File No. S360-00
Form A22-6822-12

IBM Systems Reference Library

IBM System/360 Bibliography

All available reference literature applicable to the installation and operation of any IBM System/360, except the Model 20, is in this Bibliography. Part 1 is a publications selector, arranged by model and machine number. Part 2 provides abstracts of all publications in form-number sequence.

Publications relating to the Model 20 are in the *IBM System/360 Model 20 Bibliography*, Form A26-3565. Another publication of interest to the user of System/360 is the *IBM Teleprocessing Bibliography*, Form A24-3089.

Additional copies of most publications with form numbers can be ordered through local IBM representatives. Special ordering procedures are given in the abstracts.

Systems Reference Library

For each major IBM data processing system, a Systems Reference Library (SRL) contains all basic reference literature needed to plan, program, install, and operate the system. An SRL Bibliography Supplement, Form A24-3089, covers publications for IBM teleprocessing and data collection equipment. The *Bibliography of Data Processing Techniques,* Form F20-8172, lists selected IBM technique-oriented publications that are applicable to many types of systems.

Bibliography

The bibliography is always associated with the *System/360 SRL Newsletter,* Form N20-0360. When you order the bibliography, you automatically receive the SRL Newsletter. The bibliography provides a publication selector to aid in quickly finding publications related to a specific model or device, and contains the abstracts (in form number sequence) for all current System/360 SRL publications except those pertaining to the Model 20.

By reviewing the contents of this bibliography, you may select items of interest for your installation and be aware of other materials that may be useful in the future.

File Numbers, Subject Codes

The cover page of each SRL manual shows the title, abstract, form number, and file number. The file number identifies the system or component discussed and the general subject area.

For publications associated with one or two Libraries, the prefix of the file number is the system type (e.g., 1401/1460-, 7080-). When the publication is included in more than two Libraries, the component type (e.g., 1311-, 7330-) is used, if applicable. In other cases "GENL" (general) is used.

The suffix of the file number is the subject code which designates a general subject area and the suggested filing sequence. Code 15, for example, is used for all publications related to physical planning specifications; code 33 appears on all publications related to IBM sort and merge programs for the system. Application program documentation appears under subject code 60.

In the bibliography, the subject code for any publication appears to the upper right of its abstract. A complete list of publications appears as an accumulative index in subject-code sequence in the *System/360 SRL Newsletter,* Form N20-0360.

Technical Newsletters

To keep publications current, additions and other modifications are distributed as Technical Newsletters (TNLs). The TNL masthead carries the file number and form number of the publication to which it applies. Also, all previously issued TNLs are listed so that you may verify receipt of all changes.

SRL Newsletter

The *System/360 SRL Newsletter,* Form N20-0360, is issued every four weeks (if changes have occurred during that period) to update the System/360 Bibliography. All current publications are listed in subject code sequence. Each entry shows the form number and title of the publication as well as the form numbers of applicable TNLs. Obsolete publications are listed separately, with replacement form numbers (if any) indicated. Abstracts of new publications are also included.

The SRL Newsletter gives the form number suffix so that you may verify your publications as current. Some publications have more than one current edition, since a reprint that incorporates previously distributed replacement pages is given a new suffix. All current editions and applicable TNLs are listed in the SRL Newsletter.

SRL Subscription Service

A direct-mail service is available to IBM system users to supply new publications, major revisions, and Technical Newsletters for a library that is formed and maintained according to a profile of the user's interests. To subscribe, see your local IBM representative.

IBM Programming Systems

SRL Newsletters also show the current status of programming systems available for a system. Additional data, including ordering instructions, for these and application programs are in the *Catalog of Programs for IBM System/360,* Form C20-1619.

Thirteenth Edition (December, 1968)

This is a major revision of, and obsoletes, A22-6822-11 and all associated SRL Newsletters. The entire section headed "Library Subject Code Listing" has been removed; however, the contents of that section continue to appear in the current issue of the *System/360 SRL Newsletter,* Form N20-0360. Always use the bibliography with the current SRL Newsletter.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

This manual has been prepared by the IBM Systems Development Division, Product Publications, Dept. B98, PO Box 390, Poughkeepsie, N.Y. 12602. Send comments concerning the contents of this publication to the above address.

The publications selector is an aid for quickly finding publications about a specific model or specific I/O control unit or device of the System/360, except for publications about the Model 20. It is arranged according to the numbers of the models and the I/O units. To determine the models of the System/360 to which an I/O unit currently may attach, refer to the *IBM System/360 Input/Output Configurator,* Form A22-6823.

Aids for finding specific Programming Systems publications are given in the:

IBM System/360 Basic Programming Support Programming Index, Form C24-5067

IBM System/360 Basic Operating System Programming Index, Form C24-5041

IBM System/360 Tape Operating System Programming Index, Form C24-5064

IBM System/360 Disk Operating System Programming Index, Form C24-5063

IBM System/360 Operating System Master Index, Form C28-6644

IBM System/360 Model 44 Programming System—Concepts and Facilities, Form C28-6810

IBM System/360 Time Sharing System Concepts and Facilities, Form C28-2003

Refer to the *IBM System/360 Model 20 Bibliography,* Form A26-3565, for information regarding the Model 20.

Publication Description	Publication Form Number for System/360									
	Model 25	Model 30	Model 40	Model 44	Model 50	Model 65	Model 67	Model 75	Model 85	Model 91
System Summary		A22-6810 (for all models)								
System Reference		A22-6821 (for all models)								
System Physical Planning Reference		C22-6820 (for all models)								
Model Reference	A24-3510	A24-3231 (CPU) A24-3411 (Channel)	A22-6881	A22-6875	A22-6898	A22-6884	A27-2719	A22-6889	A22-6916	A22-6907
Model Configurator	A24-3511	A24-3232	A22-6813	A22-6874	A22-6814	A22-6887	A27-2713	A22-6888	A22-6920	(In A22-6907)
Model Operating Procedures		A24-3373	A22-6911	A22-6910	A22-6908	A27-2728		A22-6909		
Model Physical Planning Template	X22-6894	X22-6894	X22-6894	X22-6914	X22-6914	X22-6856 X22-6924	X22-6905	X22-6856	X22-6923	
I/O Reference		See separate I/O chart.								
I/O Configurator		A22-6823 (for all models)								
OEMI: Channel-to-Control Unit Interface		A22-6843 (for all models)								
OEMI: Power Control Interface		A22-6906 (for all models except 91)								
OEMI: Direct Control Feature		A22-6845 (for all models except 44)								
Channel-to-Channel Adapter Feature		A22-6892 (for all models)								
Other Features	A24-3512 A24-3524 A24-3526	A24-3255 A24-3365 C20-1650	L22-6902 L22-6903 L22-6904	A22-6900	A27-2717	A27-2715 A27-2716 A27-2717				

I/O Device or Control Unit	Publication Form Number: Reference Manual	OEMI Manual	Physical Planning Template
50 Magnetic Data Inscriber Model 1	A27-2725		
1017 Paper Tape Reader Models 1, 2	A33-4500		X22-6834
1018 Paper Tape Punch Model 1	A33-4500		X22-6834
1051 Control Unit Models 1, N1	*	*	X22-6894 X24-3381
1052 Printer-Keyboard Models 3, 5, 8	*	*	
1052 Printer-Keyboard Model 7	A22-6877		
1053 Printer Models 1, 4	*	*	X22-6894
1231 Optical Mark Page Reader Model N1	A21-9031 (A21-9012)		X22-6860
1259 Magnetic Character Reader Model 2	A24-3500		X22-6860
1285 Optical Reader Model 1	A24-3256		X22-6860
1287 Optical Reader Models 1-4	A21-9064		X22-6860
1288 Optical Page Reader Model 1	A21-9081		X22-6860
1403 Printer Models 2, 3, 7, N1	A24-3073 (A24-3488)	A24-1431	X22-6834
1404 Printer Model 2	A24-1446	A24-3356	X22-6834
1412 Magnetic Character Reader Model 1	A24-1421		X22-6860
1418 Optical Character Reader Models 1, 2	A24-1473 (A24-1452) (A24-3081)		X22-6860
1418 Optical Character Reader Model 3	A24-1473 A24-3059 (A24-1452) (A24-3081)		X22-6860
1419 Magnetic Character Reader Model 1	A24-1499 (A24-3342)		X22-6860
1428 Alphameric Optical Reader Models 1, 2	A24-1473 (A24-1452) (A24-3081)		X22-6860
1428 Alphameric Optical Reader Model 3	A24-1473 A24-3059 (A24-1452) (A24-3081)		X22-6860
1442 Card Read Punch Model N1	A21-9025		X22-6834
1442 Card Punch Model N2	A21-9025		X22-6834
1443 Printer Model N1	A24-3120 (A24-3488)		X22-6834
1445 Printer Model N1	A24-3120		X22-6834
1827 Data Control Unit Model 1	A22-6868 (A22-6872)		X26-5508
2150 Console Model 1	A22-6877		X22-6859
2250 Display Unit Model 1	A27-2701		X22-6859
2250 Display Unit Model 3	A27-2721		X22-6859
2260 Display Station Models 1, 2	A27-2700 (C20-1688)		
2301 Drum Storage Model 1	A22-6895 (C20-1649)	A26-5661	X22-6858

I/O Device or Control Unit	Publication Form Number: Reference Manual	OEMI Manual	Physical Planning Template
2302 Disk Storage Models 3, 4	A26-5988 (C20-1649)		X22-6858
2303 Drum Storage Model 1	A26-5988 (C20-1649)	A26-5663	X22-6858
2311 Disk Storage Drive Model 1	A26-5988 (C20-1649)	A26-3567	X22-6858
2314 Direct Access Storage Facility Model 1	A26-3599 (C20-1649)		X22-6858
2321 Data Cell Drive Model 1	A26-5988 (A26-3633) (C20-1649)	A26-3574	X22-6858
2401 Magnetic Tape Unit Models 1-6	A22-6866	A22-6862	X22-6855
2415 Magnetic Tape Unit and Control Models 1-6	A22-6866		X22-6855
2420 Magnetic Tape Unit Model 7	A22-6918		X22-6855
2495 Tape Cartridge Reader Model 1	A27-2726		X22-6855
2501 Card Reader Models B1, B2	A21-9026		X22-6834
2520 Card Read Punch Model B1	A21-9027		X22-6834
2520 Card Punch Models B2, B3	A21-9027		X22-6834
2540 Card Read Punch Model 1	A21-9033		X22-6834
2560 Multifunction Card Machine Model A1	A26-5893		X22-6894
2671 Paper Tape Reader Model 1	A24-3388		X22-6834
2701 Data Adapter Unit Model 1	A22-6864	A22-6844	X22-6857
2702 Transmission Control Model 1	A22-6846		X22-6857
2703 Transmission Control Model 1	A27-2703		X22-6857
2803 Tape Control Models 1, 2	A22-6866		X22-6855
2804 Tape Control Models 1, 2	A22-6866		X22-6855
2816 Switching Unit Model 1	A22-6866		X22-6855
2820 Storage Control Model 1	A22-6895		X22-6858
2821 Control Unit Models 1-5	A24-3312		X22-6834
2822 Paper Tape Reader Control Model 1	A24-3388		X22-6834
2826 Paper Tape Control Models 1, 2	A33-4500		X22-6834
2840 Display Control Model 2	A27-2721		X22-6859
2841 Storage Control Model 1	A26-5988		X22-6858
2844 Auxiliary Storage Control Model 1	A26-3599		X22-6858
2848 Display Control Models 1-3, 21, 22	A27-2700 (C20-1688)		X22-6859
7770 Audio Response Unit Model 3	A27-2712	A27-2706	X22-6857
7772 Audio Response Unit Model 3	A27-2711 (A27-2710)	A27-2706	X22-6857

Publications shown in parentheses are related but not primary references.
* See IBM SRL Bibliography Supplement — Teleprocessing, Form A24-3089.

The abstracts for all System/360 publications and materials, except those pertaining to the Model 20, are listed by form number. From the abstract, the System/360 user can determine if a particular publication is applicable. The subject code number is shown at the right of the title.

320-1621 IBM Marketing Publications KWIC Index 99

Keyword Index of Marketing Publications, based on publication titles. Each title is shifted to the right, one keyword at a time, and placed in alphabetic order with all other keywords. Type numbers are treated as keywords; thus a section of the index contains all publications in type number sequence. (176 pages)

A19-0004 IBM 1219 Reader Sorter Model 32 IBM 1419 Magnetic Character Reader Model 32; For IBM World Trade Use Only 09

This publication contains detailed information about the keys, lights, switches, mechanical features, and special features of the IBM 1219 Reader Sorter Model 32 and the IBM 1419 Magnetic Character Reader Model 32.

On-line and off-line data-flow and operating theory are fully discussed, with step-by-step procedures for each reader operation. Programming notes and error-correction routines are also covered in detail. It should be noted that, in the areas of on-line operation, error-recovery, and programming notes, this manual refers to the 1401 attachment only.

For additional information, readers are referred to the following publications: *IBM 1401/1460 Miscellaneous Input/Output Instructions,* Form A24-3068; and *IBM 1419 Magnetic Character Reader with IBM 1410 System,* Form A22-0536. For information concerning the attachment of the IBM 1219/1419 Model 32 to the IBM System/360 Models 30 or 40, readers are referred to *IBM 1419 Model 32 Attached to IBM System/360 Model 30 or 40,* Form A19-0023. (60 pages)

A19-0010 IBM 3944 Dial Terminal Unit For World Trade Use Only 09

The IBM 3944 Dial Terminal Unit is designed to be used as an input device to Audio Response Units through a telephone network.

The IBM 7772 Audio Response Unit is an input/output unit of the IBM System/360 Models 30, 40, 50, 65, and 75, interfacing the computer and a telephone network. The Audio Response Unit provides, under program control, composed messages of spoken words in response to digital inquiries or input messages. Except for the use of digital language from the calling to the called line, communication between remote inquiry terminals and the Audio Response Unit is conducted in the same manner as an ordinary telephone call. (4 pages)

A19-0019 IBM System/360 Model 30, 1401/1440/1460 Compatibility Feature Inverted Print Edit and Sterling Sub-Features 13

This publication is a supplement to the source manual entitled *IBM System/360 Model 30, 1401/1440/1460 Compatibility Feature,* Form A24-3255, and should be read in conjunction with it. The information contained herein is intended primarily for users in World Trade sterling countries.

This publication is limited to a description of (1) the use of the Comma and Decimal Point Inversion Sub-Feature; and (2) how sterling-currency applications can be processed with the Sterling Currency Sub-Feature without conversion of existing 1400-series programs.

The reader is also referred to the *IBM System/360 Model 30, Functional Characteristics,* Form A24-3231, for a description of the capabilities, functions, and operational characteristics of the System/360 Model 30; and to *Reference Manual, IBM 1401 Data Processing System Sterling Currency Features,* Form UK31401-0. (2 pages)

A19-0023 IBM 1419 Model 32 Attached to IBM System/360 Model 30 or 40; For IBM World Trade Use Only 03

This publication is a supplement to *IBM 1219 Reader Sorter Model 32—IBM 1419 Magnetic Character Reader Model 32,* Form A19-0004, and should be read in conjunction with it.

This publication is limited to certain additions to A19-0004. Additional operating information relating to Power On-Power Off, Channel Line Termination, and Sort Mode Selection is provided. (12 pages)

A21-9025 IBM 1442 N1 and N2 Component Description and Operating Procedures 03

This publication describes the operating principles, machine features, and operating procedures of the IBM 1442 N1 Card Read Punch and the IBM 1442 N2 Card Punch. Also, it discusses in general the operation of these devices with IBM System/360.

For further information about these machines as they are used with System/360, refer to *IBM System/360 Principles of Operation,* Form A22-6821, and other publications listed in *IBM System/360 Bibliography,* Form A22-6822. (15 pages)

A21-9026 IBM 2501 Models B1 and B2 Component Description and Operating Procedures 03

This publication describes the operation of the IBM 2501 Card Reader Models B1 and B2 with IBM System/360 Models 30 and higher. Operating principles, system communication, and operating procedures are presented.

This manual assumes that the reader is familiar with the operation of the IBM System/360, as described in the SRL publication, *IBM System/360 Principles of Operation,* Form A22-6821. (16 pages)

A21-9027 IBM 2520—B1, B2, and B3 Component Description and Operating Procedures 03

This publication describes the IBM 2520 Card Read Punch Model B1 and the IBM 2520 Card Punch Models B2 and B3 with IBM System/360 Models 30 and above. Included are discussions of machine features and operating principles and procedures. (32 pages)

A21-9031 IBM 1231 N1 Component Description and Operating Procedures 03

This publication describes the functions, principles of operation, data flow, operating procedures, and controls of the 1231 N1 Optical Mark Page Reader. The programming section explains 1231 N1 operation with System/360. Input document specifications are also explained. (28 pages)

A21-9033 IBM System/360 Component Description and Operating Procedures IBM 2540 Card Read Punch 03

This publication explains the operating principles, procedures, and controls of the IBM 2540 Card Read Punch. Special features for the 2540 are also discussed.

Refer to the *IBM 2821 Control Unit,* Form A24-3312, for information concerning the commands, status and sense indicators, and other programming considerations that affect the 2540. For similar information about an IBM 2540 attached to an IBM System/360 through the integrated 2540 attachment feature, refer to *IBM System/360 Model 25 Functional Characteristics,* Form A24-3510.

Additional information about the operation of the 2540 with various models of the System/360 is available in the appropriate System/360 operator's guides (see the *IBM System/360 Bibliography,* Form A22-6822, for the form numbers of the required manual). (16 pages)

A21-9064 IBM 1287 Optical Reader Component Description and Operating Procedures 03

This publication describes the IBM 1287 Optical Reader and its features, operating principles and procedures, and operations with IBM System/360. The manual also contains detailed specifications for input documents and tapes and for input data quality.

For other publications that describe IBM System/360, see the SRL manual *IBM System/360 Bibliography,* Form A22-6822.

For more information about proper numeric handwriting for 1287 input, see *Handwriting Numbers and Symbols for the IBM Optical Reader,* Form R29-1280, and the handwriting practice sheet, Form R29-1281.

For more detailed programming information, see one or more of these SRL manuals as appropriate:

- *IBM System/360 Basic Programming Support, Specifications, Assembler with Input/Output Macros (8K Tape),* Form C24-3355.
- *IBM System/360 Basic Programming Support, Programmer's Guide (8K Tape),* Form C24-3354.
- *IBM System/360 Basic Operating System Specifications, Assembler with I/O Macros,* Form C24-3361.
- *IBM System/360 Basic Operating System Programmer's Guide,* Form C24-3372.
- *IBM System/360 Disk Operating System, Extended Supervisor and Input/Output Macros,* Form C24-5037.
- *IBM System/360 Disk Operating System, Data Management Concepts,* Form C24-3427.
- *IBM System/360 Tape Operating System, Extended Supervisor and Input/Output Macros,* Form C24-5035.
- *IBM System/360 Tape Operating System, Data Management Concepts,* Form C24-3430. (60 pages)

A21-9070 IBM 1050 Special Features Description—IBM ASCII Data Communication System with RPQ Features F18589, 82027, 842028 and 842029 13

This publication serves as a reference manual for the IBM 1050 ASCII Data Communication System, which provides the IBM System/360 Data Processing System with remote input and output capabilities using the American Standard Code for Information Interchange.

Detailed information about the IBM System/360 and the appropriate transmission control unit will be found in their respective SRL publications. Site preparation information in the publication, *IBM 1050 Data Communication System Installation Manual, Physical Planning,* Form A24-3022 applies for this system. For titles and abstracts of associated publications, see the *IBM Teleprocessing Bibliography,* Form A24-3089 and the *IBM System/360 Bibliography,* Form A22-6822. (52 pages)

A21-9081 IBM 1288 Optical Page Reader Model 1—Component Description 03

This publication describes the IBM 1288 Optical Page Reader and its features, operating principles, and operations with the IBM System/360. Detailed information and specifications for input documents and print quality are also included.

For publications describing the IBM System/360, see the *IBM System/360 Bibliography,* Form A22-6822. See *Handwriting Numbers and Symbols for the IBM Optical Reader,* Form R29-1280, and the handwriting practice sheet, Form R29-1281, for proper handwriting for 1288 input. (44 pages)

A22-6810 IBM System/360 System Summary 00

This publication provides basic information about the IBM System/360, with the objective of helping readers to achieve a general understanding of this new data processing system and the interrelationships of its models and parts. Broad system concepts, basic and optional features, and specific input/output devices are briefly discussed.

It is assumed that the reader has a basic knowledge of data processing systems as in *Introduction to IBM Data Processing Systems,* Form C20-1684.

This publication does not apply to System/360 Model 20. All Model 20 publications are listed in the *IBM System/360 Model 20 Bibliography,* Form A26-3565.

Detailed information on processing is in *IBM System/360 Principles of Operation,* Form A22-6821. Description of programming systems and languages, as well as further details on the I/O devices and teleprocessing capabilities described herein, are in publications listed in the *IBM System/360 Bibliography,* Form A22-6822 and *IBM Teleprocessing Bibliography,* Form A24-3089. (120 pages)

A22-6813 IBM System/360 Model 40 Configurator 00

A schematic drawing shows the complete Model 40 processor with all standard and optional features. Input/output devices are shown on Form A22-6823 and data communications devices on Form A22-6824. (1 page)

A22-6814 IBM System/360 Model 50 Configurator 00

A schematic drawing shows the complete Model 50 processor with all standard and optional features. Input/output devices are shown on Form A22-6823 and data communications devices on Form A22-6824. (1 page)

A22-6821 IBM System/360 Principles of Operation 01

This publication is the machine reference manual for the IBM System/360. It provides a direct, comprehensive description of the system structure; of the arithmetic, logical, branching, status switching, and input/output operations; and of the interruption system.

The reader is assumed to have a basic knowledge of data processing systems and to have read the *IBM System/360 System Summary,* Form A22-6810, which describes the system briefly and discusses the input/output devices available.

For information about the characteristics, functions, and features of a specific System/360 model, use the functional characteristics manual for that model in conjunction with the *IBM System/360 Principles of Operation.* Descriptions of specific input/output devices used with the System/360 appear in separate publications. Publications that relate to the IBM System/360 Model 20 are described in the *IBM System/360 Model 20 Bibliography,* Form A26-3565. (172 pages)

A22-6823 IBM System/360 Input/Output Configurator 00

This configurator deals with the input/output equipment available for the IBM System/360 Models 25-91.

The presentation is arranged in two ways: by type of equipment (such as "direct access," "display," and "printers") and by machine number (such as 1052, 1403, and 7770). For each item of equipment, information is given concerning the way in which the item attaches to the system and the number of items that can be attached.

Available System Reference Library (SRL) publications about individual items of I/O equipment are listed and described in the *IBM System/360 Bibliography,* Form A22-6822. (6 pages)

A22-6824 IBM System/360 Data Communications and Acquisition Configurator 00

This configurator presents the various possible configurations for the IBM 2701 Data Adapter Unit and the IBM 2702 Transmission Control. Examples are given of the adapters and machine features needed for specific configurations.

Included are the following configurations:

	Page
Configurator for 2701 Low Speed Communication Lines	3
Configurator for 2701 Synchronous Communication Lines	5
Configurator for Combinations of 2701 Low Speed and Synchronous Communication Lines	7
Configurator for 2701 Data Acquisition	9
Configurator for Combinations of 2701 Data Acquisition and Communication Lines	11
Configurator for the IBM 2702	13
Configurator for a 2701/1030 System	15
Configurator for a 2702/1030 System	17

(19 pages)

A22-6828 IBM 7340 Hypertape Drive Model 3 with IBM System/360 05

This publication describes the functions, operations, controls, and timings of the IBM 7340 Hypertape Drive Model 3, including the dynamics of 7340 reading and writing and details on the tape, tape cartridge, and optional automatic cartridge loader. In addition, all necessary details on the function and operation of the IBM 2802 Hypertape Control are presented.

This manual provides information for customer systems personnel and is designed as a reference and guide in the training of operators, system engineers, programmers, managers, and others who need a general idea of how Hypertape operates within the System/360. It is an I/O adjunct to *IBM System/360 Principles of Operation,* Form A22-6821. (28 pages)

A22-6843 IBM System/360 I/O Interface-Channel to Control Unit—Original Equipment Manufacturers' Information 19

This Original Equipment Manufacturers' Information (OEMI) manual provides the definitions and functional descriptions of the interface lines for the IBM I/O Interface-Channel to Control Unit. In addition, it contains electrical, mechanical, and cabling considerations and specifications of this interface. (60 pages)

A22-6844 IBM 2701 Data Adapter Unit Original Equipment Manufacturers' Information 19

This publication describes the IBM 2701 Data Adapter Unit interfaces. The processor interface description includes a description of the operating signals and responses. The transmission-adapter interface descriptions provide device-attachment information. The electrical, mechanical, and cabling specifications of these interfaces are provided, together with physical-planning requirements. (144 pages)

A22-6845 IBM System/360 Direct Control and External Interrupt Features—Original Equipment Manufacturers' Information 19

This manual describes the specifications, timings, circuits and characteristics of the IBM System/360 Direct Control and External Interrupt features. The External Interrupt feature provides the means by which external devices may signal the CPU to gain its attention. The Direct Control feature includes the External Interrupt and provides an interface, exclusive of the channel, for the exchange of information between two central processing units, or between a central processing unit and external devices. (24 pages)

A22-6846 IBM System/360 Component Description—IBM 2702 Transmission Control 09

This publication provides information concerning the operation of the IBM 2702 Transmission Control.

The first section contains a general description of the 2702, including the data communication terminals operable with the 2702, the terminal controls used by the 2702 to operate with the various terminals, and the data sets and communication facilities used.

The Operational Functions section discusses communication line addressing, 2702-multiplexor channel operation, and I/O instructions concerning the 2702. This section also contains the various commands and orders used by the 2702 and the transmit and receive operation sequences and, in addition, describes the functions of the status and sense bytes and the polling and addressing of the terminals. (32 pages)

A22-6861 IBM 7340 Model 3 Hypertape Drive—Original Equipment Manufacturers' Information 19

The information in this manual is provided to assist designers of accessory equipment for IBM 7340 Model 3 Hypertape Drives. It includes all specifications, timing information, circuit descriptions, and cable information necessary for attaching a 7340-3 to a control unit. Additional details about the operation and maintenance of the 7340-3 may be obtained from the Customer Engineer's Manual of Instruction, the CE Reference Manual and the CE Maintenance Diagram Manual. (31 pages)

A22-6862 IBM 2400-Series Magnetic Tape Units—Original Equipment Manufacturers' Information 19

This manual will assist designers of accessory equipment for IBM 2401, 2402 Models 1-6 Magnetic Tape Units, IBM 2403 Models 1-6 and 2404 Models 1-3 Magnetic Tape Units and Controls and IBM 2803/2804 Models 1 and 2 Tape Control Units.

Additional information about the operation and use of these tape units in integrated data processing systems can be obtained from the *IBM 2400 Magnetic Tape Units and 2816 Switching Unit Component Description,* Form A22-6866, and from the local IBM Sales Office. Information concerning I/O operations is in *IBM System/360 Channel to Control Unit OEMI,* Form A22-6843. (46 pages)

A22-6864 IBM 2701 Data Adapter Unit Principles of Operation 09

This manual provides information concerning the operation of the IBM 2701 Data Adapter Unit. The manual is divided into three sections.

The first section gives a general description of the 2701, including: the terminals operating with the 2701, the functional organization of the 2701, the special features on the 2701, and various configurations of the 2701.

The second section describes the operation of the 2701 with the System/360. Subjects discussed here include communication line addressing, multiplexor and selector channel operation, and I/O instructions concerning the 2701.

The third section covers the 2701's transmission adapters. A complete description on the operation of each adapter is made here. This description includes transmit and receive operation sequences, status and sense bytes, and the polling and addressing of the terminals. (48 pages)

A22-6866 IBM System/360 Component Description—2400-Series Magnetic Tape Units and 2816 Switching Unit 05

This manual contains a comprehensive presentation of the characteristics, functions, and features of the IBM 2400-Series Magnetic Tape Units and Controls, and a general description of the IBM 2816 Model 1 Switching Unit. The 2400-series consists of the 2401 and 2402 Magnetic Tape Units; the 2403, 2404, and 2415 Magnetic Tape Units and Controls; and the 2803 and 2804 Tape Control Units.

In most instances, operational descriptions are limited to the channel and command level. Operating functions and procedures common and fundamental to all I/O operations are described in *IBM System/360 Principles of Operation,* Form A22-6821.

Subjects covered include magnetic tape unit principles; keys and lights; tape load, unload, and cleaning procedures; status and sense information; magnetic tape handling; tape block and reel organization; and error recovery procedures. (56 pages)

A22-6868 IBM System/360 Component Description—IBM 1827 Data Control Unit 03

This publication contains the functional characteristics and operating information for the IBM 1827 Data Control Unit. Operations with the IBM System/360 Models 30, 40, 44, and 50 are described. The following IBM 1800 Data Acquisition and Control System Process I/O features are described: Digital Input, Digital Output, Analog Output, Analog Input, and Comparator. (40 pages)

A22-6869 IBM 2361 Core Storage—OEMI 19

The information in this manual is provided to assist designers of accessory equipment for IBM 2361 Core Storage Model 1 and Model 2. It includes all specifications, timing information, circuit descriptions, and cable information necessary for attaching a 2361 to a system. Additional details about the operation and maintenance of the 2361 may be obtained from the local IBM Branch Office. (22 pages)

A22-6872 1827 Data Control Unit Configurator 00

A schematic drawing shows the attachment of IBM 1800 components to an IBM System/360. (1 folded page)

A22-6874 IBM System/360 Model 44 Configurator 00

A schematic drawing shows the complete Model 44 processor with all standard and optional features. Input/output devices are shown on Form A22-6823, and Data Communications devices on Form A22-6824. (1 page)

A22-6875 IBM System/360 Model 44 Functional Characteristics 01

This manual describes the system structure, features, instruction timings and formulas, channels, device addressing, and operator controls unique to System/360 Model 44.

It is assumed the reader has a knowledge of the System/360 as defined in the *IBM System/360 Principles of Operation,* Form A22-6821 and the *IBM System/360 System Summary,* Form A22-6810.

For installations using the direct word, direct data channel, or priority interrupt features, a companion publication is *Data Acquisition Special Features for the IBM System/360 Model 44,* Form A22-6900. Other related literature is described in *IBM System/360 Bibliography,* Form A22-6822. (56 pages)

A22-6877 IBM System/360 Component Descriptions and Operating Procedures IBM 1052 Printer-Keyboard Model 7 with IBM 2150 Console 03

This publication describes the functional and operational characteristics of the IBM 1052 Printer-Keyboard Model 7 with the IBM 2150 Console. (20 pages)

A22-6881 IBM System/360 Model 40 Functional Characteristics 01

This manual presents the organization, characteristics, functions and features unique to the IBM System/360 Model 40. Major areas described are system structure, generalized information flow, standard and optional features, system control panel, instruction timings, and channel characteristics and functional evaluation.

Descriptions of specific input/output devices used with the IBM System/360 Model 40 appear in separate publications. Configurators for the IBM 2040 Processing Unit and I/O devices are available.

It is assumed that the reader has a knowledge of the System/360 as defined in the *IBM System/360 Principles of Operation,* Form A22-6821 and the *IBM System/360 System Summary,* Form A22-6810. (112 pages)

A22-6884 IBM System/360 Model 65 Functional Characteristics 01

This manual presents the organization, characteristics, functions and features unique to the IBM System/360 Model 65. Major areas described are system structure, generalized information flow, standard and optional features, instruction timings, and the system control panel. (29 pages)

A22-6887 System/360 Model 65 Configurator 00

A schematic drawing shows the complete Model 65 processor with all standard and optional features. Input/output devices are shown in Form A22-6823, and Data Communications devices on Form A22-6824. (1 page)

A22-6888 IBM System/360 Model 75 Configurator 00

A schematic drawing shows the complete Model 75 processor with all standard and optional features. Input/output devices are shown on Form A22-6823 and Data Communications devices on Form A22-6824. (2 pages)

A22-6889 IBM System/360 Model 75 Functional Characteristics 01

This manual presents the organization, characteristics, functions and features unique to the IBM System/360 Model 75. Major areas described are: system structure, generalized information flow, standard and optional features, instruction timings, and the system control panel.

Descriptions of specific input/output devices used with the IBM System/360 Model 75 appear in separate publications.

This manual assumes that the reader has a knowledge of System/360 as defined in the *IBM System/360 Principles of Operation,* Form A22-6821 and the *IBM System/360 System Summary,* Form A22-6810. (36 pages)

A22-6892 IBM System/360 Special Feature Channel-to-Channel Adapter 13

This manual describes the functions and operating characteristics of the channel-to-channel adapter in either multiple-processor or single-processor systems.

IBM System/360 input/output operations that are exclusive of device considerations are described in detail in the *IBM System/360 Principles of Operation,* Form A22-6821. (16 pages)

A22-6895 IBM System/360 Component Descriptions—2301 Drum Storage and 2820 Storage Control 07

This manual describes the operating characteristics of the IBM 2301 Drum Storage and the IBM 2820 Storage Control and discusses in detail the input/output operations performed by those units.

Input/output operations in the IBM System/360 that are exclusive of device considerations are described in detail in the *IBM System/360 Principles of Operation,* Form A22-6821. (20 pages)

A22-6898 IBM System/360 Model 50 Functional Characteristics 01

This manual presents the organization, characteristics, functions and features unique to the IBM System/360 Model 50. Major areas described are system structure, generalized information flow, standard and optional features, system control panel, instruction timings, channel characteristics, concurrent input/output capabilities, selector channel loading, multiplexer channel loading, and channel interference with the CPU.

Descriptions of specific input/output devices used with the IBM System/360 Model 50 appear in separate publications.

Configurators for the IBM 2050 Processing Unit and I/O devices are available. See *IBM System/360 Bibliography,* Form A22-6822.

It is assumed that the reader has a knowledge of the System/360 as defined in the *IBM System/360 Principles of Operation,* Form A22-6821 and the *IBM System Summary,* Form A22-6810. (96 pages)

A22-6900 Data Acquisition Special Features for the IBM System/360 Model 44 13

This publication provides information about the operation, control, and interface of three special features:

Direct Word
Direct Data Channel
Priority Interrupt

These features are particularly suitable for high-speed data acquisition and relatively complex control applications in the scientific fields.

Additional information can be found in *IBM System/360 Model 44 Functional Characteristics,* Form A22-6875, and *IBM System/360 Principles of Operation,* Form A22-6821. (26 pages)

A22-6906 IBM System/360 Power Control Interface—Original Equipment Manufacturers' Information 19

This Original Equipment Manufacturers' Information (OEMI) manual provides the definitions and descriptions of the power control interface lines. In addition, the manual contains the emergency power off operations and procedures. (10 pages)

A22-6907 IBM System/360 Model 91 Functional Characteristics 01

This publication describes the organization and the functional characteristics of the IBM System/360 Model 91, an information-processing system designed for ultrahigh-speed, large-scale scientific and business applications.

The system components are described, and a detailed consideration is given to the functions of processor storage, the central processing unit, the input/output channels, and the operator-control and operator-intervention portions of the system control panel. In addition, certain coding and timing considerations are discussed.

The reader is assumed to have a knowledge of information-processing systems and to have read the *IBM System/360 Principles of Operation,* Form A22-6821. (33 pages)

A22-6908 IBM System/360 Model 50 Operating Procedures 01

This manual describes operator procedures for an IBM 2050 Processing Unit, operating with or without an associated IBM 1052 Printer-Keyboard. The manual describes machine functions, machine procedures, program-oriented procedures, and operator-intervention procedures. In addition, an appendix of reference material and an index are included.

The reader is assumed to have a knowledge of the following SRL publications:

IBM System/360 Principles of Operation, Form A22-6821
IBM System/360 Model 50 Functional Characteristics, Form A22-6898
IBM System/360 Basic Programming Support Operating Guide for Basic Assembler and Utilities, Form C28-6557
IBM System/360 Basic Programming Support Operating Guide, Form C24-3391
IBM System/360 Basic Operating System Operating Guide, Form C24-3450
IBM System/360 Operating System Operator's Guide, Form C28-6540

For information pertaining to the operation of units attachable to the System/360 Model 50, refer to the appropriate SRL publication. SRL publications that pertain to IBM System/360 and attachable units are abstracted and referenced by form number in *IBM System/360 Bibliography,* Form A22-6822. (56 pages)

A22-6909 IBM System/360 Model 75 Operating Procedures 01

This manual describes operator procedures for an IBM 2075 Processing Unit, operating with or without an associated IBM 1052 Printer-Keyboard. The manual describes system control panel machine functions, machine procedures, program-oriented procedures, and operator-intervention procedures. An appendix of reference material and an index are included.

The reader is assumed to have a knowledge of the following SRL publications:

IBM System/360 Principles of Operation, Form A22-6821 (sections on "System Structure" and "System Control Panel")
IBM System/360 Model 75 Functional Characteristics, Form A22-6889
IBM System/360 Tape Operating System Operating Guide, Form C24-5021
IBM System/360 Disk Operating System Operating Guide, Form C24-5022
IBM System/360 Operating System Operator's Guide, Form C28-6540

For information pertaining to the operation of I/O units that are attachable to the System/360 Model 75, refer to the appropriate SRL publication. All System/360 SRL publications that pertain to IBM System/360 and attachable units are abstracted and referenced by form number in *IBM System/360 Bibliography,* Form A22-6822. (39 pages)

A22-6910 IBM System/360 Model 44 Operating Procedures 01

This manual describes operator procedures for an IBM 2044 Processing Unit, operating with its associated Console Printer-Keyboard. The manual has sections devoted to system control panel machine functions, machine procedures, program-oriented procedures, operator-intervention procedures, and command examples, plus an appendix of reference material, and a complete index.

The reader should also refer to the following SRL publications:

IBM System/360 Principles of Operation, Form A22-6821 (sections on System Structure and System Control Panel)
IBM System/360 Model 44 Functional Characteristics, Form A22-6875
IBM System/360 Model 44 Programming System, Guide to System Use, Form C28-6812
IBM System/360 Model 44 Programming System Operator's Guide, Form C28-6815

For information pertaining to the special features for this model, refer to *Data Acquisition Special Features for the IBM System/360 Model 44,* Form A22-6900. For information pertaining to operation of the I/O units attachable to System/360 Model 44, refer to the appropriate SRL publication. All System/360 SRL publications are abstracted and listed by form number in *IBM System/360 Bibliography,* Form A22-6822. (68 pages)

A22-6911 IBM System/360 Model 40 Operating Procedures 01

This manual describes operator procedures for an IBM 2040 Processing Unit, operating with or without an associated IBM 1052 Printer-Keyboard. The manual has sections devoted to system control panel functions, system procedures, program-oriented procedures, operator-intervention procedures, and command examples, plus an appendix of reference material, and a complete index.

The reader is assumed to have a knowledge of the following SRL publications:

IBM System/360 Principles of Operation, Form A22-6821 (sections on "System Structure" and "System Control Panel")
IBM System/360 Model 40 Functional Characteristics, Form A22-6881
IBM System/360 Tape Operating System Operating Guide, Form C24-5021
IBM System/360 Disk Operating System Operating Guide, Form C24-5022
IBM System/360 Operating System Operator's Guide, Form C28-6540

(Of the three operating system publications listed above, at least one applicable to the system in use should be read by the operator.)

For information pertaining to operation of the I/O units that are attachable to the System/360 Model 40, refer to the appropriate SRL publication. All System/360 SRL publications are abstracted and listed by form number in *IBM System/360 Bibliography,* Form A22-6822. (84 pages)

A22-6916 IBM System/360 Model 85 Functional Characteristics 01

This publication describes the organization and the functional characteristics of the IBM System/360 Model 85, an information-processing system designed for very high-speed, large-scale scientific and business applications.

The system components are described, and a detailed consideration is given to the functions of processor storage, the central processing unit, the input/output channels, and the operator-control and operator-intervention portions of the system control panel. In addition, certain coding and timing considerations are described.

The reader is assumed to have a knowledge of information-processing systems and to have read the *IBM System/360 Principles of Operation,* Form A22-6821. Other related literature is referenced by form number and briefly described in *IBM System/360 Bibliography,* Form A22-6822. (40 pages)

A22-6918 Component Description Bulletin IBM 2420 Model 7 Magnetic Tape Unit 05

This bulletin describes the characteristics, functions, and features of the IBM Model 7 Magnetic Tape Unit. This bulletin will be incorporated in the *IBM System/360 Component Description, 2400-Series Magnetic Tape Units and 2816 Switching Unit,* Form A22-6866. (8 pages)

A22-6920 IBM System/360 Model 85 Configurator 00

A schematic drawing showing the complete Model 85 processor with all standard and optional features. Input/output control units and devices are shown on the *IBM System/360 I/O Configurator,* Form A22-6823. (2 pages)

A24-1421 1412 Magnetic Character Reader Model 1 03

Describes the features and functions of the IBM 1412 Magnetic Character Reader Model 1. Explains in detail its operating principles, including document feeding, reading, and distribution, as well as control of both on-line and off-line operations. A section on operating procedures is included.

Programming notes and an explanation of 1401 stored program instructions used to control 1412 operations are presented.

Explains the use and operation of four special features: Multiple Columns Select—Sort Suppress Feature, Auxiliary Document Counter, Self-Checking Number Verification, and Electronic-Accumulator and Sequence-Checking Feature. (56 pages)

A24-1431 IBM 1403 Printer—OEMI 19

This manual contains information that will assist non-IBM engineers to attach the IBM 1403 Printer to their equipment. It includes a general description of machine functions and a reference listing of publications and engineering documents. It also contains information concerning machine interface not readily available in other publications. Charts of signal connectors and power plug pin assignments are included. (16 pages)

A24-1446 IBM 1404 Printer 03

The IBM 1404 Printer, an output unit for the IBM 1401 Data Processing System and the IBM System/360, Models 30, 40, and 50, is capable of printing either cut-card forms or continuous forms. This reference publication presents the functional and operational characteristics of the 1404, including the settings of the feed mechanism and the print unit. It also describes the read-compare special feature. Information on timing and on certain normal operating procedures is presented. (24 pages)

A24-1452 Print Quality Considerations IBM 1418 and IBM 1428 03

This publication contains a detailed description of the print quality requirements of printing to be read by the IBM 1418 Optical Character Reader and the IBM 1428 Alphameric Optical Reader and to be used as input to an IBM 1401 Data Processing System, IBM 1460 Data Processing System, and IBM System/360 Model 30. The use of print-quality measuring devices is fully explained with examples of the range of acceptable printing produced by the IBM 407 Accounting Machine, IBM 1403 Printer, IBM Selectric® Typewriter and IBM Electric Typewriter.

Refer to *IBM 1401/1460 Bibliography,* Form A24-1495, for other publications. (44 pages)

A24-1473 IBM 1418 Optical Character Reader—IBM 1428 Alphameric Optical Reader 03

This publication describes the operation of the IBM 1418 Optical Character Reader and the IBM 1428 Alphameric Optical Reader used as input devices to an IBM 1401 Data Processing System.

Included are a description of character and mark-reading capabilities, off-line sorting, document-design requirements, and examples of the range of acceptable print quality of the documents to be scanned by both machines. The use of the IBM 1418/1428 Document Design and PDS Timing Chart and the formulas for calculating document output and maximum character reading per document are also fully discussed as an aid in optimizing the design of documents to be read by both machines. (44 pages)

A24-1499 IBM 1219 Reader Sorter, IBM 1419 Magnetic Character Reader 03

This publication describes the operating characteristics, controls, indicators, and features of the IBM 1219 Reader Sorter and the IBM 1419 Magnetic Character Reader. Operating theory and procedures are given for off-line operation of both machines and on-line operation of the IBM 1419 within the 1400 series and System/360 systems.

Document handling and data flow are discussed fully, and step-by-step procedures and practical examples are given for each machine. Programming notes and error recovery procedures are also given.

For additional publication information, refer to the Bibliography for the system to which the IBM 1419 is attached. (96 pages)

A24-3073 IBM 1403 Printer Component Description 03

This reference publication describes the various models of the IBM 1403 Printer used with IBM 1401, 1410, 1440, 1460, 7010, 7040, 7044, and System/360 Models 20, 25, 30, 40, 50, 65, and 75 Data Processing Systems.

The functional and operating characteristics of the printer are presented.

The special features available for the 1403 are included, and timing information is given for printing and paper movement. (56 pages)

A24-3081 Mark Read Station (Slanted Mark) for IBM 1418 and IBM 1428 13

This publication describes the Mark Read Station (Slanted Mark) special feature. This feature is available for the IBM 1418 Optical Character Reader Models 1 and 2; and for the IBM 1428 Alphameric Optical Reader Models 1 and 2. A description of these functional specifications is included:

Document Specifications
Mark Reading
Document Format
Document Corner Cuts
Document Feeding

The Slanted Mark Reading Gage is also fully described.

This publication is for those familiar with programming and operating the IBM 1418 and 1428 Models 1 and 2, as described in these Systems Reference Library publications:

Programming for the IBM 1418 and IBM 1428 Optical Readers, Form C24-1091

IBM 1418 Optical Character Reader and IBM 1428 Alphameric Optical Reader, Form A24-1473.

(16 pages)

A24-3089 IBM SRL Bibliography Supplement—Teleprocessing 00

This bibliography lists the available reference literature for installing, programming, and operating IBM teleprocessing equipment, used independently or with several data processing systems. For publications on data communications equipment and programs associated with a single data processing system, see the bibliography for that system.

Part 1 lists publications by major subjects. This sequence (subject code) may be used in building a library.

Part 2 is a cross-index of tele-processing equipment with the associated data processing system.

Part 3 contains abstracts of tele-processing publications in form-number sequence. Copies of most form-numbered publications may be ordered through the local IBM Sales Representative. (20 pages)

A24-3120 IBM 1443 Printer Models 1 to 4 and N1—IBM 1445 Printer Models 1 and N1 03

This reference publication describes the operation of the IBM 1443 and 1445 Printers with the IBM 1240, 1401, 1440, 1450, 1460, 1800, and certain models of the IBM System/360 Data Processing System.

It also discusses timing information for the printer and the tape-controlled carriage as well as their functional and operating characteristics. The speed of the printer using the various character sets is also described.

Included is command, status, and sense information pertaining to the printers used with IBM System/360 Data Processing Systems.

For a list of other publications and abstracts, see the IBM bibliography for the associated data processing system. (32 pages)

A24-3231 IBM System/360 Model 30 Functional Characteristics 01

This reference publication describes the relationship of the IBM System/360 Model 30 to the entire System/360. The system's capabilities, features, I/O channels, and operations are also discussed.

The reader can find a more detailed description of the System/360 operations in *IBM System/360 Principles of Operation,* Form A22-6821. The interrelationships of the models and units available with System/360 are broadly described in *IBM/360 System Summary,* Form A22-6810. Other related literature is listed by form number and briefly described in *IBM System/360 Bibliography,* Form A22-6822.

Information on channel load limits for IBM System/360 Model 30 is given in *IBM System/360 Model 30 Channel Characteristics and Functional Evaluation,* Form A24-3411. (72 pages)

A24-3232 IBM System/360 Model 30 Configurator 00

A schematic drawing shows the complete Model 30 processor with all standard and optional features. Input/output devices are shown on Form A22-6823 and data communications devices on Form A22-6824. (1 page)

A24-3255 IBM System/360 Model 30 1401/1440/1460 Compatibility Feature 13

This publication describes the 1401/1440/1460 Basic Compatibility feature and associated subfeatures for the System/360 Model 30. These special features enable a rapid and simplified transfer from 1401-, 1440-, or 1460-oriented applications to the IBM System/360 Model 30.

Refer to the *IBM System/360 Model 30 Functional Characteristics,* Form A24-3231, for description of the capabilities, functions, and operational characteristics of the System/360 Model 30.

The *IBM System/360 Bibliography,* Form A22-6822, lists the associated reference publications. (124 pages)

A24-3256 IBM 1285 Optical Reader Component Description and Operating Procedures 03

This publication describes the IBM 1285 Optical Reader. The major topics include operating principles, controls and operating procedures, programming for the IBM System/360, and input tape and printing specifications. For more information about the operation of the 1285 with a particular system, see the appropriate SRL bibliography:

IBM System/360 Bibliography, Form A22-6822.
IBM 1401/1460 Data Processing Systems Bibliography, Form A24-1495.
IBM 1440 Data Processing System Bibliography, Form A24-3005.

(36 pages)

A24-3312 IBM 2821 Control Unit 03

This reference publication presents a description of input/output operations controlled through the IBM 2821 Control Unit. The IBM 2540 Card Read-Punch and the IBM 1403 and 1404 Printers controlled by the IBM 2821 Control Unit are briefly described. Commands, status, and sense information pertaining to the attached input/output units is presented. Programming timing considerations for control unit, card reader, card punch, and printers are also presented.

For further information about the attached input/output units, refer to *IBM 2540 Card Read-Punch,* Form A21-9033, *IBM 1403 Printer,* Form A24-3073, and *IBM 1404 Printer,* Form A24-1446. For further information about input/output and channel operations, refer to *IBM System/360 Principles of Operation,* Form A22-6821. Other related literature is listed in *IBM System/360 Bibliography,* Form A22-6822. (76 pages)

A24-3342 Batch Numbering Feature for IBM 1241 and 1419 Magnetic Ink Character Recognition Readers 13

This publication describes the functions and features of the Batch Numbering special feature when used with the IBM 1241 Magnetic Ink Character Recognition Reader and the IBM 1419 Magnetic Character Reader.

The operation of the keys, lights, and switches, as well as the programming information needed to operate the feature, is covered in detail. (14 pages)

A24-3356 IBM 1404 Printer Model 2—OEMI 19

This reference manual contains information that will assist non-IBM engineers to attach their equipment to the IBM 1404 Printer Model 2. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. For titles and abstracts of associated publications, see the *IBM 1401 and 1460 Bibliography,* Form A24-1495. (20 pages)

A24-3365 IBM System/360 Model 30 1620 Compatibility Feature 13

This publication describes the IBM 1620 Compatibility Feature for the IBM System/360 Model 30. This special feature provides a means of rapid and simplified transfer of 1620-oriented applications to the IBM System/360 Model 30.

Refer to *IBM System/360 Model 30 Functional Characteristics,* Form A24-3231, for a description of the capabilities, functions, and operating characteristics of the System/360 Model 30.

The *IBM System/360 Bibliography,* Form A22-6822, lists associated reference publications. (76 pages)

A24-3373 IBM System/360 Model 30 Operator's Guide 01

This reference publication describes operator procedures for the IBM 2030 Processing Unit and for the IBM 1050 Documentary Console (attached to the IBM System/360 Model 30). For additional information pertaining to operation of the I/O units attachable to System/360 Model 30, refer to the appropriate Systems Reference Library publication. Systems Reference Library publications that pertain to IBM System/360 and attachable I/O units are abstracted and referenced by form number in *IBM System/360 Bibliography,* Form A22-6822. (39 pages)

A24-3388 IBM 2671 Paper Tape Reader IBM 2822 Paper Tape Reader Control 03

This reference publication describes the operation of the IBM 2671 Paper Tape Reader and the IBM 2822 Paper Tape Reader Control when used as input to the IBM System/360 Models 30, 40, 44, 50 and 67. The System/360 channel commands necessary to control the operation of the 2671 Paper Tape Reader are fully described.

Console controls, tape specifications, tape splicing procedures, tape loading procedures, and special features available for the 2671 are also described.

Titles and abstracts of associated publications are listed in the IBM *System/360 Bibliography,* Form A22-6822. (42 pages)

A24-3411 IBM System/360 Model 30 Channel Characteristics and Functional Evaluation 01

This reference publication describes methods used to calculate System/360 Model 30 data handling capabilities that are dependent upon I/O-channel configurations and operations. Consideration of methods are also presented for:

1. Priority attachment of I/O units for maximum throughput,
2. Addressing I/O units,
3. Calculating buffer transfer times,
4. Calculating interference (with the processing unit) caused by channel operations.

Calculations for a System/360 Model 30 with a 1.5-microsecond Read/Write (RW) cycle and with a 2-microsecond RW cycle are discussed separately.

The user of this publication should be thoroughly familiar with I/O programming considerations as described in IBM *System/360 Principles of Operation,* Form A22-6821. Information related to specific I/O devices is contained in separate Systems Reference Library publications. These publications are listed by form number and briefly described in IBM *System/360 Bibliography,* Form A22-6822.

When you are performing loading calculations related to the multiplexor channel operating in multiplex mode, use the IBM *System/360 Model 30 Multiplexor Channel Worksheet,* Form X24-3407. If the IBM 2702 Communications Control is used in your configuration, use the IBM *System/360 Model 30 2702 Worksheet,* Form X24-3406. (75 pages)

A24-3423 2740 Communications Terminal, Physical Planning 15

This publication contains physical planning information for the IBM 2740 Communications Terminal. Included are physical specifications and electrical and environmental requirements.

Cabling requirements are specified and are included in the diagram showing communication facilities that can be used. (2 pages)

A24-3424 IBM 2741 Communications Terminal Physical Planning 15

This publication contains physical planning information for the IBM 2741 Communications Terminal. Included are physical specifications and electrical and environmental requirements. Cabling requirements are specified and include a diagram showing communications facilities that can be used. (2 pages)

A24-3425 IBM 2712 Remote Multiplexor Physical Planning 15

This publication contains physical planning information for the IBM 2712 Remote Multiplexor. Included are physical specifications, electrical and environmental requirements, and cabling requirements. Communication facilities and terminals that can be used with the 2712 Models 1 and 2 are also specified. (1 sheet)

A24-3426 IBM 2712 Remote Multiplexor 09

This reference publication describes the IBM 2712 Remote Multiplexor and its operation. The 2712 is used with IBM 1050, 1060, 2740, and 2741 Terminals (134.49 baud) and with telegraph terminals (74.2 baud) connected to IBM System/360 through the IBM 2702 and 2703 Transmission Control Units. Communication facilities that can be used with the 2712 are specified. (8 pages)

A24-3488 IBM 1403, 1443 and 2203 Printers Form-Design Considerations 03

This publication contains information that should be considered by personnel designing, ordering, or using forms for the IBM 1403, the IBM 1443, or the IBM 2203 Printer. (16 pages)

A24-3500 IBM 1259 Magnetic Character Reader—Component Description 03

This reference publication contains information about all the features and functions of the IBM 1259 Magnetic Character reader. On-line and off-line data flow and operating theory are discussed, with detailed programming information and operating instructions for each reader function.

Refer to the following bibliographies for additional publications:

IBM System/360 Model 20 Bibliography, Form A26-3565

IBM System/360 Bibliography, Form A22-6822

IBM 1440, 1240, and 1450 Bibliography, Form A24-3005

(40 pages)

A24-3509 IBM 2944 Data Channel Repeater Installation Manual—Physical Planning 15

This publication provides physical planning information for the IBM 2944 Data Channel Repeater Models 1 and 2 when used with the IBM System/360. Included are physical specifications and cable, electrical, and environmental requirements.

For a list of related publications and abstracts, see the *IBM System/360 Bibliography,* Form A22-6822. (8 pages)

A24-3510 IBM System/360 Model 25 Functional Characteristics 01

This reference publication augments the *IBM System/360 Principles of Operation,* Form A22-6821. It describes the relationship of the Model 25 to other System/360 models: system capabilities, system control panel, input/output channels and integrated I/O attachments, operations, instruction timings, and system features (including the 1400 Compatibility Feature).

The reader should have a knowledge of the System/360 as defined in the *IBM System/360 Principles of Operation.* Other literature applicable to the Model 25 is listed in the *IBM System/360 Bibliography,* Form A22-6822, and the *IBM System Summary,* Form A22-6810. (168 pages)

A24-3511 IBM System/360 Model 25 Configurator 00

A schematic drawing showing the complete Model 25 processor with all standard and optional features. Input/output devices are shown on Form A22-6823, and data communications devices are shown on Form A22-6824. (1 page)

A24-3512 IBM System/360 Model 25 IBM 1401/1460 and 1440 Compatibility Features 13

This publication describes the 1401/1460 and 1440 Compatibility features for the System/360 Model 25. These special features enable a rapid and simplified transfer from 1401-, 1460-, or 1440-oriented applications to the IBM System/360 Model 25.

Refer to the *IBM System/360 Model 25 Functional Characteristics,* Form A24-3510, for a description of the capabilities, functions and operational characteristics of the System/360 Model 25.

The *IBM System/360 Bibliography,* Form A22-6822, lists the associated reference publications. (48 pages)

A24-3516 IBM 2938 Array Processor Model 1 RPQ W24563, Model 2 RPQ 815188; Installation Manual—Physical Planning 15

This publication contains physical planning information for installing the IBM 2938 Array Processor Models 1 and 2 (RPQ). Included are dimensions, weights, electrical requirements, and environmental specifications. A cable diagram and a cable requirements chart are provided.

For further system information and for explanation of symbols, see *IBM System/360 Installation Manual—Physical Planning,* Form C22-6820. (6 pages)

A24-3519 IBM System/360 Custom Feature Description: 2938 Array Processor Model 1, RPQ W24563; Model 2, RPQ 815188 13

This bulletin describes the purpose and function of the IBM 2938 Array Processor as attached to the IBM System/360 Models 44, 65, and 75. A description of its abilities is presented along with a mathematical description of each array operation. This bulletin provides an understanding of arithmetic manipulation of large arrays in storage by explaining the arithmetic and data format conversion operations on one, two, or three arrays of input data that produce an array of output results.

A prerequisite for studying this bulletin is a basic knowledge of the IBM System/360 as contained in the *IBM System/360 Principles of Operation,* Form A22-6821. (56 pages)

A24-3523 IBM System/360 Model 25 Operating Procedures 01

This reference publication describes the operating features and procedures for units of the IBM System/360 Data Processing System Model 25. Included are procedures for starting, initializing, storing, altering, displaying, and restarting the:

2025 Processing Unit
1052 Printer-Keyboard Model 7
2540 Card Read Punch
2311 Disk Storage Drive Model 1
1403 Printer Model 2 or 7

For additional information on particular units and special features, refer to appropriate publications listed in *IBM System/360 Bibliography,* Form A22-6822. (76 pages)

A24-3524—IBM System/360 Model 25 Model 20 Mode Feature 13

This reference publication describes the characteristics, implementation, and operating considerations for the IBM System/360 Model 20 Mode Feature for the System/360 Model 25.

Other IBM publications necessary for a complete understanding of this feature are:

IBM System/360 Model 20 Functional Characteristics, Form A26-5847.

IBM System/360 Model 25 Functional Characteristics, Form A24-3510.

The publications applicable to the System/360 Model 20 are listed in the *IBM System/360 Model 20 Bibliography,* Form A26-3565.

The publications applicable to the System/360 Model 25 are listed in the *IBM System/360 Bibliography,* Form A22-6822. (20 pages)

A24-3526 IBM System/360 Model 25 Integrated Communications Attachment Feature 13

This reference publication describes the operation of the Integrated Communications Attachment feature for the IBM System/360 Model 25. Included is a general description of the feature and its common controls. Also included are the communications facilities that can be used with the Integrated Communications Attachment (ICA) and the remote terminals and processors that may be serviced by the ICA. Configuration limitations, overrun considerations, and the effects on multiplexer channel data rates are also presented.

The reader should have a knowledge of System/360 as defined in the SRL publications:

IBM System/360 Principles of Operation, Form A22-6821.

IBM System/360 Model 25 Functional Characteristics, Form A24-3510.

For a list of other associated System/360 publications, see the *IBM System/360 Bibliography,* Form A22-6822. (20 pages)

A26-3567 IBM 2311 Disk Storage Drive Original Equipment Manufacturers' Information 19

This manual contains information that will assist non-IBM engineers in attaching the IBM 2311 Disk Storage Drive to their equipment. It includes a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (8 pages)

A26-3574 IBM 2321 Data Cell Drive—OEMI 19

This publication contains information for engineers who plan to attach the IBM 2321 Data Cell Drive to their equipment.

The information includes a general description of machine functions, a reference listing of useful publications and engineering documents, and information concerning machine interfaces. (22 pages)

A26-3599 IBM System/360 Component Descriptions—2314 Direct Access Storage Facility and 2844 Auxiliary Storage Control 07

This publication describes the IBM 2314 Direct Access Storage Facility and the IBM 2844 Auxiliary Storage Control, and presents functional and operating characteristics for these devices. Capacities, timing considerations, commands, operating procedures, and sense and status information are described. The user of this publication should be thoroughly familiar with the I/O programming considerations described in *IBM System/360 Principles of Operation,* Form A22-6821. (62 pages)

A26-3633 Data Cell Handling Guide 07

This manual provides suggested operating and handling procedures for the IBM Data Cell used with the IBM 2321 Data Cell Drive. (12 pages)

A26-3699 IBM 1971-1980 Custom Terminal Functional Characteristics, Operating Procedures, and Physical Planning 13

This manual describes the operations, controls, and special features of the IBM 1971 Buffered Terminal Control (Models 30 and 35) and the IBM 1980 Buffered Terminal (Models 9 and 12). The communications facilities that can be used with this Teleprocessing terminal are described. Appendixes, containing the physical planning specifications, RPQ numbers, a glossary of terms, and general typewriter maintenance, are provided. (48 pages)

A26-5661 IBM 2301 Drum Storage Original Equipment Manufacturers' Information 19

This publication provides definitions and functional descriptions of the interface lines for the 2301 Drum Storage. It also contains specifications, timings, and cable information. (10 pages)

A26-5663 IBM 2303 Drum Storage Original Equipment Manufacturers' Information 19

This publication provides definitions and functional descriptions of the interface lines for the 2303 Drum Storage. It also contains specifications, timings, and cable information. (11 pages)

A26-5714 IBM 2314/2844 Multiplex Storage Control Feature—Airlines Buffer 13

This publication describes the IBM 2314/2844 Multiplex Storage Control Feature (RPQ number S50001). This feature allows the 2314/2844 to operate in its basic mode or in multiplex mode. This publication describes formed in multiplex mode. For a description of 2314/2844 basic mode operations, refer to the Systems Reference Library publication *IBM System/360 Component Descriptions—2314 Direct Access Storage Facility and 2844 Auxiliary Storage Control,* Form A26-3599. (60 pages)

A26-5756 IBM Disk Pack and Cartridge Handling Procedures 07

This manual is a guide for handling IBM Disk Packs and Cartridges. The information contained in this manual applies to IBM 1316 and 2316 Disk Packs and 2315 Disk Cartridges. (12 pages)

A26-5988 IBM System/360 Component Descriptions—2841 Storage Control 2302 Disk Storage, Models 3 and 4 2311 Disk Storage Drive, Model 1 2321 Data Cell Drive 2303 Drum Storage 07

This publication contains reference information for the operation and programming of storage devices which attach to the IBM 2841 Storage Control. These storage devices include the IBM 2311 Disk Storage Drive, Model 1; the IBM 2302 Disk Storage, Models 3 and 4; the IBM 2321 Data Cell Drive; and the IBM 2303 Drum Storage (66 pages)

A26-5993 IBM System/360 Custom Feature 2972 Line Control Unit Model 1 13

This publication presents a description of the operation of the IBM 2972 Line Control Unit Model 1. A sample configuration and a description of operation sequence are included. (20 pages)

A27-2700—IBM System/360 Component Description—IBM 2260 Display Station IBM 2848 Display Control 03

This manual describes the functional and operating characteristics of the IBM 2260 Display Station and the IBM 2848 Display Control. The two units combine to form a display complex that provides visual access to data stored in an IBM System/360. A variety of models and features permit 2260/2848 configurations that range from a 2848 with a single display-only 2260 to a multiple-station display complex, each station of which can be used as a direct-entry terminal as well as a means of rapidly accessing and displaying computer-stored data. This manual contains Principles of Operation sections for the local and remote applications of the display complex, and for the "data entry" 2260/2848 configuration as well. (88 pages)

A27-2701 IBM System/360 Component Description IBM 2250 Display Unit Model 1 03

This publication contains detailed information on programming, operation, and special features of the IBM 2250 Display Unit Model 1. The material is presented with the assumption that the reader has read the *IBM System/360 Principles of Operation,* Form A22-6821. The manual *IBM System/360 Component Description: IBM 2250 Display Unit Model 3; IBM 2840 Display Control* Form A27-2702 also may be of interest to the reader. (36 pages)

A27-2702 IBM System/360 Component Description IBM 2250 Display Unit Model 2 IBM 2840 Display Control Model 1 03

This document presents detailed information about IBM 2250 Display Unit Model 2/IBM 2840 Display Control Model 1 programming, operation, and special features. The material is presented with the assumption that the reader has read the *IBM System/360 Principles of Operation,* Form A22-6821.

The following publications may also be of interest to the reader:

IBM System/360 Component Description: IBM 2250 Display Unit Model 1, Form A27-2701.

IBM System/360 Component Description: IBM 2280 Film Recorder, IBM 2282 Film Recorder/Scanner, Form A22-6853.

IBM System/360 Operating System, Graphic Programming Services for IBM 2250 Display Unit, Preliminary Specifications, Form C27-6909.

Each 2250 Model 1 attaches directly to the System/360 channel and is not used with the 2840 Display Control. Each film unit attaches to a 2840 Display Control Model 1 by means of a 2840 special feature and shares common 2840 circuitry with the attached 2250-2 Display Unit(s). Various film unit/2250-2 configurations are described in the film unit publication. (48 pages)

A27-2703 IBM 2703 Transmission Control Component Description 09

This publication provides a detailed description of the capabilities, features, and communication facilities required for the IBM 2703 Transmission Control Unit. The capabilities of the unit are grouped by: start-stop capabilities; and binary-synchronous capabilities. All items of a general nature are discussed in the section, "Detailed Description of Operations."

The operator's controls and a detailed description of the communication facilities to which the 2703 can be attached are contained in the Appendix. For a complete listing of all SRL publications available in the IBM System/360 library, including abstracts, consult the *IBM System/360 Bibliography,* Form A22-6822. (78 pages)

A27-2704 IBM System/360 Component Description—IBM 2711 Line Adapter Unit 09

This manual describes the operation of the IBM 2711 Line Adapter Unit. Included is a general description of the 2711, the line adapters that can be contained in a 2711, the communication facilities that can be used with the 2711, and the operational functions of the line adapters. (6 pages)

A27-2706 IBM 7770 Audio Response Unit Model 3, IBM 7772 Audio Response Unit Original Equipment Manufacturers' Information 19

The purpose of an OEMI manual is to provide information to enable another manufacturer to design equipment that can be used with IBM systems or devices. The OEMI manual provides supplemental data not found in other IBM publications. This manual describes the IBM 7770 Model 3 and IBM 7772 Audio Response Units. These units are capable of connecting an IBM System/360, via the multiplexor channel, to a telephone network. (32 pages)

A27-2710 IBM 7772 Audio Response Unit Vocabulary 09

This publication obsoletes the SRL Manual *IBM 7772 Audio Response Concepts and Vocabulary,* Form A22-6847. It contains a complete listing of the 7772 vocabulary. (8 pages)

A27-2711 IBM System/360 Component Description—IBM 7772 Audio Response Unit 09

This manual describes the functional and operational characteristics of the IBM 7772 Audio Response Unit. Topics include vocabulary selection, system attachment considerations, communications requirements, and programming considerations. This manual supersedes IBM Systems Reference Library publications *IBM 7772 Audio Response Unit with System/360,* Form A22-6836, and *IBM 7770 and 7772 Audio Response Unit Common Carrier Information,* Form Z22-6831. (29 pages)

A27-2713 System/360 Model 67 Configurator 00

A schematic drawing showing the complete Model 67 processor with all standard and optional features. I/O control units and devices are described in the *IBM System/360 Input/Output Configurator,* Form A22-6823, and in the *IBM System/360 Data Communications Configurator,* Form A22-6824. (1 page)

A27-2715 IBM System/360 Special Feature Description—709/7040/7044/7090/7094 II Compatibility Feature for IBM System/360 Models 65 and 67 13

This publication contains information about the IBM 7090 Compatibility Feature (#7119). The Compatibility Feature adds interpretive facilities to System/360 Models 65 and 67 for use by the IBM 7090 Emulator Program. The combination of the feature and the program, referred to as the 7090 Emulator, allows execution on IBM System/360 Models 65 and 67 of programs written for the IBM 709, 7040, 7044, 7090, 7094, and 7094 II. (58 pages)

A27-2716 IBM System/360 Special Feature Description—7080 Compatibility Feature for System/360 Model 65 13

This publication presents a detailed description of the IBM 7080 Compatibility Feature #7118. The Compatibility Feature adds interpretive facilities to System/360 for use by the IBM 7080 Emulator Program, Program No. 360C-EU-727. This combination of feature and program, referred to as the IBM 7080 Emulator, permits an IBM System/360 Model 65 to execute programs written for an IBM 7080 Data Processing System. (38 pages)

A27-2717 IBM System/360 Special Feature Description—7074 Compatibility Feature for System/360 Models 50 and 65 13

This publication contains information about the IBM 7070/7074 Compatability Feature. The Compatibility Feature adds interpretive facilities to System/360 Model 50 or 65 for use by the IBM 7074 emulator program. The combination of the feature and the program, referred to as the 7074 Emulator, allows execution on IBM System/360 Models 50 and 65 of programs written for the IBM 7070 and 7074. (34 pages)

A27-2719 IBM System/360 Model 67 Functional Characteristics 01

This publication contains detailed information on the organization, characteristics, features, and functions unique to the IBM System/360 Model 67 Time Sharing System. Major areas described include time-sharing philosophy, system structure, new units, generalized information flow, standard and special features, instruction timings, and the system control panel.

Descriptions or specific input/output devices used with the Model 67 appear in separate publications. See the *IBM System/360 Bibliography,* Form A22-6822 for a listing and a brief description of these publications.

The material in this publication is presented with the assumption that the reader has knowledge of System/360 as defined in the *IBM System/360 Principles of Operation,* Form A22-6821 and the *IBM System/360 System Summary,* Form A22-6810. The *IBM System/360 Model 67 Configurator,* Form A27-2713 also may be of interest to the reader. (68 pages)

A27-2721 IBM System/360 Component Description—IBM 2250 Display Unit Model 3—IBM 2840 Display Control Model 2 03

This document presents detailed information about IBM 2250 Display Unit Model 3/IBM 2840 Display Control Model 2 programming, operation, and special features. The material is presented with the assumption that the reader has read the *IBM System/360 Principles of Operation,* Form A22-6821. (67 pages)

A27-2724 IBM System/360 Custom Systems Unit—2916 Long Line Adapter, Models 3 and 4 Installation Bulletin—Physical Planning 15

This bulletin contains all the necessary physical planning data required for the installation of the unit described. If the unit is to be installed in conjunction with a computer system, the specifications of the most critical unit must be met. The data follows the same format and utilizes the same standardized symbols as used in the *IBM System/360 Installation Manual—Physical Planning,* Form C22-6820. (4 pages)

A27-2725 IBM System/360 Component Description—IBM 50 Magnetic Data Inscriber 10

This manual describes the functional and operating characteristics of the IBM 50 Magnetic Data Inscriber. The IBM 50 Magnetic Data Inscriber is a key-operated device that records data on cartridge-contained magnetic tape. Each IBM 50-generated tape can be used as a data storage medium or as a vehicle for entering data into an IBM System/360, via the IBM 2495 Tape Cartridge Reader. In addition to its data recording capability, the IBM 50 can also be used to verify data stored on tapes generated on the same or other IBM 50's. (20 pages)

A27-2726 IBM System/360 Component Description—IBM 2495 Tape Cartridge Reader 03

This manual describes the functional and operating characteristics of the IBM 2495 Tape Cartridge Reader (TCR). The IBM 2495 TCR is used to transfer data stored on cartridge-contained 16mm magnetic tape to an IBM System/360. The TCR accepts cartridge tapes containing data generated on either the IBM 50 Magnetic Data Inscriber or the IBM Magnetic Tape Selectric Typewriter System. (12 pages)

A27-2727 IBM System/360 Custom Systems Unit—2909 Model 3 Asynchronous Data Channel—RPQ F13299/RPQ 882045 Installation Bulletin—Physical Planning 15

This bulletin contains all the necessary physical planning data required for the installation of the unit described. If the unit is to be installed in conjunction with a computer system, the specifications of the most critical unit must be met. This bulletin utilizes the same format and standardized symbols contained in the *IBM System/360 Installation Manual—Physical Planning,* Form C22-6820. (6 pages)

A27-2728 IBM System/360 Model 65 Operating Procedures 01

This manual describes operator procedures for an IBM 2065 Processing Unit, operating with or without an associated IBM 1052 Printer-Keyboard. Also described are system control panel machine functions, machine procedures, program-oriented procedures, and operator-intervention procedures. An appendix of reference material and an index are included.

The reader is assumed to have a knowledge of the following SRL publications:

- *IBM System/360 Principles of Operation,* Form A22-6821 (sections on "System Structure" and "System Control Panel")
- *IBM System/360 Model 65 Functional Characteristics,* Form A22-6884
- *IBM System/360 Tape Operating System Operating Guide,* Form C24-5021
- *IBM System/360 Disk Operating System Operating Guide,* Form C24-5022
- *IBM System/360 Operating System Operator's Guide,* Form C28-6540

For information pertaining to the operation of I/O units that are attachable to the System/360 Model 65, refer to the appropriate SRL publication. All System/360 SRL publications that pertain to IBM System/360 and attachable units are abstracted and referenced by form number in *IBM System/360 Bibliography,* Form A22-6822. (46 pages)

A27-2729 IBM System/360 Custom Systems Unit—2972 Model 7 Scientific Interface Control Unit, RPQ E46181; Installation Bulletin—Physical Planning 15

This bulletin contains all the necessary physical planning data required for the installation of the unit described. If the unit is to be installed in conjunction with a computer system, the specifications of the most critical unit must be met. This bulletin utilizes the same format and standardized symbols contained in the *IBM System/360 Installation Manual—Physical Planning,* Form C22-6820. (4 pages)

A27-2731 IBM System/360 Component Description—IBM 2265 Display Station IBM 2845 Display Control 09

This manual describes the functional and operating characteristics of the IBM 2265 Display Station and the IBM 2845 Display Control. The two units combine to form a display system that provides visual access to data stored in an IBM System/360. This manual also contains a Principles of Operation section for remote applications of the display system. (48 pages)

A27-3002 2740/2741 Communication Terminal—Original Equipment Manufacturers' Information 19

To assist non-IBM engineers in attaching the IBM 2740 or 2741 Communication Terminal to their equipment, this manual describes in detail important interface considerations such as physical connections, line adapting equipment, signals and data flow, codes, power requirements, power supply, configurations, timing considerations, and line control, as well as descriptions of the terminals themselves. To provide information on the IBM Line Adapters appropriate for use with 2740/2741 Communication Terminals, this manual refers to *Planning and Installation of a Data Communications System Using IBM Line Adapters,* Form A24-3435. (46 pages)

A27-3005 IBM 2780 Data Transmission Terminal—Component Description 09

This Component Description manual describes the principles of operation of the IBM 2780 Data Transmission Terminal. The data-link control characters, code structures, timeouts, and throughput rates associated with the Binary Synchronous method of transmission are described.

The communications facilities, data sets, and special features available for this teleprocessing terminal are also discussed. As an introduction to the Binary Synchronous method of transmission, refer to the manual, *General Information—Binary Synchronous Communications,* Form A27-3004.

Additional information on the Binary Synchronous method of transmission when using an IBM 2701 or IBM 2703 can be found in the following publications:

- *IBM 2701 Data Adapter Unit—Component Description,* Form A22-6864
- *IBM 2703 Transmission Control—Component Description,* Form A27-2703 (80 pages)

A27-3007 IBM 2780 Data Transmission Terminal—Installation Manual—Physical Planning 15

This publication contains physical-planning information for the IBM 2780 Data Transmission Terminal, Models 1, 2, 3, and 4. Included are physical specifications and electrical and environmental requirements.

Refer to the *Installation Manual—Physical Planning, Unit Record Data Processing Equipment,* Form C24-1037, for additional information.

For titles and abstracts of associated publications, see the *IBM Teleprocessing Bibliography,* Form A24-3089. (10 pages)

A27-3012 IBM 2702/2703 Transmission Controls—Original Equipment Manufacturers' Information 19

This publication describes the IBM 2702/2703 Transmission Control interfaces. The processor interface description includes a description of the operating signals and responses. The interface descriptions provide device attachment information. The electrical, mechanical, and cabling specifications of these interfaces are provided, together with physical planning requirements. (110 pages)

A33-4500 IBM System/360 Component Descriptions—2826 Paper Tape Control Unit, 1017 Paper Tape Reader, 1018 Paper Tape Punch 03

This publication describes the above named paper tape input/output components for the reading and punching of paper or Mylar* tape. Attachment is to the multiplexer channel of the IBM System/360 Models 25, 30, 40, and 50. The channel commands necessary to control the operation of the above units, and the status and sense bytes provided by the control unit, are fully described.

Controls, tape specifications, tape-splicing procedures, tape-loading procedures, and special features are also described.

Detailed information about System/360 channel operations is included in the Systems Reference Library *IBM System/360 Principles of Operation,* Form A22-6821. (48 pages)

*Trademark of E. I. du Pont de Nemours & Co. (Inc.)

C19-0001 IBM System/360 Installation Manual—IBM World Trade 50-Cycle Physical Planning Requirements (for World Trade Use Only) 15

This publication is a version of IBM System/360 Installation Manual—Physical Planning, Form C22-6820; it is limited to IBM World Trade requirements.

This manual contains preliminary physical information for installing the IBM System/360. (164 pages)

C20-1618 IBM System/360 Number Systems 95

This IBM student text on number systems presents a brief review of the principles of positional notation, as applied to the binary and hexadecimal systems of notation. The publication covers the operations of binary and hexadecimal arithmetic, decimal-binary-hexadecimal base conversion, and the principles of base and base-minus-one complementation. (18 pages)

C20-1619 Catalog of Programs for IBM System/360—June 1968 20

This Catalog contains a complete listing of all programs for the IBM System/360 available from the Program Information Department, 40 Saw Mill River Road, Hawthorne, New York 10532.

Instructions for ordering programs are contained in the section of the Introduction entitled, "How to Order Programs." (144 pages)

C20-1637 PL/I Guide for FORTRAN Users 29

This text is an introductory guide to PL/I, written especially for those who have a working knowledge of FORTRAN II or IV. It does not attempt to cover all the features of the language. It should prepare the student to write a straightforward PL/I program. (40 pages)

C20-1646 A Programmer's Introduction to the IBM System/360 Architecture, Instructions, and Assembly Language 95

This text is intended to introduce the student to the characteristics of the System/360 and to its instruction set. Many sample programs are used throughout to illustrate specific instructions and programming techniques. It is expected that the student has some knowledge of computing systems.

This publication incorporates but does not obsolete the following IBM System/360 Student Texts:

Fixed-Point Operations, C20-1613; *Programming with Base Registers and the USING Instruction,* C20-1614; *Introduction to Assembler Language Programming,* C20-1615; *Decimal Operations,* C20-1616; *Number Systems,* C20-1618; *Logical Operations on Character and Bits,* C20-1623; *Edit, Translate, and Execute Instructions,* C20-1624; *Subroutines and Subprograms,* C20-1625.

The new material in this text includes the chapters on "Architecture," "Automatic Interrupts," and "Floating Point and Advanced Loops in Scientific Applications."

No attempt at completeness is made, and therefore it is expected that the student will refer to the appropriate SRL publications for additional detail. (218 pages)

C20-1649 Introduction to IBM System/360 Direct Access Storage Devices and Organization Methods 95

This student text discusses the physical characteristics and capacities of the following System/360 Direct Access Storage Devices: 2301 Drum Storage, 2302 Disk Storage, 2303 Drum Storage, 2311 Disk Storage Drive, 2314 Direct Access Storage Facility, and 2321 Data Cell Drive.

The file organization methods and access methods provided for these devices by the IBM System/360 Basic Operating System, the IBM System/360 Disk Operating System, and the IBM System/360 Operating System are also discussed. The uses of direct access storage basic terminology, and the establishment of controls for a direct access system are other topics addressed by this text. Most of the chapters end with student exercises, the answers to which may be found at the end of the manual.

No attempt at completeness is made. Refer to the publications listed in the Bibliography for additional details. (76 pages)

C20-1650 IBM System/360 Model 30 1401 Compatibility Mode Operator's Manual 13

This manual has been prepared to aid the 1401 operator in transferring to Compatibility Mode Operation on a System/360 Model 30. Only those procedures that differ from their counterparts on the 1401 are discussed. Detailed run book entries are presented for each functional operator action. Procedures can be incorporated into the installation's 1401 run book(s) to provide a single source of operator reference. (56 pages)

C20-1651 A Guide to PL/I for Commercial Programmers 95

This publication presents those features of PL/I that apply to commercial data processing. It does not restrict itself to a particular aspect of commercial data processing but attempts to discuss all features of PL/I that may be used in the full spectrum of commercial applications.

Because of the many similarities between PL/I and COBOL (Common Business Oriented Language), each chapter in this publication concludes with a section showing comparisons of two languages. The material in this publication is quite comprehensive, but by no means is it a complete description of PL/I nor does it represent the definitive treatment of any one language feature. (69 pages)

C20-1667 Introduction to IBM System/360 Architecture 95

This text is intended to introduce the student to the characteristics of System/360. It is expected that the student has some knowledge of computing systems.

This publication contains the same information as Chapter 1 of *A Programmer's Introduction to the IBM System/360 Architecture, Instructions, and Assembly Language,* Form C20-1646 and obsoletes *IBM System/360 Introductory Notes,* Form C20-1608.

No attempt at completeness has been made and, therefore, it is expected that the student will refer to the appropriate Systems Reference Library (SRL) publications for additional detail. (32 pages)

C20-1676 IBM System/360 Model 30—IBM System/360 Disk Operating System System Operation Training 95

This publication must be used together with the publication *IBM System/360 Model 30—IBM System/360 Disk Operating System: System Operation Training Manual Book of Illustrations,* Form C20-1677. They are intended to introduce the student to many of the procedures to be followed when operating the IBM System/360 Model 30. This publication describes the system, various input and output devices, and, through the explanation of sample jobs, illustrates how personnel operate the system in an IBM System/360 Disk Operating System (DOS) stacked-job processing environment.

A student with no prior experience in the data processing field can use this text. In most cases, however, it is expected that the text will be used after the completion of units 1, 4, 5, and 6 of the programmed instruction course *Computing System Fundamentals,* Course Y9897 88. The materials for these units include the following booklets: R29-0241, R29-0242, R29-0244, R29-0245, R29-0246, R29-0247, R29-0248.

This text makes no attempt at completeness. The student should refer to the most recent editions of the publications listed in Appendix D for complete infor-

mation about the IBM System/360 Model 30 and the various input/output devices discussed in this text (1052 Printer-Keyboard, 1403 Printer Model N1, 2311 Disk Storage Drive, and 2401 Magnetic Tape Unit). The student should refer to the publications listed in the *IBM System/360 Bibliography,* Form A22-6822 for information about operating procedures for input/output devices not discussed in this text. This text's discussion of DOS is based on release 10 of DOS and concentrates on a stacked-job processing environment rather than on a multiprogramming environment. The student should refer to the latest edition of *IBM System/360 Disk Operating System Operating Guide,* Form C20-5022 for the most complete, up-to-date information about operating procedures in both environments. (56 pages)

C20-1677 IBM System/360 Model 30—IBM System/360 Disk Operating System System Operation Training—Book of Illustrations 95

This publication contains the illustrations for *IBM System/360 Model 30—IBM System/360 Disk Operating System: System Operation Training Manual,* Form C20-1676. (88 pages)

C20-1678 IBM System/360 Model 40—IBM System/360 Disk Operating System System Operation Training 95

This publication must be used together with *IBM System/360 Model 40—IBM System/360 Disk Operating System: System Operation Training Manual Book of Illustrations,* Form C20-1679. They are intended to introduce the student to many of the procedures to be followed when operating the IBM System/360 Model 30. This publication describes the system, various input and output devices, and, through the explanation of sample jobs, illustrates how personnel operate the system in an IBM System/360 Disk Operating System (DOS) stacked-job processing environment.

A student with no prior experience in the data processing field can use this text. In most cases, however, it is expected that the text will be used after the completion of units 1, 4, 5, and 6 of the programmed instruction course *Computing System Fundamentals,* Course Y9897 88. The materials for these units include the following booklets: R29-0241, R29-0242, R29-0244, R29-0245, R29-0246, R29-0247, and R29-0248.

After reading this text, the student may wish to perform a System Exercise (Card Deck R20-4074) on a System/360 Model 40 to gain actual experience in operating input/output devices, interpreting operator messages, and issuing commands.

This text makes no attempt at completeness. The student should refer to the most recent editions of the publications listed in Appendix D for complete information about the IBM System/360 Model 40 and the various input/output devices discussed in this text (1052 Printer-Keyboard, 1403 Printer Model N1, 2311 Disk Storage Drive, 2401 Magnetic Tape Unit). The student should refer to the publications listed in the *IBM System/360 Bibliography,* Form A22-6822 for information about operating procedures for input/output devices not discussed in this text. This text's discussion of DOS is based on release 10 of DOS and concentrates on a stacked-job processing environment rather than on a multiprogramming environment. The student should refer to the latest edition of *IBM System/360 Disk Operating System Operating Guide,* Form C24-5022 for the most complete, up-to-date information about operating procedures in both environments. (60 pages)

C20-1679 IBM System/360 Model 40 System/360 Disk Operating System System Operation Training Manual, Book of Illustrations 95

This publication contains the illustrations for the publication *IBM System/360 Model 40—System/360 Disk Operating System—System Operation Training Manual,* Form C20-1678. (88 pages)

C20-1680 IBM System/360 Operating System System Operation Training Manual 95

This publication must be used together with the publication *IBM System/360 Operating System: System Operation Training Manual, Book of Illustrations,* Form C20-1681. These two publications introduce the student to many of the procedures to be followed when operating an IBM System/360 under control of the IBM System/360 Operating System. These publications describe the Operating System and various input/output devices and illustrate how personnel operate the System/360 under control of the Operating System.

A student with no prior experience in the data processing field can use this text after completion of units 1, 4, 5, and 6 of the programmed instruction course *Computing Systems Fundamentals,* Course Y9897-88. The materials for these units include the following booklets: R29-0241, R29-0242, and R29-0244 through R29-0248. (40 pages)

C20-1681 IBM System/360 Operating System System Operation Training Manual—Book of Illustrations 95

This publication contains the illustrations for *IBM System/360 Operating System—System Operation Training Manual,* Form C20-1680. (96 pages)

C20-1682 IBM System/360 Model 30—IBM System/360 Tape Operating System System Operation Training Manual 95

This publication must be used together with *IBM System/360 Model 30—IBM System/360 Tape Operating System—System Operation Training Manual, Book of Illustrations,* Form C20-1683. They are intended to introduce the student to many of the procedures to be followed when operating the IBM System/360 Model 30. This publication describes the system, various input and output devices, and, through the explanation of sample jobs, illustrates how personnel operate the system in an IBM System/360 Tape Operating System (TOS) stacked-job processing environment.

A student with no prior experience in the data processing field can use this text. In most cases, however, it is expected that the text will be used after the completion of units 1, 4, 5, and 6 of the programmed instruction course *Computing System Fundamentals,* Course Y9897-88. The materials for these units include the following booklets: R29-0241, R29-0242, R29-0245 through R29-0248. (56 pages)

C20-1683 IBM System/360 Model 30—IBM System/360 Tape Operating System System Operation Training Manual, Book of Illustrations 95

This publication contains the illustrations for *IBM System/360 Model 30—IBM System/360 Tape Operating System—System Operation Training Manual,* Form C20-1682. (80 pages)

C20-1685 System/360 Disk Operating System User's Guide: Control Statement Techniques 50

This publication provides guidance in the use of control statements as related to compilations, linkage editing, utilities, sorts, and user programs. It presents tested examples with supporting explanations as an aid to understanding the input stream requirements for processing in the System/360 Disk Operating System environment. The control statements discussed are job control statements, linkage editor control statements, and operator commands.

A list of related publications appears in the Preface. (86 pages)

C20-1688 IBM 2260 Display Station—IBM 2848 Display Control—IBM 1053 Printer Operator's Manual 03

This manual describes the operating characteristics of the IBM 2260 Display Station and the IBM 2848 Display Control. The two units combine to provide visual access to data stored in an IBM System/360.

This manual also contains a section on operating the IBM 1053 Printer that can be attached to this system for printing the messages displayed on the screen.

All functions described in this manual refer to the Models 1 and 2 of the 2260, Models 1, 2, and 3 of the 2848, and Model 4 of the 1053. (20 pages)

C20-1689 Introduction to the Compile-Time Facilities of PL/I 95

The compile-time facilities of PL/I provide a convenient way of modifying and completing a PL/I program before it is finally translated into a set of machine-language instructions. PL/I supplies these facilities through a special set of source statements, called the preprocessor (or compile-time) statements which specify operations to be performed at compile time upon the text of a source program. The features, the formats, and the restrictions of preprocessor statements are discussed in this student text. Illustrative applications accompanied by actual compilation listings appear with the discussions. (44 pages)

C20-8011 Random Number Generation and Testing 99

Random sampling—simulation studies—Monte Carlo methods—have been in use for many years. Papers describing various aspects of these topics have appeared in technical journals and textbooks available to a relatively small percentage of computer users. Meanwhile, applications requiring random numbers are becoming more important and more common in business and industry as well as purely scientific areas. This manual gives the mathematical development of the power residue method, outlines computer techniques for implementing it, and also offers brief comments on other methods. An appendix provides programming illustrations for binary and decimal computers. (12 pages)

C20-8078 Form and Card Design 99

The first section discusses the steps to take and factors to consider in designing a form. The second section describes the various types of cards and the major phases of card design, illustrates and explains design aids, and presents operating and processing factors that affect card design.

This publication can be used as a guide for individual study or a text for class study. It presupposes a knowledge of IBM Data Processing equipment. (15 pages)

C20-8152 Flowcharting Techniques 99

Adherence to standard techniques for the preparation of flowcharts of data processing systems and procedures greatly increases effectiveness of communication between the programmer analyst and the many groups with whom he deals. The manual describes in detail the preparation of system and program flowcharts. The symbols used are those provided by the new *IBM Flowcharting Template*, Form X20-8020, which contains cutouts for all flowchart symbols. The template envelope gives uses for the symbols. The *Flowchart Worksheet*, Form X20-8021 is a means of standardizing documentation. It provides space for drawing program flowcharts and contains an area for identification of the job, including application, procedure, date and pagination. (34 pages)

C21-5000 IBM System/360 Basic Programming Support Programmer's Guide FORTRAN IV, (16K Card) 25

This publication provides the information necessary for:

1. Translating Card FORTRAN IV source programs into System/360 coding.
2. Executing the resulting System/360 coding.

Included also are techniques and considerations for improving Card FORTRAN IV programs. These are supplementary to the information provided in the language publication, *IBM System/360 Basic Programming Support Specifications, FORTRAN IV (16K Card)*, Form C21-9040. The user should read that publication before reading this one. (88 pages)

C21-5001 IBM System/360 Basic Programming Support Distribution Program, Specifications and Operating Guide 32

Program Number: 360-UT-208

The distribution program is used for maintenance and distribution of the Disk Operating System. This reference publication contains the specifications and operating guide for the distribution program and describes the functions of the program, program deck, control cards, system and deck preparation, error messages and options, and operating instructions.

The reader should be familiar with the information presented in the publications: *IBM System/360 Basic Operating System, Programmer's Guide* (Form C24-3372) and *IBM System/360 Principles of Operation* (Form A22-6821). For a list of related publications, refer to the *IBM System/360 Bibliography* (Form A22-6822). (36 pages)

C21-9040 IBM System/360 Basic Programming Support Specifications FORTRAN IV, (16K Card) 25

This publication describes and illustrates the use of the Basic Programming Support Card FORTRAN IV language for the IBM System/360. The reader is presumed to have some knowledge of an existing FORTRAN language.

The Basic Programming Support FORTRAN IV language is a symbolic programming language. It parallels the symbolism and format of mathematical notation. In addition, many programming features and facilities are available for expressing the method of solution of a mathematical problem as a meaningful FORTRAN program. (52 pages)

C22-6820 IBM System/360 Installation Manual—Physical Planning 15

This manual contains preliminary physical information for installing IBM System/360, including floor planning and electrical, environmental, and structural requirements. It discusses the physical characteristics of each unit and their effect on installation requirements. Detailed cable and location charts are included, together with illustrations and dimensions, on all cable connectors used in the system. (169 pages)

C22-6922 IBM 2911 Models 1, 2, and 5 and IBM 2989 Model 8 Installation Manual—Physical Planning 15

This bulletin contains all physical planning data necessary to install the IBM 2911 Manual Switching Unit Models 1, 2, and 5 and the IBM 2989 Remote Switching Console Model 8. If a unit is to be installed in conjunction with a computer system, specifications for the most critical unit must be met.

Data follows the same format and uses the same standardized symbols as *IBM System/360 Installation Manual—Physical Planning*, Form C22-6820. (8 pages)

C24-3320 IBM System/360 Basic Programming Support Specifications Sort/Merge Programs (8K Tape) 33

This publication describes the IBM System/360 Basic Programming Support 8K Tape Sort/Merge Programs (one channel and two channel). It contains the following information: 1. Minimum machine requirements for sorting or merging records with this program. 2. Program capabilities. 3. A description of the control statements required to define specific sort or merge operations. 4. A description of the facilities provided for inserting user-written routines into the program. (72 pages)

C24-3321 IBM System/360 Basic Operating System—Sort/Merge Program 33

This publication describes the IBM Basic Operating System/360 8K Disk Sort/Merge Program. It contains the following information:

1. Minimum machine requirements for sorting or merging records with this program.
2. Program capabilities.
3. A description of the control statements required to define specific sort or merge operations.
4. A description of the facilities provided for inserting user-written routines into the program (43 pages)

C24-3337 IBM System/360 Operating System Report Program Generator Language 28

This reference publication contains fundamentals of RPG programming and language specifications for the IBM System/360 Operating System, Report Program Generator.

Also included is the job setup information for executing RPG. (145 pages)

C24-3343 IBM System/360 Basic Programming Support—Autotest Specifications (8K Tape) 37

This reference publication describes in detail the testing services provided by the Basic Programming Support BPS Tape Autotest (8K Tape) program and the control cards necessary to use the services. Although one of the 8K Tape BPS programs, Autotest requires at least 16K positions of main storage for execution. The following features are described: Autopatch, display, panel, card list, Autotest Output Tape, the Autotest Card-to-Tape utility, the Autotest Tape-to-Printer utility, normal and abnormal dumps, and disaster continue. Special Autotest requirements of Job Control are also presented.

The reader should be familiar with *IBM System/360 Principles of Operation*, Form A22-6821 and *IBM System/360 Basic Programming Support Programmer's Guide (8K Tape)*, Form C24-3354. (54 pages)

C24-3345 IBM 1401/1460 Timing Programs for IBM System/360 Basic Programming Support Sort/Merge Programs (8K Tape) 33

Program Numbers:
1401-LM-078, Version 2 (2401-2404)
1401-LM-080, Version 1 (2415)

This publication contains the specifications and operating procedures for the IBM 1401 and 1460 timing programs used to estimate the amount of time required to sort records with an IBM System/360 Basic Programming Support 1-channel or 2-channel Sort/Merge Program (8K Tape).

The following information is included in this publication:

1. Minimum machine requirements for estimating times with these programs.
2. A description of the user-prepared information cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing programs.

The user of this publication should be familiar with *IBM System/360 Basic Programming Support Sort/Merge Programs (8K Tape)*, Form C24-3320. For a list of associated 1401/1460 publications, see the *IBM 1401/1460 Bibliography*, Form A24-1495. For a list of associated System/360 publications, see the *IBM System/360 Bibliography*, Form A22-6822. (16 pages)

C24-3354 IBM System/360 Basic Programming Support—Basic Tape System Programmer's Guide 20

This reference publication describes the Basic Tape System and its use. The reader should have a basic knowledge of System/360. The major topics explained are:

Operation with the Control Programs: Supervisor interruption handling, operator communication, the Channel Scheduler, and the communication region; Job Control card formats and symbolic I/O assignment; IPL and the Program Loader.

Input/Output Control System (IOCS): Labels, file and record processing.

Basic Tape System: Job Control with the System Tape, assembly of a Supervisor, Linkage Editor, and System Tape building, maintenance, and service.

Titles and abstracts of related publications are listed in the *IBM System/360 Bibliography*, Form A22-6822. (168 pages)

C24-3355 IBM System/360 Basic Programming Support—Assembler with Input/Output Macros (Tape) Specifications 21

This reference publication describes the basic programming support tape assembler language and the input/output (I/O) macros supplied by IBM for use in programs written in the assembler language. The general features of the assembler language are described first, followed by a description of each of the three types of assembler language statements: machine-instruction, assembler-instruction, and macro-instruction statements. The description of macro instructions consists of a description of each of the IBM-supplied I/O macros.

The reader should be familiar with the information presented in the publications: *IBM System/360 Principles of Operation,* Form A22-6821; *IBM System/360 Basic Programming Support, Programmer's Guide,* Form C24-3354; and *IBM System/360 Basic Operating System and IBM System/360 Basic Programming Support, Macro Definition Language,* Form C24-3364. For a list of associated publications see the *IBM System/360 Bibliography,* Form A22-6822. (232 pages)

C24-3361 IBM System/360 Basic Operating System—Assembler with Input/Output Macros Specifications 21

This reference publication describes the assembler language and the input/output (I/O) macros supplied by IBM for use in writing programs for 8K disk-oriented System/360 installations. The general features of the assembler language are described first, followed by a description of each of three types of assembler language statements: machine-instruction, assembler-instruction, and macro-instruction statements. The description of the macro instructions consists of a description of each of the IBM-supplied I/O macros.

The reader should be familiar with the information presented in the publications:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Basic Operating System, Programmer's Guide, Form C24-3372

IBM System/360 Basic Operating System and IBM System/360 Basic Programming Support, Macro Definition Language, Form C24-3364

For a list of other associated publications, refer to the *IBM System/360 Bibliography,* Form A22-6822. (280 pages)

C24-3363 IBM System/360 Basic Programming Support—DASD Utility Programs Specifications 32

This reference publication describes the IBM System/360 Basic Programming Support Direct Access Storage Device Utility Programs. The programs described are:

PROGRAM NAME	ORDER NUMBER
Single-Transfer Utility Programs	
Card to Disk, Version 3	360P-UT-063
Disk to Card, Version 3	360P-UT-064
Disk to Disk, Version 3	360P-UT-067
Disk to Printer, Version 3	360P-UT-073
Disk to Tape, Version 3	360P-UT-065
Tape to Disk, Version 3	360P-UT-066
Special-Purpose Utility Programs	
Alternate Track Assignment (2311), Version 3	360P-UT-098
16K Alternate Track Assignment (2311/2314), Version 1	360P-UT-207
Alternate Track Assignment (2321), Version 1	360P-UT-212
Clear Disk, Version 3	360P-UT-068
Copy Data Cell to Tape, and Restore Tape to Data Cell, Version 1	360P-UT-071
Copy Disk to Card, and Restore Card to Disk, Version 1	360P-UT-062
Copy Disk to Disk, Version 1	360P-UT-072
Copy Disk to Tape, and Restore Tape to Disk, Version 1	360P-UT-061
Initialize Data Cell, Version 1	360P-UT-204
Initialize Disk (2311), Version 4	360P-UT-069
16K Initialize Disk (2311/2314), Version 1	360P-UT-206
Multiple Disk to Printer, Version 2	360P-UT-203

These programs can be received by ordering individually numbered program packages. Each program is shipped as a complete entity, in object form, ready to perform its function. Other BPS Utility Programs have been reissued in the publication: *IBM System/360 Basic Programming Support, Card and Tape Utility Programs Specifications,* C24-5026. These publications support only the latest version of the program.

The reader should be familiar with the information presented in the publications: *IBM System/360 Basic Operating System, Programmer's Guide,* C24-3372 and *IBM System/360 Basic Programming Support DASD Utility Program Operating Guide,* C24-3392. For a list of associated publications, refer to the *IBM System/360 Bibliography,* A22-6822. (80 pages)

C24-3364 IBM System/360 Basic Programming Support, Basic Operating System—Macro Definition Language (8K Tape) 21

This reference publication describes the macro definition language for the IBM Basic Operating System/360 (8K Disk) and the IBM System/360 Basic Programming Support (8K Tape). The language described in this publication can be used to facilitate the writing of an assembler language program.

The reader should be familiar with the information presented in these publications: *IBM System/360 Principles of Operation,* Form A22-6821; *IBM Basic Operating System/360 Assembler with Input/Output Macros (8K Disk),* Form C24-3361; and *IBM System/360 Basic Programming Support Assembler with Input/Output Macros (8K Tape),* Form C24-3355. (45 pages)

C24-3372 IBM System/360 Basic Operating System—Programmer's Guide 20

This reference publication describes the IBM System/360 Basic Operating System. The system is a set of control programs and processing programs provided for smaller configurations of the IBM System/360. Utilizing IBM 2311 Disk Storage for on-line program residence, IBM System/360 Basic Operating System provides stacked-job processing capability, controls all input/output, and provides for continuous operation of all programs run in its environment.

This Programmer's Guide includes descriptions of the control programs, service programs, and system facilities supported by IBM. A comprehensive introduction gives an over-all picture of the entire system. Detailed information is given on these major topics:

1. Operation with the System Control Programs
2. Using the System Service Programs
3. Data Management

The prerequisite for a thorough understanding of this manual is a basic knowledge of System/360 machine concepts and instructions.

For titles and abstracts of other associated publications see the *IBM System/360 Bibliography,* Form A22-6822. (174 pages)

C24-3374 IBM System/360 Basic Programming Support Specifications—Report Program Generator (Card) 28

This reference publication contains complete programming specifications for the IBM System/360 Report Program Generator (Card). Included are the basic functions of RPG for readers with unit record experience who are not familiar with RPG. (110 pages)

C24-3377 IBM System/360 Basic Operating System—IBM 1401/1460 Timing Program for Sort/Merge Program 33

This publication contains the specifications and operating procedures for the IBM 1401 and 1460 timing program used to estimate the amount of time required to sort records with the IBM Basic Operating System/360 8K Disk Sort/Merge program.

The following information is included in this publication:

1. Minimum machine requirements for estimating times with this program.
2. A description of the user-prepared information cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing program.

The user of this publication should be familiar with *IBM Basic Operating System/360 Sort/Merge Program (8K Disk),* Form C24-3321. For a list of associated 1401/1460 publications, see *IBM 1401/1460 Bibliography,* Form A24-1495. (13 pages)

C24-3378—IBM System/360 Basic Operating System Specifications—Autotest 37

This reference publication describes in detail the testing services provided by Disk Autotest in the Basic Operating System—8K Disk and the control cards necessary to use the services. The following services are discussed: autopatch, display, panel, the autotest card to tape (variable) utility, the normal and abnormal end of job dumps including the symbolic dump, testing immediately following an assembly, and separate assemblies and tests. Special autotest requirements for job control are also presented.

The reader should be familiar with *IBM System/360 Principles of Operation,* Form A22-6821; *IBM Basic Operating System/360 Programmer's Guide (8K Disk),* Form C24-3372; *IBM Basic Operating System/360 Utility Programs (8K Disk),* Form C24-3409; and *IBM Basic Operating System/360 Assembler with Input/Output Macros (8K Disk),* Form C24-3361. (110 pages)

C24-3387—IBM System/360 Basic Operating System Specifications—Report Program Generator Language 28

This reference publication contains fundamentals of RPG programming and language specifications for the IBM Basic Operating System/360 Report Program Generator. For information on the Basic Operating System that is beyond the purpose of this language publication, see *IBM Basic Operating System/360 Programmer's Guide (8K Disk),* Form C24-3372. (153 pages)

C24-3391 IBM System/360 Basic Programming Support Basic Tape System Operating Guide 20

Program Number: 360P-AS-091
RPG Program Number: 360P-RG-201

This reference publication discusses briefly the overall concepts of using the various programs in the Basic Tape System. It describes the function and operation of the Control Programs used in conjunction with the IBM-supplied system tape or user's object program. A section listing messages provided by the programs or routines is included. System/operator communication is discussed, and a section of reference charts for System/360 coding is also included.

Each individual program section gives the specific operating procedure for that particular program, supplying information such as: description of card decks, and procedures to be followed.

Refer to the SRL publication *IBM System/360 Model 30 Operator's Guide,* Form A24-3373, for information about the operation of the System/360. For a list of other associated System/360 publications, see the *IBM System/360 Bibliography,* Form A22-6822. (120 pages)

C24-3392 IBM System/360 Basic Programming Support DASD Utility Programs Operating Guide 32

This publication is intended to be used as a guide in operating the following direct access storage device (DASD) utility programs:

PROGRAM NAME	ORDER NUMBER
Single-Transfer Utility Programs	
Card to Disk, Version 3	360P-UT-063
Disk to Card, Version 3	360P-UT-064
Disk to Disk, Version 3	360P-UT-067
Disk to Printer, Version 3	360P-UT-073
Disk to Tape, Version 3	360P-UT-065
Tape to Disk, Version 3	360P-UT-066
Special Purpose Utility Programs	
Alternate Track Assignment (2311), Version 3	360P-UT-098
16K Alternate Track Assignment (2311/2314), Version 1	360P-UT-207
Alternate Track Assignment (2321), Version 1	360P-UT-212
Clear Disk, Version 3	360P-UT-068
Copy Data Cell to Tape, and Restore Tape to Data Cell, Version 1	360P-UT-071
Copy Disk to Card, and Restore Card to Disk, Version 1	360P-UT-062
Copy Disk to Disk, Version 1	360P-UT-072
Copy Disk to Tape, and Restore Tape to Disk, Version 1	360P-UT-061
Initialize Data Cell, Version 1	360P-UT-204
Initialize Disk (2311), Version 4	360P-UT-069
16K Initialize Disk (2311/2314), Version 1	360P-UT-206
Multiple Disk to Printer, Version 2	360P-UT-203

These programs can be received by ordering individually numbered program packages. Each program is shipped as a complete entity, in object form, ready to perform its function. Other BPS utility programs have been reissued in the publication: *IBM System/360 Basic Programming Support, Card and Tape Utility Programs Operating Guide,* Form C24-5027. These publications will support only the latest versions of the programs.

The reader should be familiar with the information presented in the publications: *IBM System/360 Basic Programming Support, DASD Utility Programs Specifications,* Form C24-3363; *IBM System/360 Basic Operating System, Programmer's Guide,* Form C24-3372; and *IBM System/360 Principles of Operation,* Form A22-6821. For a list of related publications, refer to the *IBM System/360 Bibliography,* Form A22-6822. (70 pages)

C24-3396 IBM System/360 Basic Programming Support Universal Character Set Utility Program Operating Guide 32

Program Number: 360P-UT-048

This reference publication contains the Operating Guide for the Universal Character Set Utility Program used to load the read/write storage units in the IBM 2821 Control Unit. Included in the manual are a description of the UCS program deck, control cards, system and deck preparation, error waits and options, and operating instructions. An Appendix contains related information including standard train/chain arrangements and the Extended Binary Coded Decimal Interchange Code.

The user of this publication should be familiar with *IBM 2821 Control Unit,* Form A24-3312 and *IBM 1403 Printer,* Form A24-3073. For a list of associated System/360 publications, see the *IBM System/360 Bibliography,* Form A22-6822. (24 pages)

C24-3398 IBM System/360 Basic Programming Support Input/Output 1412/1419 Specifications and Operating Guide 30

Program Number: 360P-IO-058

This reference publication describes programming specifications and operating procedures for the Input/Output control program supplied by IBM for System/360 applications using the IBM 1412 and 1419 Magnetic Character Readers. Detailed information is given on the programming required for all I/O operations on these devices as well as for other services of the control program. Also included are operator instructions and diagnostic messages.

The reader should be familiar with the following publications:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Basic Programming Support, Basic Assembler Language, Form C28-6503

IBM 1412 Magnetic Character Reader, Form A24-1421, or

IBM 1219 Reader Sorter, IBM 1419 Magnetic Character Reader, Form A24-1499. (*IBM 1419 Model 32 Magnetic Character Reader,* Forms A19-0004 and A19-0023.)

IBM System/360 Model 30 Operator's Guide, Form A24-3373

For information pertaining to Job Control cards, refer to either:

IBM System/360 Basic Programming Support, Basic Tape System, Programmer's Guide, Form C24-3354, or

IBM System/360 Basic Operating System Programmer's Guide, Form C24-3372.

Other related IBM publications are referenced by form number and briefly described in *IBM System/360 Bibliography,* Form A22-6822. (56 pages)

C24-3408 IBM System/360 Basic Programming Support Input/Output 1231 Specifications and Operating Guide 30

Program Number: 360P-IO-060

This reference publication contains a description of the Input/Output program for the IBM 1231 Optical Mark Page Reader, and information concerning the instructions required to use the 1231 as an input device to an IBM System/360.

This reference publication also describes operating procedures for the Input/Ouput 1231 program. This program is used with the IBM 1231 Optical Mark Page Reader attached to an IBM System/360 Model 25, 30, 40, 50, or 65.

The reader should be familiar with the information presented in these publications: *IBM System/360 Principles of Operation,* Form A22-6821, *IBM System/360 Basic Programming Support, Basic Tape System Programmer's Guide,* Form C24-3354, and *IBM System/360 Basic Operating System Programmer's Guide,* Form C24-3372. The publication *IBM 1231 N1 Optical Mark Page Reader,* Form A21-9031, contains information that will be helpful to the 1231 programmer. For a complete list of associated System/360 publications, see the *IBM System/360 Bibliography,* Form A22-6822. (48 pages)

C24-3409 IBM System/360 Basic Operating System Utility Programs Specifications 32

This reference publication describes the IBM System/360 Basic Operating System Utility Programs. The programs described are:

GROUP 1 *Program Number*	GROUP 2 *Program Number*
360B-UT-300	*360B-UT-301*
Card-to-Disk Program	Card-to-Tape Program
Card-to-Printer and/or Punch Program	Disk-to-Tape Program
Disk-to-Card Program	Tape-to-Card Program
Disk-to-Disk Program	Tape-to-Disk Program
Disk-to-Printer Program	Tape-to-Printer Program
Clear Disk Program	Tape-to-Tape Program
VTOC Display Program	Tape Compare Program

These programs are ordered by the above group program numbers and are distributed on the disk pack.

The reader should be familiar with the information presented in the publications *IBM System/360 Basic Operating System, Programmer's Guide,* Form C24-3372, *IBM System/360 Basic Operating System, Assembler with Input/Output Macros,* Form C24-3361, *IBM System/360 Basic Operating System, Operating Guide: Control Programs and Assembler,* Form C24-3450.

The reader will find error messages for these utility programs in *IBM System/360 Basic Operating System, Operating Guide: Operator Messages,* Form C24-5024.

For a list of related publications refer to the *IBM System/360 Bibliography,* Form A22-6822. (68 pages)

C24-3413 IBM System/360 Basic Programming Support Operating Guide—Sort/Merge Programs (8K Tape) 33

Program Numbers:
360P-SM-043 (one-channel)
360-SM-044 (two-channel)

This reference publication contains the following information: 1. The minimum machine requirements for sorting or merging records with the 8K Tape Sort/Merge Program, 2. A description of the program packages, 3. A description of the procedure to follow when modifying the program decks, 4. The instructions for running on 8K Tape Sort/Merge Program, 5. The programmed messages that can occur while the program is being run. (26 pages)

C24-3414 IBM System/360 Disk and Tape Operating Systems Assembler Language 21

This reference publication contains specifications for the IBM System/360 Disk and Tape Operating Systems Assembler Language (including macro instructions and conditional assembly facilities).

The assembler language is a symbolic programming language used to write programs for the IBM System/360. The language provides a convenient means for representing the machine instructions and related data necessary to program the IBM System/360. The IBM System/360 Disk and Tape Operating Systems Assembler Programs process the language and provide auxiliary functions useful in the preparation and documentation of a program, and include facilities for processing macro instructions.

Part 1 of this publication is an introduction to the assembler language.

Part 2 describes the basic functions of the assembler language.

Part 3 describes the conditional assembly and macro facilities in the assembler language. (144 pages)

C24-3417 IBM System/360 Basic Programming Support Operating Guide—Autotest 37

This reference publication contains information the operator must know to test an object program using the 8K Tape Autotest Program. Autotest can be executed only on a machine with a minimum of 16K positions of main storage.

The reader should be familiar with the IBM System/360 publications: *IBM System/360 Basic Programming Support Autotest (8K Tape)*, Form C24-3343; *IBM System/360 Basic Programming Support Operating Guide: Basic Tape System (8K)*, Form C24-3391; and *IBM System/360 Model 30 Operators Guide*, Form A24-3373. (16 pages)

C24-3418 IBM System/360 Basic Programming Support Report Program Generator Language Specifications (8K Tape) 28

This reference publication contains complete programming specifications for the IBM System/360 Report Program Generator (8K Tape). Included are the basic functions of RPG for readers with tape experience who are not familiar with RPG. For more detailed information regarding the generation of system tapes and input/output facilities provided, refer to the publication *IBM System/360 Basic Programming Support Programmer's Guide (8K Tape)*, Form C24-3354. (137 pages)

C24-3420 IBM System/360 Basic Programming Support, Basic Operating System, Tape Operating System, and Disk Operating System—Programming Systems Summary 20

This publication provides a general description of the functions, capabilities, and applications of programming support for IBM System/360 with 8K, 16K, 24K, and 32K main storage. Basic Programming Support consists of programs and programming aids for small card and tape configurations. Basic Operating System is an 8K disk-resident system that provides greater capabilities. Tape Operating System and Disk Operating System are, respectively, tape-resident and disk-resident systems requiring at least 16K main storage, but providing additional facilities beyond those of Basic Operating System. With additional main storage, these latter systems also provide multiprogramming and telecommunications facilities.

For a list of associated publications and their abstracts, refer to the *IBM System/360 Bibliography*, Form A22-6822. (52 pages)

C24-3427 IBM System/360 Disk Operating System Data Management Concepts 30

This reference publication contains a discussion of the data management facilities inherent in the Disk Operating System. It describes the file formats, labeling procedures, and access methods available with the system. There is also a general section describing the design of the direct-access storage devices supported.

The following publications are recommended as prerequisite readings: *IBM System/360 Principles of Operation*, Form A22-6821, and *IBM System/360 Disk Operating System, System Control and System Service Programs*, Form C24-5036.

Other related publications are: *IBM System/360 Disk Operating System Supervisor and Input/Output Macros*, Form C24-5037, *IBM System/360 Disk and Tape Operating Systems Assembler Specifications*, Form C24-3414, and *Glossary for Information Processing*, Form C20-8089.

For a List of associated System/360 publications, refer to *IBM System/360 Bibliography*, Form A22-6822. (68 pages)

C24-3430 IBM System/360 Tape Operating System—Data Management Concepts 30

This reference publication contains a discussion of the data management facilities inherent in the Tape Operating System. It describes the Input/Output Control System (IOCS), the file formats, and the labeling procedures available with the system.

The following publications are recommended as prerequisite readings:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Tape Operating System, System Control and System Service Programs, Form C24-5034

Other related publications are:

IBM System/360 Tape Operating System, Supervisor and Input/Output Macros, Form C24-5035

IBM System/360 Disk and Tape Operating Systems, Assembler Specifications, Form C24-3414

Glossary for Information Processing, Form C20-8089

For a list of associated publications, see the *IBM System/360 Bibliography*, Form A22-6822. (36 pages)

C24-3433 IBM System/360 Disk and Tape Operating Systems COBOL Language Specifications 24

Program Numbers:
360N-CB-452 (COBOL DOS)
360M-CB-402 (COBOL TOS)

COBOL (Common Business Oriented Language) is a programming language, similar to English, that is used for commercial data processing. It was developed by the Conference of Data Systems Languages (CODASYL).

This publication provides the programmer with rules for writing programs in COBOL for IBM System/360 Disk and Tape Operating Systems. Users unacquainted with COBOL should read the programmed instruction textbook *COBOL Program Fundamentals*, Form R29-0205, with its reference handbook, Form R29-0206.

The titles and abstracts of related publications are listed in the *IBM System/360 Bibliography*, Form A22-6822. (140 pages)

C24-3437 IBM System/360 Basic Programming Support Input/Output 1418/1428 Specifications and Operating Guide 30

Program Number: 360P-IO-059

This publication describes the input/output 1418/1428 program (I/O 1418/1428 Program) supplied by IBM for System/360 applications using the IBM 1418 or 1428 Optical Character Readers. The I/O 1418/1428 Program provides complete interruption-handling capability, controls all input/output, and controls a document buffer for maximum throughput. This reference publication also describes operating procedures for the Input/Output 1418/1428 program.

The reader should be familiar with the information presented in the following publications:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Basic Programming Support, Basic Assembler and Basic Utility Programs (Card) Specifications and Operating Guide, Form C28-6503

IBM 1418 Optical Reader, IBM 1428 Alphameric Optical Reader, Form A24-1473

IBM System/360 Model 30 Operator's Guide, Form A24-3373

For information pertaining to job control cards, refer to either publication:

IBM System/360 Basic Programming Support, Programmer's Guide, Form C24-3354, or

IBM System/360 Basic Operating System, Programmer's Guide, Form C24-3372

Other related IBM publications are referenced by form number and briefly described in *IBM System/360 Bibliography*, Form A22-6822. (62 pages)

C24-3438 IBM System/360 Disk and Tape Operating Systems Tape Sort/Merge Program—Specifications 33

Program Numbers:
360M-SM-400
360N-SM-400

This publication explains the following:

1. Minimum machine requirements.
2. Program capabilities.
3. Required control statements.
4. User-written routines.

The reader should be familiar with these publications:

IBM System/360 Tape Operating System, Data Management Concepts, Form C24-3430

IBM 1401/1460 Timing Programs for IBM System/360 Disk and Tape Operating System, Tape Sort/Merge Program, Form C24-3439

IBM System/360 Tape Operating System, Performance Estimates, Form C24-5020

IBM System/360 Tape Operating System, System Control and System Service Programs, Form C24-3431

(65 pages)

C24-3439 IBM 1401/1460 Timing Program for IBM System/360 Disk and Tape Operating Systems Tape Sort/Merge Program 33

Program Numbers:
1401-LM-010 (2401-2404)
1401-LM-012 (2415)

This publication contains the specifications and operating procedures for the IBM 1401 and 1460 timing program used to estimate the amount of time required to sort tape records with the IBM System/360 Disk Operating System Tape Sort/Merge program or the IBM System/360 Tape Operating System Tape Sort/Merge Program.

The following information is included in this publication:

1. Minimum machine requirements for estimating times with these programs.
2. A description of the user-prepared information cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing program.

The user of this publication should be familiar with *IBM System/360 Disk and Tape Operating Systems, Tape Sort/Merge Program Specifications*, Form C24-3438. For a list of associated 1401/1460 publications, see the *IBM 1401/1460 Bibliography*, Form A24-1495. For a list of associated System/360 publications, see the *IBM System/360 Bibliography*, Form A22-6822. (16 pages)

C24-3441 IBM System/360 Tape Operating System—Autotest Specifications 37

This reference publication describes the testing services provided by the IBM System/360 Tape Operating System Autotest program. Programmer-oriented diagnostic messages are included in this publication, as well as formats and examples of control cards for both job control and Autotest.

Refer to the following IBM System/360 publications for related information:

Principles of Operation, Form A22-6821

Disk and Tape Operating Systems Assembler Specifications, Form C24-3414

Disk and Tape Operating Systems Utility Programs Specifications, Form C24-3465

Tape Operating System, System Control and System Service Programs, Form C24-3431

Tape Operating System Operating Guide, Form C24-5021

These and other IBM publications, along with a brief description of the content of each, are listed in the *IBM System/360 Bibliography,* Form A22-6822. (52 pages)

C24-3444 IBM System/360 Disk Operating System Sort/Merge Program Specifications 33

Program Number: 360N-SM-450

This publication describes the IBM System/360 Disk Operating System Sort/Merge Program and contains the following information:

1. Minimum machine requirements for sorting or merging records with this program.
2. Program capabilities.
3. A description of the control statements required to define specific sort or merge operations.
4. A description of the facilities provided for inserting user-written routines into the program.

The following publications are prerequisites:

IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427

IBM System/360 Disk Operating System, System Control and System Service Programs, Form C24-5036

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-5037.

IBM System/360 Disk Operating System, System Generation and Maintenance, Form C24-5033.

For a list of associated publications and their abstracts, see the *IBM System/360 Bibliography,* Form A22-6822. (76 pages)

C24-3445 IBM 1401/1460 Timing Program for IBM System/360 Disk Operating System Sort/Merge Program 33

Program Number: 1401-LM-011

This publication contains the specifications and operating procedures for the IBM 1401 and 1460 timing program used to estimate the amount of time required to sort records with the IBM System/360 Disk Operating System Sort/Merge program.

The following information is included in this publication:

1. Minimum machine requirements for estimating times with this program.
2. A description of the user-prepared information cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing program.

The user of this publication should be familiar with *IBM System/360 Disk Operating System, Sort/Merge Program Specifications,* C24-3444. For a list of associated 1401/1460 publications, see *IBM 1401/1460 Bibliography,* A24-1495. For a list of associated System/360 publications, see *IBM System/360 Bibliography,* A22-6822. (16 pages)

C24-3450 IBM System/360 Basic Operating System Operating Guide 20

Program Numbers:	
Basic Control Program	*360B-CL-302*
Consecutive Processing Macros	*360B-IO-303*
Indexed Sequential File Management System (ISFMS) Macros	*360B-IO-304*
Direct Access Method (DAM) Macros	*360B-IO-305*
Assembler	*360B-AS-309*
Autotest	*360B-PT-306*
Report Program Generator (RPG)	*360B-RG-307*
Sort/Merge	*360B-SM-308*
Utility Programs	*360B-UT-300* *360B-UT-301*

This publication is divided into five sections:

Section 1 presents the operating procedures for the IBM System/360 Basic Operating System Control Programs and Assembler.

Section 2 presents the operating procedures for testing an object program using the IBM System/360 BOS Autotest program.

Section 3 presents the operating procedures for programs written in the IBM System/360 BOS Report Program Generator (RPG) language.

Section 4 presents the operating procedures for using the IBM System/360 BOS Sort/Merge program and a description of the procedure to follow when cataloging the BOS Sort/Merge program and user routines into the disk-resident core-image library.

Section 5 presents the operating procedures for both groups of utility programs in the IBM System/360 Basic Operating System.

For information about the operation of the System/360, see *IBM System/360 Model 30 Operator's Guide,* Form A24-3373. For other related publications, see *IBM System/360 Bibliography,* Form A22-6822. (170 pages)

C24-3464 IBM System/360 Basic Programming Support Operating Guide—Report Program Generator (Card) 28

This reference publication describes the operating procedures for the IBM System/360 Basic Programming Support, Report Program Generator (Card). It contains this information:

1. A description of the procedure to follow when using the Card RPG program to produce a variety of business reports.
2. The operating considerations for the Card RPG program.
3. The programmed messages that may be printed or displayed during generation or execution of the object program.

The publication *IBM System/360 Model 30 Operator's Guide,* Form A24-3373, is a prerequisite. (28 pages)

C24-3465 IBM System/360 Disk and Tape Operating Systems Utility Programs Specifications 32

This reference publication describes the IBM System/360 Disk and Tape Operating Systems Utility Programs. The programs described are:

360N-UT-461

Assign Alternate Track-Disk	Disk to Card
Card to Printer and/or Punch	Disk to Disk
Card to Disk	Disk to Printer
Clear Disk	Initialize Disk
Copy-Disk to Disk	VTOC Display
Copy and Restore-Disk to Card	

360N-UT-462

Card to Tape	Tape Compare
Copy and Restore-Disk to Tape	Tape to Data Cell
Data Cell to Tape	Tape to Disk
Disk to Tape	Tape to Printer
Tape to Card	Tape to Tape

360N-UT-463

Clear Data Cell	Data Cell to Printer
Data Cell to Data Cell	Disk to Data Cell
Data Cell to Disk	

The reader should be familiar with these IBM System/360 Disk and Tape Operating Systems publications: *IBM System/360 Tape Operating System, Supervisor and Input/Output Macros,* Form C24-5035; *IBM System/360 Disk Operating System, Supervisor and Input/Output Macros,* Form C24-5037; *IBM System/360 Tape Operating System, Data Management Concepts,* Form C24-3430; *IBM System/360 Disk Operating System, Data Management Concepts,* Form C24-3427; *IBM System/360 Tape Operating System, System Control and System Service Programs,* Form C24-5034; *IBM System/360 Disk Operating System, System Control and System Service Programs,* Form C24-5036.

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (140 pages)

C24-5015 IBM System/360 Tape Operating System—System Generation and Maintenance 31

This reference publication contains specifications and operating procedures used to generate an installation-tailored Tape Operating System. Supervisor macro instructions are used to describe facilities that are required within the system. This publication also contains sample problems that can be used to test the generated system.

The following publications are useful references:

IBM System/360 Tape Operating System, System Control and System Service Programs, Form C24-5034.

IBM System/360 Tape Operating System, Supervisor and Input/Output Macros, Form C24-5035.

IBM System/360 Tape Operating System, Performance Estimates, Form C24-5020.

IBM System/360 Disk and Tape Operating Systems, Utility Programs Specifications, Form C24-3465.

IBM System/360 Tape Operating System, Operating Guide, Form C24-5021.

IBM System/360 Basic Programming Support, Card and Tape Utility Programs Specifications, Form C24-5026.

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (116 pages)

C24-5020 IBM System/360 Tape Operating System Performance Estimates 20

This reference publication contains main storage, external storage, and timing estimates for the Tape Operating System. The storage requirements are not sensitive to system configuration, but the timing estimates are. Therefore, representative system configurations are used to illustrate timing variances.

The timing discussion includes estimates for Job Control, Linkage Editor, Assembler, COBOL, FORTRAN, PL/I, and RPG. Time requirements for processing ATTN commands, foreground program initiation, and the task selection mechanism are included. Examples illustrate the use of the timing data to calculate total job time.

Related publications are:

IBM System/360 Tape Operating System, System Control and System Service Programs, Form C24-5034.

IBM System/360 Tape Operating System, Supervisor and Input/Output Macros, Form C24-5035.

IBM System/360 Tape Operating System, System Generation and Maintenance, Form C24-5015.

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (68 pages)

C24-5021 IBM System/360 Tape Operating System—Operating Guide **20**

Program Numbers:	
Assembler	*360M-AS-465*
COBOL	*360M-CB-402*
System Control and Basic IOCS	*360M-CL-405*
FORTRAN IV	*360M-FO-409*
PL/I	*360M-PL-410*
Consecutive Tape IOCS	*360M-IO-404*
Compiler I/O Modules	*360M-IO-412*
Optical Character Reader IOCS	*360M-IO-417*
Autotest	*360M-PT-407*
Report Program Generator (RPG)	*360M-RG-408*
Tape Sort/Merge	*360M-SM-400*
Supervisor (6K)	*360M-SV-413*
Supervisor (8K)	*360M-SV-414*
Utilities	*360M-UT-403*
MPS Utility Macros	*360M-UT-411*

This reference publication describes the operating procedures to be followed when executing jobs in a multiprogramming environment using the Tape Operating System. Topics discussed in this publication include stacked-job processing capability, multiprogramming, and related functions the operator must perform to initiate system operation and communicate with the system. A quick reference listing of all system-to-operator messages is included.

For a description of the concepts of the Tape Operating System, see *IBM System/360 Disk and Tape Operating Systems Concepts and Facilities,* Form C24-5030. Information concerning the operation of the System/360 can be found in *IBM System/360 Model 30 Operator's Guide,* Form A24-3373, or a corresponding publication. For a list of other associated System/360 publications, see the *IBM System/360 Bibliography,* Form A22-6822. (124 pages)

C24-5022 IBM System/360 Disk Operating System—Operating Guide **20**

Program Numbers:		
System Control and Basic IOCS		*360N-CL-453*
Supervisor (10K)	*2311*	*360N-SV-473*
Supervisor (6K)		*360N-SV-474*
Supervisor (8K)		*360N-SV-475*
Supervisor (8K)	*2314*	*360N-SV-486*
Supervisor (10K)		*360N-SV-487*
Supervisor (12K)		*360N-SV-488*
Direct Access Method (DAM) Macros		*360N-IO-454*
Consecutive Disk IOCS		*360N-IO-455*
Consecutive Tape IOCS		*360N-IO-456*
Indexed Sequential File Management System (ISFMS) Macros		*360N-IO-457*
Consecutive Paper Tape IOCS		*360N-IO-458*
Compiler I/O Modules		*360N-IO-476*
Magnetic Character Reader IOCS		*360N-IO-477*
Optical Character Reader IOCS		*360N-IO-478*
Group 1 Utilities (Disk and Unit Record)		*360N-UT-461*
Group 2 Utilities (Magnetic Tape)		*360N-UT-462*
Group 3 Utilities (Data Cell)		*360N-UT-463*
Multiprogramming Support Utility Macros		*360N-UT-471*
Vocabulary File Utility Program		*360N-UT-472*
Tape Sort/Merge		*360N-SM-400*
Disk Sort/Merge		*360N-SM-450*
Assembler		*360N-AS-465*
Report Program Generator		*360N-RG-460*
COBOL		*360N-CB-452*
COBOL and PL/I DASD Macros		*360N-CB-468*
FORTRAN IV		*360N-FO-451*
Autotest		*360N-PT-459*
PL/I		*360N-PL-464*
Basic Telecommunications Access Method (BTAM)		*360N-CQ-469*
Queued Telecommunications Access Method (QTAM)		*360N-CQ-470*

This reference publication describes the operating procedures to be followed when executing jobs in a multiprogramming environment using the Disk Operating System. Topics discussed in this reference publication include: stacked-job processing capability, multiprogramming, both basic and queued telecommunications capability, and functions the operator must perform to initiate system operation and to communicate with the system. A quick reference listing of all system-to-operator messages is included.

Prerequisite publications are: *IBM System/360 Disk and Tape Operating Systems, Concepts and Facilities,* Form C24-5030 and *IBM System/360 Model 30 Operator's Guide,* Form A24-3373 (or a corresponding publication. (180 pages)

C24-5024 IBM System/360 Basic Operating System Operator Messages **20**

Program Numbers:	
Basic Control Program	*360B-CL-302*
Consecutive Processing Macros	*360B-IO-303*
Indexed Sequential File Management System (ISFMS) Macros	*360B-IO-304*
STR Macros	*360B-IO-310*
BSC Macros	*360B-CQ-312*
Utilities—Group I	*360B-UT-300*
Utilities—Group II	*360B-UT-301*
Sort/Merge	*360B-SM-308*
Assembler	*360B-AS-309*
Report Program Generator	*360B-RG-307*
Autotest	*360B-PT-306*

This reference publication lists, in numeric and alphabetic order, all messages issued to the operator by the programs of the IBM System/360 Basic Operating System.

For a list of associated publications and their abstracts, see *IBM System/360 Bibliography,* Form A22-6822. (92 pages)

C24-5025 IBM System/360 Disk and Tape Operating Systems—COBOL Programmer's Guide **24**

This publication is designed to aid the COBOL programmer. Its purpose is to provide guidance and examples in the techniques of COBOL programming in the Disk and Tape Operating Systems, and to expose the user to the components of the Control Program and facilities of IBM System/360 Disk and Tape Operating Systems.

The prerequisites for a thorough understanding of the COBOL language are:

IBM System/360 Disk and Tape Operating Systems COBOL Language Specifications, Form C24-3433

Publications closely related to this one are:

IBM System/360 Disk Operating System, System Control and System Service Programs, Form C24-3428

IBM System/360 Tape Operating System, System Control and System Service Programs, Form C24-3431

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-3429

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-3432

IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427

IBM System/360 Tape Operating System, Data Management Concepts, Form C24-3430

IBM System/360 Disk Operating System, System Generation and Maintenance, Form C24-5033

IBM System/360 Tape Operating System, System Generation and Maintenance, Form C24-5015

IBM System/360 Principles of Operation, Form A22-6821

(160 pages)

C24-5026 IBM System/360 Basic Programming Support Specifications—Card and Tape Utility Programs **32**

This reference publication describes the IBM System/360 Basic Programming Support Utility Programs. The programs described are:

Card to Printer and/or Punch	360P-UT-050, Version 2
Card to Tape	360P-UT-051, Version 2
Tape to Card	360P-UT-053, Version 2
Tape to Printer	360P-UT-052, Version 2
Tape to Tape	360P-UT-054, Version 2

The preceding programs can be received by ordering individually numbered program packages. Each program is shipped as a complete entity, in object form, ready to perform its function.

The reader should be familiar with the information presented in the publications: *IBM System/360 Basic Programming Support, Programmer's Guide (8K Tape),* C24-3354; *IBM System/360 Basic Programming Support Operating Guide: Card and Utility Programs,* Form C24-5027. (48 pages)

C24-5027 IBM System/360 Basic Programming Support Card and Tape Utility Programs Operating Guide **32**

This reference publication contains the guidelines to operate the following Card and Tape utility programs:

SINGLE-TRANSFER UTILITY PROGRAMS	SPECIAL-PURPOSE UTILITY PROGRAMS
Card to Printer and/or Punch 360P-UT-050, Version 3	Initialize Tape 360P-UT-057, Version 3
Card to Tape 360P-UT-051, Version 3	Multiple Utility 360P-UT-055, Version 2
Tape to Card 360P-UT-053, Version 3	Storage Print 360P-UT-056, Version 1
Tape to Printer 360P-UT-052, Version 3	Tape Compare 360P-UT-202, Version 1
Tape to Tape 360P-UT-054, Version 3	

These programs can be received by ordering individually numbered program packages. Each program is shipped as a complete entity, in object form, ready to perform its function.

The reader should be familiar with these IBM System/360 publications: *IBM System/360 Basic Programming Support Specifications: Utility Programs,* Form C24-5026; *IBM System/360 Principles of Operation,* Form A22-6821; and other manuals associated with his device configuration.

For a list of related publications and their abstracts, see the *IBM System/360 Bibliography,* Form A22-6822. (44 pages)

C24-5029 IBM System/360 Operating System COBOL (E) Programmer's Guide 24

This reference publication describes how to compile, linkage edit, and execute a COBOL (E-Level Subset) program. It also describes the output of compilation and execution, how to make optimal use of the compiler and a load module, and compiler and load module restrictions.

The corequisite to this publication is *IBM System/360 Operating System: COBOL Language,* Form C28-6516.

Other publications related to this one are:

IBM System/360 Principles of Operation, Form A22-6821.

IBM System/360 Operating System: Control Program Services, Form C28-6541.

IBM System/360 Operating System: Job Control Language, Form C28-6539.

IBM System/360 Operating System: Utilities, Form C28-6586.

IBM System/360 Operating System: Linkage Editor, Form C28-6538.

IBM System/360 Operating System: Control Program Messages and Completion Codes, Form C28-6608.

For a list of other associated System/360 publications, see the *IBM System/360 Bibliography,* Form A22-6822. (154 pages)

C24-5030 IBM System/360 Disk and Tape Operating System—Concepts and Facilities 20

This reference publication describes the concepts of Disk and Tape Operating Systems and guides the planner in the use of their various facilities. It describes the components in the Disk and Tape Operating Systems and explains the function of each. The last section of the publication discusses the design, preparation, and execution of programs.

A suggested prerequisite reading is *IBM System/360 Basic Programming Support, Basic Operating System, Tape Operating System, and Disk Operating System, Programming Systems Summary,* Form C24-3420.

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (40 pages)

C24-5032 IBM System/360 Disk Operating System—Performance Estimates 20

This reference publication contains main storage, external storage, and timing estimates for the Disk Operating System. The storage requirements are not sensitive to system configuration, but the timing estimates are. Therefore, representative system configurations illustrate timing variances.

The timing discussion includes estimates for Job Control, Linkage Editor, Assembler, COBOL, PL/I, FORTRAN, and RPG. Time requirements for processing ATTN routines, Single Program Initiation, and the task selection mechanism are included. Examples illustrate the use of the timing data to calculate total job time.

Related publications are:

IBM System/360 Disk Operating System, System Control and System Service Programs, Form C24-5036

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-5037

IBM System/360 Disk Operating System, System Generation and Maintenance, Form C24-5033

For titles and abstracts of other associated publications see the *IBM System/360 Bibliography,* Form A22-6822. (124 pages)

C24-5033 IBM System/360 Disk Operating System—System Generation and Maintenance 31

This reference publication contains specifications and operating procedures used to generate an installation-tailored Disk Operating System. Supervisor macro instructions are used to describe facilities that are required within the system. This publication also contains sample problems that can be used to test the generated system.

The following publications are useful references:

IBM System/360 Disk Operating System, Operating Guide, Form C24-5022

IBM System/360 Disk Operating System, System Control and System Service Programs, Form C24-5036

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-5037

IBM System/360 Disk Operating System, Performance Estimates, Form C24-5032

IBM System/360 Basic Programming Support, DASD Utility Programs Specifications, Form C24-3363

IBM System/360 Basic Programming Support, DASD Utility Programs Operating Guide, Form C24-3392

IBM System/360 Basic Programming Support, Distribution Program Specifications and Operating Guide, Form C21-5001

IBM System/360 Disk and Tape Operating Systems, Utility Programs Specifications, Form C24-3465

IBM System/360 Disk Operating System, Vocabulary File Utility Programs for IBM 7772 Audio Response Unit, Form C27-6924

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (268 pages)

C24-5034 IBM System/360 Tape Operating System—System Control and System Service Programs 36

This reference publication describes the IBM System/360 Tape Operating System. The system is a set of control programs and processing programs provided for the IBM System/360. Using IBM 2400-Series Magnetic Tape Units for on-line program residence, IBM System/360 Tape Operating System provides stacked-job processing capability, multiprogramming capability, controls all input/output, and provides for continuous operation of all programs run in its environment. Detailed information is given in this publication on these major topics.

1. Operation with the System Control Program:
   a. System Organization
   b. Supervisor Functions
   c. Job Control Program.
2. Using the System Service Programs:
   a. Linkage Editor
   b. Librarian.

The prerequisite for a thorough understanding of this publication is a basic knowledge of System/360 machine concepts. The publications most closely related to this one are:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Tape Operating System: Data Management Concepts, Form C24-3430

IBM System/360 Tape Operating System: Supervisor and Input/Output Macros, Form C24-5035

IBM System/360 Disk and Tape Operating Systems: Assembler Specifications, Form C24-3414

(124 pages)

C24-5035 IBM System/360 Tape Operating System—Supervisor and Input/Output Macros 30

This reference publication contains planning information about the Input/Output Control System macro instructions and the Supervisor macro instructions for use with IBM System/360 Tape Operating System (TOS). IBM publications that provide related information are:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Tape Operating System, Data Management Concepts, Form C24-3430

IBM System/360 Tape Operating System, System Control and System Service Programs, Form C24-5034

IBM System/360 Disk and Tape Operating Systems, Assembler Specifications, Form C24-3414

For titles and abstracts of other associated publications see *IBM System/360 Bibliography,* Form A22-6822. (140 pages)

C24-5036 IBM System/360 Disk Operating System—System Control and System Service Programs 36

This reference publication describes the IBM System/360 Disk Operating System. The system is a set of control programs and processing programs provided for IBM System/360. Using IBM 2311 Disk Storage or IBM 2314 Direct Access Storage for on-line program residence, the IBM System/360 Disk Operating System provides stacked-job processing capability, multiprogramming and telecommunications capability, controls all input/output, and provides for continuous operation of all programs run in its environment. Detailed information is given in this publication on these major topics.

1. Operation with the System Control Program:
   a. System Organization
   b. Supervisor Functions
   c. Job Control Program.
2. Using the System Service Programs:
   a. Linkage Editor
   b. Librarian.

The prerequisite for a thorough understanding of this publication is a basic knowledge of System/360 machine concepts. The publications most closely related to this one are:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427

IBM System/360 Disk Operating System Supervisor and Input/Output Macros, Form C24-5037

IBM System/360 Disk and Tape Operating Systems, Assembler Specifications, Form C24-3414.

(168 pages)

C24-5037 IBM System/360 Disk Operating System—Supervisor and Input/Output Macros 30

This reference publication contains information about the Input/Output Control System macro instructions and the Supervisor macro instructions for use with the IBM System/360 Disk Operating System (DOS). IBM publications that provide related information are:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427

IBM System/360 Disk Operating System, System Control and System Service Programs, Form C24-5036

IBM System/360 Disk and Tape Operating Systems, Assembler Specifications, Form C24-3414

IBM System/360 Disk Operating System, System Generation and Maintenance, Form C24-5033

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (232 pages)

C24-5038 IBM System/360 Disk and Tape Operating Systems—Basic FORTRAN IV Programmer's Guide 25

Program Numbers:
360N-FO-451
360M-FO-409

This publication describes the procedures for compiling and executing FORTRAN IV programs under control of the Disk Operating System or Tape Operating System. Its purpose is to guide the programmer with examples and techniques of the Basic FORTRAN IV language. It also exposes the user to the components of the control program and facilities of the IBM System/360 Disk and Tape Operating Systems. (98 pages)

C24-5039 IBM System/360 Disk Operating System—COBOL DASD Macros 24

This publication provides the programmer with rules for using DASD macros to handle input/output operations for direct access or indexed sequential files. The programmer should be familiar with:

COBOL: General Information Manual, Form F28-8053

IBM System/360 Disk and Tape Operating System, COBOL Language Specifications, Form C24-3433

IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-3429

(24 pages)

C24-5041 IBM System/360 Basic Operating System Master Index 20

This index is a consolidation of the indexes of all programming publications for the IBM Basic Operating System (BOS). Each index entry is accompanied by the abbreviated publication title, the subject code of the publication within the IBM System Reference Library, and the publication form number. Appendix A contains a list of the BOS publications, by title and form number, used to compile this consolidated index. Appendix B contains the publication plan for the Basic Operating System.

For a complete list of all IBM System/360 publications (machine manuals, all programming support, etc.) by form number and subject code, and with the abstract of each publication, see the *IBM System/360 Bibliography,* Form A22-6822. (52 pages)

C24-5042 IBM System/360 Disk and Tape Operating Systems—Utility Macros Specifications 32

This reference publication describes Multiprogramming Support (MPS) Utility Macro Instructions for use with the Disk and Tape Operating Systems. The reader should be familiar with the following publications:

IBM System/360 Disk Operating System, System Control and System Service Programs, Form C24-5036

IBM System/360 Tape Operating System, System Control and System Service Programs, Form C24-5034

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-5037

IBM System/360 Tape Operating System, Supervisor and Input/Output Macros, Form C24-5035

IBM System/360 Disk and Tape Operating Systems Assembler Specifications, Form C24-3414.

(148 pages)

C24-5059 IBM System/360 Disk Operating System PL/I DASD Macros 29

This publication provides the programmer with rules for using DASD macros with the IBM 2311 Disk Storage Drive to handle input/output operations for indexed sequential files. The programmer should be familiar with these publications:

IBM System/360 Disk and Tape Operating Systems, PL/I Subset, Language Specifications, Form C28-6809

IBM System/360 Disk and Tape Operating Systems, PL/I Programmer's Guide, Form C24-9005

IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427

IBM System/360 Disk, Operating System, Supervisor and Input/Output Macros, Form C24-5037

(15 pages)

C24-5060 IBM System/360 Basic Operating System—System Generation and Maintenance 31

This reference publication contains specifications and operating procedures used to generate an installation-tailored Basic Operating System. Supervisor macro-instructions are used to define the facilities that are required within the system.

The following publications are useful references:

IBM System/360 Basic Operating System, Utility Programs Specifications, Form C24-3409

IBM System/360 Basic Operating System, Programmer's Guide, Form C24-3372

IBM System/360 Basic Operating System, Assembler with I/O Macros Specifications, Form C24-3361

IBM System/360 Basic Operating System Operating Guide, Control Programs and Assembler, Form C24-3450

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (80 pages)

C24-5061 IBM System/360 Basic Programming Support, Basic Tape System, System Generation and Maintenance 31

This reference publication contains specifications and operating procedures for generating and maintaining a system tape for Basic Programming Support.

For additional information, refer to the following publications:

IBM System/360 Basic Programming Support, Basic Tape System, Programmer's Guide, Form C24-3354

IBM System/360 Basic Programming Support, Basic Tape System Operating Guide, Form C24-3391

IBM System/360 Basic Programming Support, Assembler with Input/Output Macros (Tape) Specifications, Form C24-3355

IBM System/360 Basic Programming Support, Specifications: Card and Tape Utility Programs, Form C24-5026

IBM System/360 Basic Programming Support, Operating Guide Card and Tape Utility Programs, Form C24-5027

IBM System/360 Basic Programming Support, Report Program Generator (Tape) Specifications, Form C24-3418

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (52 pages)

C24-5062 IBM System/360 Disk Operating System—Autotest Specifications 37

This reference publication describes the testing services provided by the Disk Operating System Autotest. The following features are described: Autopatch, Test Request Options, normal and abnormal End of Job Dumps, Disaster Continue and the Autotest Card-to-Tape Variable program. Programmer-oriented diagnostic messages are also included. Control card formats and examples are given for Job Control as well as for Autotest.

The reader should be familiar with the following related publications:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Disk and Tape Operating Systems Assembler Specifications, Form C24-3414

IBM System/360 Disk Operating System System Control and System Service Programs, Form C24-5036

IBM System/360 Disk Operating System Operating Guide, Form C24-5022

IBM System/360 Disk Operating System System Generation and Maintenance, Form C24-5033

IBM System/360 Disk and Tape Operating System Utility Programs Specifications, Form C24-3465

For information regarding other related publications, see *IBM System/360 Bibliography,* Form A22-6822.

(50 pages)

C24-5063 IBM System/360 Disk Operating System—Master Index 20

This index is a consolidation of the indexes of all programming publications for the IBM Disk Operating System (DOS). Each index entry is accompanied by the abbreviated publication title, the subject code of the publication within the IBM System Reference Library, and the publication form number. Appendix A contains a list of the DOS publications, by title and form number, used to compile this consolidated index. Appendix B contains the publication plan for the Disk Operating System.

For a complete list of all IBM System/360 publications (machine manuals, all programming support, etc.) by form number and subject code, and with the abstract of each publication, see the *IBM System/360 Bibliography,* Form A22-6822. (132 pages)

C24-5064 IBM System/360 Tape Operating System Programming Index 20

This index is a consolidation of the indexes of all programming publications for the IBM Tape Operating System (TOS). Each index entry is accompanied by the abbreviated publication title, and subject code of the publication within the IBM System Reference Library, and the publication form number. Appendix A contains a list of the TOS publications, by title and form number, used to compile this consolidated index. Appendix B contains the publication plan for the Tape Operating System.

For a complete list of all IBM System/360 publications (machine manuals, all programming support, etc.) by form number and subject code, and with the abstract of each publication, see the *IBM System/360 Bibliography,* Form A22-6822. (75 pages)

C24-5066 IBM System/360 Disk and Tape Operating Systems—On-Line Test Executive Program—Specifications and Operating Guide 37

Program Numbers:
DOS 360N-DN-481
TOS 360M-DN-418

This reference publication describes the On Line Test Executive Program that controls on line testing of I/O units under the Disk and Tape Operating Systems supervisors. It explains the functions of the program and gives procedures for running the test programs. The test programs are not described in this publication. Information about the test programs can be obtained from an IBM Field Engineering representative.

For titles and abstracts of associated publications see the *IBM System/360 Bibliography*, Form A22-6822. (24 pages)

C24-5067 IBM System/360 Basic Programming Support—Programming Index 20

This index is a consolidation of the indexes of all programming publications for IBM System/360 Basic Programming Support (BPS). Each index entry is accompanied by the abbreviated publication title, the subject code of the publication within the IBM Systems Reference Library, and the publication form number. Appendix A contains a list of the BPS publications, by title and form number, used to compile this consolidated index. Appendix B contains the publication plan for Basic Programming Support.

For a complete list of all IBM System/360 publications (machine manuals, all programming support, etc.) by form number and subject code, and with the abstract of each publication, see the *IBM System/360 Bibliography*, Form A22-6822. (72 pages)

C24-5068 IBM System/360 Disk Operating System, Single Disk Only System Generation 31

This reference publication contains specifications and operating procedures for generating an installation-tailored Disk Operating System with the use of only one disk drive and no tape drives.

This publication must be used with *IBM System/360 Disk Operating System, System Generation and Maintenance*, Form C24-5033, when performing system generation with a single disk only system. (20 pages)

C24-5069 IBM System/360 Basic Programming Support Modular File Maintenance Program Specifications and Operating Guide 32

Program Number: 360P-UT-219

This reference publication describes the specifications and operating procedures for the IBM System/360 Basic Programming Support Modular File Maintenance Program. This program builds and maintains a file of one or more modules, primarily source and/or object decks of programs, which may be revised whenever necessary.

Programmer-oriented diagnostic messages, as well as formats and examples of control statements for job control and the Modular File Maintenance Program, are included in this publication. An understanding of the IBM System/360 programming concepts is a prerequisite.

System/360 programming concepts are discussed in *IBM System/360 Principles of Operation*, Form A22-6821.

Titles and abstracts of other related publications are listed in the *IBM System/360 Bibliography*, Form A22-6822. (40 pages)

C24-5070 IBM System/360 Basic Programming Support, Basic Operating System, Tape Operating System, and Disk Operating System—Tape Labels 30

The types of labels that may be written on magnetic tape by the System/360 are defined and described in this reference manual. The processing performed by the programming systems, and the specifications that the user must supply to the systems, are discussed in two major sections: one section for BPS and BOS processing, and another section for TOS and DOS processing. Each section discusses the processing of standard, user-standard, and nonstandard labels, and unlabeled files. The discussion deals primarily with the functions performed for volume, header, and trailer labels when the user gives specifications directly to IOCS through DTF entries. In addition, a portion of each label processing section deals with the label processing specifications required by components of the system (such as Sort/Merge, Utilities, COBOL, etc).

Illustrations of volume layouts depict the various arrangements of labels and data records that can be handled by the four programming systems. Flowcharts show the sequence of events that occur when files with standard, nonstandard, or no labels are opened and closed.

For a thorough understanding of this manual, the reader should have a basic knowledge of the Input/Output Control System (IOCS). The manuals that provide this information for each system are:

IBM System/360 Basic Programming Support, Assembler with Input/Output Macros (Tape) Specifications, Form C24-3355.

IBM System/360 Basic Operating System, Assembler with Input/Output Macros Specifications, Form C24-3361.

IBM System/360 Tape Operating System, Supervisor and Input/Output Macros, Form C24-5035.

IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-5037.

(144 pages)

C24-9005 IBM System/360 Disk and Tape Operating Systems PL/I Programmer's Guide 29

This publication complements the Systems Reference Library publication *IBM System/360, PL/I Subset Reference Manual*, Form C28-8202. Its purpose is to aid the programmer and to familiarize him with the techniques of PL/I programming. This publication therefore provides all information that is not part of the PL/I Subset language specifications but required by the programmer to write programs in the PL/I Subset language and to have them compiled and executed in the DOS/TOS environment.

The main topics covered in this publication are:

1. The DOS/TOS environment
2. PL/I data file organization
3. Storage requirements of PL/I programs and program elements
4. The overlay facility
5. Listings produced for PL/I programs
6. Restrictions to the PL/I Subset language

In some instances, the programmer may desire detailed additional information on topics not directly connected with PL/I. A list of all pertinent Systems Reference Library publications is provided in the *Introduction* section of this publication. (112 pages)

C26-3564 IBM System/360 Model 30 Specifications and Operating Guide Tape Overlap Emulator 35

This publication provides specifications for the IBM System/360 Model 30 Tape Overlap Emulator. A description of the functions of this program and the general requirements for its use are included. This program operates as an extension of the capabilities described in the publication, *IBM System/360 Model 30 1401/1440/1460 Basic Compatibility Feature and Sub-Features*, Form A24-3255. (10 pages)

C26-3570 IBM System/360 Disk and Tape Operating Systems Report Program Generator Specifications 28

This publication contains fundamentals of RPG programming and language specifications for the IBM System/360 Disk and Tape Operating Systems, Report Program Generator. This program can be used for System/360 Models 30, 40, 50, 65, and 75.

Also included is the job setup information for executing RPG. (220 pages)

C26-3627 IBM System/360 Basic Operating System Operating Guide—IBM 1070 Process Communication Supervisor 36

This publication describes operating procedures for the IBM 1070 Process Communication Supervisor. It includes instructions for loading the 1070 routines into the BOS libraries and describes methods of assembling, loading, and executing the PCS and problem programs. A description of error messages and halts is also included. (20 pages)

C26-3756 IBM System/360 Operating System Assembler [F] Programmer's Guide 21

Program Number: 360-AS-037

This publication complements the IBM System/360 Operating System Assembler Language publication. It provides a guide to program assembling, linkage editing, executing, interpreting listings, assembler programming considerations, diagnostic messages, and object output cards. (48 pages)

C26-5996 IBM System/360 Basic Operating System—IBM 1070 Process Communication Supervisor 36

This publication provides specifications for the IBM 1070 Process Communication Supervisor. This supervisor works in conjunction with the IBM Basic Operating System/360 (8K Disk) to handle telecommunications between a System/360 host computer and a network of remotely-located 1070 terminals.

Included in this publication are detailed descriptions of the routines that make up the supervisor package, the macro-instructions used to call the routines, and performance data to help plan for use of the system. Also included is a glossary of process communication terms and a sample program illustrating the use of the supervisor in a typical application. (34 pages)

C26-5999 IBM System/360 RPG Translator 28

This manual provides programming specifications for the IBM System/360 RPG Translator. It describes the operations necessary for converting a 1400 RPG source program to a System/360 RPG source program.

The information contained in this publication will enable a 1400 RPG programmer to determine and to formulate preliminary plans for its use.

This manual lists the machine features required and supported, describes the functional characteristics of the program, and provides a section on data checking and operating characteristics. Restrictions to the program are defined, and suggested solutions are provided. A program example is also included.

Related System/360 RPG literature is contained in the following publications: *IBM System/360 Model 20 Report Program Generator,* Form C26-3600; *IBM System/360 Basic Programming Support RPG (Card),* Form C24-3374; *IBM Basic Operating System/360 RPG Language Specifications (8K Disk),* Form C24-3387; and *IBM Operating System/360 Report Program Generator Language,* Form C24-3337. (20 pages)

C27-6908 IBM System/360 Conversion Aids: The 7074 Emulator Program for IBM System/360 Models 50 and 65 35

Program Number: 360C-EU-725

This publication provides information on the IBM 7074 Emulator Program (360C-EU-725), and is directed to the user who is supplementing or replacing his IBM 7070/7074 Data Processing System with an IBM System/360 Model 50 or 65. Emulation is a technique that utilizes both equipment (Compatibility Feature) and programming to execute object programs written for other data processing systems. (50 pages)

C27-6909 IBM System/360 Operating System—Graphic Programming Services for IBM 2250 Display Unit 30

Program Number: 360S-IO-523

This publication describes macro-instructions and routines provided under the IBM System/360 Operating System for use with the IBM 2250 Display Unit.

These programming services are designed to facilitate the assembler-language coding of programs for displaying data in alphameric or graphic form on the 2250 screen and for controlling man-machine communication using the 2250. Included are facilities for creating the image-defining orders and data, for controlling input/output functions of the graphic device, and for handling communications from a 2250 operator. Both basic and express attention handling are described.

Although intended primarily for the programmer coding in System/360 assembler language, portions of this publication are also of interest to installation managers, system engineers, system programmers, and others seeking general information about programming the IBM 2250 Display Unit. (136 pages)

C27-6911 IBM System/360 Conversion Aids: The 7080 Emulator Program for IBM System/360 Model 65 35

Program Number: 360C-EU-727

Special machine and programming features expand the capabilities of IBM System/360 Model 65 to include an alternate mode of operation: operation as the IBM 7080 Emulator. The Emulator is the effective equivalent of the IBM 7080 Data Processing System, and is capable of executing programs written for the 7080. This publication describes how to prepare and use a suitably configured System/360 for the execution of 7080 programs.

General information is provided on Emulator characteristics, programming considerations, and operating considerations. Complete instructions for system generation and program use are provided, together with detailed information on error messages and corrective actions. (54 pages)

C27-6912 IBM System/360 Operating System—Graphic Programming Services for IBM 2260 Display Station (Local Attachment) 30

Program Number: 360S-IO-523

This publication describes programming services for using the IBM 2260 Display Station with the System/360 Operating System. Included are descriptions of macro-instructions for input/output control and for basic and express attention handling, along with some general requirements for using the display station effectively.

Although intended primarily for the programmer coding in System/360 assembler language, portions of this publication are also of interest to installation managers, system engineers, system programmers, and others seeking general information about programming the IBM 2260 Display Station. (48 pages)

C27-6918 IBM System/360 Operating System Maintenance Program 360S-UT-506 31

This publication describes the procedure for applying IBM-distributed maintenance material, or user-provided material in a prespecified form, to operating-system libraries. The major portion of this information concerns the Update Analysis Program—a program that determines the applicability of maintenance material for the individual system libraries, and accordingly constructs a job stream that effects the library updating. (37 pages)

C27-6924 IBM System/360 Disk Operating System Vocabulary File Utility Program for the IBM 7772 Audio Response Unit 32

Program Number: 360N-UT-472

This document provides information on the Vocabulary File Utility Program for the IBM 7772 Audio Response Unit, that enables the user to create, organize, and update the file of word representations from which the audible responses of the IBM 7772 Audio Response Unit are formed. (44 pages)

C27-6927 IBM System/360 Operating System Graphic Programming Services for IBM 2280 and 2282 Film Units 30

Program Number: 360S-IO-523

This publication contains information for writing programs using the IBM 2280 Film Recorder or the IBM 2282 Film Recorder/Scanner.

For complete coverage of available 2280/82 graphic programming services, this publication must be used with *IBM System/360 Operating System; Graphic Programming Services for IBM 2250 Display Unit,* Form C27-6909.

The information consists primarily of formats and descriptions of macro-instructions that generate orders and data that control the graphic devices. Considerations for user's error handling routines are also included. (56 pages)

C27-6929 IBM System/360 Conversion Aids: Sample Problems for IBM System/360 Emulator Programs 35

Program Numbers:
360C-EU-074
360C-EU-097
360C-EU-725
360C-EU-726
360C-EU-727
360C-EU-728
360C-EU-729
360C-EU-731
360C-EU-733

Sample problems are provided as a part of the distribution material for IBM System/360 Emulator Programs. They are illustrative examples designed to familiarize the user with the techniques required to execute object programs written for other IBM data processing systems under Emulator control. Sample problems are not intended to provide detailed and exhaustive tests or demonstrations of Emulator Programs.

Included in this publication are sample problems for use with the following Emulators: 1401/1440/1460 Model 30, 1401/1460 Model 40, 1410/7010 Models 40 and 50, 1620 Model 30, 7040/7044 Model 65, 7074 Models 50 and 65, 7080 Model 65, and 709/7090/7094/7094II Model 65. (28 pages)

C27-6932 IBM System/360 Operating System Graphic Programming Services for FORTRAN IV 25

Program Number: 360S-LM-537

This publication describes how a FORTRAN programmer can write graphic programs for use with the IBM 2250 Display Unit in association with the IBM System/360 Operating System. It also describes how the same facilities may be used in a program written in Assembler Language.

The graphic programming services for FORTRAN IV consist of subroutines and functions for displaying characters or graphic forms on the 2250 screen and for controlling communication between the program and the 2250 operator. The subroutines may be called from a program written in the E, G, or H level of FORTRAN IV, or from a program written in Assembler Language. They are not an extension of the FORTRAN IV language, but may be used in conjunction with it.

It is assumed that the FORTRAN user of this publication is experienced in the IBM System/360 Operating System FORTRAN IV language. It is assumed that the Assembler Language user of this publication is experienced in both FORTRAN IV and Assembler Language. (120 pages)

C27-6933 IBM System/360 Operating System User's Guide for Job Control from the IBM 2250 Display Unit—Preliminary Specifications 36

This publication describes how a person at an IBM 2250 Display Unit can define and initiate jobs to be processed by the IBM System/360 Operating System. The publication discusses the job control operations that are available at the display unit and provides supplementary information to assist the user. A complete sample job control session is explained with text and illustrations.

The publication is written for a person who is not familiar with the IBM System/360 Operating System. (48 pages)

C27-6935 IBM System/360 Operating System Planning for Rollout/Rollin 36

This publication describes the features and capabilities provided by the rollout/rollin feature of the IBM System/360 Operating System. Rollout/rollin is used in conjunction with MVT (multiprogramming with a variable number of tasks) as an aid to main storage management. (16 pages)

C27-6937 IBM System/360 Operating System and 1130 Disk Monitor System: FORTRAN IV Subroutines for Data Transmission Between a System/360 and an 1130 System Preliminary Specifications 25

This publication contains preliminary information about subroutines that can be called by a System/360 Operating System FORTRAN IV program or an 1130 System FORTRAN IV program to transmit data from one system to the other. The subroutines enable FORTRAN programmers to perform the same kind of telecommunications as an Assembler Language programmer performs by using the binary synchronous services of the Basic Telecommunications Access Method (in the System/360) and the Synchronous Communications Adapter subroutines (in the 1130). No knowledge of binary synchronous communications is needed to use the subroutines described in this manual. The FORTRAN IV data transmission subroutines can also be used in Assembler Language programs if the proper subroutine linkage is employed.

This publication contains a general description of the data transmission and data conversion subroutines, provides detailed information on the formats of the subroutine calls, and contains coding examples that illustrate use of the subroutines. Detailed information on data conversion from 1130 format to System/360 format and vice versa is provided in Appendix A. (48 pages)

C27-6938 IBM System/360 Operating System and 1130 Disk Monitor System: User's Guide for Job Control from an IBM 2250 Display Unit Attached to an IBM 1130 System Preliminary Specifications 36

This publication describes how a person at an IBM 2250 Display Unit attached to an IBM 1130 Computing System can define and initiate jobs to be processed by the IBM System/360 Operating System. The job defined at the display unit can either be processed independently in the System/360 or can be processed in conjunction with a related program in the 1130. The publication discusses the job control operations that are available to the 2250 user and provides supplementary information to assist the user at the display unit. A complete sample job is included with text and illustrations.

The information on job control operations is written for a person who is not familiar with the IBM System/360 Operating System, the IBM 1130 Computing System, or the IBM 2250 Display Unit. (64 pages)

C27-6939 IBM System/360 Operating System Planning for Multiprogramming with a Fixed Number of Tasks, Version II (MFT II) 36

This publication provides information concerning Version II of multiprogramming with a fixed number of tasks (MFT II) for installation personnel who are responsible for selection, evaluation, and implementation of System/360 Operating System configurations. The information is presented in three major categories: concepts, considerations, and characteristics. These sections describe, respectively:

1. The principles of operation of MFT II.
2. How they influence application and operation of the system.
3. Detailed specifications of storage requirements, system generation, and operation of an MFT II system.

The descriptive information is supplemented by examples and illustrations including a sample job scheduling sequence and sample partition configurations for systems with 128K, 256K, and 512K bytes of main storage. (60 pages)

C27-6940 IBM System/360 Disk Operating System—1401/1440/1460 Emulator Programs for IBM System/360 Models 30 and 40—Preliminary Specifications 35

This publication contains preliminary information on the IBM 1401/1440/1460 Emulator Programs under the Disk Operating System for IBM System/360 Models 30 and 40. The Emulator under DOS for the Model 30 comprises the IBM 1401/1440/1460 Model 30 Emulator Program, the IBM 1401/1440/1460 Compatibility Feature (4456), and the Programmed Mode Switch Subfeature (5856). The Emulator under DOS for the Model 40 comprises the IBM 1401/1440/1460 Model 40 Emulator Program and the 1401/1440/1460 DOS Compatibility Feature (4460).

General information concerning machine requirements, program generation, simulation techniques, data formats, control cards, and programming considerations is included, as are detailed explanations of operator service functions, operating procedures, console messages, and special instructions added by the two compatibility features.

The 1400 Emulator Programs under DOS allow the user to run 1401/1440/1460 programs, with little or no reprogramming, under the Disk Operating System in conjunction with the compatibility features. This allows 1400 programs to be run in a stacked job environment, mixed with System/360 jobs. (128 pages)

C27-6942 IBM System/360 Operating System Introduction to Main Storage Hierarchy Support for IBM 2361 Models 1 and 2 36

This publication contains pre-release information that describes the programming requirements and considerations for the division of main storage into two separately addressable blocks called hierarchies.

Main Storage Hierarchy Support is primarily designed for use with IBM 2361 Core Storage, a standalone, economical bulk storage unit. The support provides a technique by which the 2361 can be directly addressed, so that storage can be allocated from it and modules can be loaded into it. Main Storage Hierarchy Support is effective across all versions of the operating system. (24 pages)

C28-2000 IBM System/360 Time Sharing System Assembler Language 21

This publication describes the IBM System/360 Time Sharing System Assembler Language, a symbolic programming language used to write programs for IBM System/360. The language provides a convenient means for representing the machine instructions and related data necessary to program the IBM System/360, especially as related to Time Sharing System/360 (TSS/360). The TSS/360 Assembler Program processes the language and provides auxiliary functions for preparing and documenting a program; the Assembler includes facilities for processing the assembler macro language. (132 pages)

C28-2001 IBM System/360 Time Sharing System Command System User's Guide 36

The command system in Time Sharing System/360 gives to the user the facilities he needs for constructing, executing, and debugging his programs; also, he can create, modify, share, and copy data sets; he can move them to or from input/output devices. The user can modify and add to the IBM-supplied command system to meet his specific requirements. (232 pages)

C28-2002—IBM System/360 Time Sharing System Command Language for Administrators and Operators 36

This manual provides detailed information on the command language commands available to the system manager, system administrator, system operator, and subsidiary operator.

The system manager and system administrator share an identical set of commands with which they control user access to the time sharing system. The system operator has a unique set of commands with which he controls and monitors the system configuration and handles system requests. The subsidiary operator employs a subset of these commands to service requests from the system. (113 pages)

C28-2003 IBM System/360 Time Sharing System Concepts and Facilities 20

This publication explains basic concepts of IBM System/360 Time Sharing System, or Time Sharing System/360 (TSS/360), and describes the available facilities.

Time Sharing System/360 is a comprehensive programming system used in conjunction with IBM System/360 computers that have time-sharing features. TSS/360 comprises a supervisory program, a group of service programs, and a group of user programs. The supervisory program controls operation of the system and provides the time-sharing environment. The service programs perform task- and data-management functions in response to user or system requests. The user programs perform language processing, linkage editing, and other work defined by the user's problem programs.

The primary purpose of TSS/360 is to provide many users with simultaneous conversational (on-line) access to a computing system that may have a single processor, or multiple processors. The combination of machine and program features gives each user the impression that he has sole possession of the system. He uses the system as if it had a directly accessible main-storage addressing space equal to the addressing capability of the system, rather than its actual main-storage capacity.

While the system is operating conversationally, for many simultaneous users, it can also operate nonconversationally, with batch-type processing jobs, in the background. (132 pages)

C28-2004 IBM System/360 Time Sharing System Assembler User Macro Instructions 36

IBM System/360 Time Sharing System provides comprehensive program and data management services which, together with communication, bulk output, and interruption handling services, are requested through macro instructions. These macro instructions are written in the assembler language as an aid to programming and processing time-shared tasks. (228 pages)

C28-2005 IBM System/360 Time Sharing System Linkage Editor 31

This publication describes and illustrates the linkage editor, an optional service program available for the IBM System/360 Time Sharing System (TSS/360). The linkage editor connects and edits program modules that have been assembled or compiled separately to produce a single program module that can be efficiently loaded by the dynamic loader at execution time. Linkage editor facilities are illustrated in conversational and nonconversational modes of operation. (56 pages)

C28-2006 IBM System/360 Time Sharing System—Time Sharing Support System 48

This publication describes the Time Sharing Support System and the command language used to operate it. This system is used only by system programmers with authority code O or P and is not intended to be available to any other Time Sharing System/360 users; consequently, this manual contains no information required by users other than properly authorized system programmers.

The Time Sharing Support System is an on-line program error analysis facility that provides the capability of collecting data from the Time Sharing System/360 for analysis and of altering the Time Sharing System/360 storage and machine registers. These functions may be performed on command from a terminal or dynamically during TSS/360 execution; and the programs, tables, and control blocks of real, virtual, and secondary storage can be referenced. (64 pages)

C28-2007 IBM System/360 Time Sharing System IBM FORTRAN IV 25

This publication describes and illustrates the use of the IBM FORTRAN IV language for the IBM System/360 Time Sharing System (TSS/360).

The IBM FORTRAN IV language is a symbolic programming language that parallels the symbolism and format of mathematical notation. It provides many programming features and facilities that can be used to express as a meaningful FOTRTAN program the method of solution of a mathematical problem. (120 pages)

C28-2008 IBM System/360 Time Sharing System—System Programmer's Guide 50

IBM System/360 Time Sharing System (TSS/360) makes a distinction between user and system programmers. This publication is specifically intended for persons responsible for maintaining, modifying, or extending the system and discusses:

Operating environment
Program structure
Coding practices and conventions
Privileged supervisor call instructions
Serviceability aids
System macro definitions
Changing TSS/360
Privilege Class E

(188 pages)

C28-2010 IBM System/360 Time Sharing System—System Generation and Maintenance 31

This publication explains how an installation generates and maintains IBM System/360 Time Sharing System (TSS/360).

System generation is the process of specifying and creating an installation adapted TSS/360. An operable time-sharing system is necessary for system generation. Initially, a basic system is provided.

System maintenance is the procedure for incorporating changes to TSS/360.

This publication presents:

1. The construction of the basic TSS/360.
2. The method of specifying, through SYSGEN macro instructions, such installation-dependent information as machine configuration, task-management requirements, and command-language default specifications.
3. The application of this information to create a new TSS/360.
4. The maintenance process for TSS/360.
5. The method of dynamically modifying TSS/360 for the duration of a startup-to-shutdown session.

(96 pages)

C28-2017 IBM System/360 Time Sharing System Terminal User's Guide 36

This manual gives instructions for operating the IBM 2741 Communications Terminal and the IBM 1050 Data Communications System in the IBM System/360 Time Sharing System. (32 pages)

C28-2023 IBM System/360 Time Sharing System Master Index 20

This index has been compiled from the indexes of the existing SRL publications that describe the IBM System/360 Time Sharing System. It is a subject index that refers the reader to the individual publications. Actual page references will be found in the individual indexes. (92 pages)

C28-2024 IBM System/360 Time Sharing System Manager's and Administrator's Guide 36

This manual provides detailed information on the command system as used by system managers and system administrators in Time Sharing System/360. They share an identical set of commands with which they control access to the time-sharing system. (36 pages)

C28-2025 IBM System/360 Time Sharing System FORTRAN Programmer's Guide 25

This publication describes how to use the IBM System/360 Time Sharing System (TSS/360) for compiling and executing programs written in the FORTRAN IV language. It also describes how to use the services and features of TSS/360 that, while not directly related to FORTRAN programming, are frequently of use to the FORTRAN programmer. (176 pages)

C28-2026 IBM System/360 Time Sharing System FORTRAN IV—Supplied Subprograms 25

This publication describes the FORTRAN IV-supplied subprograms provided with IBM System/360 Time Sharing System (TSS/360) and provides the information necessary to use the subprograms in either a FORTRAN IV or an assembler language program. (44 pages)

C28-2032 IBM System/360 Time Sharing System Assembler Programmer's Guide 21

This publication explains the use of Time Sharing System/360 (TSS/360) for assembler language applications programmers. It describes how to assemble, store, and execute programs in TSS/360, as well as how to identify data sets, process them as input/output in problem programs, and manipulate them in various ways (such as erasing, copying, modifying, and cataloging them). (160 pages)

C28-2033 IBM System/360 Time Sharing System Operator's Guide 36

This manual provides detailed information on the functions of the system operator for the time sharing system, and on the facilities of the command language reserved for the operators. The system operator has a set of commands with which he controls and monitors the system configuration and handles system requests. (44 pages)

C28-2037 IBM System/360 Time Sharing System—System Messages 20

The IBM System/360 Time Sharing System provides for a dialogue between the user and the system. The system participates in this dialogue with a series of messages, which provides the recipient with the information he requires to fulfill his task. These messages may be received at a remote terminal in the conversational mode, in the data set created as part of the output of a nonconversational task, or at the operator's terminal in the machine room.

This publication lists and explains all of the messages issued by all IBM-supplied components of the IBM System/360 Time Sharing System. Furthermore, it contains additional information with each message, such as the identification code of the modules issuing and determining the need for the message, the transmittal technique, and where appropriate the format of the associated dump or the completion date. (496 pages)

C28-2038 IBM System/360 Time Sharing System Independent Utilities 32

This publication discusses the use of the independent utility programs that support IBM System/360 Time Sharing System (TSS/360), their features, functions, capabilities, control statements, and record formats. The TSS/360 independent utility programs are: direct-access storage device initialization (DASDI), direct-access storage device dump/restore (DASDDR), direct-access print (DADUMP), and core dump. (32 pages)

C28-2043 IBM System/360 Time Sharing System Addendum 20

This addendum presents the external and internal specifications for program changes that have been made recently to the IBM System/360 Time Sharing System (TSS/360).

The features described herein are different from those covered in the previous *Addendum*, Form C28-2043-2, which has been obsoleted by a recent update of the TSS/360 publications series.

This addendum should be regarded as a required supplement to the present TSS/360 publications until those documents are again updated to reflect these improvements. (12 pages)

C28-6380 IBM System/360 Operating System COBOL (F) Programmer's Guide 24

Program Numbers:
360S-CB-524
360S-LM-525

This publication describes how to compile, linkage edit, and execute a COBOL (F) program. The text also describes the output from each of these steps. In addition, it explains options of the compiler and many available features of the operating system. (150 pages)

C28-6394 IBM System/360 Disk Operating System USA Standard COBOL 24

COBOL (Common Business Oriented Language) is a programming language, similar to English, that is used for commercial data processing. It was developed by the Conference On Data SYstems Languages (CODASYL). The U. S. A. standard of the language is USA Standard COBOL, X3.23-1968, as specified by the United States of America Standards Institute.

IBM System/360 Disk Operating System USASI COBOL incorporates the eight processing modules defined in the USA standard. These modules include: Nucleus, Table Handling, Sequential Access, Random Access, Sort, Report Writer, Segmentation, and Library. A significant number of IBM extensions are implemented as well. The IBM implementation of USA Standard COBOL also complies with the first Draft ISO Recommendation on COBOL.

This publication gives the programmer the rules for writing programs that are to be compiled by the IBM USASI COBOL compiler under the Disk Operating System. It is meant to be used as a reference manual in the writing of IBM USASI COBOL programs. (360 pages)

C28-6395 IBM System/360 COBOL Differences USA Standard COBOL Conversion 24

This publication summarizes the differences between the current IBM System/360 COBOL languages—COBOL D, COBOL E, and COBOL F—and the IBM COBOL languages conforming to the full USA Standard COBOL—IBM System/360 Operating System USASI COBOL and IBM System/360 Disk Operating System USASI COBOL. It also summarizes new features offered in the IBM USASI COBOL languages.

This Differences Manual is meant to be a supplementary reference manual. Therefore, it is advisable that it be used only in conjunction with the IBM USASI COBOL Language Manuals. (52 pages)

C28-6396 IBM System/360 Operating System USA Standard COBOL 24

COBOL (*CO*mmon *B*usiness *O*riented *L*anguage) is a programming language, similar to English, that is used for commercial data processing. It was developed by the Conference *on Da*ta *S*ystems *L*anguages (CODASYL). The U. S. A. standard of the language is USA Standard COBOL X3.23-1968, as specified by the United States of America Standards Institute.

IBM System/360 Operating System USASI COBOL incorporates the eight processing modules defined in the USA standard. These modules include: Nucleus, Table Handling, Sequential Access, Random Access, Sort, Report Writer, Segmentation, and Library. A significant number of IBM extensions are implemented as well. The IBM implementation of USA Standard COBOL also complies with the first Draft ISO Recommendation on COBOL.

This publication gives the programmer the rules for writing programs that are to be compiled by the IBM USASI COBOL compiler under the Operating System. It is meant to be used as a reference manual in the writing of IBM USASI COBOL programs. (364 pages)

C28-6501 IBM 7090/7094 Support Package for IBM System/360 35

The IBM 7090/7094 Support Package for the IBM System/360 consists of three programs. These programs are designed to permit the assembly, testing, and execution on an IBM 709, 7090, 7094, or 7094 II Data Processing System, of programs written for an IBM System/360. The three component programs are a 7090 assembly program, a 7090 simulator program, and a 1401 input program.

The support package can process all System/360 assembler language and machine language programs that are not specifically dependent on input/output timing considerations. It accepts the machine instruction and assembler instruction mnemonic codes of the IBM System/360 special support basic assembler language and simulates the standard, scientific, commercial, universal, storage protection, and direct control instruction sets of System/360. It simulates most input/output operations and most interruption procedures of System/360. Simulation of up to 64K bytes of System/360 main storage is allowed. With certain limitations, the support package simulates the operations of the 1052 Printer-Keyboard, 1402 Card Read Punch, 1403 Printer, 1442 Card Read Punch, 1443 Printer, and the 2401, 2402, 2403, and 2404 Magnetic Tape Units. In addition, it provides extensive facilities for use in detecting and tracing errors in object programs.

Assembly and simulator programs operate under a supervisor program called in by the 7090/7094 Operating System Monitor, IBSYS.

It is assumed that the user of this publication is familiar with the basic assembler language and with the *IBM System/360 Principles of Operation*, Form A22-6821. (73 pages)

C28-6503 IBM System/360 Basic Programming Support—Basic Assembler (Card) Specifications 20

Program Number: 360P-AS-021

This publication contains information required for writing programs in the Basic Assembler language, a symbolic programming language for the IBM System/360. The Basic Assembler language permits the use of symbolic operation codes and addresses instead of machine-language codes and addresses, and provides other conveniences for the programmer in using the full capabilities of the IBM System/360. Basic Assembler language source programs are translated into object programs by the Basic Assembler.

This publication provides a description of the Basic Assembler language, a list of symbolic instructions with their machine-language equivalents, and explanations of the instructions available to the programmer for controlling the Basic Assembler. A description of the Basic Assembler is included, emphasizing those features concerned with the planning and writing of source programs. (65 pages)

C28-6514 IBM System/360 Operating System Assembler Language 21

This publication contains specifications for the IBM System/360 Operating System Assembler Language (Levels E and F).

The assembler language is a symbolic programming language used to write programs for the IBM System/360. The language provides a convenient means for representing the machine instructions and related data necessary to program the IBM System/360. The IBM System/360 Operating System Assembler Program processes the language and provides auxiliary functions useful in the preparation and documentation of a program, and includes facilities for processing the assembler macro language.

Part I of this publication describes the assembler language.

Part II of this publication describes an extension of the assembler language—the macro language—used to define macro-instructions. (148 pages)

C28-6515 IBM System/360 FORTRAN IV Language 25

This publication describes and illustrates the use of the FORTRAN IV language for the IBM System/360 Operating System and the IBM System/360 Model 44 Programming System. (121 pages)

C28-6516 IBM System/360 Operating System COBOL Language 24

Program Numbers:
(COBOL E) 360S-CO-503
(COBOL F) 360S-CB-524

COBOL (Common Business Oriented Language) is a programming language, similar to English, that is used for commercial data processing. It was developed by the Conference of Data Systems Languages (CODASYL).

This publication provides the programmer with rules for writing programs that are to be compiled by the COBOL E and COBOL F compilers under System/360 Operating System. Any violation of the rules for System/360 Operating System COBOL as defined in this publication is considered an error. The features implemented by the COBOL F compiler and not by COBOL E, and the IBM extensions to COBOL, are listed in an appendix.

Programmers unacquainted with COBOL should read the programmed instruction textbook *COBOL Program Fundamentals*, Form R29-0205, with its reference handbook, Form R29-0206. (152 pages)

C28-6528 IBM System/360 Conversion Aids: The 1410/7010 Simulator for IBM System/360 35

Program Number: 360C-SI-754

This document provides information on the IBM System/360 Simulator for the IBM 1410/7010, and is directed to the user who is replacing his IBM 1410/7010 Data Processing System with an IBM System/360 Model 40, 50, 65, or 75. Simulation is a technique that uses System/360 instruction sequences to perform the functions of 1410/7010 instructions, thus permitting the user to execute object programs written for the 1410/7010. (58 pages)

C28-6529 IBM System/360 Simulator for the IBM 1620 Model 1 and 2 Preliminary Specifications 35

This publication contains information needed in planning for use of the Simulator during the conversion of a 1620 installation to a System/360 installation.

In effect, the Simulator will enable the System/360 to perform as a 1620. This will permit the running of 1620 programs that are not rewritten for the System/360.

The reader should be familiar with the contents of the following publications: *IBM System/360 System Summary*, Form A22-6810; *IBM System/360 Principles of Operation*, Form A22-6821; *IBM 1620 Central Processing Unit Model 1*, Form A26-5706 or *IBM 1620 Central Processing Unit Model 2*, Form A26-5781. (16 pages)

C28-6530 IBM System/360 Conversion Aids: The 7070/7074 Simulator for IBM System/360 35

Program Number: 360C-SI-753

This document provides information on the IBM System/360 Simulator for the IBM 7070/7074, and is directed to the user who is replacing his IBM 7070/7074 Data Processing System with an IBM System/360 Model 40, 50, 65, or 75. Simulation is a technique which uses System/360 instruction sequences to perform the functions of 7070/7074 instructions, thus permitting the user to execute object programs written for the 7070/7074. (68 pages)

C28-6531 IBM System/360 Conversion Aids: The 7080 Simulator for IBM System/360 35

Program Number: 360C-SI-751

This document provides information on the IBM System/360 Simulator for the IBM 7080, and is directed to the user who is replacing his IBM 7080 Data Processing System with any model IBM System/360 with at least 131,072 bytes of main storage. Simulation is a technique that uses System/360 instruction sequences to perform the functions of 7080 instructions, thus permitting the user to execute object programs written for the 7080. (64 pages)

C28-6532 IBM System/360 Conversion Aids: The 7090/7094 Simulator for IBM System/360 35

Program Number: 360C-SI-750

This document provides information on the IBM System/360 Simulator for the IBM 709/7090/7094 I/7094 II and is directed to the user who is replacing his IBM 709/7090/7094 I/7094 II Data Processing System with an IBM System/360 Model 40, 50, 65, or 75. Simulation is a technique which uses System/360 instruction sequences to perform the functions of 709/7090/7094 I/7094 II instructions, thus permitting the user to execute object programs written for the 709/7090/7094 I/7094 II. (64 pages)

C28-6534 IBM System/360 Operating System Introduction 20

This publication describes the general organization, function, and application of IBM System/360 Operating System.

The operating system is designed to extend the performance and application of Computing System/360 and to assist the manager, programmer, and operator of the system. The operating system consists of a comprehensive set of language translators and service programs operating under the supervisory control and coordination of an integrated set of control routines. It is designed for use with Models 30, 40, 50, 65, and 75 of Computing System/360. The operating system is located in direct-access storage, such as disk or drum, and operates on computing systems that have 32,768 bytes or more of main storage. (24 pages)

C28-6535 IBM System/360 Operating System Concepts and Facilities 20

This publication describes the basic concepts of the IBM System/360 Operating System (the operating system) and guides the programmer in the use of its facilities.

The operating system is a comprehensive set of language translators and service programs operating under the supervision and coordination of an integrated control program. It assists the programmer by extending the performance and application of the computing system. (64 pages)

C28-6538 IBM System/360 Operating System Linkage Editor 31

This publication provides programmers and systems analysts with the information necessary to make effective use of the linkage editor of IBM System/360 Operating System. Included are descriptions of the functions performed automatically by the linkage editor as well as those performed in response to control statements prepared by the programmer.

The linkage editor combines and edits modules to produce a single module that can be loaded by the control program. The linkage editor operates as a processing program rather than as a part of the control program. (84 pages)

C28-6539 IBM System/360 Operating System Job Control Language 36

This publication describes the facilities of the Job Control Language, and illustrates how to use these facilities in various applications. Information coded by programmers on job control statements is used by the System/360 Operating System to initiate and control the processing of jobs.

Information in this publication is applicable to systems with PCP, MFT, and MVT. (90 pages)

C28-6540—IBM System/360 Operating System Operator's Guide 20

This publication tells how to run the IBM System/360 Operating System. After summarizing how the system works, it describes the three major system types: systems with the primary control program (PCP); systems that provide multiprogramming with a fixed number of tasks (MFT or Option 2); and systems that provide multiprogramming with a variable number of tasks (MVT or Option 4). Instructions are given telling:

1. How to start, stop, and restart the system.
2. How to control input and output.
3. How to control jobs through commands and statements.
4. How to understand messages.

General operating techniques are discussed, as well as the meanings of many technical terms. (84 pages)

C28-6543 IBM System/360 Operating System Sort/Merge 33

Program Number: 360S-SM-023

This publication contains specifications for the IBM System/360 Operating System Sort/Merge program, including control statement preparation, program operation, I/O device assignment, and timing estimates. The program has generalized sorting and merging capabilities that can be tailored to the needs of particular installations and applications. (80 pages)

C28-6550 IBM System/360 Operating System System Programmer's Guide 20

This publication consists of self-contained chapters, each of which provides information on how to modify, extend, or implement capabilities of the IBM System/360 Operating System control program. It is designed primarily for system programmers responsible for maintaining, updating, and extending the operating system features.

Topics:

- Catalog and VTOC Maintenance
- Adding SVC Routines
- Adding Accounting Routines
- IECDSECT, IEFJFCBN, and IEFUCBOB Macro-Instructions
- The Must Complete Function of ENQ/DEQ
- The EXCP Macro-Instruction
- The XDAP Macro-Instruction
- The Tracing Routine
- Implementing Data Set Protection
- PRESRES Volume Characteristic List
- Residency Options and Link Pack Area
- MVT Job Queue Formatting
- System Macro-Instructions
- Adding System Output Writer Routines
- Output Separators
- System Reader, Initiator, and Writer Cataloged Procedures
- Writing Rollout/Rollin Installation Appendages
- Adding a Universal Character Set Image to the System Library
- The Shared Direct Access Device Option
- The Time Slicing Facility
- Graphic Job Processor Procedures

(216 pages)

C28-6551 IBM System/360 Operating System Storage Estimates 20

This publication contains instructions, formulas, and tables to be used in estimating the main and auxiliary storage requirements of any configuration of the IBM System/360 Operating System. This publication is intended for three types of users: sales personnel, who will use the introduction to evaluate the feasibility of using the configurations; systems programmers, who will use the publication to plan the storage requirements of a new system and to determine the amount of storage available to the problem programmer; the problem programmer, who will use the dynamic storage section to estimate the requirements of his jobs. (128 pages)

C28-6554 IBM System/360 Operating System System Generation 31

System generation is a process that generates an IBM System/360 Operating System adapted to both the machine configuration and the data processing requirements of an installation. The system generation process is performed under the control of an existing IBM System/360 Operating System. This publication provides information on the machine and operating system requirements for system generation, the initialization of system volumes and data sets, the macro-instructions used in specifying system generation, the methods of including user-written programs in the operating system, restart procedures, and the sample programs used to test the new system.

IBM provides a starter operating system that can be used for the first system generation. The procedures required to initialize the starter system are also described in this publication. (216 pages)

C28-6559 IBM System/360 Transition Aids: COBOL Language Conversion Program (1401-CB-701) for the IBM 1401 24

This publication contains preliminary information about the IBM COBOL Language Conversion Program (COBOL LCP). The COBOL LCP facilitates transition to IBM System/360 by converting COBOL source programs written for IBM current-system COBOL compilers into source programs for a System/360 COBOL compiler, Design Level E or Design Level F. This publication is intended to assist users of current COBOL in planning for use of the COBOL Language Conversion Program. (42 pages)

C28-6560 IBM System/360 Conversion Aids: FORTRAN II Language Conversion Program for the IBM 1401 25

Program Number: 1401-FO-702

This publication contains information about the IBM FORTRAN II Language Conversion Program (FORTRAN LCP). The FORTRAN LCP facilitates transition to IBM System/360 by detecting statements in FORTRAN II source programs that are incompatible with System/360 FORTRAN IV, by converting these statements to the proper System/360 format when possible, and by providing message codes for statements that cannot be converted. This publication is intended to assist users of current FORTRAN in the use of the FORTRAN Language Conversion Program. (71 pages)

C28-6561 IBM System/360 Conversion Aids: The 1401/1460 Emulator Program for IBM System/360 Model 40 35

Program Number: 360C-EU-074

This publication contains the information required to use the IBM 1401/1460 Emulator for IBM System/360 Model 40. The Emulator comprises the IBM 1401/1460 Emulator Program (360C-EU-074) and IBM 1401/1460 Compatibility Feature #4457. General information concerning machine requirements, data formats, and control cards is included, as are detailed explanations of operating procedures, user modification of the Emulator Program, and special instructions added by the Compatibility Feature.

The Emulator allows programs written for IBM 1401/1460 card/tape/disk systems to be executed on System/360 Model 40, with little or no reprogramming. Emulation provides substantial improvement over the speeds possible with simulation. (44 pages)

C28-6563 IBM System/360 Conversion Aids: The 1410/7010 Emulator Program for IBM System/360 Model 40 35

Program Number: 360C-EU-728

This publication provides information for the user who is planning to supplement or replace his IBM 1410 or 7010 card/tape/disk system with an IBM System/360 Model 40. Emulation is a technique which utilizes both equipment capabilities (Compatibility Feature #4478) and programming (Emulator Program 360C-EU-728) to execute object programs of other data processing systems. The 1410/7010 Emulator allows the user to run 1410/7010 programs on the System/360 Model 40 with little or no reprogramming. This technique provides substantial improvement over the speeds achievable with simulators.

Included in this document are the characteristics, functions, requirements, limitations, and operating procedures of the Emulator. (50 pages)

C28-6565 IBM System/360 Conversion Aids: The 709/7090/7094/7094 II Emulator Program for IBM System/360 Model 65 35

Program Number: 360C-EU-729

This publication describes the characteristics and use of the IBM 7090 Emulator Program, a component of the IBM 7090 Emulator. The Emulator consists of this program, and special machine additions and modifications called the IBM 7090 Compatibility Feature (#7119). The combination of program and machine feature enables the user to execute, on his System/360 Model 65, programs written for the IBM 709, 7090, 7094, and 7094 II Data Processing Systems. (68 pages)

C28-6568 IBM System/360 Conversion Aids: The 1410/7010 Emulator Program for IBM System/360 Model 50 35

Program Number: 360C-EU-726

This publication provides information for the user who is planning to supplement or replace his IBM 1410 or 7010 card/tape/disk system with an IBM System/360 Model 50. Emulation is a technique that utilizes both machine adaptations and programming to execute object programs written for other data processing systems. The 1410/7010 Emulator (Compatibility Feature #4478 and Emulator Program No. 360C-EU-726) allows the user to run 1410/7010 programs on the System/360 Model 50, with little or no reprogramming. This technique provides substantial improvement over the speeds that can be achieved with simulators.

Included in this document are the characteristics, functions, requirements, limitations, and operating procedures of the Emulator. (42 pages)

C28-6570 IBM System/360 Transition Aids COBOL Language Differences 24

This publication summarizes the System/360 and Current Systems specifications for major IBM COBOL language elements requiring evaluation, and possible conversion, during the transition to IBM System/360 COBOL. System/360 COBOL differences from Current Systems COBOL are also summarized. Where pertinent, the distinction is made between Level E and Level F COBOL for System/360. (79 pages)

C28-6583 IBM System/360 Basic Programming Support—FORTRAN IV, 360P-FO-031 Programmer's Guide 25

This publication describes the procedures for compiling and executing programs written in the Basic Programming Support FORTRAN IV language. It also includes the procedures for editing and updating the Basic Programming Support FORTRAN IV system and for preparing a Basic Programming Support FORTRAN IV job for a machine run. (86 pages)

C28-6585 IBM System/360 Model 65 Emulation of the IBM 7040/7044 Data Processing Systems 35

This publication provides preliminary information about the characteristics, functions, requirements, limitations, and operating procedures of the IBM 7040/7044 Emulator. This Emulator allows the user who plans to supplement or replace his present data processing system with the IBM System/360 Model 65 to execute his current programs on the IBM System/360 without reprogramming. (28 pages)

C28-6586 IBM System/360 Operating System Utilities 32

Program Numbers:
360S-UT-506
360S-UT-507

This publication discusses the capabilitities of the IBM System/360 Operating System utility programs and the control statements used with each program. These programs are used by programmers responsible for organizing and maintaining operating system data.

Three types of utility programs are discussed: *system utilities* and *data set utilities*, which are used directly with the System/360 Operating System; and *independent utilities*, which operate outside the operating system. System utilities deal with operating system control data. Data set utilities manipulate data sets at the record level and above. Independent utilities initialize, dump, and restore direct-access volumes. (352 pages)

C28-6590 IBM System/360 Operating System PL/I Subroutine Library Computational Subroutines 29

Program Number: 360S-LM-512

This publication gives details of the computational subroutines available in the PL/I Library. These subroutines are used by the PL/I (F) compiler in the implementation of PL/I built-in functions and of the operators used in the evaluation of PL/I expressions. Not all PL/I built-in functions and expression operators are supported by the PL/I Library; the compiler generates in-line code for a small number of them. The details provided include timing figures, summaries of the mathematical methods used, and (where appropriate) figures for range and accuracy. This information is intended to be of interest chiefly to those programmers concerned with the performance of computational subprograms. (84 pages)

C28-6594 IBM System/360 Operating System PL/I (F) Programmer's Guide 29

Program Number: 360S-NL-511

The PL/I (F) Compiler translates PL/I source programs into object programs in System/360 machine language. This publication describes the facilities provided by the compiler, and the conventions and restrictions which the user must observe. It explains how to compile, linkage edit, and execute PL/I source programs in the environment of System/360 Operating System. Features of PL/I which are not supported by the (F) Compiler are detailed in Appendix H of this publication. (212 pages)

C28-6595 IBM System/360 Operating System Assembler (E) Programmer's Guide 21

This publication complements the IBM System/360 Operating System Assembler Language publication. It provides a guide to program assembling, linkage editing, executing, interpreting listings, and assembler programming considerations. (43 pages)

C28-6596 IBM System/360 FORTRAN IV Library Subprograms 25

Program Numbers:
360S-LM-501
360F-LM-619

This publication describes the library subprograms supplied with Basic FORTRAN IV (E) and FORTRAN IV (G, H, and MODEL 44) and tells how to use the subprograms in either a FORTRAN or an assembler language program. (62 pages)

C28-6602 IBM System/360 Operating System FORTRAN IV (H) Programmer's Guide 25

Program Number: 360S-FO-500

This publication describes how to compile, link edit, and execute a program written in IBM System/360 FORTRAN IV Language. (114 pages)

C28-6603 IBM System/360 Operating System FORTRAN IV (E) Programmer's Guide 25

Program Number: 360S-FO-092

This publication describes how to compile, link edit, and execute a FORTRAN IV (E) program. The text also describes the output of compilation and execution and how to make optimal use of the compiler and a load module. (118 pages)

C28-6615 IBM System/360 Operating System ALGOL Language 26

This publication provides the programmer with the information needed to use the IBM System/360 Operating System ALGOL compiler for the solution of scientific and technical problems. ALGOL has been introduced in a number of universities and technical institutes for communication and education purposes. To assist that particular area, the OS/360 ALGOL Compiler is intended to provide a bridge to System/360 for existing ALGOL users. A basic knowledge of the ALGOL language is assumed.

This publication consists of two main parts. The first (section 1 to 5) describes the elements of the ALGOL language, the second (section 6) describes the input/output procedures to be called when using ALGOL. (109 pages)

C28-6628 IBM System/360 Operating System System Control Blocks 36

This publication shows the formats of the major control blocks and tables used by more than one component of the System/360 Operating System control program. Descriptions of each field within the control blocks or tables follow each format illustration.

The system control blocks described in this publication will be changed by IBM from time to time to extend the capabilities of the operating system. Programs should refer to these control blocks only through the system macro instruction facilities provided in the operating system. (For example, a field of the Data Control Block should only be referred to by use of the DCBD macro instruction.) Programs that refer to the control blocks by other means do so at the risk of not executing correctly in the future. (276 pages)

C28-6629 IBM System/360 Basic FORTRAN IV Language 25

This publication describes and illustrates the use of the Basic FORTRAN IV language for the IBM System/360 Operating System, the IBM System/360 Disk Operating System, the IBM System/360 Tape Operating System, and the IBM System/360 Basic Programming Support Tape System. (93 pages)

C28-6631 IBM System/360 Operating System Messages and Codes 20

This publication lists and explains the messages, completion codes, and wait state codes produced by all IBM-supplied components of the IBM System/360 Operating System. The introduction shows the formats of the messages and codes, and gives certain information not given in the individual message and code descriptions. The messages and codes are presented in alphameric order. (408 pages)

C28-6632 IBM System/360 Operating System Job Control Language Charts 36

This publication presents the Job Control Language in a graphic form. Detailed flowcharts describe how to code job control statements for a sequential scheduling system. (67 pages)

C28-6639 IBM System/360 Operating System FORTRAN IV (G) Programmer's Guide 25

Program Number: 360S-FO-520

This publication describes how to compile, link edit, and execute a program written in IBM System/360 FORTRAN IV Language. (94 pages)

C28-6644 IBM System/360 Operating System Master Index 20

This publication consolidates the indexes of publications in the IBM Systems Reference Library for the System/360 Operating System. It also provides a reading plan for these publications.

The master index lists topics alphabetically, and refers to publications where these topics are discussed. The indexes of these publications list the same topics and refer to specific pages. (240 pages)

C28-6646—IBM System/360 Operating System Supervisor and Data Management Services 36

This publication describes the services and facilities available in the IBM System/360 Operating System when using supervisor and data management macro instructions. It also describes the linkage conventions established for use in the operating system. Macro instructions used for Graphics or Teleprocessing are included in separate publications. Publications relating to Graphics or Teleprocessing are indexed in *IBM System/360 Bibliography,* Form A22-6822.

This publication covers the three main configurations of the operating system: systems with the primary control program; systems that provide multiprogramming with a fixed number of tasks (MFT or Option 2); systems that provide multiprogramming with a variable number of tasks (MVT or Option 4). (160 pages)

C28-6647 IBM System/360 Operating System Supervisor and Data Management Macro Instructions 36

This publication defines and describes the supervisor and data management macro instructions available in the IBM System/360 Operating System. The macro instruction descriptions and definitions apply to the three main configurations of the operating system: systems with the primary control program; systems that provide multiprogramming with a fixed number of tasks (MFT or Option 2); and systems that provide multiprogramming with a variable number of tasks (MVT or Option 4).

Descriptions and definitions applying to Graphics or Teleprocessing are included in separate publications. Publications relating to Graphics or Teleprocessing are indexed in *IBM System/360 Bibliography,* Form A22-6822. (270 pages)

C28-6648 IBM System/360 Operating System TESTRAN 37

TESTRAN is a facility for testing programs written in the assembler language for execution under the System/360 Operating System. It is intended for use by the individual programmer in testing his own programs.

This publication explains how to use TESTRAN for typical testing purposes, how to write essential job control statements, and how to interpret printed test results. It formally describes TESTRAN statements, cataloged procedures supplied by IBM, and TESTRAN diagnostic messages.

The information in this publication applies to systems that include the primary control program (PCP) and to systems that provide multiprogramming with a fixed number of tasks (MFT or Option 2) or multiprogramming with a variable number of tasks (MVT or Option 4). (96 pages)

C28-6650 IBM System/360 Operating System On-Line Test Executive Program 37

Program Number: 360S-DN-533

This publication describes the On-Line Test Executive Program which controls on-line testing of I/O units under control of the System/360 Operating System. It explains the program's functions and gives procedures for running the tests. (24 pages)

C28-6656 IBM System/360 Operating System Checkpoint/Restart 31

This publication describes the checkpoint/restart facility of the IBM System/360 Operating System, and contains the information necessary for programmers and operators to use the facility.

The checkpoint/restart facility saves job step information at specific checkpoints in a program so that, in the event of error, it can restart the job step from one of the checkpoints. (17 pages)

C28-6662 IBM System/360 Operating System Sort/Merge Timing Estimates 33

Program Number: 360S-SM-023

This publication contains total execution times of the Operating System Sort/Merge program for over 30,000 sorting applications. These times are for sorting applications executed on the System/360 Models 30, 40, 50, 65, and 75 with various amounts of main storage assigned to the program. Typical input data set sizes and I/O configurations are shown. (56 pages)

C28-6666 IBM System/360 Operating System Guide to Model 91 Support 32

This publication is a guide to considerations that must be understood when programming on the IBM System/360 Model 91. The information in this publication applies to the MVT version of the IBM System/360 Operating System. (44 pages)

C28-6668 IBM System/360 Operating System Sort/Merge Timing Estimates for the IBM 2420 Model 7 Magnetic Tape Unit Planning Guide 33

This publication is intended for those who require estimated execution times of the Operating System Sort/Merge program using the IBM 2420 Model 7 Magnetic Tape Unit for input, output, and intermediate storage. Times are shown for over 2,500 sorting applications on the System/360 Models 50, 65, and 75. The assumptions under which these estimates were calculated are described. (16 pages)

C28-6670 IBM System/360 Operating System Programmer's Guide to Debugging 20

This publication describes the major debugging facilities provided with the IBM System/360 Operating System:

1. Abnormal Termination and Snapshot Dumps
2. Indicative Dumps
3. Stand-Alone Hexadecimal Dumps

It explains the aspects of system control pertinent to debugging, tells what each debugging facility offers, and outlines procedures for invoking and interpreting dumps issued at the three control program levels—PCP, MFT, and MVT. (80 pages)

C28-6671 IBM System/360 Operating System Model 65 Shared Main Storage Multiprocessing Preliminary Description 20

This document is a preliminary description of IBM System/360 Operating System Model 65 Shared Main Storage Multiprocessing. Among the features of M65 multiprocessing are:

1. Extended CPU power.
2. Extended emulation capabilities.
3. Pooling capabilities.
4. Availability and flexibility.

(20 pages)

C28-6680 IBM System/360 Operating System Tape Labels 30

This publication describes how the IBM System/360 Operating System processes magnetic tape volumes with standard labels, nonstandard labels, or no labels. Included for the guidance of programmers and operations analysts are discussions of:

1. Label formats and contents.
2. Tape volume layouts.
3. Label-processing for input, output, multi-data set, and multi-volume conditions.
4. Tape characteristics.
5. Nonstandard label processing routines and volume label editor routines.
6. Component considerations.
7. Using tape volumes created by other systems.
8. External labels.

(100 pages)

C28-6808 A Programming Language/One Primer 95

The purpose of this publication is to provide tutorial material not only for the person with some knowledge of computer programming, but also for the novice who knows little or nothing about data processing.

The first chapter is written solely for the novice. A reader who is familiar with basic programming techniques should skip the first chapter, and begin reading at Chapter 2, "Basic Elements of PL/I."

Chapter 1, "Communicating with a Computer," touches on machine language and introduces the concept of symbolic programming. The basic techniques of programming are illustrated by using symbolic instructions, rather than PL/I, because certain PL/I statements can generate so much single-instruction coding that the details of some of the techniques are hidden.

Further information concerning PL/I can be found in the following publications: *IBM Operating System/360 PL/I Language Specifications,* Form C28-6571; *A Guide to PL/I for FORTRAN Users,* Form C20-1637. (76 pages)

C28-6810 IBM System/360 Model 44 Programming System Concepts and Facilities 20

This publication describes the facilities provided by the IBM System/360 Model 44 Programming System.

The Model 44 Programming System consists of a FORTRAN compiler, an assembler, a supervisor, and system support programs. It provides FORTRAN and assembler language processing and program execution in a monitored environment, with automatic job-to-job transition, interruption handling, and input/output supervision. The system has facilities for the creation and maintenance of libraries and the manipulation of their contents. It also provides extensive job control and program segmentation capabilities for flexibility and versatility in the preparation of programs for execution. (47 pages)

C28-6811 IBM System/360 Model 44 Programming System Assembler Language 21

This publication contains specifications for the IBM System/360 Model 44 Programming System Assembler Language.

This assembler language is used to write programs for the Model 44. The IBM System/360 Model 44 Programming System Assembler Program processes the language and provides auxiliary functions useful in the preparation and documentation of a program. (73 pages)

C28-6812 IBM System/360 Model 44 Programming System Guide to System Use 36

This publication contains detailed information for preparing programs to be executed under the IBM System/360 Model 44 Programming System. It discusses and illustrates the system's requirements, its capabilities, and the control statements and supervisor calls that are used with it.

A prerequisite publication is the *IBM System/360 Model 44 Programming System: Concepts and Facilities,* Form C28-6810.

(37 pages)

C28-6813—IBM System/360 Model 44 Programming System Guide to System Use for FORTRAN Programmers 25

This publication describes how to use the Model 44 Programming System to compile and execute programs written in the IBM System/360 FORTRAN IV language. A discussion of program optimization and of the restrictions of the Model 44 FORTRAN IV compiler is also included.

This publication is directed primarily at programmers who are familiar with the FORTRAN IV language. Previous knowledge of the Model 44 Programming System is not required. (111 pages)

C28-6814 IBM System/360 Model 44 Programming System—Systems Programmer's Guide 36

This publication describes how to construct an IBM System/360 Model 44 Programming System, and how to modify and extend its capabilities.

Among the subjects discussed in this publication are:

1. How to construct and edit a Model 44 Programming System.
2. How to write an accounting routine and incorporate it into the system.
3. How to define the input/output configuration at IPL time.
4. How to write routines at the Execute Channel Program (EXCP) level of the input/output facilities.
5. How to expand the user communication region.
6. How to update the module and phase libraries.
7. How to print, punch, and update the distributed tape reel. (86 pages)

C28-6815 IBM System/360 Model 44 Programming System Operator's Guide 36

This publication provides operators with detailed information required for operating the IBM System/360 Model 44 Programming System and the various stand-alone programs associated with it.

Operating instructions are provided for IPL procedures, general operations, abnormal end procedures, operator-to-system communications, and stand-alone operations. (40 pages)

C28-6816 IBM System/360 Conversion Aids: 1620 Simulator for IBM System/360 Model 44 35

Program Number: 360C-SI-755

This reference publication provides information on the 1620 simulator for the IBM System/360 Model 44, and is directed to the user who is replacing his IBM 1620 Model 1 or Model 2 Data Processing System with an IBM System/360 Model 44. This manual describes the installation requirements, and programming and operating considerations for the 1620 simulator.

Simulation is a technique that uses System/360 instruction sequence to perform the functions of 1620 instructions, thus permitting the user to execute object programs written for the 1620. (56 pages)

C28-8201 IBM System/360 PL/I Reference Manual 29

This publication provides the rules for writing PL/I programs that are to be compiled using the PL/I F-level compiler under the IBM System/360 Operating System. It is not a reference to the entire language, but only to those features implemented by the third version of the F-level compiler. (312 pages)

C28-8202 IBM System/360 PL/I Subset Reference Manual 29

This publication provides the rules for writing PL/I Subset programs that are to be compiled using the PL/I D-level compiler under the IBM System/360 Disk and Tape Operating Systems. It is not a reference to the entire PL/I Subset language, but only to those features implemented by the second version of the D-level compiler. (232 pages)

C30-2003 IBM System/360 Operating System Queued Telecommunications Access Method—Message Processing Program Services 30

This publication provides information on how to use the Queued Telecommunications Access Method (QTAM) within Option 2 (Multiprogramming with a Fixed Number of Tasks) of the System/360 Operating System, to support a telecommunications application. Services provided by QTAM in support of a message processing program are described in detail, including the facilities provided to establish the interface to a QTAM message control program.

For detailed information on the QTAM facilities provided for the construction of a message control program, refer to the publication, *IBM System/360 Operating System, QTAM Message Control Program,* Form C30-2002. (22 pages)

C30-2004 IBM System/360 Operating System Basic Telecommunications Access Method 30

This publication describes the Basic Telecommunications Access Method (BTAM) available with the System/360 Operating System. BTAM provides read/write level macro instructions for the assembler-language programmer who is implementing programs for telecommunications applications such as data acquisition, message switching, and inquiry processing, employing start-stop and binary synchronous communications.

Included are macro instruction formats and descriptions and specific information on terminal-dependent considerations. Descriptions for binary synchronous communications are included for planning purposes only. A complete sample program illustrates problem program design for a simple message switching application.

For titles and abstracts of associated publications see the *IBM System/360 Bibliography,* Form A22-6822. (168 pages)

C30-2005 IBM System/360 Operating System Queued Telecommunications Access Method Message Control Program 30

This publication contains specifications on the use of the Queued Telecommunications Access Method (QTAM) and the IBM System/360 Operating System to support telecommunications applications. Information in this publication will facilitate the construction of a QTAM message control program by the problem programmer. Complete descriptions of QTAM macro instructions are included.

For detailed information on the services provided by QTAM to support a message processing program, refer to *IBM System/360 Operating System: QTAM Message Processing Program Services,* Form C30-2003, (176 pages)

C30-2006 IBM System/360 Operating System Remote Job Entry 36

Remote Job Entry (RJE) allows users at remote locations to submit jobs over communication lines to an IBM System/360 using the Operating System that provides multiprogramming with a variable number of tasks (MVT). RJE includes a unique Job Entry Control Language which provides the additional flexibility and control required for remote entry.

This publication provides preliminary information required by the programmer and the operator concerning general RJE concepts and facilities, and a complete discussion of RJE capabilities and uses. Job Entry Control Language is introduced and explained. Sections describing RJE system generation at the central installation and at a remote computer are included for the system programmer. In addition, RJE operating procedures for both the central and remote operation are included. The telecommunications support used by RJE is discussed, in general terms, only when necessary to give a complete picture of the system. (78 pages)

C30-2007 IBM System/360 Introduction to Teleprocessing 30

This publication provides computer applications analysts and programmers with an introduction to Teleprocessing. Following a historical survey and some brief application descriptions is a review of equipment characteristics and programming techniques. Introductory material on two levels of IBM System/360 Teleprocessing programming support is then presented. A bibliography and a technical glossary conclude the publication. (40 pages)

C30-2008 IBM System/360 Operating System Planning for Remote Job Entry (MFT Version II) 36

Remote Job Entry (RJE) allows users at remote locations to submit jobs over communication lines to an IBM System/360 using the Operating System that provides multiprogramming. RJE includes a unique Job Entry Control Language which provides the additional flexibility and control required for remote entry.

This publication provides preliminary information required by the programmer and the operator concerning general RJE concepts and facilities, and a complete discussion of RJE capabilities and uses. Job Entry Control Language is introduced and explained. Sections describing RJE system generation at the central installation and at a remote computer are included for the system programmer. In addition, RJE operating procedures for both the central and remote operation are included. The telecommunications support used by RJE is discussed, in general terms, only when necessary to give a complete picture of the system. (58 pages)

C30-5001 IBM System/360 Disk Operating System Basic Telecommunications Access Method 30

Program Number: 360N-CQ-469

This publication describes the Basic Telecommunications Access Method (BTAM) used with the System/360 Disk Operating System (DOS) control program. BTAM provides READ/WRITE level macro instructions for the assembler-language programmer who is implementing programs for telecommunications applications.

Included are macro instruction formats and descriptions and specific information on device-dependent considerations.

For titles and abstracts of associated publications see the *IBM System/360 Bibliography,* Form A22-6822. (192 pages)

C30-5003 IBM System/360 Disk Operating System—QTAM Message Processing Program Services 30

This reference publication provides information on the use of the Queued Telecommunications Access Method (QTAM) and the System/360 Disk Operating System for a telecommunications application. Services provided by QTAM in support of a message processing program are described in detail, including the facilities provided to establish the interface to a QTAM message control program.

The QTAM facilities provided for the construction of a message control program are presented in the publication *IBM System/360 Disk Operating System, QTAM Message Control Program,* Form C30-5004.

For titles and abstracts of other associated publications, see the *IBM System/360 Bibliography,* Form A22-6822. (36 pages)

C30-5004 IBM System/360 Disk Operating System QTAM Message Control Program 30

Program Number: 360N-CQ-470

This reference publication contains specifications for the use of the Queued Telecommunications Access Method (QTAM) and of the IBM System/360 Disk Operating System in a telecommunications application. Complete descriptions of QTAM macro instructions are included along with information to aid the problem programmer in constructing a QTAM message control program.

For detailed information on the services provided by QTAM to support a message processing program, refer to the publication *IBM System/360 Disk Operating System, QTAM Message Processing Program Services,* Form C30-5003.

For titles and abstracts of other associated publications, see *IBM System/360 Bibliography,* Form A22-6822. (192 pages)

C33-2003 IBM System/360 Conversion Aids: The 1410/7010 Simulator for IBM System/360 35

Program Number: 360C-SI-754

This document provides information on the 1410/7010 Simulator for the IBM System/360, and is directed to the user who is replacing his IBM 1410/7010 Data Processing System with an IBM System/360 Model 40, 50, 65, or 75. Simulation is a technique which uses System/360 instruction sequences to perform the functions of 1410/7010 instructions, thus permitting the user to execute object programs written for the 1410/7010. (60 pages)

C33-4000 IBM System/360 Operating System ALGOL Programmer's Guide 26

Program Numbers:
360S-AL-531—Compiler
360S-LM-532—Library Routines

This publication describes how to compile, linkage edit and execute a program written in the System/360 Operating System Algorithmic Language (ALGOL). It includes an introduction to the operating system and a description of the information listings that can be produced, the job control language, and the subroutine library. (63 pages)

C50-0001 The IBM 2701 Data Adapter Unit and ASCII AUTODIN Adapter RPQ F 16124 Principles of Operations 13

This manual provides information concerning the operation of the IBM 2701 Data Adapter Unit and the ASCII Adapter RPQ F 16124. The manual is divided into five sections, a glossary, and six annexes.

The first section gives a general description of the 2701 and the AUTODIN Adapter, the functional organization of the 2701 and the configuration of the 2701.

The second section describes the operation of the 2701 with System/360 Model 20. Subjects discussed here include communications line addressing, channel operation, and I/O instructions concerning the 2701 for the Model 20.

The third section describes the operation of the 2701 with System/360 for Models 30 and above. Subjects discussed here include communications line addressing, multiplexor and selector channel operation, and I/O instructions concerning the 2701 for Models 30 and above.

The fourth section covers the ASCII AUTODIN Adapter. A complete description of the operation of the adapter is made which includes transmit and receive operation sequences, status and sense bytes, line interfaces, and the operators panel.

The fifth section covers the operating procedures of the 2701 Data Adapter Unit and the ASCII AUTODIN Adapter.

The glossary contains definitions of certain terms used in this manual which may not be in common use.

The annexes include charts on the ASCII code, representation of the ASCII code to System/360 codes, specifications on the 2701, and two electrical interface drawings. (48 pages)

E20-0188 Retail IMPACT—Inventory Management Program and Control Techniques—Application Description 60

The purpose of this manual is to describe the Retail IMPACT System for the retail industry. The Retail IMPACT System actually consists of two separate systems, one for staple and one for fashion merchandise. Either or both of these systems may be implemented. Programs for the systems are enumerated in the manual.

The manual is divided into chapters which cover topics such as: a general statement of the problems of retail inventory management; simulation, and its uses; ordering parameters, methods of forecasting and forecasting techniques; record maintenance, purchase order generation and operating and management reporting; design considerations; and implementation. Where appropriate, these topics are discussed separately for the fashion and staple systems. Also, graphs and report examples supplement the text, and a glossary of terms peculiar to the retail environment is included in the manual. (104 pages)

E20-0196 System/360 Mortgage Loan Program—Application Description 60

The program is designed to provide the major processing for mortgage loan accounting operations at mutual savings banks, savings and loan associations, commercial banks, mortgage servicing companies, and other users. These programs will significantly help to minimize the time, expense, and effort in converting from manual systems, unit record equipment, or earlier-generation computers to System/360.

An operation system using these programs will provide for servicing investor accounts with the necessary related reports and will handle many types of irregular transactions. The system enables management to keep close surveillance on the bank's entire loan portfolio and to meet reporting requirements of the Federal Home Loan Bank Board including delinquent account and slow loan analyses. Extensive audit control procedures are maintained throughout all programs, and attention is focused immediately on unusual conditions that may arise in individual account or control records.

This manual describes system design features, presents the highlights of the individual programs, and discusses reports that the user may wish to develop. (18 pages)

E20-0228 Optimum Bond Bidding User's Manual 60

Program Number: 360A-FI-06X

This program has been designed to help underwriters determine the coupon schedule and associated values for a bid on a new bond issue. A mathematical procedure is used which develops an optimal set of coupon rates. The optimization procedure minimizes the net interest cost or effective rate whichever is applicable, while remaining within the constraints established by the issuer and those established by the underwriter. A number of options are provided which help the user obtain bidding information for issues with various characteristics.

This manual contains a general description of the program, including all mathematical formulas, machine configuration, general systems chart, input/output description, sample problem, operating instructions, and halt and message list.

The manual is so structured that the user may concentrate on sections germane to his interest. (119 pages)

E20-0246 Demand Deposit Accounting Application Description 60

Program Number: 360A-FB-15X

This manual describes the scope and capabilities of System/360 Demand Deposit Accounting. It covers (1) requirements for a demand deposit application in either a single-bank or multi-bank environment, (2) results from and advantages of using the application programs, (3) accomplishments of each program, (4) information on getting started, (5) record layouts and reports produced, and (6) machine requirements, sample timings, and disk pack requirements. (36 pages)

E20-0256 IBM System/360 Text Processor COMPOSITION/360—Application Description 60

This manual discusses one component application program, which forms the basis for a comprehensive text composition system.

COMPOSITION/360 acts in conjunction with user-supplied programs and the full facilities of the Disk Operating System for System/360. It consists of control and functional routines that accept input from a user-prepared disk-resident file, produces generalized justified output records, and stores them in a specified disk area. If word division capabilities are required, the HYPHENATION/360 program is linked with COMPOSITION/360. (32 pages)

E20-0257 IBM System/360 Text Processor HYPHENATION/360—Application Description 60

HYPHENATION/360 provides division of words for text processing applications in which the addition of word syllables to a line to meet justification requirements is preferable to forcing the line to end with a complete word. This hyphenation capability is provided in the form of a module that can be linked with a user's System/360 text-processing program or the COMPOSITION/360 module of the IBM System/360 Text Processor.

Through program linkage, HYPHENATION/360 accepts a word from the user's program and determines the division points. The word, with the division points indicated, is returned to the user's program, where the portion to be retained on the line can be selected on the basis of the user's graphic requirements.

This publication contains general descriptions of the application and program; a general systems chart; and programming system, minimum machine, and core and disk requirements.

For detailed information the reader is referred to the *Program Description Manual,* Form H20-0525. (22 pages)

E20-0306 IBM 1287 Input Conversion Program—Application Description 60

The IBM Input Conversion Program translates cut-form document information from the IBM 1287 Optical Reader into computer-processable data. The program is designed to enable a user to utilize the IBM 1287 Optical Reader in implementing input conversion in an efficient and economical manner without the need of additional programming. The input conversion process is an essential link between the information coming from the multitudes of data sources and its utilization in an integrated data processing system.

The ability of the IBM 1287 to accept numerical data (plus some special symbols) from documents provides an economical system solution for the expeditious and accurate data collection required by any advanced data processing system. (22 pages)

F20-0009 Summary of System/360 Transition Aids 50

This manual describes transition aids provided by IBM to assist users in the conversion of programs and data files to the System/360. Each transition aid is described with respect to general specifications, application, and performance to assist in determining the applicability of each aid in various transition situations. References are provided to other publications containing more detailed information on each transition aid. (31 pages)

F20-8172 Bibliography of Data Processing Techniques 00

This bibliography and associated classification system provide a means to identify selected IBM publications which, either wholly or in part, document data processing *techniques* information. The listing of any given publication in this bibliography, however, does not preclude its appearance in other reference bibliographies such as the Systems Reference Library.

Part I of this bibliography lists publications within major subject classification. Note that a publication may appear in more than one classification. Part II contains abstracts of the publications in form-number sequence. (12 pages)

H20-0126 Advanced Life Information System—Application Description 60

Program Number: 360A-IL-09X

This system represents a new insurance information systems approach to the maintenance, processing, and servicing of individual life insurance contracts. It provides for immediate direct access inquiry and a base for a teleprocessing communications network.

The system uses a modular programming technique to process all scheduled and nonscheduled transactions, to provide figures for annual and interim statement purposes, to update policies with cash values, dividends, and other forms of participation, and to update policies with renewable term premiums on or just before anniversary. Internal and remote interrupt capabilities provide policy status on loan, surrenders, and mode premium values.

Basically, the information contained in this manual includes a general description of the system, insurance statements describing the approach, and a discussion of the policy master record. The manual is intended to define for the reader the amount of information needed to establish the system and to serve as a guide for his early planning. (64 pages)

H20-0136 Mathematical Programming System/360—Application Description 60

MPS/360 is an open-ended mathematical programming system. This manual is an overview of the capabilities of MPS/360 (360A-CO-14X), MARVEL (360A-CO-15X), and the MPS Report Generator (360A-CO-20X). MARVEL and the MPS Report Generator operate under the control of MPS/360. The detailed capabilities of each functional component are described in the associated User's Manual.

Use of MPS/360 might involve building a mathematical model, finding an optimal solution, determining the effect of changing key data on the optimal solution, computing alternate solutions by systematically varying cost or requirement data, and preparing a management report. Application areas include material allocation, blending of ingredients, production or refinery scheduling, distribution and shipping, machine loading, waste reduction, and many other areas. (36 pages)

H20-0149 System/360 Online Teller Program and Mortgage Loan Background Capability—Application Description 60

Program Number: 360A-FB-16X

This program furnishes System/360 programming support for 1060 systems and minimizes expenses in installing and maintaining teller terminal complexes. The Application Description gives an overview of the program, lists its advantages, discusses applications- and machine-oriented concepts, presents control and audit procedures, and contains other standard sections, plus a glossary of terms. (18 pages)

H20-0166 System/360 Scientific Subroutine Package Version III—Application Description 60

Program Number: 360A-CM-03X

The Scientific Subroutine Package (SSP) is a collection of over 250 FORTRAN subroutines divided, for the sake of presentation, into two groups: statistics and mathematics. Over 200 subroutines are presented in both single- and double-precision mode. SSP is a collection of input/output-free computational building blocks that can be combined with a user's input, output, or computational routines to meet his needs. The package can be applied to the solution of many problems in industry, science, and engineering.

Version 3 of the Scientific Subroutine Package for System/360 incorporates and extends the capabilities of the original SSP/360. This version provides over 40 new mathematical and statistical subroutines, 24 of which are in both single- and double-precision FORTRAN. Typical of the new capabilities is the use of the QR iteration for obtaining eigenvalues of a matrix, and the nonparametric test of Kolmogorov-Smirnov.

The application description presents the purpose and objectives of the program, a list of subroutines, machine configuration, programming systems, precision, and a list of reference material. (20 pages)

H20-0173 System/360 Wholesale IMPACT Program Library Version 2—Application Description 60

Program Number: 360A-DW-05X

This manual describes use of the System/360 Wholesale IMPACT Program Library to implement the IMPACT system of scientific inventory management. The Wholesale IMPACT system provides the means of deciding when to order and how much to order for items in inventory so as to minimize the total cost of inventory, purchasing and receiving, and lost discounts for any specified level of service. This is accomplished by use of probability science in combination with an IBM System/360. (16 pages)

H20-0181 System/360 APT Numerical Control Processor Versions 3 and 4—Application Description 60

Program Number: 360A-CN-10X

The IBM System/360 APT uses a symbolic language to simplify the preparation of instructions for numerically controlled machine tools. The APT processor prepares intermediate data for a user-written postprocessor program. (84 pages)

H20-0186 General Purpose Simulation System/360—Application Description 60

This manual discusses the role of GPSS in system simulation, briefly describes the operation of the GPSS program, and points out its application scope. A final section describes the new entities, block types, expanded features, and system requirements of GPSS/360. (18 pages)

H20-0194 System/360 Data Conversion Utilities—Application Description 60

This publication describes the general capabilities of IBM System/360 Data Conversion Programs and, through examples, illustrates their use.

The IBM System/360 Data Conversion Programs provide an effective and flexible capability for converting current IBM system data files to System/360 data sets. Designed as general purpose utility programs utilizing control cards, the programs will accept data sets from current IBM systems tape or DASD devices and write these data sets in the proper formats on System/360 tape or DASD devices. The programs have data transformation capability that allows maximum flexibility in resystemizing data sets for System/360. (49 pages)

H20-0197 System/360 Bill of Material Processor—Application Description 60

Program Number: 360-ME-06X

The IBM System/360 Bill of Material Processor is an implementation package used to create and maintain a central information system for a manufacturing organization. The package will contain (1) generalized programs to organize and maintain part number (inventory, etc.), product structure, manufacturing routing, and work center data on direct access files, and (2) logic diagrams explaining the retrieval and use of the information in manufacturing applications.

This manual contains a general description of the application, the machine configuration, general systems charts, and a discussion of input/output files. A section that contrasts this package to the IBM 1440-1311 Bill of Material Processor (1440-ME-02X) is provided for 1440 users who may wish to upgrade their present system to a System/360. (38 pages)

H20-0199 Flowchart—Application Description 60

Program Number: 360A-SE-22X

The IBM System/360 Flowchart is a System/360 program designed to produce program flowcharts. This documentation aid operates under the IBM Disk Operating System (DOS) and is intended to minimize the planning and effort required to produce and maintain program documentation.

It enables the user to:

1. Produce clear, standardized, easily reproduced computer-generated flowcharts.
2. Facilitate program development by keeping flowcharts continually up to date.
3. Standardize flowcharting techniques.

This publication describes the purposes and objectives of the IBM System/360 Flowchart and explains its uses. It contains a general description of the application, a discussion of the input language, an explanation of System/360 Flowchart processing, a detailed description of the statements, and miscellaneous application information.

For detailed information, the user is referred to the User's Manual. (25 pages)

H20-0202 Student Scheduling System/360 Application Description 60

Student Scheduling System/360 is a class section assignment package for scheduling students in secondary schools, vocational schools, and junior colleges. After a school has created a master schedule of course offerings, the system processes student requests to create student schedules and class lists.

This scheduling package includes two auxiliary programs. A Tally program and a Conflict Matrix program furnish the school administrator with data useful to master schedule creation. The Tally run lists the total number of students requesting each course, and the Conflict Matrix points out potential scheduling conflicts.

The new package contains improvements over many similar programs. Greater flexibility is achieved by inclusion of many new user options, such as better study hall control, common-course scheduling, an expanded prerun edit, and alternate course substitution. Parameters controlling number of periods per day, number of courses offered, sections per course, and total number of sections have been significantly enlarged. Features of the new IBM System/360 are also utilized to increase overall program effectiveness. (27 pages)

H20-0205 System/360 Scientific Subroutine Package Version III—Programmer's Manual 60

Program Number: 360A-CM-03X

The Scientific Subroutine Package (SSP) is a collection of over 250 FORTRAN subroutines divided, for the sake of presentation, into two groups: statistics and mathematics. Also, over 200 subroutines are presented in both single- and double-precision mode. SSP is a collection of input/output-free computational building blocks that can be combined with a user's input, output, or computational routines to meet his needs. The package can be applied to the solution of many problems in industry, science, and engineering.

Version 3 of the Scientific Subroutine Package for System/360 incorporates and extends the capabilities of the original SSP/360. This version provides over 40 new mathematical and statistical subroutines, 24 of which are in both single- and double-precision FORTRAN. Examples of the new capabilities are the use of the QR iteration for obtaining eigenvalues of a matrix, and the nonparametric test of Kolmogorov-Smirnov.

This manual contains sufficient information to permit the reader to understand and use all of the subroutines of the Scientific Subroutine Package. (460 pages)

H20-0210 Project Management System for IBM System/360—Application Description 60

PMS/360 is a highly modular set of computer program routines, each performing one function common to many management applications. It is open-ended—that is, the number of functions under PMS/360 can be expanded and added to. It is versatile—that is, the user can control program logic without resorting to reprogramming. Output reports can be defined with a single set of procedural statements and can be revised with every computer run if required. The computer code itself is written in a way that simplifies modification, if this ever becomes necessary. At present, PMS/360 contains the following three modules: a Network Processor, a Cost Processor, and a versatile Report Processor. In suitable combinations these processors will accomplish the data processing required in critical path analysis, PERT, and PERT Cost. (29 pages)

H20-0217 System/360 COBOL Edit on the 1401 Program Reference Manual 60

Program Number: 1401-SE-13X

This program is of benefit to System/360 COBOL users in detecting syntactical errors in System/360 COBOL program statements before compilation of the System/360.

The program reference manual contains complete data on the application description, programming information, and operating instructions. Systems information is not presented in detail. (22 pages)

H20-0220 Student Scheduling System/360 The Tally and Conflict Matrix Programs—User's Manual 60

Program Number: 360A-US-06X

Use of the Tally and Conflict Matrix programs of Student Scheduling System/360 is facilitated by this combined programmer's and operator's manual. These two programs furnish the school administrator the data needed to create the best possible master schedule of course and section offerings, prior to use of the Scheduler Program.

The Tally program accumulates the number of students requesting each course, by sex and by grade. These counts are used to determine how many sections of a given course are required. Those courses shown to require one- or two-section offerings are entered into the Conflict Matrix program, which is then used to point out potential scheduling conflicts.

The programmer's section of this manual contains program systems charts, general program description, I/O description, program modification aids, sample problem, etc. The operator's section contains program setup sheet, console operator's instructions, message list, storage maps, and restart procedures. (22 pages)

H20-0222 System/360 Project Control System Version 2—Application Description 60

Program Number: 360A-CP-06X

This manual presents a brief description of a project control system, and discusses the design, features, and input/output characteristics of a computer program developed to serve as the data processing element of such a system. Although the IBM System/360 Project Control System is designed primarily for those areas of government and industry concerned with construction, repair, or maintenance, its features are such that it can meet the critical path requirements of a broad range of users, regardless of industry. (24 pages)

H20-0232 System/360 Data Conversion Utility I Programmer's Manual 60

Program Number: 360A-SE-15X

This program is useful in converting IBM 1620/1401/1440/1460/1410/7010 card, tape, and DASD data files to System/360 tape or DASD data sets.

The Programmer's Manual presents a general and detailed description of the program and its operation under the IBM System/360 Basic Operating System (8K disk). In addition, the individual modules, standard program interfaces, and incorporation of user modules are discussed.

The reader should be familiar with *IBM System/360 Data Conversion Utility I—Application Description,* Form H20-0194, *IBM Basic Operating System/360 Assembler with Input/Output Macros (8K Disk),* Form C24-3361, and *IBM Basic Operating System/360 Programmer's Guide,* Form C24-3372.

(86 pages)

H20-0233 System/360 Data Conversion Utility I Operator's Manual 60

Program Number: 360A-SE-15X

This program is useful in converting IBM 1620/1401/1440/1460/1410/7010 card, tape, and DASD data files to System/360 tape or DASD data sets.

The Operator's Manual presents a program setup sheet, console operating instructions, message list, storage maps and restart procedures.

The reader should be familiar with *System/360 Data Conversion Utilities—Application Description,* Form H20-0194, *IBM System/360 Data Conversion Utility I —Programmer's Manual,* Form H20-0232, and *IBM Basic Operating System/360 Operating Guide,* Form C24-3450.

(32 pages)

H20-0239 Student Scheduling System/360 The Scheduler Program User's Manual 60

Program Number: 360A-US-07X

Student Scheduling System/360 is a class section assignment program for scheduling students in secondary schools, vocational schools, and junior colleges. After a school has created a master schedule of course offerings, the system processes student requests to create student schedules and class lists.

This manual contains a detailed explanation of the Scheduler program within the scheduling application framework, with special emphasis on input data and output reports. It also includes an "Operator's Section," which describes operational setup and running procedures. (64 pages)

H20-0240 System/360 Continuous System Modeling Program—Application Description 60

Program Number: 360A-CX-16X

This is an IBM System/360 program for the simulation of continuous systems. It provides an application-oriented input language that accepts problems expressed in the form of either an analog block diagram or a system of ordinary differential equations. Data input and output are facilitated by means of application-oriented control statements.

This manual contains a general description of the application, the machine configuration, a general systems chart, and a sample problem. (32 pages).

H20-0242 Synchronous Transmit-Receive Access Method for OS/360 Application Description 60

This manual describes the macro-instruction support which enables a System/360 with OS/360 to communicate with STR-type terminal devices. The level of support is discussed, and the language is briefly described. (12 pages)

H20-0243 Synchronous Transmit-Receive Access Method for DOS/360 Application Description 60

This manual describes the macro-instruction support which enables a System/360 with DOS/360 to communicate with STR-type terminal devices. The level of support is discussed, and the language is briefly described. (7 pages)

H20-0244 Communications Control Application Program Programmer's Manual 60

Program Number: 360A-SC-01X

This manual is intended to supply an overall understanding of the CCAP system concepts. It contains sufficient information to allow a systems programmer to plan and design a CCAP installation. Information necessary for implementing any modifications prior to installation is contained in detail in the System Manual supplied with delivery of the system from the Program Information Department. (52 pages)

H20-0246 System/360 Bill of Material Processor Version 2—Programmer's Manual 60

Program Number: 360A-ME-06X

The IBM System/360 Bill of Material Processor is an implementation package used to create and maintain the central data files for a manufacturing organization.

This manual includes (1) a brief discussion of system definition, (2) a checklist of things to be done before modifying the file organization and maintenance programs or preparing retrieval programs, (3) descriptions of all I/O files, (4) explanation and operating instructions for the sample problem, (5) descriptions of all the file organization and maintenance programs and instructions for their modification, and (6) descriptions and logic diagrams for selected user retrieval programs. (400 pages)

H20-0254 System/360 Bill of Material Processor Version 2—Operator's Manual 60

Program Number: 360A-ME-06X

The IBM System/360 Bill of Material Processor is an implementation package used to create and maintain the central data files for a manufacturing organization.

This operator's manual for the file organization and maintenance programs contains detailed operating information for:

1. Master File Creation and Maintenance Modules
2. Chain File Creation and Maintenance Modules
3. Bill of Material Processor Input/Output Modules to be used with user-prepared retrieval programs
4. File reorganization modules
5. A set of four specialized Bill of Material Processor utility programs

In addition there are specific operating procedures for IBM Basic Operating System/360 control programs and the IBM Disk Operating System/360 control programs as they apply to the Bill of Material Processor. (96 pages)

H20-0255 System/360 Wholesale IMPACT Program Library Program Description Manual 60

Program Numbers:
360A-DW-05X, Version 2
360V-DW-06X

This program library provides a distributor with the information necessary to determine when and how much to order, thus minimizing the total cost of carrying inventory, purchasing and receiving, freight charges, and lost discounts for any specified level of service. The program library uses probability science in combination with an IBM System/360.

The IMPACT programs are grouped into two categories: initializing programs, and operating programs. Five programs are provided for initializing purposes: (1) Edit Run, (2) Mean Absolute Deviation and Forecast Model Run, (3) Order Quantity and Order Model Run, (4) Safety Stock and Safety Factor Run, and (5) Report Generator Run. Three programs are provided for operating purposes: (1) Service Point and Variable Interval Allocation Run, (2) Fixed Interval Allocation Run, and (3) Allocation Print Run. An extensive group of macroinstructions is included for incorporation in user-written programs. The Wholesale IMPACT program Library for the Model 20 (360V-DW-06X) is a subset of the System/360 Library (360A-DW-05X).

This manual contains a general description of the overall system and a detailed description of each program and macroinstruction. (184 pages)

H20-0256 System/360 Wholesale IMPACT Program Library Operations Manual 60

Program Numbers:
360A-DW-05X, Version 2
360V-DW-06X

This program library provides a distributor with the information necessary to determine when and how much to order, thus minimizing the total cost of carrying inventory, purchasing and receiving, freight charges, and lost discounts for any specified level of service. The program library uses probability science in combination with an IBM System/360 Data Processing System.

The IMPACT programs are grouped into two categories: initializing and operating programs. Five programs are provided for initializing purposes: (1) Edit Run, (2) Mean Absolute Deviation and Forecast Model Run, (3) Order Quantity and Order Model Run, (4) Safety Stock and Safety Factor Run, and (5) Report Generator Run. Three programs are provided for operating purposes: (1) Service Point and Variable Interval Allocation Run, (2) Fixed Interval Allocation Run, and (3) Allocation Print Run.

The Model 20 Program Library is a subset of the System/360 Wholesale IMPACT Program Library.

This manual contains a general description of the overall system and a detailed description of each program. (72 pages)

H20-0262 System/360 Demand Deposit Accounting—Operator's Manual 60

Program Number: 360A-FB-15X

This manual contains operating instructions for the runs that make up the System/360 Demand Deposit Accounting application program. It includes instructions for preparation of all I/O units, and, for each program, a program setup sheet, operating instructions, operator message list, and core map. (124 pages)

H20-0263 System/360 Demand Deposit Accounting—Programmer's Manual 60

Program Number: 360A-FB-15X

This program is adaptable by commercial banks to accomplish demand deposit accounting in either a single or multi-bank environment. The program provides for conversion of IBM 1440 series disk and tape balance and name/address records. Also included are programs to collect and display historical profit and loss information for selected accounts or groups of accounts.

For each program, this manual presents a program abstract, program systems chart, and general description. Where applicable, some program modification aids are included.

The input/output section includes a summary for all files by type (card, disk, tape, printer, and MICR) and a visual record layout and description of file functions. (220 pages)

H20-0285 System/360 Data Conversion Utility III, Version 2 Programmer's Manual 60

Program Number: 360A-SE-26X

These macros will be helpful in converting IBM 705/1401/1410/1440/1460/1620/7010/7040/7044/7070/7074/7080/7090/7094 card or tape data files to System/360 tape or DASD data sets.

This manual presents a general and detailed description of the program and its operation under the IBM System/360 Tape Operating System and the IBM System/360 Disk Operating System. In addition, the macro capabilities, standard program interfaces, and incorporation of user instructions are discussed.

The reader should be familiar with the corresponding Application Description, Form H20-0194, and Operator's Manual, Form H20-0286, and with those IBM System/360 manuals listed in the Application Directory. (93 pages)

H20-0286 System/360 Data Conversion Utility III, Version 2 Operator's Manual 60

This program will be useful in converting IBM 705/1401/1410/1440/1460/1620/7010/7040/7044/7070/7074/7080/7090/7094 card and tape data files to System/360 tape or DASD data sets.

This manual presents operating procedures, a message list, restart procedures, and a program setup sheet.

The reader should be familiar with the corresponding Application Description, Form H20-0194 and Programmer's Manual, Form H20-0285, and with *IBM System/360 Tape Operating System, Operating Guide,* Form C24-5021, or *IBM System/360 Disk Operating System, Operating Guide,* Form C24-5022. (17 pages)

H20-0290 Mathematical Programming System/360 Control Language User's Manual 60

Program Number: 360A-CO-14X

This manual is one of a series of manuals which describe the use of the IBM Mathematical Programming System/360 (MPS/360). It assumes that the user is familiar with the Application Description, Form H20-0136 and *IBM Operating System/360 Job Control Language,* Form C28-6531. This manual is a prerequisite of *MPS/360 Linear Programming User's Manual,* Form H20-0291, and the MPS/360 MARVEL Manual (to be published at a later date). This manual describes the organization of the components of MPS/360 and their interface with Operating System/360 (OS/360). It also describes in detail the control language used to communicate a solution strategy for solving a mathematical programming problem to MPS/360, and OS/360 job control language statements necessary to execute MPS/360. (38 pages)

H20-0293 System/360 Flowchart User's Manual 60

Program Number: 360A-SE-22X

The IBM System/360 Flowchart is a System/360 program designed to produce program flowcharts. This documentation aid operates under the IBM Disk Operating System (DOS) and is intended to minimize the planning and effort required to produce and maintain program documentation.

It enables the user to:

1. Produce clear, standardized, easily reproduced computer-generated flowcharts.
2. Keep flowcharts continually up to date.
3. Standardize flowcharting techniques.

This reference publication contains the specifications and detailed instructions for using the System/360 Flowchart program. The only prerequisite for reading it is a basic understanding of flowcharting. (56 pages)

H20-0294 System/360 Flowchart Operator's Manual 60

Program Number: 360A-SE-22X

The IBM System/360 Flowchart is a System/360 program designed to produce program flowcharts. This documentation aid operates under the IBM Disk Operating System (DOS) and is intended to minimize the planning and effort required to produce and maintain program documentation.

It gives the user the ability to:

1. Produce clear, standardized, easily reproduced computer-generated flowcharts.
2. Keep flowcharts up to date continually.
3. Standardize flowcharting techniques.

This reference publication gives the specifications and detailed information for operating the System/360 Flowchart program. It contains the console operating instructions, job control card deck key, job control card details, halt and message list, a file and storage map, and restart procedures.

A knowledge of DOS operating procedures, including the use of job control card, is a prerequisite for reading and using this manual.

For more detailed information about the System/360 Flowchart input language, refer to the User's Manual. (20 pages)

H20-0297 System/360 Administrative Terminal System—OS (ATS/OS) Application Description Manual 60

Program Number: 360A-CX-19X

This system consists of control and functional programs that permit many different text-processing and data-handling activities to be carried on simultaneously through different typewriter terminals attached to an IBM System/360. Written to operate under OS/360, the Administrative Terminal System runs in a multiprogramming environment. It will run concurrently with and independently of other tasks in other partitions/regions.

This publication contains a general discussion of the features of the program, an indication of some of the areas in which it may be applied, and the machine configuration required. Three appendices are included dealing with data formats, core storage estimates, and communication line requirements. (28 pages)

H20-0302 Shared Hospital Accounting System (SHAS) Application Description 60

Program Number: 360A-UH-11X

The Shared Hospital Accounting System (SHAS), developed by IBM, provides extensive accounting services to groups of hospitals sharing central System/360 computer facilities. By means of a flexible system of programs and options, each participating hospital retains its own individuality in terms of access to records as well as types and formats of files set up and reports generated.

Managed by an executive program, the system records and processes data related to inpatient and outpatient billing, accounts receivable, and general ledger, and is designed to facilitate automatic preparation of Medicare and other insurance billing forms. Communication with the central facility is effected through teleprocessing terminals located at each hospital in the group.

This publication describes the objectives and features of the IBM Shared Hospital Accounting System and is designed to give the reader an overall knowledge of the system without reference to program detail. (112 pages)

H20-0304 General Purpose Simulation System/360 Introduction—User's Manual 60

This publication provides a basic introduction to the use of the General Purpose Simulation System/360 (GPSS/360). It is written for those individuals who have no previous simulation experience.

Examples are given throughout the manual to emphasize the basic features of the GPSS/360 program. A complete and detailed description of all the GPSS/360 features may be found in the *General Purpose Simulation System/360 User's Manual,* Form H20-0326. Readers are advised to obtain a copy of the User's Manual when they begin to write more sophisticated models.

The information presented in this manual should enable most readers to apply the program intelligently within a short period of time. (88 pages)

H20-0305 System/360 Online Teller Program and Mortgage Loan Background Capability Programmer's Manual 60

Program Number: 360A-FB-16X

This program furnishes System/360 programming support for 1060 systems and minimizes expenses in installing and maintaining teller terminal complexes. The Programmer's Manual presents the program logic and data definitions for the program. It enables a user to plan modifications to the program to suit his own requirements. (188 pages)

H20-0309 System/360 APT Numerical Control Processor—Part Programming Manual 60

Program Number: 360A-CN-10X

This program has been developed to span the gap between the engineering drawing and the machine tool control system.

This manual describes APT (Automatic Programmed Tool), a programming system that uses an English-like language to describe a part shown as an engineering drawing. The statements are keypunched into cards, converted by the APT processor into an intermediate format, and then converted to instructions that can be read by the machine tool controller. (113 pages)

H20-0311 General Purpose Simulation Operating System/360—Operator's Manual 60

Program Number: 360A-CS-17X

This publication contains information that will enable the user to link-edit and incorporate the GPSS/360 program into a system for subsequent execution under the control of OS/360. Detailed examples are given for editing the GPSS/360 program into a private JOBLIB or the OS/360 SYS. LINKLIB; several other examples illustrate the OS/360 JOL cards required to execute models that use various features provided by GPSS/360.

This Operator's Manual describes and illustrates a method (REALLOCATION) whereby the user can reallocate the quantity of GPSS/360 entities and effectively use all available core on a given machine. The various data sets required by GPSS/360 are also listed and described. (37 pages)

H20-0313 System/360 Data Conversion Utility II, Version 3 (Sequential, Direct Access)—Programmer's Manual 60

Program Number: 360A-SE-20X

This program will be useful in converting IBM 705/1410/7010/7040/7044/7070/7074/7080/7090/7094 card, tape, and DASD data files to System/360 tape or DASD data sets.

This manual presents a general and detailed description of the program and its operation under the IBM Operating System/360. In addition, the individual modules, standard program interfaces, and incorporation of user coding are discussed. (122 pages)

H20-0314 System/360 Data Conversion Utility II, Version 3 (Direct Access Indexed Sequential)—Operator's Manual 60

Program Number: 360A-SE-20X

This program will be useful in converting IBM 705/1410/7010/7040/7044/7070/7074/7080/7090/7094 card, tape, and DASD data files to System/360 tape or DASD data sets.

This manual presents a program setup sheet, console operating instructions, and a message list. (14 pages)

H20-0315 IBM System/360 Document Processing System—Application Description 60

The System/360 Document Processing System operates under the control of Operating System/360, processing narrative and bibliographic data into a set of interrelated data sets. These data sets can then be searched for Boolean combinations of keywords. Various elements of the data sets can be manipulated by a set of special utilities to produce various forms of indexes.

Without limiting the system to a specific application, because no such limit exists, this manual surveys the operational concepts and capabilities of System/360 Document Processing. Routines within the system are written in the OS/360 Assembler Language and require no further coding on the part of the system user. (28 pages)

H20-0318 Public Utility Customer Information Control System—Application Description 60

The IBM System/360 Public Utility Customer Information Control System is a program modularly constructed and designed to assist customers in the installation of online information systems. The Customer Information Control System is an interface program between user-written processing programs and System/360 Operating System; the control system with the user-written programs and System/360 Operating system comprises an information system. Through a series of macro instructions, the user invokes the facilities of the Customer Information Control System.

This manual describes the Customer Information Control System. Knowledge of System/360 Operating System would assist the reader in understanding the contents of this manual. (44 pages)

H20-0319 System/360 Data Conversion and Label Processing Subroutines, Version 2 Program Reference Manual 60

Program Number: 360A-SE-23X

This manual contains a description of a set of subroutines that may be used in converting data files from current system formats to System/360 formats and vice versa. The subroutines available for processing current system data file formats are listed and described. Also, the use of the subroutines is shown by example. (63 pages)

H20-0321 IBM System/360 Attached Support Processor System (ASP) Version 2 Console Operator's Manual 60

Program Number: 360A-CX-15X

The Attached Support Processor (ASP) system is a multiprocessor operating system that provides a compatible extension to Operating System/360 (OS/360). Designed primarily for the use of the customer with a large scientific system and a workload typically consisting of many jobs of short duration, ASP includes features to facilitate the use of the 709X Emulator and OS/360 integrated into the same operational environment.

This manual contains instructions that will permit the console operator to operate the ASP system. ASP console operation is identical in most respects to IBM System/360 operation. Therefore, to avoid repetition of documentation, the material in this manual has been prepared on the assumption that the operator is familiar with IBM System/360 operation. Details concerning System/360 operations are found in *IBM System/360 Operating System, Operator's Guide,* Form C28-6540, and in its prerequisite and recommended publications. If the 709X Emulator is to be used, the ASP operator should also be familiar with IBM System/360 Conversion Aids, 709/7090/7094/7094II Emulator Program, Form C28-6565. (120 pages)

H20-0322 IBM System/360 Attached Support Processor System (ASP) Version 2 Application Programmer's Manual 60

Program Number: 360A-CX-15X

The Attached Support Processor (ASP) system is a multiprocessor operating system which provides a functional extension to Operating System/360 (OS/360). Designed primarily for the use of the customer with a large scientific system whose workload typically consists of many jobs of short duration, ASP includes features to facilitate the use of the 709X Emulator and OS/360 integrated into the same operational environment.

This manual contains detailed information concerning system concepts, programming considerations, control cards, deck setup, and output. OS/360 programming is the primary operating system used for ASP; therefore, to avoid repetition of documentation, the material in this manual has been prepared on the assumption that the programmer is familiar with OS/360 programming. Details of OS/360 utilization are found in *IBM Operating System/360 Job Control Language,* Form C28-6539, and in its prerequisite and recommended publications. (44 pages)

H20-0323 IBM System/360 Attached Support Processor System (ASP) Version 2 System Programmer's Manual 60

Program Number: 360A-CX-15X

The Attached Support Processor (ASP) system is a multiprocessor operating system which extends the functional capabilities of Operating System/360 (OS/360). Designed primarily for the use of the customer with a large scientific system whose workload typically consists of many jobs of short duration, ASP includes features to facilitate the use of the 709X Emulator and OS/360 integrated into the same operational environment.

This manual contains detailed information concerning the internal operations of the ASP system and includes a functional description, instructions for writing Dynamic Support Programs and for generating the system, and a description of modifications to OS/360 and 709X Emulator programs. (172 pages)

H20-0325 System/360 Online Teller Program and Mortgage Loan Background Capability Operator's Manual 60

Program Number: 360A-FB-16X

The Operator's Manual includes operating procedures for the Online Teller program as well as the Conversion, Reorganization, and Control Pack Setup programs. It also contains a discussion of testing aids. (36 pages)

H20-0326 General Purpose Simulation System/360—User's Manual 60

This publication is an extension and amplification of the GPSS/360 Introductory User's Manual, Form H20-0304. It provides a detailed description and explanation of the component parts and operation of the GPSS/360 program. Examples illustrating the uses of GPSS/360 are given in appropriate sections of the manual. This manual should enable the reader to construct and simulate models using the full capabilities of GPSS/360. (244 pages)

H20-0327 General Purpose Simulation System/360, Disk Operating System Operator's Manual 60

Program Number: 360A-CS-19X

This publication contains information that will enable the user to link-edit and incorporate the GPSS/360 program into a system for subsequent execution under the control of DOS/360.

A method (REALLOCATION) whereby the user can reallocate the quantity of GPSS/360 entities and effectively use all available core on a given machine is described and illustrated. The various data sets required by GPSS/360 are also listed and described. (20 pages)

H20-0329 IBM System/360 Product Structure Retrieval Program—Application Description 60

The IBM System/360 Product Structure Retrieval Program is an implementation package used to retrieve product structure records created and maintained by the System/360 Bill of Material Processor Program (360A-ME-06X). The package will contain (1) generalized programs to retrieve product structure records, (2) flexible user report formats, and (3) logic diagrams explaining the retrieval and use of the information in manufacturing applications.

This manual contains a general description of the application, the machine configuration, general systems charts, and a discussion of input/output files. (24 pages)

H20-0331 System/360 APT Numerical Control Processor Operator's Manual 60

Program Number: 360A-CN-10X

This manual provides suggested processor generation and maintenance techniques, program setup instructions, console operating instructions, halts and error messages, storage map, and restart procedures. (12 pages)

H20-0344 Project Management System/360 Version 2 Program Description and Operations Manual 60

Program Number: 360A-CP-04X

This manual provides a detailed description of the three component parts of PMS/360: the Network Processor, the Cost Processor, and the Report Processor. It provides in detail the format of input required, the methods of calculation followed, and an explanation of the output generated by each processor. It also defines OS/360 Job Control cards required to run the three processors.

This manual will enable the user to perform critical path analysis as well as PERT and PERT/Cost analyses. (400 pages)

H20-0346 Synchronous Transmit-Receive Access Method for DOS/360 User's Manual 60

Program Number: 360A-SE-32X

This publication describes the Synchronous Transmit-Receive Access Method for DOS/360. The STR access method provides macro instructions and routines to support STR transmission under program control. The macro instructions are described for the following functions:

1. Environment definition
2. Line control
3. Data transmission
4. Code conversion

In addition, the STR error messages are described and a macro instruction summary is given. Prerequisites are: a basic knowledge of System/360 machine concepts, a basic knowledge of DOS/360, and a knowledge of the principles of STR data transmission. (36 pages)

H20-0347 Synchronous Transmit-Receive Access Method for DOS/360 Operator's Manual 60

Program Number: 360A-SE-32X

This publication describes the operator actions when using the Synchronous Transmit-Receive Access Method for DOS/360. Topics include establishing a data line, error messages, and maintenance. (8 pages)

H20-0349 Synchronous Transmit-Receive Access Method for System/360 Operating System User's Manual 60

Program Number: 360A-SE-33X

This publication describes the Synchronous Transmit-Receive Access Method for OS/360. The STR Access Method provides macro instructions and routines to support STR transmission under program control. The macro instructions are described for the following functions:

1. Environment definition
2. Line control
3. Data transmission
4. Buffer management
5. Code conversion

In addition, the STR error messages are described and a macro instruction summary is given. Prerequisites are: a basic knowledge of System/360 machine concepts, a basic knowledge of OS/360, and a knowledge of the principles of STR data transmission. (64 pages)

H20-0350 Synchronous Transmit-Receive Access Method for OS/360 Operator's Manual 60

Program Number: 360A-SE-33X

This publication describes the operator actions when using the Synchronous Transmit-Receive Access Method for OS/360. Topics include establishing a data line, error messages, and maintenance. (8 pages)

H20-0352 1400 Autocoder to COBOL Conversion Aid Program Version 2 Application Description 60

Program Number: 360A-SE-19X

This document provides information about the 1400 Autocoder to COBOL Conversion Aid Program (ACCAP) and its resulting COBOL programs. The information provided should enable the user to evaluate ACCAP for his installation before its use.

The manual contains a general description of ACCAP, a discussion of the overall program conversion process, and some testing experiences with the program. (28 pages)

H20-0353 IBM System/360 Remote Access Computing System (RAX) Version 2 Application Description 60

Program Number: 360A-CX-17X

This system is designed to allow multiple concurrent access to a System/360 processor from remote terminals. RAX implements time-sharing techniques for the compilation and execution of user computing problems in FORTRAN and Assembler languages. Also, it provides a Terminal Command Language to provide control of the terminal and to implement the use of the programming languages.

This publication contains a description of the system, the equipment requirements, the system capabilities, the elements of the Terminal Command Language, and a discussion of the system operation. (32 pages)

H20-0354 System/360 Remote Access Computing System (RAX) Version 3 Program Description Manual 60

Program Number: 360A-CX-17X

This publication provides the information necessary to use the IBM System/360 Remote Access Computing System (RAX). It contains a description of the system, which provides concurrent access to a System/360 Model 30, 40, or 50, for up to 63 remote 1050 IBM Data Communication Terminals and eight 2260 Display Station locations. This system provides for the compilation and execution of Basic FORTRAN IV and Basic Assembler Language programs and the maintenance of program and data files in a library structure. (148 pages)

H20-0355 IBM System/360 Remote Access Computing System (RAX) Version 3 Operations Manual 60

Program Number: 360A-CX-17X

This publication provides the System/360 machine operator with detailed instructions for starting, running, and stopping the Remote Access Computing System (RAX). It includes machine requirements, description of online messages and their meanings, and restart procedures. This manual also includes the procedures required for system generation and library maintenance. (44 pages)

H20-0367 System/360 Continuous System Modeling Program User's Manual 60

Program Number: 360A-CX-16X

This is an IBM System/360 program for the simulation of continuous systems. It provides an application-oriented input language that accepts problems expressed in the form of either an analog block diagram or a system of ordinary differential equations. Data input and output are facilitated by application-oriented control statements.

This manual contains a general description of the program, detailed programming information, and a description of the inputs and outputs. (68 pages)

H20-0368 System/360 Continuous System Modeling Program Operator's Manual 60

Program Number: 360A-CX-16X

This is an IBM System/360 program for the simulation of continuous systems. It provides an application-oriented input language that accepts problems expressed in the form of either an analog block diagram or a system of ordinary differential equations.

This manual contains information and procedures that will enable the user to incorporate the System/360 Continuous System Modeling Program into an Operating System/360 library; to include a procedure in the Operating System/360 procedure library (OS/360 SYS1.PROCLIB); and subsequently to execute System/360 CSMP under the control of, and using the services of, OS/360. (20 pages)

H20-0369 System/360 Product Structure Retrieval Program Programmer's Manual 60

Program Number: 360A-ME-07X

The IBM System/360 retrieval package for the Bill of Material Processor Program provides the following types of retrieval:

1. Single-level explosion
2. Indented explosion
3. Summarized explosion
4. Single-level implosion
5. Indented implosion
6. Summarized implosion

This manual includes:

1. A brief discussion of system definition.
2. A checklist of things to be done before customizing retrieval programs.
3. Descriptions of all I/O files.
4. Explanation and operating instructions for the sample problem.
5. Descriptions of all retrieval programs and subroutines, plus instructions for their modification.
6. Descriptions and logic diagrams for three retrieval phases. (48 pages)

H20-0370 System/360 Product Structure Retrieval Program Operator's Manual 60

Program Number: 360A-ME-07X

The IBM System/360 Bill of Material Processor Retrieval Programs constitute an implementation package that uses the assembly and where-used information from the processor files previously loaded on disk to produce reports for the user.

This manual for the retrieval programs contains detailed operating information for retrieval program system loading and retrieval job control. (16 pages)

H20-0372 Mathematical Programming System/360 Read Communications Format (READCOMM)—Program Reference Manual 60

Program Number: 360A-CO-14X

This manual provides the system user with the information necessary to use the Read Communications Format (READCOMM) feature of MPS/360. READCOMM is a subroutine that enables the user to augment MPS/360 with procedures written in the FORTRAN language.

This manual assumes that the user is familiar with the *MPS/360 Application Description,* Form H20-0136, the *MPS/360 Control Language User's Manual,* Form H20-0290, the *MPS/360 Linear Programming User's Manual,* Form H20-0291, and the FORTRAN programming language. (48 pages)

H20-0373 System/360 AUTOSPOT Numerical Control Processor, Version 2—Part Programming Manual 60

Program Number: 360A-CN-08X

This manual describes the AUTOSPOT language for users of numerically controlled machine tools. Included in this manual are definitions and examples of language elements. Also included are the interpretation of machining statements as output to the CLFILE and the description of this output file. (176 pages)

H20-0374 System/360 AUTOSPOT and AD-APT/AUTOSPOT Numerical Control Processors, Version 2—Operator's Manual 60

Program Numbers:
360A-CN-08X (AUTOSPOT)
360A-CN-09X (AD-APT/AUTOSPOT)

This manual provides suggested processor generation and maintenance techniques, program setup instructions, console operating instructions, halts and error messages, storage map, restart procedures, and disk storage map. (12 pages)

H20-0375 System/360 AD-APT/AUTOSPOT Numerical Control Processor, Version 2 Part Programming Manual 60

Program Number: 360A-CN-09X

The IBM N/C 360 adaptation of APT for small computers (AD-APT) uses a symbolic language to simplify the preparation of instructions for numerically controlled machined tools. The AD-APT processor prepares intermediate data for a user-written postprocessor program.

This manual contains the definition and examples of the AD-APT symbolic language. (152 pages)

H20-0376 Project Control System/360 Program Description and Operations Manual 60

Program Number: 360A-CP-06X

The Project Control System serves as the data processing element of a system that helps management carry out its functions of planning and supervising projects, within a broader environment of operations and procedures. Although designed primarily for those areas of government and industry concerned with construction, repair, or maintenance, the system will meet the critical path requirements of a broad range of users, irrespective of industry. It will process data from networks planned in either precedence-diagramming or

arrow-diagramming methods. The system consists of a set of routines stored on disk. The sequence of processing and system outputs is controlled by the system control card, the type of input data to be processed, and the output report requests submitted at run time. Output reports include status listings, bar charts, and basic resource and cost summarization reports. Updating capability is provided for network restructuring as well as progress reporting for in-process work items. (130 pages)

H20-0462 IBM System/360 AUTOSPOT Numerical Control Processor—Application Description 60

Program Number: 360A-CN-08X

The purpose of this manual is to provide an introduction to the AUTOSPOT language for users of numerically controlled machine tools. Included in this manual are language structure and elements, and system configuration. (24 pages)

H20-0463 IBM System/360 AD-APT/ AUTOSPOT Numerical Control Processor Application Description 60

Program Number: 360A-CN-09X

The IBM N/C 360 adaptation of APT for small computers (AD-APT) uses a symbolic language to simplify the preparation of instructions for numerically controlled machine tools. The AD-APT processor prepares intermediate data for a user-written postprocessor program. (44 pages)

H20-0464 IBM System/360 Vehicle Scheduling Program—Application Description 60

This publication describes the general capabilities of the IBM System/360 Vehicle Scheduling Program and explains some of the many uses of this approach.

The Vehicle Scheduling Program determines the route that a group of vehicles must travel in order to meet certain commitments in the delivery of service or products to a collection of given destinations. The program tends to minimize some of the basic parameters, such as distance, time, and the number of vehicles, or achieves a satisfactory balance of these. The program analyzes a network representing the potential calling points and computes either actual or approximate distances between all points. A schedule is then produced with adherence to restrictions such as route-time, speed, vehicle capacity, and customer requirements. (32 pages)

H20-0466 IBM System/360 Attached Support Processor System (ASP) Version 2—System Description 60

Program Number: 360A-CX-15X

The Attached Support Processor (ASP) system is a multiprocessor operating system that provides a compatible extension to Operating System/360 (OS/360). Designed primarily for the use of the customer with a large scientific system and a workload typically consisting of many jobs of short duration, ASP includes features to facilitate the use of the 709X Emulator and OS/360 integrated into the same operational environment.

An outgrowth of the 704X-709X Direct Couple Operating System (DCS), ASP incorporates the operational characteristics of this system, although it diverges from it in implementation. (40 pages)

H20-0468 Data Acquisition Multiprogramming System—System Description 60

This manual describes an operating system for online scientific applications. In addition to support for the usual peripheral devices, the system supports 32 levels of priority interrupt and the IBM 1827 Data Control Unit for interfacing directly with scientific applications. The system supports the assignment of program tasks to various priority levels. Foreground program tasks may be dynamically scheduled for execution during periods with no active priority levels. (24 pages)

H20-0469 System/360 Mortgage Loan Program Programmer's Manual 60

Program Number: 360A-FB-19X

The mortgage loan program fulfills the prime requirements for mortgage loan procedure. This manual sets forth a detailed description of mortgage loan processing. Included are sections on transactions and transaction file processing. In addition, complete program descriptions are given for each run in the application. This includes program abstracts, processing descriptions, system charts, and input/output lists. Also included are detailed file layouts and suggested methods for converting a master file. (236 pages)

H20-0470 System/360 Mortgage Loan Program Operator's Manual 60

Program Number: 360A-FB-19X

This manual contains operating instructions for the runs that make up the System/360 Mortgage Loan Accounting application program. It includes instructions for preparation of all I/O units, and, for each program, a program setup sheet, operating instructions, operator message list, and core map. (40 pages)

H20-0471 System/360 Inventory Control Application Description 60

The IBM inventory control application consists of a group of integrated programs and techniques designed for the selection and implementation of order point inventory control where it applies in manufacturing organizations. The programs provide for:

1. Classification of inventory items for determining the type of control.
2. Calculation of economic order quantities on the basis of usage information or future requirements.
3. Computation of safety stock and order point.
4. Projection of demand on the basis of historical data.
5. Basic programs for transaction processing and report preparation.

This manual includes a general description of these programs, the machine configuration, general systems charts, sample reports, and a discussion of inventory control concepts applicable to the use of the programs. (68 pages)

H20-0475 System/360 Automated Chemistry Program (360 ACP) for the 1080 Data Acquisition System—Application Description 60

Program Number: 360A-UH-12X

The 360 ACP, a Type II program within the Clinical and Administrative REcord system (CARE), is a System/360 program designed to operate under the System/360 Disk Operating System. The 360 ACP processes the punched card output of the IBM 1080 Data Acquisition System servicing continuous processing analyzer systems and one or more IBM 1084 Sampler Readers, all operating in a clinical laboratory environment. It matches specimen identification numbers with their raw data values, makes the necessary adjustments, and computes specimen concentrations. A quality control report is produced which summarizes the test runs, and each test result and specimen identification number is stored in disk memory. By a user-provided program, the results are stored in the patient file. The 360 ACP requires 32K core storage, a 1052 Printer-Keyboard, a 2311 Disk Storage Drive, a printer, a card reader, and the floating-point and decimal arithmetic features.

The purpose of this manual is to provide a general description of the application, a description of the various program runs (including system flowchart), a description of the input/output files as related to the various runs, the machine configuration required, and a statement of the system advantages. (32 pages)

H20-0476 Mathematical Programming System/360 Linear and Separable Programming—User's Manual 60

Program Number: 360A-CO-14X

This manual provides the system user with the information required to prepare input data and control cards and to interpret the system's output. It is a basic reference document for any user interested in the problems with which the system can help him. All procedures are fully explained in this manual. (224 pages)

H20-0477 IBM System/360 Document Processing System Program Description and Operations Manual 60

Program Number: 360A-CX-12X

The System/360 Document Processing System is a set of programs designed to convert machine-readable document data into a set of searchable data sets, to search these data sets, and to produce various index listings. The system operates under the control of the System/360 Operating System.

This manual generally expresses the intent and content of an operations manual and a programming manual. Part 1 of the manual contains descriptive program information and specifications; Part 2 contains detailed operational instructions. A prerequisite to reading portions of this manual is a basic understanding of *IBM System/360 Operating System Job Control Language* Form C28-6539. (268 pages)

H20-0479 System/360 Matrix Language (MATLAN) Application Description 60

MATLAN is a programming system that is designed to simplify handling of and computation with matrices. This publication describes the MATLAN language and its general capabilities.

Matrices may consist of real or complex, single- or double-precision numbers. Segmenting algorithms are used if the storage requirements of the matrices exceed available core size.

MATLAN is useful in many scientific and technical applications. It is of special interest in the aerospace industry, as well as in electrical and civil engineering, mathematical statistics, and econometrics. (20 pages)

H20-0480 IBM Retail IMPACT Fashion System under Operating System/360 Program Description Manual 60

Program Number: 360A-DR-04X

The IBM Retail IMPACT Fashion System consists of programs and procedures designed to provide the retailer with timely and accurate information for fashion merchandising. The system provides reorder recommendations, return recommendations, and other action reports to assist the fashion merchandiser in responding to changes in the volatile fashion market.

This manual describes the concepts, characteristics, and implementation of the Fashion System. Operational controls, report interpretation, and complete file specifications are included. The programs are described conceptually and specifically. Input, output, and processing information is included along with program modification aids. This manual provides the information and guidance necessary for planning and installation of the system. (184 pages)

H20-0481 Retail IMPACT Fashion System under Operating System/360—Operations Manual 60

Program Number: 360A-DR-04X

This manual provides instructions and guidance for operating the programs in the IBM Retail IMPACT Fashion System. The major components of the manual describe (1) preparatory information and procedures, (2) operations, and (3) retrieving the programs from the distribution tape, preparing the system, and running the sample problem. (44 pages)

H20-0483 Advanced Life Information System Policy Master Record Code Book 60

The policy master record code book describes every section and trailer of the policy master record, each field in every section and trailer, and the codes and values applicable to each field. There is a table of contents at the beginning of the manual and one for each section and trailer. The table of contents at the beginning of the manual identifies only the location of sections and trailers. The table at the beginning of each section or trailer indicates the location of each field. (260 pages)

H20-0487 System/360 Requirements Planning Application Description 60

A manufacturing organization requires that all parts, both manufactured and purchased, be available to meet production schedules demanded by finished product due dates, and that a sufficient quantity be available to satisfy demand. Manufacturing also must be able to adjust these requirements quickly to react suitably and in time to forecast any customer order changes. In addition, there is a need to maintain inventories at an optimum level so as not to incur the costs of obsolescence, unneeded warehouse space, unnecessary inventory, insurance and purchase charges.

IBM System/360 Requirements Planning is designed to meet these needs. The system is capable of:

1. Determining net finished product requirements.
2. Determining net component part requirements.
3. Planning economic lot size or order quantities.
4. Offsetting requirements by considering lead times.
5. Maintaining and updating the requirements plan by processing changes to forecasts and orders (referred to as "requirements alterations").
6. Providing for review of planned orders at the end of each level; "interrupt" and adjustment of these planned orders; "reentry" (referred to as "conversational planning").
7. Providing for management review through detailed requirements reports and exception notices. (76 pages)

H20-0489 Program for Optical System Design/II (POSD/II) Application Description 60

POSD/II consists of an interrelated set of programs providing a complete and flexible facility for the geometric analysis of image-forming optical systems, together with a means for automatically correcting such systems. Particular emphasis has been placed on creating an efficient man-machine relationship. The evaluation techniques available to the designer encompass both ray tracing and third- and fifth-order aberration analysis with ray-tracing speeds in the order of 1/10 second per ray surface. The program has the capacity to analyze systems containing prisms, toric surfaces, and diffraction gratings, in addition to the usual refracting or reflecting elements.

POSD/II is an extension of 1130 POSD (1130-EO-11X and 1130-EO-12X) with increased operating speeds and additional program capabilities. Two new POSD/II programs are provided to operate under the IBM Problem Language ANalyzer (PLAN*) program to support both the 1130 system and System/360. Additional utility features are incorporated to provide greater flexibility for the user. Significant improvements, such as provision for varying glasses, broaden the scope of the automatic design program. *PLAN operates as a submonitor providing simplified user modification of programs and design languages.

POSD/II utilizes input formats and operating procedures identical to 1130 POSD. (24 pages)

H20-0490 Problem Language Analyzer (PLAN) Application Description 60

This manual provides a description of the scope and purpose of the Problem Language Analyzer. It allows the reader to measure the applicability of this system to the solution of his problems and provides a description of the PLAN approach to modular problem solution. (16 pages)

H20-0492 System/360 Decision Logic Translator Application Description Manual 60

Program Number: 360A-CX-32X

The Decision Logic Translator program accepts decision tables punched in cards in a prescribed format and translates the tables into a FORTRAN program. The FORTRAN source program is punched in cards or stored on disk or tape ready for compilation.

This manual describes the decision table language, the format of the input decision tables, features of the Decision Logic Translator, program output, and a sample problem. (28 pages)

H20-0493 Mechanism Design System Kinematics—Application Description 60

A programmed system for the kinematic analysis of linkage mechanisms is made available to the mechanical engineer through the Mechanism Design System—Kinematics.

A wide variety of two- and three-dimensional linkage mechanisms can be analyzed with this FORTRAN-coded system. Program input provided by the engineer includes a list of the linkage elements and the connectivity of those elements, metric data that gives size to the elements, and position and motion input data. For mechanisms that can be solved by the system, plotted and printed output is provided to aid the engineer in evaluating his design.

The primary functions of the program are to create a digital model of the linkage mechanism, solve for position and motion and display the calculated results. The model of the linkage can be stored on disk for later recall. The disk also stores intermediate results for data display after processing is complete. The use of a model facilitates modification of the linkage by simple and direct means.

This manual is divided into five sections. The introduction discusses the overall role of the 1130 Computing System and the System/360 in mechanism design and analysis. The next section discusses specific concepts of kinematic analysis, the programs that make up the system, and a sample problem. The third section gives machine and programming system requirements and estimated program timing. The fourth and fifth sections present glossary and references, respectively. (24 pages)

H20-0494 Data Acquisition Multiprogramming System (DAMPS), Version 2—Application Description 60

This manual describes an operating system for real-time scientific applications. The system will support a single real-time job containing multiple online applications in the foreground, while processing an offline application in the background. DAMPS, Version 2, supports the 32 levels of the Priority Interrupt special feature and the Store and Fetch Protection special feature, both of which are required for system operation. In addition to support for the usual peripheral devices, the system supports the IBM 1827 Data Control Unit for interfacing directly with scientific applications. (24 pages)

H20-0495 Rigid Frame Selection Program (RFSP) Application Description 60

The Rigid Frame Selection Program (RFSP) provides direct optimal design procedures for rigid frame construction in steel, timber, or concrete. Two- and three-hinged frames may be analyzed and designed using the programs. Cost reduction can be realized in two ways—material inventory and design.

Procedures included in the program can be used to design members for different types of structures, using the results of analysis programs provided by the user.

The program operates under a problem-oriented language supported by the Problem Language ANalyzer (PLAN), thus allowing the user to create his own input language, if he so prefers. (32 pages)

H20-0496 MARVEL/360 Primer 60

Program Number: 360A-CO-15X

MARVEL is a language processor for the data preparation, matrix generation, output analysis, and management report writing functions associated with the Mathematical Programming System/360 (360A-CO-14X). MARVEL was designed and implemented to provide powerful functional capabilities in this fast growing area of mathematical programming. In providing such a comprehensive language and processor capability, "trade-offs" were made that reduced execution speed.

MARVEL will provide maximum customer utility as an input/output system for the development of new linear programming applications, because this is an area where extended function is more significant than high performance. In a production environment where emphasis is on execution speed, MARVEL will be less suitable.

This MARVEL language primer is designed to acquaint the reader with the basic notation employed in MARVEL. Further, by constructing a sample program, it is hoped to introduce the potential user to a variety of MARVEL statements. The discussion of statements in the primer is limited to those features of each statement that are applicable to the specific problem presented. Therefore, the reader should consult the *MARVEL/360 Program Description Manual,* Form H20-0505, where a comprehensive discussion of all MARVEL statements is provided. (60 pages)

H20-0505 MARVEL/360 Program Description Manual **60**

Program Number: 360A-CO-15X

This publication provides the information required to use the MARVEL programming language. It is a basic reference document for any user interested in the problems with which this system can help him. It is expected that the reader is thoroughly familiar with the contents of the MARVEL/360 Primer.

MARVEL is a language processor for the data preparation, matrix generation, output analysis, and management report writing functions associated with the Mathematical Programming System/360 (360A-CO-14X). MARVEL was designed and implemented to provide powerful functional capabilities in this fast growing area of mathematical programming. In providing such a comprehensive language and processor capability, "trade-offs" were made that reduced execution speed.

MARVEL will provide maximum customer utility as an input/output system for the development of new linear programming applications, because this is an area where extended function is more significant than high performance. In a production environment where emphasis is on execution speed, MARVEL will be less suitable. (184 pages)

H20-0506 System/360 Vehicle Scheduling Program—Program Description and Operations Manual **60**

Program Number: 360A-ST-06X

This manual contains specific information about the preparation for, the functions of, and the use of the IBM System/360 Vehicle Scheduling Program, as well as its operation under the IBM System/360 Disk Operating System. Detailed data preparation suggestions are explained under the program section to which they apply. The operations section contains a description of program setup and restart procedures, console operating instructions, and card layouts. In addition, the manual presents input/output descriptions, suggestions for option usage, lists of messages, and a sample problem.

The reader should be familiar with the *System/360 Vehicle Scheduling Program Application Description,* Form H20-0464. (120 pages)

H20-0507 Bibliography of Application Publications Finance Industries **99**

The purpose of this bibliography and the associated classification system is to list and categorize IBM application publications that are pertinent to finance industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication, in form number sequence.

A periodic Bibliography of Application Publications (BAP) newsletter (N20-1077) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (26 pages)

H20-0508 System/360 Administrative Terminal System DOS (ATS/DOS) Program Description Manual **60**

Program Number: 360A-CX-18X

This manual may be used as a reference manual by application programmers that are concerned with the Administrative Terminal System, ATS/360, functioning under the IBM System/360 Disk Operating System (DOS). ATS/360 applications consist of control and functional programs that permit the simultaneous performance of many different text processing and data-handling activities on different terminals. This publication describes the principles and techniques of storage and real-time processing control for each of the programs that make up ATS/360, as well as information pertinent to their organization, scope, and planning for system applications and/or modifications to those applications. System generation procedures are also described and information regarding storage estimates and system timing is given. (136 pages)

H20-0509 System/360 Administrative Terminal System DOS (ATS/DOS) Terminal Operator's Manual **60**

Program Number: 360A-CX-18X

This manual contains procedures for operating the IBM Administrative Terminal System (ATS)/360. Operation consists of manipulating the keyboard on the IBM 2741 Communications Terminal to send commands to the computer, enter documents into the system for storage, and print documents which have been previously stored.

Procedures are provided for using the terminal to send and receive messages in the form of documents from one terminal location to another, to transfer stored documents onto magnetic tape or punched cards, and to accomplish high-speed printing of stored documents at the computer center. Procedures are also included to bring documents into the system that are stored on punched cards and magnetic tape.

The procedures are arranged so that the operator can begin with the most basic commands and immediately start using the terminal while progressing through the remaining text and examples to understand the operating principles.

A summary is included at the end of some sections to provide a quick review for operators who only use the ATS/360 occasionally, or infrequently after exposure to the initial training period.

Four appendices are included. Appendix A provides a listing of operator commands. Appendix B provides a listing of computer responses. Appendix C provides a glossary of terms that are used throughout the manual. Appendix D consists of punched card codes and reference data for entering special characters and hexadecimal values at the terminal. (124 pages)

H20-0510 System/360 Administrative Terminal System DOS (ATS/DOS) Application Description **60**

Program Number: 360A-CX-18X

This system consists of control and functional programs that permit many different text-processing and data-handling activities to be carried on simultaneously through different terminals attached to an IBM System/360. Written to operate under DOS/360, the Administrative Terminal System will allow background programs to run concurrently with, and independently of, normal terminal operation.

This publication contains a general discussion of the features of the program, an indication of some of the areas in which it may be applied, and the machine configuration required. (28 pages)

H20-0511 System/360 Administrative Terminal System DOS (ATS/DOS) Computer Center Operator's Manual **60**

Program Number: 360A-CX-18X

This manual describes operating procedures for the IBM Administrative Terminal System, ATS/360. These procedures are designed for computer centers using the Disk Operating System (DOS) version of the IBM System/360 Model 30, 40, or 50F. ATS/360 computer centers using a different machine configuration may use this manual as a reference for establishing procedures for use with the system.

These procedures are intended for the computer center operator or other personnel using the equipment during scheduled operating periods to set up the system for ATS/360 applications, maintain the real-time capability while the system is in use, and shut down the system to terminate ATS/360 operations.

Any deviation from these procedures must be carefully considered to avoid introducing errors which could jeopardize the effectiveness of the system.

Special handling instructions and other computer center (CC) operator duties are described for servicing the requests of remote terminal (RT) operators, maintaining the security of records, off-line machine operations for peripheral equipment, and error recovery techniques.

The manual is divided into sections, each of which describes the overall system application, arrangement of equipment, and procedures for its use. (72 pages)

H20-0512 MARVEL/360 Operations Manual **60**

Program Number: 360A-CO-15X

This publication contains information that will enable the user to link-edit and incorporate the MARVEL/360 program into a system for subsequent execution under control of Mathematical Programming System/360. Detailed examples are given for editing the MARVEL/360 program into a private JOBLIB or the OS/360 SYS1.LINKLIB. (12 pages)

H20-0513 Linear Programming System/360 (LPS/360)—Application Description 60

This program provides the System/360 Disk Operating System (DOS) user with a simple, easy to understand and easy to use means of solving LP problems, and with a powerful tool for implementing other mathematical optimization applications.

The system contains all the procedures necessary to solve an LP problem and to perform an extensive post-optimal analysis of the problem. The system provides extensive data generation and maintenance facilities.

To solve an LP problem, these procedures are called into core storage by procedure control statements that define the processing sequence.

This manual contains a description of the system, the required machine configurations, and limits on problem size. (20 pages)

H20-0514 System/360 Model 44 Remote Access Computing System Application Description 60

This system is designed to allow multiple concurrent access to a System/360 Model 44 from remote terminals. RAX implements time-sharing techniques for the compilation and execution of user computing problems in FORTRAN and Assembler Languages. Also, it provides a Terminal Command Language to provide control of the terminal and to implement the use of the programming languages.

This publication contains a description of the system, the equipment requirements, the system capabilities, the elements of the Terminal Command Language, and a discussion of the system operation. (28 pages)

H20-0515 System/360 Automated Chemistry Program (360 ACP) for the 1080 Data Acquisition System—Program Description Manual 60

Program Number: 360A-UH-12X

The IBM System/360 Automated Chemistry Program (360 ACP) is designed to process the punched card output of the IBM 1080 Data Acquisition System servicing continuous processing analyzer systems and one or more IBM 1084 Sampler Readers, all operating in a clinical laboratory environment.

The purpose of this manual is to provide the user with an understanding of the program necessary to implement the application. Included are descriptions of the two runs which make up 360 ACP, an input/output description, timing information, program modification aids, and a sample problem. (56 pages)

H20-0516 System/360 Automated Chemistry Program (360 ACP) for the 1080 Data Acquisition System, Operations Manual 60

Program Number: 360A-UH-12X

System/360 Automated Chemistry Program (360 ACP) is designed to process the punched card output of the 1080 Data Acquisition System servicing continuous processing analyzer systems and one or more IBM 1084 Sampler Readers, all operating in a clinical laboratory environment. The 360 ACP is composed of two runs—a file creation program and a process data program. The former is executed at the time the system is set up and need not be performed again unless the user wishes to change any of the files. The latter is the program designed to process the 1080 punched card output.

This manual gives the specifications and necessary information for operating 360 ACP. It includes a description of retrieval of data from distributed machine-readable material and cataloging programs in the user's core image library. Use of this manual requires an operating knowledge of the IBM Disk Operating System (DOS) job control cards and operating procedures. (32 pages)

H20-0517 Advanced Life Information System Operations Manual 60

Program Number: 360A-IL-09X

This manual presents the information required to set up the Advanced Life Information System (ALIS) and to execute the ALIS programs. This system operates under the IBM System/360 Disk Operating System (DOS) and consists of a series of programs which are run in sequence. The ALIS programs are presented in the suggested running sequence. Suggestions on user program integration with ALIS are also made. The information applicable to all ALIS programs is presented once at the beginning of the manual. Following that information is a control card, console operating, message, error, restart, and external control information for each ALIS program. Operating instructions for the ALIS utility programs are also included. (132 pages)

H20-0519 Advanced Life Information System Utility Program Description Manual 60

Program Number: 360A-IL-09X

This manual provides general information about the utility programs supplied with the Advanced Life Information System. The user should be familiar with the Operations manual to gain the necessary supplementary information to include the utility programs on his library and to execute them. (72 pages)

H20-0521 System/360 Generalized Information System (Basic) Application Description Manual 60

This manual surveys the operational concepts and system capabilities of the Generalized Information System (Basic). It provides an introduction to the language of GIS and describes the file organization and processing actions supported by GIS.

The System/360 Generalized Information System (Basic) operates under control of the System/360 Operating System and supports a wide variety of applications by providing information handling capabilities against many typical data base organizations. As a system, GIS provides facilities for defining, maintaining, and retrieving data from user files under direction of the using installation and its personnel. (64 pages)

H20-0522 Bibliography of Application Publications Distribution Industries 99

The purpose of this bibliography and the associated classification system is to list and categorize IBM application publications that are pertinent to distribution industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication, in form number sequence.

A periodic Bibliography of Application Publications (BAP) newsletter (N20-1853) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (26 pages)

H20-0523 System/360 AD-APT/AUTOSPOT (OS) Numerical Control Processor Application Description 60

AD-APT/AUTOSPOT is a symbolic language designed to simplify the preparation of instructions for numerically controlled machine tools. This manual provides an introduction to both the AD-APT and AUTOSPOT languages. Included are language structure and elements, and system configuration.

This program will provide the OS/360 installation with the capability currently available in AD-APT/AUTOSPOT (360A-CN-09X) under DOS/360. (60 pages)

H20-0524 Information Management System/360 for the IBM System/360 (System Description) Application Description Manual 60

The Information Management System/360 is an Operating System/360 processing program designed to facilitate the implementation of medium to large common data bases in a multiapplication environment. This environment is created to accommodate both online message processing and conventional batch processing, either separately or concurrently. The system permits the evolutionary expansion of data processing applications from a batch-only to a teleprocessing environment.

This manual includes a general description of the system and its various facilities and programs, listings of typical and minimum configurations, and a sample application. (48 pages)

H20-0525 System/360 Text Processor HYPHENATION/360 Program Description Manual 60

Program Number: 360A-DP-07X

HYPHENATION/360 provides division of words for text-processing applications in which the addition of word syllables to a line to meet justification requirements is preferable to forcing the line to end in a complete word. This hyphenation capability is provided in the form of a module that can be linked with a user's System/360 text-processing program or the COMPOSITION/360 component of the IBM System/360 Text Processor.

Through program linkage, the HYPHENATION/360 module accepts a word from the user's program and determines the division points. The word, with the division points indicated, is returned to the user's program, where the portion to be retained on the line can be selected on the basis of the user's graphic requirements.

This publication contains processing descriptions, core and disk requirements, timing information, and detailed instructions for the use of the HYPHENATION/360 module and its associated utility programs. A thorough understanding of the CALL, SAVE, and RETURN macros discussed in *IBM System/360 DOS Supervisor and Input/Output Macros,* Form C24-5037 is a prerequisite for reading this publication. (68 pages)

H20-0526 System/360 Text Processor HYPHENATION/360—Operations Manual 60

Program Number: 360A-DP-07X

HYPHENATION/360 provides division of words for text-processing applications in which the addition of word syllables to a line to meet justification requirements is preferable to forcing the line to end with a complete word. This hyphenation capability is provided in the form of a module that can be linked with a user's System/360 text-processing program or the COMPOSITION/360 module of the IBM System/360 Text Processor.

Through program linkage, HYPHENATION/360 accepts a word from the user's program and determines the division points. The word, with the division points indicated, is returned to the user's program, where the portion to be retained on the line can be selected on the basis of the user's graphic requirements.

This publication contains detailed preparatory system procedures; operating instructions, error messages, and restart procedures for the component programs; and programming system and machine requirements.

A knowledge of DOS operating procedures is a prerequisite for reading and using this manual. (36 pages)

H20-0527 System/360 1287 Input Conversion Program—Program Description Manual 60

Program Number: 360A-DR-07X

This program consists of a Transaction Specification Compiler and an Operational Processor. The Compiler provides for the description of the format and processing logic to be applied to documents scanned by the IBM 1287 Optical Reader. The program module created by the Compiler is referenced by the Processor in order to convert the data from the documents to a conversion journal. This manual describes the general program logic, the input and output formats, and provides samples of each. (48 pages)

H20-0528 System/360 1287 Input Conversion Program—Operations Manual 60

Program Number: 360A-DR-07X

The purpose of this manual is to provide the user with the information, instructions, and guidance necessary to:

1. Retrieve and prepare the programs for operation.
2. Prepare to use the system.
3. Operate the programs in the system.

(32 pages)

H20-0529 IBM System/360 Attached Support Processor System (ASP) Version 2 (MVT/Local Execution) System Description 60

Program Number: 360A-CX-15X

The Attached Support Processor (ASP) system is an operating system that provides a compatible extension to System/360 Operating System. Designed primarily for the commercial and scientific customer with a computer job shop environment, ASP provides for increased automation of the computing operation. The ASP system operates as a programmed operator of Operating System, providing an operational interface for controlling the system job stream, thus optimizing the use of the computer's resources.

This manual describes Version 2 of the ASP system, including MVT/Local Execution extensions that will be made available in a future modification. This manual contains a general description, machine configuration, application program considerations, operational considerations, and extended ASP configurations. The manual is primarily intended for installation planning purposes. For an overall description of the existing ASP Version 2 program see Form H20-0466. (32 pages)

H20-0530 Bibliography of Application Publications Public Utility Industries 99

The purpose of this bibliography and the associated classification system is to list and categorize IBM application publications that are pertinent to public utility industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication, in form number sequence.

A periodic Bibliography of Application Publications (BAP) newsletter N20-1866 is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (14 pages)

H20-0531 Bibliography of Application Publications Printing and Publishing Industries 99

The purpose of this bibliography and the associated classification system is to list and categorize IBM application publications that are pertinent to printing and publishing industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication, in form number sequence.

A periodic Bibliography of Application Publications (BAP) newsletter N20-1867 is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (12 pages)

H20-0532 System/360 Power System Planning for the Electric Utility Industry Application Description Manual 60

The Power System Planning (PSP) application program package is designed specifically for the IBM System/360. The package provides the electric utility planning engineer with the most important digital simulation programs for studying the steady-state and transient operational characteristics of present and projected interconnected power networks. The package provides for the storing of data describing electric networks and the convenience of automatic data preparation for the simulation programs.

This manual contains a general description of the application, the machine configuration required, a general system flowchart, and four system charts covering the data storage and retrieval program and the three electrical network simulation programs provided within the package. (36 pages)

H20-0533 Shared Hospital Accounting System (SHAS) Program Description Manual 60

Program Number: 360A-UH-11X

The Shared Hospital Accounting System (SHAS) provides hospital accounting for a multiple-hospital environment. The participating hospitals are connected to the central System/360 facility by teleprocessing terminals. SHAS consists of application programs and a teleprocessing executive. The application programs are patient billing, accounts receivable, and general ledger including accounting for both inpatients and outpatients. This manual refers to the accounts receivable portion of SHAS. References to teleprocessing and other applications have been minimized but still may be present to be consistent with subsequent manuals dealing with the entire system.

This basic publication provides information on the Shared Hospital Accounting System program to enable the user to understand the function of all of the SHAS programs as a guide for preparing to install SHAS.

This document is written as a reference manual and not as a study text. For education purposes this manual should be used in conjunction with the *SHAS Application Description Manual,* Form H20-0302 and the *SHAS Operations Manual,* Form H20-0534.

The organization is such that the reader can easily find in-depth information on what the program does for the user. It also helps the user connect that information with the programs through the use of program references, COBOL tags, and modular descriptions following modular programs. The user can turn to a given program description and find the information immediately without having to read the entire section, and can easily relate the information directly to the program and the code.

This manual is written for systems engineers or programmers with a thorough understanding of DOS, COBOL, and System/360 Basic Assembler Language. (188 pages)

H20-0534 Shared Hospital Accounting System (SHAS) Operations Manual 60

Program Number: 360A-UH-11X

The Shared Hospital Accounting System (SHAS) provides hospital accounting for a multiple-hospital environment. The participating hospitals may be connected to the central System/360 facility by teleprocessing terminals. SHAS consists of application programs and a teleprocessing executive. The application programs are patient billing, accounts receivable, and general ledger, including accounting for both inpatients and outpatients.

This basic publication gives the specifications and necessary information for operating the SHAS programs. It includes a description of retrieving data from distributed machine-readable material and cataloging programs in the user's core image library. Use of this manual requires an operating knowledge of the IBM Disk Operating System (DOS) job control cards and operating procedures.

This document is written as a reference manual for central operation and user-hospital personnel. User hospitals will find guidance for installation preparation, data coding and creation, and options available during operation. For education purposes, this manual should be used in conjunction with the *Shared Hospital Accounting System Application Description Manual,* Form H20-0302 and the *Shared Hospital Accounting System Program Description Manual,* Form H20-0533. (636 pages)

H20-0535 PLAN Graphics Support for the IBM 2250—Application Description Manual 60

PLAN Graphics Support is designed to drastically reduce the time required to convert existing applications or create new applications for graphic displays. This system supports Models 1, 3, and 4 of the IBM 2250 Display Unit.

With PLAN Graphics Support, the application programmer works at a level where he is relieved from tedious graphic programming. High-level statements allow the application programmer to simply state the format, content, and control options that are desired by the console operator (the application user). By means of user-oriented statements, the application programmer may rapidly extend his existing application program or create new applications to include interactive graphic capability.

Among the graphic interface features supported are:

1. Graphic Output—Data generated by the application may be displayed using points, characters, vectors, or geometric shapes.

2. Graphic Input—Data may be created or modified at the console and passed to the application via the Light Pen, Programmed Function Keyboard, and Alphameric Keyboard.

3. Monitoring and Control—Intermediate results can be examined in an application. The console user dynamically controls the next function of the application program to be executed.

PLAN (Problem Language ANalyzer), a Type II program, is used as a base for PLAN Graphics Support. Since it coexists with PLAN, the user has access to all of the functional capability in PLAN. PLAN Graphics Support and PLAN support both the IBM 1130 and System/360. (24 pages)

H20-0536 Bibliography of Application Publications Insurance Industry **99**

The purpose of this bibliography and the associated classification systems is to list and categorize IBM application publications that are pertinent to the insurance industry. Section I lists these publications by application or industry. Section II contains an abstract of each publication, in form number sequence.

A periodic Bibliography of Application Publications (BAP) newsletter (N20-1869) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (22 pages)

H20-0537 Data Acquisition Multiprogramming System/360 Model 44 (DAMPS) Program Description Manual **60**

Program Number: 360A-CX-20X

This publication contains detailed information for preparing programs to be executed under DAMPS. It discusses the system's requirements and capabilities, and the facilities that are available as a result of the DAMPS extensions to the System/360 Model 44 Programming System. (78 pages)

H20-0538 Data Acquisition Multiprogramming System/360 Model 44 (DAMPS) Operations Manual **60**

Program Number: 360A-CX-20X

This publication describes the operations that are required to run, construct, or modify the Data Acquisition Multiprogramming System/360 Model 44. This publication assumes that the reader has operating knowledge of the IBM System/360 Model 44 Programming System. (36 pages)

H20-0539 Graphic Analysis of Three-Dimensional Data (GATD) Application Description Manual **60**

Graphic Analysis of Three-Dimensional Data (GATD) is an application system built around the IBM 2250 Display Unit, which allows online analysis of three-dimensional data. GATD operates in conjunction with Operating System/360, PLAN (Problem Language Analyzer), and PLAN Graphics Support.

Many industries are concerned with the quantitative description of three-dimensional surfaces as approximated by field or laboratory observations. Since it is usually impossible to obtain a sufficient number of measurements to adequately define a surface, a numerical model of the surface is developed. The numerical model is used to predict the value of the surface representing the dependent variable where observations are not present.

A typical GATD problem begins with a light-pen query of the user's mass data file. Because the raw observational data extracted from the user's file may be poorly distributed, or the data may contain bad or spurious points, it is necessary to display, monitor and, in some cases, clean up the data before processing further. To accomplish this end, a powerful set of data editing facilities is provided.

Once edited the data can be passed to analytical routines which develop numerical models. Graphic representation of the numerical models can be displayed in the form of contour maps, perspective views, cross sections, and fence diagrams.

All operations take place in a conversational mode as directed by the 2250 console operator with the light pen.

Geology, geophysics, oceanography, meteorology, engineering, and physical property analysis are a few of the areas where this powerful new analytical tool can be applied. The development and use of these techniques in a man/machine environment opens up entirely new problem-solving techniques and will lead to significant reductions in total problem solution time. (28 pages)

H20-0540 Retail IMPACT Fashion System under Disk Operating System/360 Program Description Manual **60**

Program Number: 360A-DR-08X

The IBM Retail IMPACT Fashion System consists of programs and procedures designed to provide the retailer with timely and accurate information for fashion merchandising. The system provides reorder recommendations, return recommendations, and other action reports to assist the fashion merchandiser in responding to changes in the volatile fashion market.

This manual describes the concepts, characteristics, and implementation of the Fashion System. Operational controls, report interpretation, and complete file specifications are included. The programs are described conceptually and specifically. Input, output, and processing information is included along with program modification aids. This manual provides the information and guidance necessary for planning and installation of the system. (184 pages)

H20-0541 Retail IMPACT Fashion System under Disk Operating System/360 Operations Manual **60**

Program Number: 360A-DR-08X

This manual provides instructions and guidance for operating the programs in the IBM Retail IMPACT Fashion System. The major components of the manual describe (1) preparatory information and procedures, (2) operations, and (3) retrieving the programs from the distribution tape, preparing the system, and running the sample problem. (40 pages)

H20-0544 System/360 Scientific Subroutine Package (PL/I) Application Description **60**

The System/360 Scientific Subroutine Package (SSP) (PL/I) is a collection of mathematical and statistical subroutines (or procedures) written in the PL/I language. It provides the PL/I user with most of the basic capabilities in earlier FORTRAN versions of SSP/360. It also has the same basic characteristics as the FORTRAN versions, in that it consists of input/output-free computational building blocks, written completely in PL/I, which may be combined with a user's input, output, or computational routines as needed. The package may be applied to the solution of many problems in industry, science, and engineering.

This Application Description presents an introduction to the program, a list of the capabilities of the package, rules of usage, machine configuration, programming systems, and a list of reference material. (12 pages)

H20-0545 System/360 Remote Access Computing System (RAX) Version 3 Application Description **60**

This system is designed to allow multiple concurrent access to a System/360 processor from remote terminals. RAX implements time-sharing techniques for the compilation and execution of user computing problems in FORTRAN and Assembler languages. Also, it provides a Terminal Command Language to provide control of the terminal and to implement the use of the programming languages.

This publication contains a description of the system, the equipment requirements, the system capabilities, the elements of the Terminal Command Language, and a discussion of the system operation. (32 pages)

H20-0549 System/360 AD-APT/AUTOSPOT (OS) Numerical Control Processor Part Programming Manual **60**

Program Number: 360A-CN-12X

The IBM N/C 360 adaptation of APT for small computers (AD-APT) uses a symbolic language to simplify the preparation of instructions for numerically controlled machined tools. The AD-APT processor prepares intermediate data for a user-written postprocessor program.

This manual contains the definition and examples of the AD-APT symbolic language. (168 pages)

H20-0550 Shared Hospital Accounting System (SHAS) Teleprocessing Operations Manual **60**

Program Number: 360A-UH-11X

The Shared Hospital Accounting System (SHAS) provides hospital accounting for a multiple-hospital environment. The participating hospitals are connected to the central System/360 facility by teleprocessing terminals. SHAS consists of application programs and a teleprocessing executive.

The application programs are patient billing, accounts receivable, and general ledger, including accounting for both inpatients and outpatients.

This publication gives the specifications and necessary information for operating the SHAS teleprocessing programs. This manual also includes a description of how to assemble and operate the teleprocessing system. Operation of AR inquiry procedure is included.

For the installation of the system knowledge of teleprocessing and QTAM under DOS is required. Prerequisites for the 1050 teleprocessing terminal setup and maintenance are the *IBM 1050 Operator's Guide,* Form A24-3125 and *Procedures for Transmitting/Receiving Messages between an IBM Data Processing System and a 1050 Data Communication System,* Form C20-1664. (72 pages)

H20-0556—System/360 Inventory Control Operations Manual 60

Program Number: 360A-MF-04X

System/360 Inventory Control consists of nine programs designed to assist in the implementation of order point inventory control in manufacturing organizations.

This manual contains information regarding preparatory and operating procedures for the programs. It includes a complete list of the console messages that can be produced by the programs. (36 pages)

H20-0557 System/360 AD-APT/AUTOSPOT (OS) Numerical Control Processor Operations Manual 60

Program Number: 360A-CN-12X

This manual provides suggested processor generation and maintenance techniques, program setup instructions, console operating instructions, halts and error messages, storage map, and restart procedures. (12 pages)

H20-0558 System/360 Array Processing Subroutine Package Application Description Manual 60

The Array Processing Subroutine Package is a set of subroutines designed to enhance and simplify the use of the IBM 2938 Array Processor, and to provide a series of analytical methods for use in digital signal analysis. (20 pages)

H20-0559 System/360 Matrix Language (MATLAN) Operations Manual 60

Program Number: 360A-CM-05X

This manual provides detailed information to generate a MATLAN system and to run MATLAN programs. (124 pages)

H20-0560 Mathematical Programming System/360 Report Generator (MPSRG) Program Description Manual 60

Program Number: 360A-CO-20X

This manual provides the system user with the information required to prepare input data and a report program. It is a basic reference document for any user of MPSRG. All MPSRG procedures are fully explained in this manual.

This manual assumes that the user is familiar with the *MPS/360 Application Description,* Form H20-0136, the *MPS/360 Control Language User's Manual,* Form H20-0290 and the *MPS/360 Linear and Separable Programming User's Manual,* Form H20-0476. (60 pages)

H20-0561 Mathematical Programming System/360 Report Generator (MPSRG) Operations Manual 60

Program Number: 360A-CO-20X

This manual contains complete information regarding the preparatory and operating procedures for the MPS/360 Report Generator. (32 pages)

H20-0563 IBM System/360 Model 44 Remote Access Computing System RAX/44 Operations Manual 60

Program Number: 360A-CX-21X

This publication provides the System/360 machine operator with detailed instructions for starting, running, and stopping the Remote Access Computing System (RAX). It includes machine requirements, description of online messages and their meanings, and restart procedures. This manual also includes the procedures required for system generation and library maintenance. (36 pages)

H20-0564 System/360 Matrix Language (MATLAN) Program Description Manual 60

Program Number: 360A-CM-05X

MATLAN is a programming system, operating under the control of System/360 Operating Systems, that is designed to simplify handling of and computation with matrices. This publication describes the MATLAN language in detail and includes description of the statements, programming considerations, and examples. (224 pages)

H20-0565 IBM System/360 Model 44 Remote Access Computing System RAX/44 Program Description Manual 60

Program Number: 360A-CX-21X

This publication provides the information necessary to use the IBM System/360 Model 44 Remote Access Computing System (RAX). It contains a description of the system, which provides concurrent access to a System/360 Model 44 for up to 63 remote 1050 IBM Data Communication Terminals and eight 2260 Display Station locations. This system provides for the compilation and execution of FORTRAN IV and Assembler Language programs and the maintenance of program and data files in a library structure. (80 pages)

H20-0572 System/360 Decision Logic Translator Program Description Manual 60

Program Number: 360A-CX-32X

The Decision Logic Translator program translates decision tables punched in cards into a FORTRAN source program. The FORTRAN source program is either punched in cards or stored on disk or tape ready for compilation. This manual contains information needed by the reader to understand the functions performed by the Decision Logic Translator. A sample problem shows how to use the decision table language to program an application. (36 pages)

H20-0573 System/360 Decision Logic Translator Operations Manual 60

Program Number: 360A-CX-32X

This manual contains information on the preparation and operation of the Decision Logic Translator program. It is designed to translate decision tables (punched into cards in a prespecified format) into a FORTRAN program (stored on disk, on tape, or on cards) ready for compilation. The reader should be familiar with the contents of the following publications:

- *IBM System/360 Disk Operating System—System Control and System Service Programs,* Form C24-5036
- *IBM System/360 Decision Logic Translator Application Description Manual,* Form H20-0492
- *IBM System/360 Decision Logic Translator Program Description Manual,* Form H20-0572

(20 pages)

H20-0574 System/360 Generalized Information System Application Description Manual 60

This manual surveys the operational concepts and system capabilities of the Generalized Information System (GIS). It provides an introduction to the language of GIS and describes the file organization and processing actions supported by GIS.

The System/360 Generalized Information System operates under control of the IBM System/360 Operating Systems and uses the "Multiprogramming with a Variable Number of Tasks" (MVT) feature. GIS is designed to operate in a terminal environment using the Queued Telecommunications Access Method and supports a wide variety of applications by providing information handling capabilities against many typical data base organizations. As a system, GIS provides facilities for defining, maintaining and retrieving data from user files under direction of the using installation and its personnel. (80 pages)

L22-6871 IBM System/360 2911 Manual Switching Unit Models 1, 2, and 5 and 2989 Remote Switching Console Special Systems Feature 13

This bulletin describes the function of the 2911 Manual Switching Unit and the 2989 Remote Switching Console for System/360 signal lines. (16 pages)

L22-6890 IBM 2930 Model 1 Tape Intersystem Connecting Unit 13

This bulletin describes the operation of the IBM 2930 Model 1 Tape Intersystem Connecting Unit, which is a special systems feature for connecting a 1401, 1410, 1460, or any 7000-series system to a System/360.

The reader's familarity with *IBM System/360 Principles of Operation,* Form A22-6821 is presumed.

Detailed information concerning interface lines is in the following publications: *IBM System/360 I/O Interface—Channel-to-Control Unit, Original Equipment Manufacturers' Information,* Form A22-6843. *IBM 729 II, IV, V, VI Magnetic Tape Units, Original Equipment Manufacturers' Information,* Form A22-6643. (20 pages)

L22-6901 IBM 2937 Models 1, 2, and 3 Multiplier-Summation Processor—Special Systems Feature—RPQ 880626 13

This bulletin describes the function of the multiplier summation processor as an input/output device of the IBM System/360. Physical and electrical requirements are given along with illustrations of the formation of final product sums. (16 pages)

L22-6902 IBM System/360 Model 40 Sum of Products Instruction—RPQ W12561 Special Systems Feature 13

This bulletin describes the function of a new instruction, Sum of Products, as an option of System/360 Model 40. Computation of the convolution integral is possible with this single instruction. The instruction is described and timing and overflow considerations are given. (2 pages)

L22-6903 IBM System/360 Model 40 Halfword Translate Instruction—RPQ W13462 Special Systems Feature 13

This bulletin describes the function of a new instruction, Halfword Translate, as an option of System/360 Model 40. The instruction is used in a data move operation. A description of the instruction is given, together with its timing. (2 pages)

L22-6904 IBM System/360 Model 40 Table Address Chaining—RPQ W13518 Special Systems Feature 13

This bulletin describes the function of table address chaining as a System/360 Model 40 I/O data chaining option. A description of the option is given together with restrictions for use of the option. (2 pages)

L22-6921 IBM System/360 Custom Feature Description, 2903 Special Control Unit Model 1—RPQ 880836 13

This publication describes the organizational, functional, and operational characteristics of the IBM 2903 Special Control Unit Model 1, which permits attachment of a wide variety of nonstandard and conventional input/output devices to IBM System/360 Models 30, 40, 44, 50, 65, 67, and 75. Attachment of the 2903-1 to a System/360 is via the standard System/360 I/O interface of a selector or multiplexer channel.

A detailed description of the functional units and interfaces of the 2903 is given, with particular emphasis on programming aspects of and design considerations for attached input/output adapters and external devices. Command, status, and sense information pertaining to the 2903 and the external devices is also included.

The reader is assumed to have a knowledge of information-processing systems and to have read *IBM System/360 Principles of Operation*, Form A22-6821. *IBM System/360 I/O Interface—Channel to Control Unit—OEMI*, Form A22-6843 is a required reference. Other related literature is listed by title and form number and briefly described in *IBM System/360 Bibliography*, Form A22-6822. (48 pages)

L27-3009 2905 Remote Multiplexer Component Description 13

This publication describes the IBM 2905 Remote Multiplexer and its operation. The 2905 is used with various IBM and common-carrier terminals and is connected to an IBM System/360 through the IBM 2906 Data Transmission Unit. Communication facilities that can be used with the 2905 are specified.

Refer to *Planning and Installation of a Data Communications System Using IBM Line Adapters*, Form A24-3435, for further information.

Other related literature is referenced by form number and briefly described in the *IBM System/360 Bibliography*, Form A22-6822. (112 pages)

L27-3010 IBM System/360 Custom Systems Unit, 2905 Remote Multiplexer, 2906 Transmission Control, Installation Manual—Physical Planning 13

This publication contains detailed physical-planning information for the IBM 2905 Remote Multiplexer and the IBM 2906 Transmission Control. Dimensions, weights, cable specifications, service clearances, physical specifications, and electrical and environmental requirements for each unit are included. (10 pages)

M08-0033 System/360 VTOC Overlay 80

This transparent plastic overlay is designed to simplify the reading of VTOC listings. When placed over a listing (obtained by means of the IEHLIST utility program, orderable component number—UT-506), the overlay labels the fields of the VTOC so that the programmer no longer needs to refer to a manual to interpret them.

Course Description Note

These publications describe a course, its objectives, length, intended audience, prerequisites, and course code. All materials required by the instructor and student are listed. Abstracts are included for education materials created especially for the course; abstract references are provided for the other materials.

R20-1055 IBM System/360 COURSE Selection Guide—Course Description 90

"See Course Description Note." (2 pages)

R20-9064 IBM System/360 COBOL Coding Course Description 90

"See Course Description Note." (4 pages)

R20-9100 IBM System/360 Programming Language/One Coding Course Description 90

"See Course Description Note." (4 pages)

R20-9105 IBM System/360 FORTRAN IV Language/One Coding 90

"See Course Description Note." (4 pages)

R20-9107 IBM System/360 Introduction Course Description 90

Upon successful completion of this course the student is familiar with the integration of equipment and programming systems for System/360. Topics covered are: development of System/360, configurations, data representation and formats, CPU organization, channels, multiprogramming and multiprocessing, programming systems, input/output devices, direct access storage devices, teleprocessing, data file planning, education and publications, and transition to the System/360.

This course replaces *System Features (I-3600)*, Form Z23-4045, and *Random File Concepts (S-1300)*, Form R20-4002. (4 pages)

R20-9108 System/360 System Operation BOS—Course Description 90

"See Course Description Note." (4 pages)

R20-9113 IBM System/360 Disk/Tape Operating Systems—Course Description 90

"See Course Description Note." (4 pages)

R20-9118 IBM System/360 Operating System Coding—Course Description 90

"See Course Description Note." (6 pages)

R20-9121 IBM System/360 Report Program Generator Program Coding Course Description 90

"See Course Description Note." (4 pages)

R20-9128 IBM System/360 Customer Executive Seminar—Course Description 90

"See Course Description Note." (4 pages)

R20-9135 IBM System/360 Macro Writing Course Description 90

"See Course Description Note." (2 pages)

R20-9136 IBM System/360 Operating System Generation—Course Description 90

"See Course Description Note." (2 pages)

R20-9148 IBM System/360 Operating System Workshop—Course Description 90

"See Course Description Note." (2 pages)

R20-9150 COBOL Program Fundamentals Course Description 90

"See Course Description Note." (3 pages)

R20-9151 Writing Programs in COBOL Course Description 90

"See Course Description Note." (3 pages)

R20-9152 COBOL Programming Techniques Course Description 90

"See Course Description Note." (3 pages)

R20-9154 IBM System/360 Disk Operating System Communication Coding—BTAM Course Description 90

"See Course Description Note." (2 pages)

R20-9163 IBM System/360 Communication System Design and Analysis—Course Description 90

"See Course Description Note." (4 pages)

R20-9165 System/360 Assembler Language Coding Programmed Instruction Course Description 90

"See Course Description Note." (2 pages)

R20-9168 IBM System/360 Report Program Generator Coding (Card System) Course Description 90

"See Course Description Note." (2 pages)

R20-9169 IBM System/360 Report Program Generator Coding (Tape System) Course Description 90

"See Course Description Note." (2 pages)

R20-9170 IBM System/360 Report Program Generator Coding (Disk System) Course Description 90

"See Course Description Note." (2 pages)

R20-9171 System/360 Assembler Language Coding Workshop—Course Description 90

"See Course Description Note." (2 pages)

R20-9188 IBM System/360 Operating System STRAM—Course Description 90

"See Course Description Note." (2 pages)

Course Description Note

These publications describe a course, its objectives, length, intended audience, prerequisites, and course code. All materials required by the instructor and student are listed. Abstracts are included for education materials created especially for the course; abstract references are provided for the other materials.

R20-9189 IBM System/360 Disk Operating System Synchronous Transmit Receive Access Method—Course Description 90

"See Course Description Note." (2 pages)

R20-9195 IBM System/360 Introduction to Forecasting—Course Description 90

"See Course Description Note." (4 pages)

R20-9196 IBM System/360 General Purpose System Simulator—Introduction—Course Description 90

"See Course Description Note." (1 page)

R20-9197 IBM System/360 General Purpose System Simulator—Advanced—Course Description 90

"See Course Description Note." (1 page)

R20-9201 IBM System/360 Basic Operating System Synchronous Transmit Received Course Description 90

"See Course Description Note." (2 pages)

R20-9202 IBM System/360 Synchronous Transmit Received Devices and Concepts —Course Description 90

"See Course Description Note." (2 pages)

R20-9211 IBM System/360 Basic PL/I Coding Programmed Instruction—Course Description 90

"See Course Description Note." (4 pages)

R20-9214 1287 Optical Reader—Course Description 90

"See Course Description Note." (3 pages)

R20-9216 IBM System/360 OS Language Interface—Course Description 90

"See Course Description Note." (4 pages)

R20-9227 System/360 Computer System Simulator/360—Course Description 90

"See Course Description Note." (4 pages)

R20-9232 Introduction to System/360 Programmed Instruction—Course Description 90

"See Course Description Note." (3 pages)

R20-9233 System/360 OS BTAM Coding Course Description 90

Upon successful completion of the course, the student is able to understand the functions of BTAM and where it fits in the Operating System, and to code using BTAM macros in order to service the communication lines connected to System/360. (4 pages)

R20-9236 Introduction to the System/360 Document Processing System Course Description 90

"See Course Description Note." (8 pages)

R20-9244 System/360 Operating System Advanced Operator Training—Course Description 90

"See Course Description Note." (4 pages)

R20-9257 IBM System/360 Operations Management—Course Description 90

"See Course Description Note." (4 pages)

R20-9259 IBM System/360 DOS/TOS Facilities for Nonprogrammers Course Description 90

"See Course Description Note." (4 pages)

R20-9262 System/360 Mathematical Programming System Control Program and Linear Programming Feature Course Description 90

"See Course Description Note." (4 pages)

R20-9263 System/360 Mathematical Programming System II Separable Programming Feature Course Description 90

"See Course Description Note." (4 pages)

R20-9264 System/360 Mathematical Programming System III READCOMM FORTRAN—Interface Feature—Course Description 90

"See Course Description Note." (4 pages)

R20-9265 System/360 Mathematic Programming System IV MARVEL Language Feature—Course Description 90

"See Course Description Note." (4 pages)

X20-1702 Proportional Record Layout Format Forms 80

The front side of this form consists of the Proportional Record Layout Form. It is suitable for card, tape, and disk records. Positional markings are 00–99 and 01–100.

The back side of the form is the Record Format Form. This form permits record layouts to be prepared without the space limitations of positional markings. Space is also provided for reference data.

These forms are general-purpose and may be used for all systems. (25 per pad—11 x 16½)

X20-1703 IBM System/360 Reference Data Card 85

The information on this card is a digest of the data contained in the *IBM System/360 Principles of Operation,* Form A22-6821 and *IBM Basic Support Assembler with Input/Output Macros (8K Tape),* Form C24-3355. (Card– 5 fold)

X20-1705 IBM 2311 Disk Cell Drive Reference Card 85

A capacity and transmission time reference card arranged in a tabular format. Formulas and examples of how to use the card are included. (Folded Card)

X20-1706 IBM 2302 Disk Storage Drive Reference Card 85

A capacity and transmission time reference card arranged in a tabular format. Formulas and examples of how to use the card are included. (Folded Card)

X20-1709 IBM System/360 Basic Programming Support—Basic Utilities Reference Card 85

This reference card is a digest of form C28-6505. It contains information needed to make use of the Basic Programming Support Basic Utility Programs, including an example of coding and deck setup. (Folded Card)

X20-1710 IBM 2314 Direct Access Storage Facility Capacity and Transmission Time Reference Card 85

This reference card provides a convenient reference and several informative examples for planning and programming purposes. Tables include timing and capacity with and without keys. (1 page)

X20-1711 IBM System/360 Record Layout Worksheet 80

Padded forms showing double word, word, halfword and byte boundaries. Bytes marked to accommodate packed-decimal digits. Provides for two records of 256 positions each, both in hexadecimal and decimal numbering. (25 per pad—11 x 16½)

X20-1717 IBM 2301 Drum Storage 85

This reference card describes the capacity of the 2301 and the data transmission time requirements for records of various lengths. Formulas and examples supplement the tables. (Folded Card)

X20-1718 IBM 2303 Drum Storage Reference Card 85

This reference card describes the capacity of the 2303 and the data transmission time requirements for records of various lengths. Formulas and examples are used to supplement the tables. (Card)

X20-1719 IBM System/360 Character Sets 85

This card shows the character sets used by IBM System/360 programming languages, printers, and system typewriters. It also includes the character sets used by some current-system equipment that may be in use during a transition to System/360. (2 pages)

X20-1733 IBM Operating System/360 Reference Data, Assembler Language Data Management Macro Instructions 85

This pocket size booklet is a digest of the data management macro instruction OS/360. The information presented in this publication is extracted from C28-6647 and N28-2217. (28 pages)

X20-1738 System/360 Reference Data Assembler Language Supervisor Macro-Instruction 85

The information in this form is a digest of the data contained in the *IBM System/360 Operating System Control Program,* Form C28-6541. (4-page pocket booklet)

X20-1739 System/360 Reference Data Linkage Editor 85

The information in this form is a digest of the data contained in the *IBM System/360 Operating System Linkage Editor,* Form C28-6538. (4-page pocket booklet)

X20-1741 IBM 1287 Optical Reader Document Tracing Guide 80

This card is a forms design guide for assisting the 1287 users in the physical layout of input documents. (Card —6¼ x 9¼)

X20-1744 PL/I Refrence Data 85

Lists keywords and character sets of PL/I. Keywords are given in alphabetical sequence, are related to pages in C28-6571, and their use is illustrated by short examples. Character sets are given in System/360 ascending collating sequence, punched-card codes and System/360 8-bit code are shown, and names, use, and short examples are given and related to pages in C28-6571. (8 pages)

X20-1746 Operating System/360 Job Control Language Reference Card 85

This card contains reference tables and examples of usage designed to assist the user in preparing the Job Control Language aids for OS/360. The reference card pertains to the Primary Control Program only.

X20-1747 Share Print Chart 80

Share Print Chart—6 lines per inch spacing. Installation supply special spacing chart, padded.

X20-1749 IBM System/360 PL/I Reference Card for DOS/TOS 85

Reference card. (10 pages)

X20-1751 IBM 2260 Display Format 80

Padded form (25 per pad)

X20-1758 IBM System/360 Model 30 1401/1440/1460 Compatibility Feature Reference Card 85

A reference card for the System/360 Model 30, 1401/1440/ 1460 Compatibility Feature. (10 pages)

X20-1759 IBM 1287 Optical Reader Design Formats 80

Padded form (25 per pad)

X20-1760 Examples of Control Cards for System/360 Operating System 85

This reference card gives sample control cards for running FORTRAN, COBOL, PL/I, Assembler, and Utility jobs. An introduction and reference list to System/360 Operating System are included. (10 pages)

X20-1761 Mathematical Programming Input Form 80

Padded form (25 per pad)

X20-1769 IBM System/360 Operating System COBOL E and F Language Reference Card 85

Reference card. (4 pages)

X20-1770 IBM System/360 BPS/BOS/DOS/TOS Sort/Merge Reference Card 85

Reference card. (100 pages)

X20-1771 IBM System/360 Reference Data DOS Job Control Language Operator Communication Reference Card 85

A reference card for DOS job control language operator communication. (14 pages)

X20-8020 Flowcharting Template 80

This template provides a convenient means for drawing standard symbols used frequently in flowcharting computer programs. (1 sheet)

X20-8030 General Purpose Card Punching Form 80

A general purpose form for preparing input data, control cards, program patch cards and other card input to IBM equipment. (25 per pad—8½ x 11)

X22-6834 IBM System/360 Unit Record I/O Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (1 sheet)

X22-6835 IBM System/360 Hypertape Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (1 sheet)

X22-6837 Magnetic Tape Record Characteristics—IBM 2400 Series Magnetic Tape Units 85

This card is presented as an aid in estimating tape processing time and record capacity per reel. (Card)

X22-6840 Hypertape Capacity and Timing 85

This card is presented as an aid in estimating tape processing time and record capacity per reel. (Card)

X22-6855 Magnetic Tape Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (1 sheet)

X22-6856 IBM System/360 Processors Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (5 sheets)

X22-6857 Communication Equipment Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (1 sheet)

X22-6858 Data Storage Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (3 sheets)

X22-6859 IBM System/360 Consoles and Terminals Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (2 sheets)

X22-6860 Magnetic and Optical Character Readers Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (1 sheet)

X22-6894 IBM System/360 Processors Models 25, 30 and 40 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (1 sheet)

X22-6905 IBM System/360 Processor Model 67 Template 90

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (5 sheets)

X22-6914 IBM System/360 Processors Models 44 and 50 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (4 sheets)

X22-6923 IBM System/360 Model 85 Physical Planning Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts (4 pages)

X22-6924 IBM System/360 Model 65 Multisystem Physical Planning Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale, for planning machine room layouts. (4 pages)

X22-6925 Field Engineering Furniture Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale. (1 sheet)

X24-3347 IBM System/360 RPG File Description Sheet 80

The file description specification sheet provides information about the input and output files used by the object program. (25 per pad—8½ x 13)

X24-3348 IBM System/360 RPG File Extension Sheet 80

The file extension sheet is used to provide information about table files, chaining files, and record address files. (25 per pad—8½ x 13)

X24-3349 IBM System/360 RPG Line Counter Specification Sheet 80

This line-counter specification sheet is used if a report that will ultimately be printed is to be stored on some intermediate device, and if the program uses overflow indicators (for automatic skipping). (25 per pad—8½ x 13)

X24-3350 IBM System/360 RPG Input Specification Sheet 80

The input specification sheet is used to specify the files to be read into the system, identify records contained in the file, and describe the location of the data fields in each record. (25 per pad—8½ x 13)

X24-3351 IBM System/360 RPG Calculation Specification Sheet 80

The calculation specification sheet is used to specify operations and calculations on input data obtained from previous calculations. (25 per pad—8½ x 13)

X24-3352 IBM System/360 RPG Output-Format Specification Sheet 80

This output-format specification sheet is used to specify the location of the data fields in the output records and the kind of output fields to be produced. (25 per pad—8½ x 13)

X24-3376 IBM System/360 Model 30 IBM 1052 Key-tabs 80

These key-tabs are fastened on the front of the keys on the IBM 1052 when the Model 30 is being operated in 1400 Compatibility mode. (Plastic Sheet—5½ x 8½)

X24-3406 IBM System/360 Model 30 IBM 2702 Worksheet 80

Multiplexor channel multiplex mode loading evaluation for IBM System/360 Model 30 may indicate an apparent overload for the IBM 2702 Transmission Control Unit (when attached to the multiplexor channel). The IBM 2702 Worksheet is then used with an alternate procedure for evaluation of the 2702. This worksheet is designed for use with the alternate procedure for the 2702 described in *IBM System/360 Model 30 Channel Characteristics and Functional Evaluation,* Form A24-3411. (25 per pad—11 x 16½)

X24-3407 IBM System/360 Model 30 Multiplexor Channel Worksheet 80

This worksheet is used to facilitate evaluation of the channel effects imposed upon IBM System/360 Model 30 when the multiplexor channel is operating in multiplex mode. The evaluation procedure is described in the *IBM System/360 Model 30 Channel Characteristics and Functional Evaluation,* Form A24-3411. (25 per pad—11 x 16½)

X24-3448 IBM 1445 Printer Spacing Chart 80

This chart is scaled in non-photographic blue and provides 113 printing positions at eight characters per inch for carriage spacing of six lines per inch. Vertical rulings are shown for each inch or every eight characters apart to assist in printing layout. A carriage-control tape facilitates planning for tape punching. Space is available on the top of the form to indicate miscellaneous print line formats. (1 page)

X24-3477 Compatibility Initialization Deck Coding Sheet 80

This form is used to facilitate preparation of the Compatibility Initialization Deck (CID) when the 1401, 1440, and 1460 Compatibility Feature is used on the IBM System/360 Model 30.

The form shows the codes required for each of the 32 cards used to lead the 1400 auxiliary storage A and B. The contents of the cards required for the initialization routine are also shown. Except for variable data, the forms are pre-printed.

The card fields of the CID are described in detail in the *System/360 Model 30, 1400 Compatibility Feature,* Form A24-3255. (1 sheet)

X24-5045 System/360 Assembler Coding Form DTFSR Entries Tape 80

Padded form, 25 per pad.

X24-5046 System/360 Coding Form DTFSR Entries Card Read-Punch 80

Padded form, 25 per pad.

X24-5047 System/360 Coding Form DTFSR Entries Printer and Print Keyboard 80

Padded form, 25 per pad.

X24-5048 System/360 Coding Form DTFSR Entries Disk 80

Padded form, 25 per pad.

X24-5049 System/360 Coding Form DTFDA Entries 80

Padded form, 25 per pad.

X24-5050 System/360 Coding Form DTFIS Entries 80

Padded form, 25 per pad.

X24-5051 System/360 Coding Form DTFSD Entries 80

Padded form, 25 per pad.

X24-5052 System/360 Coding Form DTFMT Entries 80

Padded form, 25 per pad.

X24-5053 System/360 Coding Form DTFCD Entries 80

Padded form, 25 per pad.

X24-5054 System/360 Coding Form DTFCN Entries 80

Padded form, 25 per pad.

X24-5055 System/360 Coding Form PRMOD Entries 80

Padded form, 25 per pad.

X24-5056 System/360 ISMOD Entries 80

Padded form, 25 per pad.

X26-5508 IBM System/360 Process I/O Devices Template 80

Equipment templates on acetate sheets, ¼ inch equals 1 foot scale for planning machine room layouts. (2 sheets)

X26-5590 System/360 Report Program Generator Indicator Summary 80

Padded form, 25 per pad.

X27-2950 IBM 2250 Display Layout Sheet 80

A layout sheet to plan a display and formulate the associated program data. (1 sheet)

X28-6383 IBM FORTRAN IV Reference Data 85

FORTRAN IV information is included for IBM System/360 Basic Programming Support System (BPS Card and BPS Tape), IBM System/360 Tape Operating System (TOS), IBM System/360 Disk Operating System (DOS), IBM System/360 Operating System (E, G, and H), IBM System/360 Model 44 Programming System (44PS), IBM System/360 Time Sharing System (TSS), IBM 1130 System (1130), IBM 1800 System (1800), and United States of America Standards Institute (USASI). (8 pages)

X28-6506 IBM System/360 Assembler Short Coding Form 80

This form is designed to assist programmers in coding programs in the IBM System/360 special support basic assembler language, as described in Form C28-6503. (25 per pad—8½ x 11)

X28-6507 IBM System/360 Assembler Long Coding Form 80

This form is designed to assist programmers in coding programs in the IBM System/360 special support basic assembler language, as described in Form C28-6503. (25 per pad—8½ x 14)

X28-6509 IBM System/360 Assembler Coding Form 80

This form is designed to assist programmers in coding programs in the IBM System/360 operating system assembler language, as described in Form C28-6514. (25 per pad—8½ x 14)

X28-6812 IBM System/360 Model 44 Programming System Formats for Machine Check Interruption Diagnostics 85

When a machine-check interruption occurs, the system attempts to produce a diagnostic printout on the console typewriter and, if successful, places the machine in the wait state. This printout assists field engineering personnel in analyzing a malfunction, and it should be saved by the operator for their use.

Panel 1 provides material introductory to the use of this reference card. Panels 2 and 3 describe the format of the printout. Panel 4 describes its content. Panel 4 may be used in conjunction with the first line of the diagnostic printout to determine the content of remaining lines. Subsequently, Panels 2 and 3 may be used to determine the significances of the various fields and digits of the selected items displayed. (2 pages)

X28-7327 FORTRAN Coding Form 80

Padded form, 25 per pad.

Y20-0042 System/360 Data Conversion Utility III Version 2 System Manual 60

Program Number: 360A-SE-26X

This manual provides detailed information to help the user gain a more thorough knowledge of the programming logic employed in the program macros. This manual presents a narrative for each macro which should be complemented by a listing of the basic tape.

The manual is available from Mechanicsburg to those who need it for either the modification or maintenance of the program. (76 pages)

Y20-0062 System/360 Flowchart System Manual 60

Program Number: 360A-SE-22X

The IBM System/360 Flowchart program is a System/360 program designed to produce flowcharts. This documentation aid operates under DOS/360 and is intended to minimize the planning and effort required to produce and maintain documentation.

It gives the user ability to:

1. Produce clear, standardized, easily reproduced computer-generated flowcharts.
2. Keep flowcharts continually up to date.
3. Standardize flowcharting techniques.

This publication is used in conjunction with the System/360 Flowchart optional tape, which contains the source language input, the assembly listings, and the program logic flowcharts. The optional tape is available from the IBM Program Information Department at Hawthorne, New York. One 2400-foot reel of nine-track tape is required.

This publication contains the narrative for the flowcharts, switch and register usage, miscellaneous programming notes, and the internal record formats used by the program.

The User's Manual and the Operator's Manual are prerequisites to reading and using this publication. (92 pages)

Y20-0065 Mathematical Programming System/360 System Manual 60

Program Number: 360A-CO-14X

This manual provides detailed information to help the user understand the implementation of MPS/360. It is designed to be used with the program listings and flowcharts of MPS/360. (388 pages)

Y20-0067 System/360 Data Conversion Utilities II, Version 2 (Sequential, Direct Access) System Manual 60

Program Number: 360A-SE-20X

This manual provides detailed information to help the user gain a more thorough knowledge of the programming logic employed in the program modules, subroutines, and macros.

The manual presents, for each module and subroutine, flowcharts, flowchart narrative, and switch and register listings. For each macro, a listing and macro narrative are provided. (256 pages)

Y20-0071 System/360 Online Teller Program and Mortgage Loan Background Capability System Manual 60

Program Number: 360A-FB-16X

This manual contains detailed flowcharts for the online program and the file preparation programs. Program narratives and descriptions of switches are given in the Programmer's Manual and correlated to the flowcharts by cross-reference indexes. (278 pages)

Y20-0075 General Purpose Simulation System/360 System Manual 60

This publication contains a description of the internal structure and basic operation of the GPSS/360 program. All eleven modules which make up the GPSS/360 program are discussed in general and, where appropriate, the operation of all routines within a given module is explained in detail.

In general, the material presented throughout this manual is applicable to both the OS and DOS version of the GPSS/360 program. Specific differences are listed and described in Appendix D.

The information contained in this manual should give the user a thorough understanding of the structure and operation of the GPSS/360 program so that HELP block routines or other modification may be more easily implemented. (407 pages)

Y20-0080 System/360 APT Numerical Control Processor Version 2 System Manual 60

Program Number: 360A-CN-10X

This manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application. (920 pages)

Y20-0083 Project Management System/360 Network Processor System Manual 60

Program Number: 360A-CP-04X

This manual presents a detailed description of subroutines and internal data formats of PMS/360 Network Processor. In conjunction with the program listings and flowcharts, it provides the user with a complete description of how this processor is implemented. (228 pages)

Y20-0084 Project Management System/360 Cost Processor System Manual 60

Program Number: 360A-CP-04X

This manual presents a detailed descripiton of subroutines and internal data formats of PMS/360 Cost Processor. In conjunction with the program listings and flowcharts, it provides the user with a complete description of how this processor is implemented. (185 pages)

Y20-0085 Project Management System/360 Version 2, Report Processor System Manual 60

Program Number: 360A-CP-04X

This manual presents a detailed description of subroutines and internal data formats of PMS/360 Report Processor. In conjunction with the program listings and flowcharts, it provides the user with a complete description of how this processor is implemented. (375 pages)

Y20-0092 System/360 Scientific Subroutine Package Version 3 System Manual 60

Program Number: 360A-CM-03X

This manual provides flowchart information on the logic used in each subroutine of the System/360 Scientific Subroutine Package. All subroutine descriptions and listings are contained in the User's Manual. (264 pages)

Y20-0096 Synchronous Transmit-Receive Access Method for DOS/360 System Manual 60

Program Number: 360A-SE-32X

This publication describes the architecture and logic of the Synchronous Transmit-Receive Access Method for DOS/360. The manual describes the process for generating STR capability into a DOS system, loading the access method, and logic. Included are:

SYSGEN and STR loading
Architecture
Macro Expansions
Routine Logic
STR Error Recovery
Control Block

Prerequisites are:

1. A basic knowledge of System/360 machine concepts.
2. A basic knowledge of DOS/360.
3. A knowledge of principles of STR transmission.
4. Understanding of the Synchronous Transmit-Receive Access Method User's Manual. (120 pages)

Y20-0097 Synchronous Transmit-Receive Access Method for OS/360 System Manual 60

Program Number: 360A-SE-33X

This publication describes the architecture and logic of the Synchronous Transmit-Receive Access Method for OS/360. The manual describes the process for generating STR capability into an OS system, loading the access method, and logic. Included are:

SYSGEN and STR loading
Architecture
Macro Expansions
Routine Logic
STR Error Recovery
Control Block

Prerequisites are:

1. A basic knowledge of System/360 machine concepts.
2. A basic knowledge of OS/360.
3. A knowledge of principles of STR transmission.
4. Understanding of the Synchronous Transmit-Receive Access Method User's Manual. (360 pages)

Y20-0099 System/360 Bill of Material Processor, Version 2 System Manual 60

Program Number: 360A-ME-06X

This manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application.

It contains detailed reference material for the file organization, maintenance, and reorganization program modules. (380 pages)

Y20-0100 TEST/360 Control Card Edit and Analysis Program—Application Description 60

Program Number: 360A-SE-25X

This program is a stand-alone program for editing and analyzing network and message generation control cards before using the TEST/360 (Teleprocessing Environmental Simulator Testing) system. TEST/360 is a confidential Type II program, which does not allow users the possibility of testing their input at other than specific datacenter locations. This program allows prior editing at any location approved and authorized by the regional datacenter.

The TEST/360 Control Card Edit and Analysis Program provides the following:

1. Edit of the 17 types of TEST/360 network and message generation control cards.
2. Diagnostic message and column indicator for each edit error found.
3. Estimated core storage requirements for the TEST/360 simulation being specified.
4. Summary report of system, line, and terminal specifications.
5. Ability to edit sets of TEST/360 control cards in one pass.

Minimum configuration consists of a 64K System/360 Model 30 with 2540, 1403, 1052, and optionally, a 2400 (seven- or nine-track).

The source language used is System/360 Basic Assembler with an 8K BPS supervisor. (8 pages)

Y20-0101 System/360 Remote Access Computing System (RAX) System Manual 60

Program Number: 360A-CX-17X

This publication provides the systems programmer with detailed information about the RAX system. It contains flowcharts and descriptions of the routines making up the system. (376 pages)

Y20-0105 1400 Autocoder to COBOL Conversion Aid Program Version 2 Program Description Manual 60

Program Number: 360A-SE-19X

This program is designed to aid in conversion to System/360 COBOL for all 1401, 1410, 1440, 1460 and 7010 users whose current applications are written in Autocoder, by (1) reducing the total effort required in program conversion, (2) freeing manpower of much of the routine reprogramming effort, and (3) eliminating many clerical errors associated with reprogramming.

This manual contains a general description of the program, the machine configuration used, and a sample problem. (56 pages)

Y20-0106 1400 Autocoder to COBOL Conversion Aid Program Version 2 Operator's Manual 60

Program Number: 360A-SE-19X

This program is designed to aid in conversion to System/360 COBOL for all 1401, 1410, 1440, 1460, and 7010 users whose current applications are written predominately in Autocoder, by (1) reducing the total effort required in program conversion, (2) freeing manpower of much of the routine reprogramming effort, and (3) eliminating many clerical errors associated with reprogramming.

This manual contains the information necessary to run the program. It includes operating instructions, halts and message list, and storage map. Instructions are also provided for preparing a functioning system from the basic machine-readable material furnished by the Program Information Department. (108 pages)

Y20-0111 System/360 Continuous System Modeling Program System Manual 60

Program Number: 360A-CX-16X

This is an IBM System/360 program for the simulation of continuous systems. It provides an application-oriented input language that accepts problems expressed in the form of either an analog block diagram or a system of ordinary differential equations. Data input and output are facilitated by means of application-oriented control statements.

This manual provides detailed information to help the user gain a thorough knowledge of the program's logic. It contains flowcharts, flowchart narratives, and tables of switches and data used in COMMON. It also includes a section describing the procedures for implementing several program modifications. (226 pages)

Y20-0112 IBM System/360 Product Structure Retrieval Program System Manual 60

Program Number: 360A-ME-07X

This manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application.

It contains reference material for the program modules included with the retrieval package. (54 pages)

Y20-0116 TEST/360 Control Card Edit and Analysis Program—Program Reference Manual 60

Program Number: 360A-SE-25X

This program is a stand-alone program for editing network and message generation control cards before using them in the TEST/360 (Teleprocessing Environmental Simulator Testing) system. The primary function of the program is to provide an efficient method of analyzing these control cards. TEST/360 is a confidential Type II program, which does not allow users the possibility of testing their input at other than specific datacenter locations. The edit and analysis program allows prior editing at any location.

The program provides the following:

1. Edit of the 17 types of TEST/360 network and message generation control cards.
2. Diagnostic message and column indicator for each edit error found.
3. Estimated core storage requirements for the TEST/360 simulation being specified.
4. Summary report of system, line, and terminal specifications.
5. Ability to edit sets of TEST/360 control cards in one pass.

Minimum configuration consists of a 64K System/360 Model 30 with 2540, 1403, and 1052. (40 pages)

Y20-0118 System/360 AD-APT/AUTOSPOT Numerical Control Processor System Manual 60

Program Number: 360A-CN-09X

This manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application. Certain information, applicable to both this processor and the AUTOSPOT Processor (360A-CN-08X) will be found in the AUTOSPOT System Manual, Form Y20-0119. (234 pages)

Y20-0119 System/360 AUTOSPOT Numerical Control Processor System Manual 60

Program Number: 360A-CN-08X

This manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application. (404 pages)

Y20-0124 1400 Autocoder to COBOL Conversion Aid Program Version 2, System Manual

Program Number: 360A-SE-19X

This Conversion Aid Program is designed to ease the transition to System/360 for all 1401, 1410, 1440, 1460, and 7010 users whose current applications are written predominately in Autocoder and SPS, by (1) reducing the effort required in reprogramming, (2) freeing manpower from the reprogramming effort to develop new applications, (3) eliminating many clerical errors associated with reprogramming, and (4) making re-systemization of the applications easier, since COBOL language is much easier to modify.

This manual contains information necessary to understand the workings of the program. Each phase is detailed and sufficient information is provided to allow the user to modify the program functions or its operating environment. Instructions for processing the optional tape material are also included. (92 pages)

Y20-0126 Project Control System/360 System Manual 60

Program Number: 360A-CP-06X

This manual describes the routines and subroutines that comprise the IBM Project Control System/360. It is divided into the seven logical phases of the system and is intended primarily for the programmer who wishes to gain an understanding of the programming design of the PCS/360. It provides the necessary information for maintaining and modifying the system. (128 pages)

Y20-0127 System/360 Mortgage Loan Program System Manual 60

Program Number: 360A-FB-19X

This manual provides detailed information to help the user gain more thorough knowledge of the program logic employed in the mortgage loan application. Included for each run is an introduction to the run and a flowchart narrative, applicable switch listings and register usage in addition to the actual flowchart. (88 pages)

Y20-0130 Computer System Simulator/360 Program Description and Operations Manual 60

Program Number: 360A-SE-29T

This manual provides a definitive description of the Computer System Simulator/360 (CSS/360), a simulator program for analyzing the performance of computer systems. The structure and language of the program are explained in detail, with some examples showing the application of the program. In addition, the operation procedures for running the program are included. (248 pages)

Y20-0143 IBM System/360 Document Processing System—System Manual 60

Program Number: 360A-CX-12X

This manual represents the information required to maintain or modify the internal logic of the IBM System/360 Document Processing System. Insofar as possible, all agreements, assumptions, and production aids used by the development programmers are included. (316 pages)

Y20-0148 TEST/360 Version 2—Program Description Manual 60

Program Number: 360A-SE-24R

TEST/360 is a general-purpose TP test package which allows the user to test his operational programs and to evaluate the performance of his entire TP system before installation.

TEST/360, operating in a separate System/360 CPU, is interfaced with the user's teleprocessing system through an IBM transmission control unit. Thus, the customer's program residing in a separate CPU can operate in accordance with actual operating conditions. Because the user's programs and associated hardware are both integral parts of the simulation process, TEST/360 provides the closest approximation to a true operational environment.

This manual describes TEST/360 and how it interfaces with the user's teleprocessing system during test. The document also describes the preparation of control cards, the generation of message transactions from the simulated terminals, logical features, interval reports, end-of-job reports, and post-run analysis reports which enable a user to evaluate the performance of his TP system. (144 pages)

Y20-0153 Medical Information System Programs (MISP) Application Description 60

Program Number: 360A-UH-08L

A hospital must have the ability to respond quickly and accurately to the demands placed upon it. The application of electronic information processing can help provide a solution to the recurring problem of improving service with limited resources.

The Medical Information System Programs (MISP) represent an application of information-processing equipment to answer this need. MISP is designed to assist in the installation of a teleprocessing system (hospital information system) linking the many different service areas in a hospital where complete and prompt patient care is a requirement. These areas include the nursing station, admitting, pharmacy, clinical laboratories, Xray, electrodiagnositcs, dietary, operating room, central supply, and others.

This manual describes in general the purpose and functions of a hospital information system using MISP. (40 pages)

Y20-0155 Medical Information System Programs (MISP)—Application Description Programmer's Manual 60

Program Number: 360A-UH-08L

The purpose of this manual is to describe how to use the Medical Information System Programs and facilities. A description of each interface to the executive program, each library routine, system symbols, and parameters for system definition are included. In addition, there is a series of steps outlined for guidance in construction of application programs using the MISP facilities.

This manual is available to those who meet the special conditions under which MISP is released. (204 pages)

Y20-0168 System/360 Vehicle Scheduling Program, Scheduling Production and Distance Listing System Manual 60

Program Number: 360A-ST-06X

This manual provides detailed information to help the user gain a more thorough knowledge of the programming logic employed in the Schedule Production and Distance Listing phases of the System/360 Vehicle Scheduling Program. (40 pages)

Y20-0174 System/360 Administrative Terminal System DOS (ATS/DOS) System Manual 60

Program Number: 360A-CX-18X

This manual contains information on the system design, logic flow, and coding of the ATS/360 Program. It contains narrative which describes the significant programs which make up the system. Program flowcharts and assembly listings, although logically part of this manual, are not included in it. These are available on tape as described elsewhere. (206 pages)

Y20-0177 Advanced Life Information System Batch Edit Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes processing of input cards and the creation of input edit transaction items. Appropriate flowcharts, flowchart narratives, input/output formats, program modification aids, and table descriptions are included. (104 pages)

Y20-0178 Advanced Life Information System Input Edit Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help understand program logic. It describes processing of transaction items produced by the batch edit program and also describes the creation of external file maintenance transactions. Appropriate flowcharts, flowchart narratives, input/output formats, tables and descriptions, and program modification aids are included. (544 pages)

Y20-0179 Advanced Life Information System Frequently Used Record Formats System Manual 60

Program Number: 360A-IL-09X

This manual contains the transaction data area formats, the miscellaneous data area formats, and policy master record formats. The transaction data area formats illustrate the output from the input edit program and the input to the file maintenance program. The transaction data area formats also illustrate a portion of certain output messages from the file maintenance program. The miscellaneous data area formats illustrate a portion of certain output messages from the file maintenance program. Both the transaction data area formats and the miscellaneous data area formats are a part of the input and output for many of the output programs. In the documentation for the output programs reference is made to *Frequently Used Record Formats* for illustration of the exact nature of portions of the input or output message. (84 pages)

Y20-0180 Advanced Life Information System Miscellaneous Volume System Manual 60

Program Number: 360A-IL-09X

This manual contains sections on customer constants, customer tables, file maintenance account numbers and customer account strips, file maintenance message codes, transaction codes, and file maintenance work areas. The information in this manual will be referred to by many system manuals, particularly the file maintenance system manuals. (244 pages)

Y20-0181 Advanced Life Information System File Maintenance Run Executive Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help understand program logic. This manual describes control of all file maintenance processing. Also described is the creation of file maintenance messages for the output analysis program, policy master record updating, and creation of restart records for the data cell restore program. Appropriate flowcharts, flowchart narratives, input/output formats, and work area descriptions are included. (136 pages)

Y20-0182 Advanced Life Information System Data Cell Reorganization Program, Policy Master Record Merge Program, Data Cell Reconstruction Program, and Data Cell Restore Program System Manual 60

Program Number: 360A-IL-09X

This manual describes the policy master record file organization on the IBM 2321 Data Cell Drive and the programs which were written to (1) initially load the data cell file, (2) reorganize the data cell file, (3) reconstruct a data cell, (4) provide restart procedures, and (5) maintain backup tape files. The following text describes the file organization and introduces the programs. A complete description of each program is provided in a subsequent section. (96 pages)

Y20-0183 Advanced Life Information System File Maintenance Include (R) Routines (Narratives) System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It includes a general description of each file maintenance include (R) routine. This manual should be used with the File Maintenance Include (R) Routines (Flowcharts) to obtain a more detailed understanding of the processing in each include routine. (512 pages)

Y20-0184 Advanced Life Information System File Maintenance Include (R) Routines (Flowcharts) System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It contains a flowchart for each file maintenance include (R) routine. This manual should be used with the File Maintenance Include (R) Routines (Narratives) to obtain a more detailed understanding of the processing in each include routine. (684 pages)

Y20-0185 Advanced Life Information System File Maintenance Call (S) Routines (Narratives) System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It includes a general description of each file maintenance call (S) routine. This manual should be used with the File Maintenance Call (S) Routines (Flowcharts) to obtain a more detailed understanding of the processing in each call (S) routine. (612 pages)

Y20-0186 Advanced Life Information System File Maintenance Call (S) Routines (Flowcharts) System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It contains a flowchart for each file maintenance call (S) routine. This manual should be used with the File Maintenance Call (S) Routines (Narratives) to obtain a more detailed understanding of the processing in each call (S) routine. (604 pages)

Y20-0187 Advanced Life Information System File Maintenance Issues, Additions, Complex Changes, and Terminations Transactions System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand the processing for issues, additions, complex changes, and terminations in the file maintenance program. It describes the processing for the respective transactions. A program abstract, narratives, and flowcharts are provided. (48 pages)

Y20-0188 Advanced Life Information System File Maintenance Simple Changes Transactions System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand the simple change processing. It describes the external file maintenance transactions that add, delete, or replace individual policy master record fields and/or trailers. A program abstract, narratives, and flowcharts are provided. (196 pages)

Y20-0189 Advanced Life Information System File Maintenance 36XX Financial Transactions-Payments System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand payment processing in the file maintenance program. It describes financial processing for all payment transactions. A program abstract, narratives, and flowcharts are provided. (80 pages)

Y20-0190 Advanced Life Information System File Maintenance Financial Transactions-Accounting Entries System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand accounting entry processing in the file maintenance program. It describes financial processing for all accounting adjustment transactions. A program abstract, narratives, and flowcharts are provided. (132 pages)

Y20-0191 Advanced Life Information System File Maintenance Status Transactions-Process and Quote Terminations System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand status transaction processing in the file maintenance program. It describes processing for executing termination status transactions on a process (action) and a quote basis. A program abstract, narratives, and flowcharts are provided. (32 pages)

Y20-0192 Advanced Life Information System File Maintenance Status Transactions-Process and Quote Miscellaneous, Loan Values, and Participation Values System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand status transaction processing in the file maintenance program. It describes processing for executing miscellaneous, loan value, and participation value status transactions on a process (action) and a quote basis. A program abstract, narratives, and flowcharts are provided. (76 pages)

Y20-0193 Advanced Life Information System File Maintenance Billing Transactions System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand the billing processing in the file maintenance program. It describes processing for the internal transaction billing (normal billing), catch-up billing, externally generated billing (billing request transaction billing), and special frequency billing. A program abstract, narratives, and flowcharts are provided. (56 pages)

Y20-0194 Advanced Life Information System File Maintenance Premium Due, Overdue, and Anniversary Processing Transactions System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand the internal activity processing in the file maintenance program. It describes processing for premium due, overdue, and anniversary processing activity. A program abstract, narratives, and flowcharts are provided. (56 pages)

Y20-0195 Advanced Life Information System File Maintenance Rate File Extract and Anniversary Extract Update Transactions System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand the creation of rate file extracts and the anniversary extract update processing in the file maintenance program. It describes processing for the creation of the rate file extracts and the processing required to perform the anniversary extract updating. A program abstract, narratives, and flowcharts are provided. (24 pages)

Y20-0196 Advanced Life Information System File Maintenance Contractual Changes and Notifications System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand the internal activity processing in file maintenance. It describes the internal processing based on the annual activity and contractual change activity date in the policy information section of the policy master record. A program abstract, narratives, and flowcharts are provided. (104 pages)

Y20-0197 Advanced Life Information System Output Analysis Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes the processing of messages output from the file maintenance run. Appropriate flowcharts, flowchart narratives, input/output formats, program modification aids, and tables and descriptions are included. The input/output formats and descriptions are to be used as an explanation of the file maintenance output in addition to their use to describe the input and output from the output analysis program. (212 pages)

Y20-0198 Advanced Life Information System Transaction Register Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes processing of transaction register extracts and error register extracts produced by the output analysis program and also describes the creation of transaction register reports. Appropriate flowcharts, flowchart narratives, input/output formats, tables and descriptions, and program modification aids are included. (84 pages)

Y20-0199 Advanced Life Information System Status Print Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes processing of status report extracts produced by the output analysis program and the creation of printed status reports. Appropriate flowcharts, flowchart narratives, input/output formats, tables and descriptions, and program modification aids are included. (212 pages)

Y20-0200 Advanced Life Information System Policy Accounting Journal System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes the processing of accounting messages and the printing of the policy accounting journal. Appropriate flowcharts, flowchart narratives, input/output formats, and tables are included. (32 pages)

Y20-0201 Advanced Life Information System Accounting Control Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes the updating of the accounting control file and the printing of the accounting control register. Appropriate flowcharts, flowchart narratives, input/output formats, and program modification aids are included. (52 pages)

Y20-0202 Advanced Life Information System Error Register Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes the processing of error register messages and the printing of the error register. Appropriate flowcharts, flowchart narratives, input/output formats, and tables and descriptions are included. (32 pages)

Y20-0203 Advanced Life Information System Rate File Program System Manual 60

Program Number: 360A-IL-09X

This manual provides detailed information to help the user understand program logic. It describes processing for rate file extracts, the reference to the rate file, and the creation of the output extract for updating the policy master record file. Appropriate flowcharts, flowchart narratives, input/output formats, and program modification aids are included. (40 pages)

Y20-0204 Project Management System/360 Flowchart System Manual 60

Program Number: 360A-CP-04X

This manual contains the flowcharts for Project Management System/360. It should be used in conjunction with the System Manuals for the Network Processor, Form Y20-0083, Cost Processor, Form Y20-0084, and Report Processor, Form Y20-0085. (308 pages)

Y20-0205 MARVEL/360 System Manual 60

Program Number: 360A-CO-15X

MARVEL is a language processor for the data preparation, matrix generation, output analysis, and management report writing functions associated with the Mathematical Programming System/360 (360-A-CO-14X). MARVEL was designed and implemented to provide powerful functional capabilities in this fast-growing area of mathematical programming. In providing such a comprehensive language and processor capability, trade-offs were made that reduced execution speed.

MARVEL provides maximum customer utility as an input/output system for the development of new linear programming applications. This is an area where extended function is more significant than high performance. In a production environment where emphasis is on execution speed, MARVEL is less suitable.

This manual gives detailed information concerning the program logic for the purpose of making modifications to or doing maintenance work on the program. It is designed to be used with the program listings of MARVEL/360. (410 pages)

Y20-0206 Communication Network Design Program/360 CNDP/360/DOS/TOS Application Description 60

Program Number: 360A-SE-28R

CNDP/360 is a program to assist in the design of communication networks for data and message transmission.

This manual contains a general description of the program's capabilities, required machine configuration, general systems charts, a list of input/output data sets, and a sample run. It is designed to run on System/360 under control of the Disk Operating System or the Tape Operating System. (24 pages)

Y20-0207 Communications Network Design Program/360 CNDP/360/DOS/TOS Program Description and Operations Manual 60

Program Number: 360A-SE-28R

CNDP/360 is a program to assist in the design of communication networks for data and message transmission.

This publication describes the design capabilities of CNDP/360 input information and program output. A sample run is provided to illustrate the required design data and the network constructed. Also included are the necessary operating instructions. (100 pages)

Y20-0208 System/360 Text Processor HYPHENATION/360 System Manual 60

Program Number: 360A-DP-07X

HYPHENATION/360 provides division of words for text-processing applications where the addition of word syllables to a line to meet justification requirements is preferable to forcing the line to end in a complete word. This hyphenation capability is provided in the form of a module that can be linked with a user's System/360 text-processing program or the COMPOSITION/360 module of the IBM System/360 Text Processor.

Through program linkage, HYPHENATION/360 accepts a word from the user's program and determines the division points. The word, with the division points indicated, is returned to the user's program, where the portion to be retained on the line can be selected on the basis of the user's graphic requirements.

This manual provides detailed information to help the user gain a more thorough knowledge of the programming logic and techniques used in each of the component programs. The information includes program narrative, switch and register listings, storage allocation data, and program modification aids.

The manual is intended for use chiefly by systems analysts and programmers who may need to alter the component programs or otherwise engage in program maintenance.

Familiarity with the Program Description Manual, Form H20-0525 and Operations Manual, Form H20-0526 is a prerequisite to reading and using this publication. (44 pages)

Y20-0209 System/360 1287 Input Conversion Program System Manual 60

Program Number: 360A-DR-07X

This program consists of a Transaction Specification Compiler and an Operational Processor. The Compiler processes the statements which describe the format and processing logic to be applied to documents scanned by the IBM 1287 Optical Reader. The output of the Compiler is a program module written in Assembly Language.

The program module is assembled and link-edited with the Operational Processor and existing program modules. The Operational Processor controls the execution of the various program modules and converts the data to a conversion journal, error journal, and correction turnaround documents.

Provision is made for correcting the error journal and updating the conversion journal. (212 pages)

Y20-0211 Data Acquisition Multiprogramming System/360 Model 44 (DAMPS) System Manual 60

Program Number: 360A-CX-20X

This publication describes the internal logic of the DAMPS/44 extensions to the System/360 Model 44 Programming System. It is designed for persons involved in program maintenance, and system programmers who are altering the program design. Program logic is not required for system construction, use, or operations. (170 pages)

Y20-0213 Student Sheduling System/360, The Scheduler Program System Manual 60

Program Number: 360A-US-07X

This manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application. It presents, for each phase, flowcharts, flowchart narrative, a list of switches, an index register list, programming notes, and program listings. (644 pages)

Y20-0215 Shared Hospital Accounting System (SHAS) System Manual 60

Program Number: 360A-UH-11X

The Shared Hospital Accounting System (SHAS) provides hospital accounting for a multiple-hospital environment. The participating hospitals utilize the application programs of a central System/360 facility. The application programs include accounts receivable, patient billing, general ledger and system executive and monitor routines.

This reference publication is used for additional support of SHAS accounts receivable application only. The manual contains detailed program information useful for program modification, error diagnosis situations, and maintenance performance. This manual contains detail descriptive information on the logical operation of each program through program flowcharts. The program flowcharts are very detailed; every line of COBOL code is depicted. The narratives are general for the most part—more detail has been included for the complicated programs. Program switches, indication usage, and labels and symbols are defined for each system program.

The data listings provided are examples which might be used by a typical SHAS user. All of the data shown has been used to load the files and run the sample problem. The data includes label books, function books, hospital profile load, edit specifications, sample problem data, and control cards.

A chart indicating storage allocation of core required by each program has been included as an appendix. (480 pages)

Y20-0227 System/360 APT Numerical Control Processor Version 3 System Manual Flowcharts 60

Program Number: 360A-CN-10X

This manual consists entirely of flowcharts for the subject program. (280 pages)

Y20-0230 System/360 Wholesale IMPACT Program Library System Manual 60

Program Numbers:
360A-DW-05X, Version 2
360V-DW-06X

The System Manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application.

This manual presents, for each run, general description, flowcharts, flowchart narrative, programming notes, and a switch and register listing. For each operating system with which the IMPACT Programs can be run, there is an Input/Output Section listing, Control Systems Macro listing, core storage requirements, and storage maps. (480 pages)

Y20-0251 Shared Hospital Accounting System (SHAS) Teleprocessing System Manual 60

Program Number: 360A-UH-11X

The Shared Hospital Accounting System (SHAS) provides hospital accounting for a multiple-hospital environment. The participating hospitals utilize the application programs of a central System/360 facility. The application programs include accounts receivable, patient billing, general ledger and system executive and monitor routines.

This reference publication is used for additional support of SHAS teleprocessing executive and control programs. The manual contains detailed program in-

formation useful for program modification, error diagnosis situations, and maintenance performance. This manual contains detail descriptive information on the logical operation of each program through program flowcharts. The program flowcharts are very detailed; every line of code is depicted. The narratives are general for the most part—more detail has been included for the complicated program segments. Program switches, register usage, and labels and symbols are defined for each system program module. (68 pages)

Y20-0256 System/360 Inventory Control System Manual 60

Program Number: 360A-MF-04X

System/360 Inventory Control consists of nine programs especially designed for implementing order point inventory control in manufacturing organizations.

This manual provides detailed information to assist the user in obtaining a more thorough knowledge of the program logic employed in the programs.

The manual includes program flowcharts and flowchart narratives in addition to information regarding switches, labels, symbols, and register assignment. (108 pages)

Y20-0257 Data Acquisition Multiprogramming System/360 Model 44 DAMPS Assembler Language Listings System Manual 60

Program Number: 360A-CX-20X

This publication contains the assembly listings of the DAMPS extensions to the System/360 Model 44 Programming System. It is designed for persons involved in DAMPS program maintenance or modification. (950 pages)

Y20-0262 IBM System/360 Model 44 Remote Access Computing System (RAX) System Manual 60

Program Number: 360A-CX-21X

This publication provides the systems programmer with detailed information about the RAX system. It contains flowcharts and descriptions of the routines making up the system. (260 pages)

Y20-0263 System/360 Decision Logic Translator System Manual 60

Program Number: 360A-CX-32X

This manual provides detailed information to assist the user in gaining a more thorough knowledge of the programming logic employed in the application. The System Manual is optional information available to the user and includes the flowchart narrative, the programmed switch listing, the storage allocation, etc. Other material consists of the source program, the assembly listing, and the flowcharts, recorded on the optional tape. (28 pages)

Y20-0294 Mathematical Programming System/360 Report Generator (MPSRG) System Manual 60

Program Number: 360A-CO-20X

This manual provides detailed information to help the user understand the organization and structure of MPS/360 Report Generator. It is designed to be used with the program listing of MPS/360 Report Generator. (92 pages)

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y21-0001 IBM System/360 Basic Programming Support—FORTRAN IV (16K Card)—Program Logic Manual 25

Program Number: 360P-FO-205

"See PLM Note." (156 pages)

Y21-0004 IBM System/360 Basic Programming Support Distribution Program—Program Logic Manual 32

Program Number: 360-UT-208

"See PLM Note." (40 pages)

Effective use of this manual requires an understanding of the following IBM System/360 publications: *IBM System/360 Basic Programming Support, Distribution Program Specifications and Operating Guide,* Form C21-5001; *IBM System/360 Principles of Operation,* Form A22-6821.

Y24-5000 IBM Basic Operating System/360 Assembler (8K Disk)—Program Logic Manual 21

Program Number: 360B-AS-309

"See PLM Note." (526 pages)

Y24-5001 IBM Basic Operating System/360 (8K Disk) Sort/Merge—Program Logic Manual 33

Program Number: 360B-SM-308

"See PLM Note." (390 pages)

Y24-5002 IBM System/360 Basic Operating System—System Control—Program Logic Manual 36

Program Number: 360B-CL-302

"See PLM Note." (499 pages)

Y24-5003 IBM System/360 Basic Operating System—Logical IOCS—Program Logic Manual 30

Program Numbers:
360B-IO-303 (Sections 1 and 2)
360B-IO-304 (Section 3)
360B-IO-305 (Section 4)

"See PLM Note." (321 pages)

Y24-5004 IBM System/360 Basic Operating System—Autotest (8K Disk)—Program Logic Manual 37

Program Number: 360B-PT-306

"See PLM Note." (124 pages)

Y24-5005 IBM System/360 Basic Operating System—Report Program Generator (8K Disk)—Program Logic Manual 28

Program Number: 360B-RG-307

"See PLM Note." (408 pages)

Y24-5006 IBM System/360 Basic Operating System—1070 Process Communication Supervisor—Program Logic Manual 36

Program Number: 360B-SV-032

"See PLM Note." (117 pages)

Y24-5007 IBM System/360 Basic Programming Support Paper Document Program Logic Manual 30

Program Numbers:
For IBM 1231-N1—360P-IO-060 (Version 2)
For IBM 1418/1428—360P-IO-059 (Version 2)
For IBM 1412/1419—360P-IO-058 (Version 3)

"See PLM Note." (183 pages)

Y24-5008 IBM System/360 Basic Programming Support—Tape Sort/Merge Program Logic Manual 33

Program Numbers:
360P-SM-043, 1-channel
360P-SM-044, 2-channel

"See PLM Note." (171 pages)

Y24-5009 IBM System/360 Operating System—COBOL-E—Program Logic Manual 24

Program Number: 360S-CO-503

"See PLM Note." (280 pages)

This manual is designed to be used as a supplement to the program listing. Effective use requires an understanding of IBM System/360 operation and of IBM System/360 Operating System data management linkage editing, service programs, and COBOL language specifications. Reference publications for this information are listed in the Preface.

Y24-5010 IBM System/360 Basic Programming Support—Basic Tape System (System Control and IOCS) Program Logic Manual 36

Program Number: 360P-40-046

"See PLM Note." (325 pages)

This manual discusses the 8K Tape Control System (System Tape), 8K Independent Control System, and Logical and Physical IOCS supporting these systems.

Y24-5011 IBM System/360 Basic Programming Support—Tape Autotest Program Logic Manual 37

Program Number: 360P-PT-045

"See PLM Note." (For 8K Tape) (105 pages)

Y24-5012 IBM System/360 Basic Programming Support—Tape Assembler Program Logic Manual 21

Program Number: 360P-AS-091

"See PLM Note." (524 pages)

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y24-5013 IBM System/360 Basic Programming Support—Universal Character Set Utility—Program Logic Manual 32

"See PLM Note." (23 pages)

Y24-5014 IBM System/360 Basic Programming Support—Basic Assembler—Program Logic Manual 21

"See PLM Note." (107 pages)

Y24-5015 IBM System/360 Basic Programming Support—Basic Utilities Program Logic Manual 32

"See PLM Note." (131 pages)

Programs included are:
- Absolute Loader
- Relocating Loader
- Single-Phase Dump Program
- Two-Phase Dump Program
- I/O Support Package

Y24-5016 IBM System/360 Tape Operating System—Sort/Merge—Program Logic Manual 33

Program Number: 360M-SM-400

"See PLM Note." (218 pages)

Y24-5017 IBM System/360 Disk Operating System Introduction to System Control Programs—Program Logic Manual 36

Program Number: 360N-CL-453, Version 3

"See PLM Note." (68 pages)

This is one of five program logic manuals that describe the internal logic of the IBM System/360 Disk Operating System system control programs:

IBM System/360 Disk Operating System, Introduction to System Control Programs, Form Y24-5017.

IBM System/360 Disk Operating System, IPL and Job Control Programs, Form Y24-5086.

IBM System/360 Disk Operating System, Supervisor and Physical and Logical Transients, Form Y24-5084.

IBM System/360 Disk Operating System, Librarian Maintenance and Service Programs, Form Y24-5079.

IBM System/360 Disk Operating System, Linkage Editor, Form Y24-5080.

These manuals are designed to be used as a supplement to the program listing, and their effective use requires an understanding of IBM System/360 operation and of IBM System/360 Disk Operating System control and service programs, macro instructions, and operating procedures. Reference publications for this information are listed in the Preface of this manual.

Y24-5018 IBM System/360 Tape Operating System—Logical IOCS—Program Logic Manual 30

Program Number: 360M-IO-404, Version 2.1

"See PLM Note." (320 pages)

Effective use of this publication requires an understanding of the following IBM System/360 publications:

IBM System/360 Principles of Operation, Form A22-6821

IBM System/360 Disk and Tape Operating Systems, Assembler Specifications, Form C24-3414

IBM System/360 Tape Operating System, System Control, Form Y24-5022

Other related publications are listed in the Preface.

Y24-5019 IBM System/360 Tape Operating System—Utility Programs—Program Logic Manual 32

Program Number: 360M-UT-403

"See PLM Note." (165 pages)

Y24-5020 IBM System/360 Disk Operating System Logical IOCS—Volume 1: Introduction—Program Logic Manual 30

Program Numbers:
CDMOD 360N-CL-453, Version 3
CPMOD 360N-CL-453, Version 3
DAMOD 360N-IO-544, Version 3
DIMOD 360N-CL-457, Version 3
DTFCN 360N-CL-453, Version 3
ISMOD 360N-IO-457, Version 3
MRMOD 360N-IO-477, Version 3
MTMOD 360N-IO-456, Version 3
ORMOD 360N-IO-478, Version 3
PRMOD 360N-CL-453, Version 3
PTMOD 360N-IO-458, Version 3
SDMOD 360N-IO-455, Version 3

"See PLM Note." (304 pages)

This publication is one of four Program Logic Manuals that describe the internal logic of the Logical IOCS (Input-Output Control System) programs for the IBM System/360 Disk Operating System. The four related Program Logic Manuals are:

Volume 1: Introduction, Form Y24-5020.

Volume 2: Unit Record, Magnetic Tape, and Device Independent Files, Form Y24-5087.

Volume 3: Sequential and Direct Access DASD Files, Form Y24-5088.

Volume 4: Indexed Sequential File Management System, Form Y24-5089.

Effective use of this publication requires an understanding of IBM System/360 operation and the Disk Operating System Assembler language and its associated macro definition language. Reference publications for this information are listed in the Preface.

Y24-5021 IBM System/360 Disk Operating System—Sort/Merge—Program Logic Manual 33

Program Number: 360N-SM-450

"See PLM Note." (380 pages)

Y24-5022 IBM System/360 Tape Operating System—System Control—Program Logic Manual 36

Program Number: 360M-CL-405, Version 2

"See PLM Note." (624 pages)

This manual is designed to be used as a supplement to the program listings. Effective use requires an understanding of IBM System/360 operation and of IBM System/360 Tape Operating System assembler language, macro-instructions, and system control and maintenance program operation. Reference publications for this information are listed in the Preface.

Y24-5023 IBM System/360 Disk Operating System—Utilities—Program Logic Manual 32

Program Numbers:
360N-UT-461
360N-UT-462
360N-UT-463

"See PLM Note." (222 pages)

Y24-5025 IBM System/360 Disk and Tape Operating Systems—COBOL-D with DASD Macros—Program Logic Manual 24

Program Numbers:
360M-CB-402
360M-CB-452

"See PLM Note." (131 pages)

This manual is designed to be used as a supplement to the program listing.

Y24-5026 IBM System/360 Tape Operating System—Autotest—Program Logic Manual 37

Program Number: 360M-PT-407

"See PLM Note." (225 pages)

Y24-5027 IBM System/360 Disk Operating System—Autotest—Program Logic Manual 37

Program Number: 360N-PT-459

"See PLM Note." (429 pages)

Y24-5028 IBM System/360 Basic Programming Support—Report Program Generator (8K Tape)—Program Logic Manual 28

Program Number: 360M-RG-201

"See PLM Note." (348 pages)

Y24-5032 IBM System/360 Disk and Tape Operating Systems—FORTRAN IV—Program Logic Manual 25

Program Numbers:
360M-FO-409
360N-FO-451

"See PLM Note." (151 pages)

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y24-5037 IBM System/360 Basic Programming Support Report Program Generator for Punched Card Equipment Program Logic Manual 28

Program Number: 360P-RG-200

"See PLM Note." (296 pages)

Effective use of this manual requires an understanding of IBM System/360 operation and of IBM System/360 Tape Operating System assembler language, macro instructions, and system control and maintenance program operation. Reference publications for this information are listed in the Preface of this manual.

Titles and abstracts of other related publications are listed in the *IBM System/360 Bibliography,* Form A22-6822.

Y24-5045 IBM System/360 Disk and Tape Operating Systems—Utility Macros Program Logic Manual 32

Program Numbers:
360N-UT-471
360N-UT-411

"See PLM Note." (83 pages)

These utility macros support file-to-file operations among the following devices:

- IBM 2501 Card Reader
- IBM 1442 Card Read Punch
- IBM 2520 Card Read Punch
- IBM 2540 Card Read Punch
- IBM 1052 Printer-Keyboard
- IBM 1403 Printer
- IBM 1404 Printer (continuous forms only)
- IBM 1443 Printer
- IBM 1445 Printer
- IBM 2311 Disk Storage Drive
- IBM 2400 Series Tape Drive. For Tape input and/or output, the utility macros require the optional supervisor "set mode" facility.

Effective use of this publication requires an understanding of IBM System/360 operating principles, and of the IBM System/360 Disk and Tape Operating Systems. Reference publications for this information are listed in the Preface.

Y24-5056 IBM System/360 Disk and Tape Operating Systems On Line Test Executive Program—Program Logic Manual 37

Program Numbers:
360N-DN-481 (DOS)
360M-DN-418 (TOS)

"See PLM Note." (76 pages)

Y24-5079 IBM System/360 Disk Operating System Librarian Maintenance and Service Programs—Program Logic Manual 31

Program Number: 360N-CL-453, Version 3

"See PLM Note." (220 Pages)

Effective use of this manual requires an understanding of IBM System/360 operation and of IBM System/360 Disk Operating System control and service programs, macro instructions, and operating procedures. Reference publications for this information are listed in the Preface of this manual.

For overall system control logic description, this PLM is to be used with four other PLMS:

- *IBM System/360 Disk Operating System, Introduction to System Control and Service Programs,* Form Y24-5017.
- *IBM System/360 Disk Operating System, IPL and Job Control Programs,* Form Y24-5086.
- *IBM System/360 Disk Operating System, Supervisor and Physical and Logical Transients,* Form Y24-5084.
- *IBM System/360 Disk Operating System, Linkage Editor,* Form Y24-5080.

Y24-5080 IBM System/360 Disk Operating System Linkage Editor—Program Logic Manual 31

Program Number: 360N-CL-453, Version 3

"See PLM Note." (108 pages)

Effective use of this manual requires an understanding of IBM System/360 operation and of IBM System/360 Disk Operating System control and service programs, macro instructions, and operating procedures. Reference publications for this information are listed in the Preface of this manual.

For overall system control logic description, this PLM is to be used with four other PLMS:

- *IBM System/360 Disk Operating System, Introduction to System Control Programs,* Form Y24-5017.
- *IBM System/360 Disk Operating System, IPL and Job Control Programs,* Form Y24-5086.
- *IBM System/360 Disk Operating System, Supervisor and Physical and Logical Transients,* Form Y24-5084.
- *IBM System/360 Disk Operating System, Librarian Maintenance and Service Programs,* Form Y24-5079.

Y24-5084 IBM System/360 Disk Operating System Supervisor and Physical and Logical Transients—Program Logic Manual 36

Program Number: 360N-CL-453, Version 3

"See PLM Note." (332 pages)

Effective use of this manual requires an understanding of IBM System/360 operation and of IBM System/360 Disk Operating System control and service programs, macro instructions, and operating procedures. Reference publications for this information are listed in the Preface.

For overall system control logic description, this PLM is to be used with four other PLMS:

- *IBM System/360 Disk Operating System, Introduction to System Control Programs,* Form Y24-5017.
- *IBM System/360 Disk Operating System, Librarian Maintenance and Service Programs,* Form Y24-5079.
- *IBM System/360 Disk Operating System, Linkage Editor,* Form Y24-5080.
- *IBM System/360 Disk Operating System, IPL and Job Control Programs,* Form Y24-5086.

Y24-5086 IBM System/360 Disk Operating System IPL and Job Control Programs Program Logic Manual 36

Program Number: 360N-CL-453, Version 3

"See PLM Note." (196 pages)

Effective use of this manual requires an understanding of IBM System/360 operation and of IBM System/360 Disk Operating System control and service programs, macro instructions, and operating procedures. Reference publications for this information are listed in the Preface.

For overall system control logic description, this PLM is to be used with four other PLMS:

- *IBM System/360 Disk Operating System, Introduction to System Control and Service Programs,* Form Y24-5017.
- *IBM System/360 Disk Operating System, Supervisor and Physical and Logical Transients,* Form Y24-5084.
- *IBM System/360 Disk Operating System, Librarian Maintenance and Service Programs,* Form Y24-5079.
- *IBM System/360 Disk Operating System, Linkage Editor,* Form Y24-5080.

Y24-5087 IBM System/360 Disk Operating System Logical IOCS—Volume 2: Unit Record, Magnetic Tape, and Device Independent Files—Program Logic Manual 30

Program Numbers:
CDMOD 360N-IO-453, Version 3
CPMOD 360N-CL-453, Version 3
DIMOD 360N-CL-457, Version 3
DTFCN 360N-CL-453, Version 3
MRMOD 360N-IO-477, Version 3
MTMOD 360N-IO-456, Version 3
ORMOD 360N-IO-478, Version 3
PRMOD 360N-CL-453, Version 3
PTMOD 360N-IO-458, Version 3

"See PLM Note." (308 pages)

This is one of four Program Logic Manuals that describe the internal logic of the Logical IOCS (Input/Output Control System) programs for the IBM System/360 Disk Operating System. The four related Program Logic Manuals are:

- *Volume 1: Introduction,* Form Y24-5020.
- *Volume 2: Unit Record, Magnetic Tape, and Device Independent Files,* Form Y24-5087.
- *Volume 3: Sequential and Direct Access DASD Files,* Form Y24-5088.
- *Volume 4: Indexed Sequential File Management System,* Form Y24-5089.

Effective use of this publication requires an understanding of IBM System/360 operation and the Disk Operating System Assembler language and its associated macro definition language. Reference publications for this information are listed in the Preface.

Y24-5088 IBM System/360 Disk Operating System Logical IOCS—Volume 3: Sequential and Direct Access DASD Files—Program Logic Manual 30

Program Numbers:
SDMOD 360N-IO-455, Version 3
DAMOD 360N-IO-454, Version 3

"See PLM Note." (236 pages)

This is one of four Program Logic Manuals that describe the internal logic of the Logical IOCS (Input/Output Control System) programs for the IBM System/360 Disk Operating System. The four related Program Logic Manuals are:

- *Volume 1: Introduction,* Form Y24-5020.
- *Volume 2: Unit Record, Magnetic Tape, and Device Independent Files,* Form Y24-5087.
- *Volume 3: Sequential and Direct Access DASD Files,* Form Y24-5088.
- *Volume 4: Indexed Sequential File Management System,* Form Y24-5089.

Effective use of this publication requires an understanding of IBM System/360 operation and the Disk Operating System Assembler language and its associated macro definition language. Reference publications for this information are listed in the Preface.

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y24-5089 IBM System/360 Disk Operating System Logical IOCS—Volume 4: Indexed Sequential File Management System Program Logic Manual 30

Program Number: ISMOD 360N-IO-457, Version 3

"See PLM Note." (336 pages)

This publication is one of four Program Logic Manuals that describe the internal logic of the Logical IOCS (Input/Output Control System) programs for the IBM System/360 Disk Operating System. The four related Program Logic Manuals are:

Volume 1: Introduction, Form Y24-5020.

Volume 2: Unit Record, Magnetic Tape, and Device Independent Files, Form Y24-5087.

Volume 3: Sequential and Direct Access DASD Files, Form Y24-5088.

Volume 4: Indexed Sequential File Management System, Form Y24-5089.

Effective use of this publication requires an understanding of IBM System/360 operation and the Disk Operating System Assembler language and its associated macro definition language. Reference publications for this information are listed in the Preface.

For the titles and abstracts of other related publications, refer to the *IBM System/360 Bibliography,* Form A22-6822.

Y24-5096 IBM System/360 Basic Programming Support Modular File Maintenance Program Program Logic Manual 32

Program Number: 360P-UT-219

"See PLM Note." (32 pages)

Y26-3598 IBM System/360 Operating System Assembler (32K)—Program Logic Manual 21

"See PLM Note." (123 pages)

Y26-3642 IBM System/360 Disk and Tape Operating Systems—Assembler Program Logic Manual 21

Program Numbers:
360M/N-AS-465
360N-AS-467

"See PLM Note." (137 pages)

Y26-3700 IBM System/360 Operating System Assembler (64K)—Program Logic Manual 21

Program Number: 360S-AS-037

"See PLM Note." (116 pages)

Y26-3701 IBM System/360 Disk and Tape Operating Systems—Report Program Generator—Program Logic Manual 28

Program Numbers:
360N-RG-460 (Disk)
360M-RG-408 (Tape)

"See PLM Note." (130 pages)

Y26-3704 IBM System/360 Operating System Report Program Generator—Program Logic Manual 28

Program Number: 360S-RG-038

"See PLM Note." (129 pages)

Y26-3716 IBM System/360 Disk Operating System Assembler (F)—Program Logic Manual 21

Program Number: 360N-AS-466

"See PLM Note." (120 pages)

Y27-7102 IBM System/360 Conversion Aids: FORTRAN II Language Conversion Program for the IBM 1401 Program Logic Manual 25

Program Number: 1401-FO-702

"See PLM Note." (89 pages)

Y27-7103 IBM System/360 Conversion Aids: The 1401/1460 Emulator Program for IBM System/360 Model 40—Program Logic Manual 35

Program Number: 360C-EU-074

"See PLM Note." (51 pages)

The relationship of the program logic to that of the IBM 1401/1460 Compatibility Feature (#4457) is included.

Y27-7108 IBM System/360 Transition Aids: COBOL Language Conversion Program for the IBM 1401—Program Logic Manual 24

Program Number: 1401-CB-701

"See PLM Note." (88 pages)

Y27-7110 IBM System/360 Operating System Graphics Problem Oriented Routines Program Logic Manual 30

Program Number: 360S-IO-523

"See PLM Note." (39 pages)

This manual covers routines intended for use with the IBM 2250 Display Unit. Its primary purpose is to serve as a guide to the program listings with which it is used.

Y27-7111 IBM System/360 Conversion Aids: The 7074 Emulator Program for IBM System/360 Models 50 and 65—Program Logic Manual 35

Program Number: 360C-EU-725

"See PLM Note." (74 pages)

This publication describes the internal logic of the IBM 7074 Emulator Program in conjunction with the IBM 7074 Compatibility Feature and is primarily a guide to the program listing.

Y27-7112 IBM System/360 Conversion Aids: The 7080 Emulator Program for IBM System/360 Model 65—Program Logic Manual 35

Program Number: 360C-EU-727

"See PLM Note." (73 pages)

This publication is intended to be used with the program assembly listing and is primarily a guide to that listing.

Y27-7113 IBM System/360 Operating System Graphics Access Method—Program Logic Manual 30

Program Number: 360S-IO-523

"See PLM Note." (92 pages)

This publication describes the operation of the Graphics Access Method (GAM) for the IBM 2250 Display Unit Models 1, 2, and 3, the IBM 2260 Display Station (Local Attachment); and the IBM 2280/82 Film Units. The Graphics Access Method functions in both express and basic environments, and both types of routines are described herein.

Y27-7115 IBM System/360 Conversion Aids: The 1410/7010 Simulator for IBM System/360—Program Logic Manual 35

Program Number: 360C-SI-754

"See PLM Note." (98 pages)

Y27-7116 IBM System/360 Conversion Aids: The 1620 Simulator for IBM System/360 Program Logic Manual 35

Program Number: 360C-SI-752

"See PLM Note." (85 pages)

Y27-7117 IBM System/360 Conversion Aids: The 7070/7074 Simulator for IBM System/360—Program Logic Manual 35

Program Number: 360C-SI-753

"See PLM Note." (103 pages)

Y27-7118 IBM System/360 Conversion Aids: The 7080 Simulator for IBM System/360 Program Logic Manual 35

Program Number: 360C-SI-751

"See PLM Note." (102 pages)

Y27-7119 IBM System/360 Conversion Aids: The 7090/7094 Simulator for IBM System/360—Program Logic Manual 35

Program Number: 360C-SI-750

"See PLM Note. (95 pages)

Y27-7126 IBM System/360 Model 30—1620 Emulator Program—Program Logic Manual 35

Program Number: 360C-EU-731

"See PLM Note. (79 pages)

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y27-7128 IBM System/360 Operating System Control Program with MFT—Program Logic Manual 36

Program Numbers:
360S-CI-505
360S-DM-508

"See PLM Note." (88 pages)

This publication describes the internal logic of the control program to the extent that it is modified for MFT. These modifications affect the job management, task management, and data management routines of the control program.

Y27-7136 IBM System/360 Disk Operating System—Vocabulary File Utility Program for the IBM 7772 Audio Response Unit 32

Program Number: 360N-UT-472

"See PLM Note. (56 pages)

Y27-7152 IBM System/360 Operating System Graphic Programming Services for FORTRAN IV—Program Logic Manual 25

Program Number: 360S-LM-537

"See PLM Note." (132 pages)

GSP is a program that enables a FORTRAN programmer to write graphic programs for use with the IBM 2250 Display Unit in association with the IBM System/360 Operating System. It is not an extension of FORTRAN IV, but does extend graphic capabilities via subroutines and functions to the FORTRAN programmer. GSP may also be used in an assembler language program.

Y27-7155 IBM System/360 Operating System Machine-Check Handler for System/360 Model 65—Program Logic Manual 31

"See PLM Note." (76 pages)

Y27-7159 IBM System/360 Operating System Graphic Job Processor Support—Program Logic Manual 36

Program Number: 360S-RC-541

"See PLM Note." (190 pages)

This publication describes the internal logic of the Graphic Job Processor (GJP) and the Graphics Interface Task (GFX), which are features of the IBM System/360 Operating System that permit jobs to be defined and initiated by responding to frames displayed on an IBM 2250 Display Unit.

Y28-2009—IBM System/360 Time Sharing System—System Logic Summary Program Logic Manual 36

"See PLM Note." (276 pages)

Y28-2011—IBM System/360 Time Sharing System—System Control Blocks Program Logic Manual 36

"See PLM Note." (296 pages)

This publication documents all control blocks which are a part of the Time Sharing System (TSS/360) System. Each control block is described in terms of its function, size, residence, and use by the rest of the system. A diagram gives a graphic picture of each block, and a DSECT listing shows all fields and includes comments on individual fields.

Y28-2012 IBM System/360 Time Sharing System Resident Supervisor—Program Logic Manual 36

"See PLM Note." (216 pages)

Y28-2013 IBM System/360 Time Sharing System Command Language Program Logic Manual 36

"See PLM Note." (358 pages)

The modules described in this manual process the commands available to the user, manager, administrator, and operator of the time sharing system.

Y28-2014 IBM System/360 Time Sharing System Program Control System Program Logic Manual 37

"See PLM Note." (212 pages)

Y28-2015 IBM System/360 Time Sharing System—System Generation and Maintenance—Program Logic Manual 31

"See PLM Note." (92 pages)

This manual includes a high level flow of logic from the SYSBLD Prelude, through System Build, Startup Prelude, and Startup to the point where a working system is generated.

Y28-2016 IBM System/360 Time Sharing System Access Methods—Program Logic Manual 30

"See PLM Note." (314 pages)

Y28-2018 IBM System/360 Time Sharing System—System Service Routines Program Logic Manual 31

"See PLM Note." (156 pages)

Y28-2019 IBM System/360 Time Sharing System FORTRAN IV—Program Logic Manual 25

"See PLM Note." (664 pages)

Y28-2021 IBM System/360 Time Sharing System Assembler—Program Logic Manual 21

"See PLM Note." (376 pages)

Y28-2022 IBM System/360 Time Sharing System—Time Sharing Support System Program Logic Manual 36

"See PLM Note." (220 pages)

Y28-2030 IBM System/360 Time Sharing System Linkage Editor—Program Logic Manual 31

"See PLM Note." (104 pages)

Y28-2031 IBM System/360 Time Sharing System Dynamic Loader—Program Logic Manual 31

"See PLM Note." (162 pages)

The dynamic loader assigns virtual storage for a task's program modules and resolves address constants for those pages referenced at execution time. In addition, the dynamic loader deletes modules from the task and performs several houskeeping functions. Library maintenance, a housekeeping function not part of the dynamic loader proper, is also discussed in this manual.

Y28-2039 IBM System/360 Time Sharing System Independent Utilities—Program Logic Manual 32

"See PLM Note." (66 pages)

Y28-2041 IBM System/360 Time Sharing System Task Monitor—Program Logic Manual 36

"See PLM Note." (56 pages)

Y28-2042 IBM System/360 Time Sharing System On-Line Test Control Program Program Logic Manual 36

"See PLM Note." (56 pages)

This publication is intended for use with the appropriate program listings. Its primary purpose is to serve as a guide to those listings.

Y28-6382 IBM System/360 Operating System COBOL (F)—Program Logic Manual 24

Program Numbers:
360S-CB-524
360S-LM-525

"See PLM Note." (187 pages)

Y28-6564 IBM System/360 Model 40—1410/7010 Emulator Program—Program Logic Manual 35

Program Number: 360C-EU-728

"See PLM Note." (79 pages)

Y28-6566 IBM System/360 Model 65 709/7090/7094/7094 II Emulator Program—Program Logic Manual 35

Program Number: 360C-EU-729

"See PLM Note." (128 pages)

This publication describes the internal logic of the 709/7090/7094/7094 II Emulator Program used with Compatibility Feature #7119 to execute 709/7090/7094/7094 II programs on a System/360 Model 65.

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y28-6569 IBM System/360 Model 50 1410/7010 Emulator Program—Program Logic Manual 35

Program Number: 360C-EU-726

"See PLM Note." (78 pages)

This publication describes the internal logic of the 1410/7010 Emulator Program used with Compatibility Feature #4478 to execute 1410/7010 programs on a System/360 Model 50.

Y28-6597 IBM System/360 Operating System—Sort/Merge—Program Logic Manual 33

Program Number: 360S-SM-023

"See PLM Note." (100 pages)

This manual can be used to locate specific areas of the program, and it enables the reader to relate these areas to the corresponding program listings.

This version of the sort/merge program is designed to:

1. Sort a data set using as intermediate storage the IBM 2400-Series (7- or 9-track) Magnetic Tape Unit, or the IBM 2311 Disk Storage Drive, or the IBM 2314 Direct-Access Storage Facility, or the IBM 2301 Drum Storage.
2. Merge up to 16 previously sorted data sets.

Y28-6599 IBM System/360 Conversion Aids: The 7040/7044 Emulator Program for IBM System/360 Model 65—Program Logic Manual 35

Program Number: 360C-EU-733

"See PLM Note." (139 pages)

This publication describes the internal logic of the 7040/7044 Emulator Program used with the Compatibility Feature #7119 to execute 7040/7044 programs on an IBM System/360 Model 65.

Y28-6601 IBM System/360 Operating System FORTRAN IV (E)—Program Logic Manual 25

Program Number: 360S-FO-092

"See PLM Note." (158 pages)

Y28-6604 IBM System/360 Operating System Sequential Access Methods—Program Logic Manual 30

Program Number: 360S-DM-508

"See PLM Note." (57 pages)

This publication describes the internal logic of the routines of the queued sequential access method, the basic sequential access method, and the basic partitioned access method of IBM System/360 Operating System.

Y28-6605 IBM System/360 Operating System Introduction to Control Program Logic Program Logic Manual 36

Program Numbers:
360S-CI-505
360S-DM-508

"See PLM Note." (32 pages)

This publication discusses the components of the primary control program of IBM System/360 Operating System and indicates the program logic manuals that describe these components.

Y28-6606 IBM System/360 Operating System Catalog Management—Program Logic Manual 30

Program Number: 360S-DM-508

"See PLM Note." (20 pages)

This manual provides detailed information on catalog management routines. These routines record identification of volumes used by data sets by maintaining information in logical records called indexes. The functions and structures of the routines are described, as are their relationships to other portions of IBM System/360 Operating System. This manual also describes the structure of catalog data sets that contain the indexes processed by catalog management routines.

Y28-6607 IBM System/360 Operating System Direct Access Device Space Management Program Logic Manual 30

Program Number: 360S-DM-508

"See PLM Note." (36 pages)

This manual provides detailed information on direct-access device space management (DADSM) routines. These routines control the use of external direct-access storage by maintaining the information in data set control blocks. The functions and structures of the routines are described, as are their relationships to other portions of IBM System/360 Operating System. This manual also describes the structure of volume tables of contents which are processed by DADSM routines.

Y28-6609 IBM System/360 Operating System Input/Output Support (OPEN/CLOSE/EOV) Program Logic Manual 30

Program Number: 360S-DM-508

"See PLM Note." (44 pages)

This manual discusses the relation of I/O support routines to other portions of the control program. Detailed descriptions of the open, close, and EOV routines provide the basis for the discussions of the other I/O support routines openJ, RDJFCB, Tclose, and FEOV.

Y28-6610 IBM System/360 Operating System Linkage Editor—Program Logic Manual 31

Program Number: S360-ED-510 (Level E)

"See PLM Note." (148 pages)

This publication describes the internal logic of the 15K, 18K, and 44K versions of the level E linkage editor. The linkage editor combines and edits modules to produce a single load module that can be loaded into main storage by the control program. The linkage editor operates as a processing program rather than as a part of the control program.

Y28-6611 IBM System/360 Operating System TESTRAN—Program Logic Manual 37

Program Number: 360S-PT-516

"See PLM Note." (126 pages)

TESTRAN is divided into three parts: the TESTRAN macro-instructions, the TESTRAN interpreter, and the TESTRAN editor. The operation of each of these parts is discussed in detail.

Y28-6612 IBM System/360 Operating System Fixed-Task Supervisor—Program Logic Manual 36

Program Number: 360S-CI-505

"See PLM Note." (77 pages)

This publication describes the fixed-task supervisor, which performs task management as a major part of the primary control program of IBM System/360 Operating System. In addition, this manual describes the initial program loader (IPL) and the nucleus initialization program (NIP).

Y28-6613 IBM System/360 Operating System Job Management—Program Logic Manual 36

Program Number: 360S-CI-505

"See PLM Note." (128 pages)

Job management prepares jobs for execution, and directs the disposition of data sets created during job execution. It also handles all communication between the operator and the primary control program. Included in the publication are descriptions of tables and work areas used by the Job management routines and a directory of names and purposes of control sections, assembly modules, and load modules. The information contained in this publication applies only to the primary control program.

Y28-6614 IBM System/360 Operating System Utilities—Program Logic Manual 32

Program Number: 360S-UT-506

"See PLM Note." (83 pages)

System, data set, and independent utility programs are included in this publication.

Y28-6616 IBM System/360 Operating System Input/Output Supervisor—Program Logic Manual 30

Program Number: 360S-CI-505

"See PLM Note." (110 pages)

The I/O supervisor's components, the EXCP supervisor, and the I/O interruption supervisor are discussed in detail to show the internal structure and logic involved in the control of I/O devices and channels.

Y28-6617 IBM System/360 Operating System Basic Direct Access Method—Program Logic Manual 30

Program Number: 360S-DM-509

"See PLM Note." (72 pages)

The functions and structures of the routines are described, as are their relationships to other portions of the operating system.

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y28-6618 IBM System/360 Operating System Indexed Sequential Access Methods Program Logic Manual 30

Program Number: 360S-IO-526

"See PLM Note." (88 pages)

This publication describes the program logic of the two indexed sequential access methods: the queued indexed sequential access method (QISAM) and the basic indexed sequential access method (BISAM). It also discusses the relationship of indexed sequential access method routines to other parts of the control program.

Y28-6638 IBM System/360 Operating System FORTRAN IV (G) Compiler—Program Logic Manual 25

Program Number: 360S-FO-520

"See PLM Note." (248 pages)

The FORTRAN IV (G) compiler is a processing program of the IBM System/360 Operating System. It translates one or more source modules written in the FORTRAN language into an object module that can be processed into an executable load module by the Linkage Editor.

Y28-6642 IBM System/360 Operating System FORTRAN IV (H) Compiler—Program Logic Manual 25

Program Number: 360S-FO-500

"See PLM Note." (232 pages)

The FORTRAN IV (H) compiler program transforms source modules written in the FORTRAN IV language into object modules that are suitable for input to the linkage editor for subsequent execution on System/360. At the user's option, the compiler produces optimized object modules (modules that can be executed with improved efficiency).

This revision reflects the 5.1 version of the FORTRAN IV (H) compiler program. A number of table formats and intermediate text formats have been changed. The overall operation of the compiler has not changed significantly, but some routines within the program have been changed, new routines have been added, and some routines have been deleted or combined with other routines.

Y28-6651 IBM System/360 Operating System On-Line Test Executive Program—Program Logic Manual 37

Program Number: 360S-DN-533

"See PLM Note." (68 pages)

The On-Line Test Executive Program handles on-line testing of input/output devices under control of the IBM System/360 Operating System.

Y28-6658 IBM System/360 Operating System MVT Control Program Logic Summary Program Logic Manual 36

Program Numbers:
360S-CI-535
360S-DM-508

"See PLM Note." (56 pages)

This publication introduces the internal logic of the MVT control program of System/360 Operating System. It contains general descriptions of the operating environment of the control program, the initial program loading procedure, the job management, task management, and data management functions, and the optional recovery management function. Detailed descriptions of the implementation of these functions are in the program logic manuals listed in Appendix B.

The MVT configuration of the control program is designed for use with System/360 Models 40, 50, 65, and 75 having 262,144 (256K) bytes or more main storage.

Information on RJE (remote job entry) contained herein is for planning purposes.

Y28-6659 IBM System/360 Operating System MVT Supervisor—Program Logic Manual 36

Program Number: 360S-CI-535

"See PLM Note." (308 pages)

The MVT supervisor is one part of the control program of the IBM System/360 Operating System. The supervisor controls the basic computing system and programming resources needed to perform several data processing tasks concurrently. Specifically, it was designed to:

1. Handle interruptions.
2. Supervise tasks.
3. Control programs in main storage.
4. Control main storage itself.
5. Supervise the timer.
6. Supervise console communications and the system log.
7. Supervise exiting procedures.
8. Supervise termination procedures.

The information in this publication applies only to systems capable of multiprogramming with a variable number of tasks (MVT). It reflects the status of the system at Release 12.

Y28-6660 IBM System/360 Operating System MVT Job Management—Program Logic Manual 36

Program Number: 360S-CI-535

"See PLM Note." (188 pages)

This publication describes the internal logic of the job management routines for the MVT control program of the IBM System/360 Operating System. Included are discussions of input stream processing, work queue management, job initiation and termination, I/O device allocation, system output processing, and the scheduling and execution of operator commands.

Y28-6661 IBM System/360 Operating System Initial Program Loader and Nucleus Initialization Program—Program Logic Manual 36

Program Number: 360S-CI-535

"See PLM Note." (32 pages)

The Initial Program Loader prepares main storage to receive the nucleus and then loads the nucleus. The Nucleus Initialization Program initializes the resident part of the control program and prepares main storage for control program operation. The information in this publication applies only to systems capable of multiprogramming with a variable number of tasks. (MVT).

Y28-6665 IBM System/360 Operating System Guide to Model 91 Support—Program Logic Manual 32

Program Numbers:
360S-DM-508
360S-CI-535

"See PLM Note." (84 pages)

This publication provides information concerning the ways in which the internal logic of certain routines have been expanded or modified to support the IBM System/360 Model 91.

Y28-6667 IBM System/360 Operating System Linkage Editor (F)—Program Logic Manual 31

Program Number: S360-ED-521

"See PLM Note." (184 pages)

This publication describes the internal logic of the IBM System/360 Operating System Linkage Editor (F), Version 2, with design points of 44K, 88K, and 128K. It identifies areas of the program that perform specific functions and relates those areas to the program listing.

The linkage editor, a processing program, combines and edits modules to produce a load module that can be loaded into main storage by the control program. The linkage editor:

1. Allocates storage, analyzes attributes and options, and initializes tables and buffers. (Initialization)
2. Transforms input into an internal format for subsequent processing. (Input Processing)
3. Assigns relative storage addresses to external symbols, writes records on the output data set, and produces an optional module map and/or cross-reference table. (Intermediate Processing)
4. Relocates address constants found in the input text, and writes the remaining records on the output data set. (Second Pass Processing)
5. Completes the partitioned data set directory for the output data set, produces an error diagnostic directory, and releases storage allocated to the linkage editor. (Final Processing)

Y28-6672 IBM System/360 Operating System Checkpoint/Restart—Program Logic Manual 31

Program Number: 360S-CI-505

"See PLM Note." (28 pages)

This publication includes the theory and organization of the checkpoint/restart facility of the IBM System/360 Operating System. The checkpoint-restart facility saves job step information at specific checkpoints in a program so that, in the event of error, it can restart the job step from one of the checkpoints.

Y28-6681 IBM System/360 Operating System Release 15/16 36

"See PLM Note." (340 pages)

This document outlines the current status, new features/functions, and incremental improvements to System/360 Operating System. A list of all modules added, deleted, or altered for this release is also included. System Prose and Maintenance Prose in the form APARs, PSI entries, and PTFs inform the user of the current maintenance status of the system.

PLM Note

Program Logic Manuals describe the internal design or logic of the subject programs. These manuals are intended for persons involved in program maintenance and system programmers who are altering the program design. Program logic information is not necessary for the operation of the program; therefore, distribution of these publications is limited to persons with maintenance and alteration requirements.

Y28-6800 IBM System/360 Operating System PL/I (F) Compiler—Program Logic Manual 29

Program Number: 360S-NL-511

"See PLM Note." (238 pages)

This manual is aimed at personnel responsible for analyzing program operations, diagnosing malfunction, and changing the program format for special or national language usage. The information provides a guide for effective use of the program listings.

Y28-6801 IBM System/360 Operatng System PL/I Subroutine Library—Program Logic Manual 29

Program Number: 360S-LM-512

"See PLM Note." (117 pages)

This publication describes the internal specifications of the PL/I Subroutine Library as a system component of IBM *Operating* System/360. The relationships between the code produced by the PL/I (F) compiler, the PL/I Library modules and the control program are described, and summaries of the properties of individual modules are provided.

Y28-6811 IBM System/360 Model 44 Programming System Assembler Program Logic Manual 21

Program Number: 360F-AS-616

"See PLM Note." (139 pages)

Y28-6812 IBM System/360 Model 44 Programming System Supervisor and Job Control—Program Logic Manual 36

Program Numbers:
360F-IO-613
360F-CL-614

"See PLM Note." (228 pages)

Y28-6813 IBM System/360 Model 44 Programming System Linkage Editor Program Logic Manual 31

Program Number: 360F-ED-615

"See PLM Note." (131 pages)

The linkage editor combines and edits modules to produce a single load phase that can be loaded into main storage by the control program. The linkage editor operates as a processing program rather than as a part of the control program.

Y28-6814 IBM System/360 Model 44 Programming System Utilities and Stand-alone Programs—Program Logic Manual 32

Program Numbers:
360F-UT-606
360F-UT-607
360F-UT-608
360F-UT-609
360F-UT-610
360F-UT-611
360F-UT-612
360F-UT-617
360F-UT-620

"See PLM Note." (172 pages)

Y28-6815—IBM System/360 Model 44 Programming System FORTRAN IV Compiler—Program Logic Manual 25

Program Number: 360F-FO-618

"See PLM Note." (231 pages)

The FORTRAN IV compiler is a processing program of the IBM System/360 Model 44 Programming System. It translates a source module written in the FORTRAN IV language into an object module that can be processed into an executable load module by the Model 44 linkage editor.

Y28-6816 IBM System/360 Conversion Aids: 1620 Simulator for IBM System/360 Model 44—Program Logic Manual 35

Program Number: 360C-SI-755

"See PLM Note." (112 pages)

The 1620 simulator is a conversion aid that executes object programs written for an IBM 1620 Model 1 or Model 2 Data Processing System on an IBM System/360 Model 44. The purpose of the simulator is to aid the user during the period of transition from a 1620 installation to a System/360 Model 44.

Y28-7106 IBM System/360 Operating System Update Analysis Program—Program Logic Manual 32

"See PLM Note." (24 pages)

Y30-2001 IBM System/360 Operating System Basic Telecommunications Access Method—Program Logic Manual 30

Program Number: 360S-CQ-513

"See PLM Note." (184 pages)

Y30-2002 IBM System/360 Operating System Queued Telecommunications Access Method Program Logic Manual 30

Program Number: 360S-CQ-519

"See PLM Note." (For Option 2) (188 pages)

Y30-2005 IBM System/360 Operating System Remote Job Entry—Program Logic Manual 36

Program Number: 360S-RC-536

"See PLM Note." (236 pages)

Y30-2006 IBM System/360 Basic Operating System, Basic Programming Support Remote Job Entry Work Station Program Program Logic Manual 36

Program Numbers:
360B-CQ-311 (BOS)
360P-CQ-218 (BPS)

"See PLM Note." (44 pages)

Y30-5001 IBM System/360 Disk Operating System—Basic Telecommunications Access Method—Program Logic Manual 30

Program Number: 360N-CQ-469

"See PLM Note." (296 pages)

Y30-5002 IBM System/360 Disk Operating System Queued Telecommunications Access Method—Program Logic Manual 30

Program Number: 360N-CQ-470

"See PLM Note." (200 pages)

Y33-6003 IBM System/360 PL/I Language Specifications 99

This publication is a description of the PL/I *language*. It does not describe any implementation; nor can it be construed that the publication implies any commitment that the features are implemented or will be implemented by IBM. The publication is intended for the use of implementers and programming language designers concerned with language development and the study of languages. (216 pages)

Y33-8000 IBM System/360 Operating System ALGOL (F) Compiler—Program Logic Manual 26

Program Numbers:
360S-AL-531 (ALGOL Compiler)
360S-LM-532 (ALGOL Library)

"See PLM Note." (318 pages)

The ALGOL (F) Compiler is a processing program of the IBM System/360 Operating System. It translates a source module written in the ALGOL language into an executable load module by the Linkage Editor.

Y33-9010 IBM System/360 Disk and Tape Operating Systems PL/I Subset Language (Volume 1 of 3)—Program Logic Manual 29

Program Numbers:
360N-PL-464 (DOS)
360N-PL-410 (TOS)

"See PLM Note." (422 pages)

This publication is divided into three volumes. Volume 1 contains the description of the compiler phases; volumes 2 and 3 contain the corresponding flow charts. The form numbers of the three volumes are:

Volume 1: Y33-9010
Volume 2: Y33-9011
Volume 3: Y33-9012

All information regarding the library subroutines of the DOS/TOS PL/I compiler is contained in the publication *IBM System/360 Disk and Tape Operating Systems, PL/I Subset-Library Routines, Program Logic Manual*, Form Y33-9013.

The reader must be thoroughly familiar with the IBM System/360 Disk and Tape Operating Systems and with the PL/I Subset language. A list of all publications that provide pertinent information is contained in the introduction to volume 1 of this PLM.

Y33-9011 IBM System/360 Disk and Tape Operating Systems PL/I Subset Language (Volume 2 of 3)—Program Logic Manual 29

Program Numbers:
360N-PL-464 (DOS)
360N-PL-410 (TOS)

"See PLM Note." (516 pages)

The publication is divided into three volumes. Volume 1 contains the description of the compiler phases; volumes 2 and 3 contain the corresponding flow charts. The form numbers of the three volumes are:

Volume 1: Y33-9010
Volume 2: Y33-9011
Volume 3: Y33-9012

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Y33-9012 IBM System/360 Disk and Tape Operating Systems PL/I Subset Language (Volume 3 of 3)—Program Logic Manual 29

Program Numbers:
360N-PL-464 (DOS)
360N-PL-410 (TOS)

"See PLM Note." (448 pages)

The publication is divided into three volumes. Volume 1 contains the description of the compiler phases; volumes 2 and 3 contain the corresponding flow charts. The form numbers of the three volumes are:

Volume 1: Y33-9010
Volume 2: Y33-9011
Volume 3: Y33-9012

All information regarding the library subroutines of the DOS/TOS PL/I compiler is contained in the publication *IBM System/360 Disk and Tape Operating Systems, PL/I Subset-Library Routines, Program Logic Manual,* Form Y33-9013.

The reader must be thoroughly familiar with the IBM System/360 Disk and Tape Operating Systems and with the PL/I Subset language. A list of all publications that provide pertinent information is contained in the introduction to volume 1 of this PLM.

Y33-9013 IBM System/360 Disk and Tape Operating Systems—PI/I Subset-Library Routines—Program Logic Manual 29

Program Numbers:
360N-PL-464 (DOS)
360N-PL-410 (TOS)

"See PLM Note." (168 pages)

This publication contains information on (1) the characteristics of the library and the calling conventions used and (2) the structure and functions of the various routines.

The reader of this publication should be familiar with the SRL publications:

IBM System/360 Disk and Tape Operating Systems, PL/I Subset Language Specifications, Form C28-6809

IBM System/360 Disk and Tape Operating Systems, Assembler Specifications, Form C24-3414

For a list of further related publications, refer to *IBM System/360 Bibliography,* Form A22-6822.

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