

516-40
8/14/70
HL

SNAP-Time Sharing Calculator

SNAP is an algebraic programming language allowing a user to solve a mathematical problem in ordinary mathematical notation. It is a modified version of BASIC. In the execution phase of a SNAP program, the commands are interpreted and executed under control of the multiprogramming operating system. The program to be executed is written in a program file under control of the text EDITOR. A variable file must also be created to hold all the variables needed in the program. Up to 26, 1 letter variables, consisting of the letters of the alphabet can be used in the program. The SNAP program is entered as follows:

PRØGRAM? SNAP, PRGFIL, VARFIL

SNAP -

in response to which the user can type:

- C enter variables
- E return to executive
- G go execute program
- R reset variable file
- P print values of variables.

The SNAP command list consists of:

SNAP Command List

A=B+C	addition
A=B-C	subtraction
A=B*C	multiplication
A=B/C	division
A=SRB	square root of B
BP16A	branch to line number 16 on positive A
BZ16A	branch to line number 16 on zero A
BM16A	branch to line number 16 on negative A
BS18	branch to subroutine at line number 18
BRSUN	set up DØ Loop on N
BR16N	branch to line number 16 N times
RETN	return from subroutine
STØP	stop execution of program
TYPEA	type out value of A
TYPE!	type CR LF combination
TYPE"TEXT"	type out text between quotation marks.

Note that all transfers are to line numbers as no statement labels are allowed.

A program to solve for the roots of a quadratic equation would look like:

```

PROGRAM? F
TEXT EDITOR

NI
=ROOTS
PI,13
001 TYPE"SOLVE FOR ROOTS OF AX**2+BX+C=0"
002 I=2*A
003 F=B*B
004 S=A*4
005 S=S*C
006 F=F-S
007 F=SF
008 I=0-F
009 X=I-F
010 Y=I+F
011 X=X/I
012 Y=Y/I
013 TYPE"ROOTS ARE X1="X" X2="Y!"

```

A typical execution of the program might occur as follows:

```
PROGRAM? SNAP,ROOTS,ROOTS1
```

```
SNAP - E  
SNAP - G  
SOLVE FOR ROOTS OF  $AX^2+BX+C=0$   
A=1  
B=102  
C=200  
ROOTS ARE X1=- 100 X2=- 2
```

```
SNAP - P  
A= -1  
B= 102  
C= 200  
I= 2  
R= 98  
S= 800  
T=- 102  
X=- 100  
Y=- 2  
SNAP - E
```

An example of another program which exercises most of the possible commands follows:

=BNML

F1,29

```

001 TYPE!!"BINOMIAL COEFFICIENTS (C(N,R))!" N R C"
002 F=N+0
003 BS22
004 A=J+0
005 B=0+0
006 T=N-B
007 F=F+0
008 BS22
009 F=J+0
010 F=F+0
011 BS22
012 I=J+0
013 C=I*B
014 C=A/C
015 TYPE N,R,C
016 F=F+1
017 F=F-1
018 T=N-B
019 BS211
020 BF71
021 STOP
022 I=I+0
023 J=I+0
024 BS29F
025 EFSUF
026 J=J*I
027 I=I+1
028 BP26F
029 FF1N
    
```

E

PROGRAM? SNAP, BNML, BNML1

SNAP - F
 SNAP - C
 N=7

SNAP - G

BINOMIAL COEFFICIENTS (C(N,R))

N	R	C
7	0	1
7	1	7
7	2	21
7	3	35
7	4	35
7	5	21
7	6	7
7	7	1

SNAP - F
 A= 5040
 B= 5040
 C= 1
 I= 1