**SYSTEM VARIABLES**

- **CT**: Comparison tolerance: for the functions $< s = > \neq \geq \leq$
- **FN**: Function names: An $N$ by 5 matrix whose rows contain the names of functions currently in the workspace.
- **FO**: Index origin: 0 or 1
- **LC**: Line counter: line numbers of functions in execution innermost first
- **PP**: Print precision: 2 to 16 significant digits
- **PT**: Print time: display latency measured in tenths of a second
- **PW**: Print width: 32 to 140 characters on the MCM/70 dependent on the output device
- **RL**: Random link: seed for generating random numbers
- **SI**: State indicator: $N$ by 4 matrix whose rows contain the names of functions in execution—innermost first
- **VA**: Variable names: $N$ by 4 matrix whose rows contain the names of global variables, plus local variables and labels of executing functions
- **WA**: Workspace available

**TAPE RELATED FUNCTIONS**

**General**

- **XI N**: Initialize or re-initialize tape $(N = 0$ or 1)
- **XR N**: List group numbers on tape
- **XW N**: List names of contents of group $N$
- **XF**: Close tape

**EASY**

- **XO A**: Delete object(s) named in array $A$ from group $N$
- **XR A**: Read object(s) named in array $A$ from group $N$
- **XW A**: Write object(s) named in array $A$ in group $N$

**AVS**

- **XA A**: Append the object name(s) contained in array $A$ to the directory of group $N$
- **XC A**: Append the object name(s) contained in array $A$ to the directory of group $N$ (1 to 255)
- **XS N**: Activate AVS, group 0 and group $N$
- **XV**: Indicate if AVS, and which group, is active

**ERROR MESSAGES**

- **DOMAIN ERROR**: Function not defined for given values of the arguments
- **INDEX ERROR**: Indexing a non-existing dimension of an array
- **LENGTH ERROR**: Operation asked to be performed on arrays with nonconformable coordinate lengths
- **RANGE ERROR**: The result of the function performed cannot be represented
- **RANK ERROR**: Nonconforming or inappropriate array structure
- **SYNTAX ERROR**: Missing argument
- **UNBALANCED**: Unbalanced parentheses
- **TAPE ERROR**: Two juxtaposed variables with no operator
- **VALUE ERROR**: Uneven number of quotation marks
- **WS FULL**: Cannot access the tape cassette
- **REFERENCE**: Reference to an undefined variable
- **INSTRUCTION**: Instructions required more workspace than is available
PRIMITIVE FUNCTIONS

SCALARS

Monadic

+Y Y
-Y 0-Y
xY Signum Y
·Y Reciprocal of Y
/y e to the yth power
Y Ceiling of Y
Y Floor of Y
|Y Absolute value of Y
yY Natural logarithm of Y
Y Factorial Y
SYMBOLS

Pi rems for nesting
Branch
Assign date to a variable
Quad for input and output
Quote-quad for literal input
Quote for literal data
Comment indicator
End for mode change
Negative sign
Exponential notation
Period or decimal point
Label separator
Input and index separator
Dollar sign
Underline
Cursor
Computer response indicator
Length of displayed line exceeds screen width
Additional rows of array being displayed await viewing

Monadic

Dyadic

X+Y X plus Y
X-Y X minus Y
X·Y X times Y
X|Y X divided by Y
X Y X to the yth power
X<Y X less than Y
X≤Y X less than or equal to Y
X=Y X equal to Y
X>Y X greater than Y
X≥Y X greater than or equal to Y
X≠Y X not equal to Y
X<Y X or Y
X<Y and Y
X<Y Neither X nor Y
SYMBOLS

FUNCTIONS

Monadic

Dyadic

Xσ Y Generalized inner product of X and Y
Xτ Y Generalized outer product of X and Y
σ Y Generalized reduction along the last dimension of Y
τ Y Generalized reduction along the first dimension of Y
σ Y Generalized scan along the last dimension of Y
τ Y Generalized scan along the first dimension of Y

SYMBOLS

Parentheses for nesting
+ Assign date to a variable
Quad for input and output
Quote-quad for literal input
Quote for literal data
Comment indicator
End for mode change
Negative sign
Exponential notation
Period or decimal point
Label separator
Input and index separator
Dollar sign
Underline
Cursor
Computer response indicator
Length of displayed line exceeds screen width
Additional rows of array being displayed await viewing

SPECIAL KEYS

START
Begin session

CTRL and -
Return control to user as soon as evaluation of current line is complete

CTRL and RETURN
Return control to user immediately

CTRL-SPACE
Insert space(s) within displayed statement

CTRL-BKSP
Remove character(s) from displayed statement

SPACE
Retain displayed object(s) on screen until RETURN key is pressed (valid only when ISPT is not set to infinity)