

QUICK REFERENCE

for

PolyMorphic Systems

System 88 Disk Operating System
Text Editor
Extended BASIC
WordMaster

It is assumed that the user of this Quick Reference is familiar with the system manuals.

TYPING SYSTEM COMMANDS

1. Upper case letters, commas, and other punctuation must be typed exactly as shown.
2. Each command is followed by a RETURN.
3. Lower case letters represent information to be supplied by the user.
 - a. d = disk drive number
(All commands default to drive 1.)
 - b. v = variable
 - c. n = line number
 - d. c = channel number

SYSTEM INITIALIZATION PROCEDURE

1. Place diskette in Drive 1, close door, depress LOAD.

SYSTEM COMMANDS

LIST d	Lists Disk Directory of specified drive on video display.
DIRECTORY d	Lists specified disk Directory on the printer.
COPY <d>filename <d>filename	Copies the contents of first specified file to second specified file.
EDIT <d>filename <d>filename	Invokes the Text Editor.
TYPE <d>filename	Types the contents of the specified file on the video monitor.
PRINT <d>filename	Prints the contents of the specified file.
PAGE	Causes printer to "form feed" to top of next form.
RENAME <d>filename1 <d>filename2	Renames specified filename1 to filename2.
DELETE <d>filename1, <d>filename2,	Deletes specified files from the Disk Directory.
UNDELETE d	Reactivates Disk Directory specifications for ALL previously deleted files on the specified disk drive.
PACK d	Packs specified disk, reclaiming sectors used by deleted files.
ENABLE	Puts System 88 into "enabled mode." System "prompt" is \$\$.
DISABLE	Puts System 88 into "disabled mode." System prompt is \$.
GET <d>filename	Place a copy of machine language program into RAM. Does not execute.
START	Start execution of machine language program currently in RAM. Address of 3200H is assumed.

REENTER	"Warmstart" machine language program currently in RAM. "Warmstart" address of 3203H is assumed.
CONTINUE	Resume execution of a machine language program.
SAVE	Save a machine language program in RAM as a disk file. You must provide hexadecimal "from," "load," & "start" addresses and number of sectors.
IMAGE	Duplicates disk by copying entire disk. Must be in "enabled mode."
INIT	Initialize a disk by writing zero in every sector. "Enabled mode."
DNAME	Allows user to rename Diskette upon prompting.
ZAP	Zeroes user RAM..
<d>filename	Action depends upon type of file: .GO file is loaded and executed. .TX file is assumed to be a command file. Commands are then taken from file. .BS is a BASIC source file. BASIC is loaded; the BASIC source file is then loaded and executed. File named INITIAL (if on Drive 1) Upon system initialization, EXEC acts upon it as a .TX file, a .BS file or a .GO file.

WordMaster COMMANDS

Command	Description	Default value
{bm n}	bottom margin	0 lines
{bpg}	begin new page	
{bop}	begin odd-# page	
{br}	do a break	
{cap n}	capitalize	1 unit of text
{ce n}	center	1 unit of text
{dind n}	double indent	0 characters
{efo}	even-# page footer	
{ehe}	even-# page header	
{fill}	fill text	
{fo}	footer title	
{he}	header title	
{ind n}	permanent indent	0 characters
{lm n}	left margin	0 characters
{lpp n}	lines per page	Printer Driver
{lsp n}	line spacing	single space
{ne n}	need	1 line
{nfil}	no fill	
{nind}	no indent	
{npngn}	no page number	
{nrj}	no right justify	
{ofo}	odd-# page footer	
{ohc}	odd-# page header	
{par}	paragraph break	
{pgn}	number pages	
{rj}	right justify	
{rpgn n}	reset page number	page #1
{rm n}	right margin	0 characters
{skp n}	skip	1 blank line
{tin n}	temporary indent	5 characters
{tm n}	top margin	0 lines
{ul n}	underline (total)	1 text unit
{wid n}	page width	80 characters
{wul n}	underline (word only)	1 text unit

Special Symbols: @ = non expandable blank
double-# = Current page number

TEXT EDITOR COMMANDS

Up-Arrow	Move cursor up one line.
ESC/Up-Arrow	Move cursor up to the beginning of next line.
Down-Arrow	Move cursor down one line.
ESC/Down-Arrow	Move cursor down to the beginning of next line.
Right-Arrow	Move cursor to right one position.
Left-Arrow	Move cursor to left one position.
CTRL/B	Move cursor to Beginning of text in memory.
CTRL/E	Move cursor to End of text in memory.
CTRL/N	Move cursor forward to Next Page & display 15 lines.
CTRL/P	Move cursor back to Previous Page and display 15 lines.
CTRL/F	Begin "string" to be found.
 ESC	End "string" to be found and find first occurrence.
CTRL/C	Find next occurrence of "string" specified in CTRL/F.
CTRL/W	Delete word immediately preceding cursor.
CTRL/X	Delete complete line immediately preceding cursor.
CTRL/A	Append text from open input file so that half of unused RAM is filled.
CTRL/O	Outputs half of Text in RAM to output file.
CTRL/V	Reverse upper/lower case on line to right of cursor.
ESC-Right Arrow	Mark "head" of block of text in memory.
ESC-Left Arrow	Mark "tail" of block of text in memory.
ESC-CTRL/C	Move first "Marked Block" to current cursor position.
ESC-SHIFT/DELETE	Delete first "Marked Block" including block markers.
ESC-DELETE	Delete block markers from first marked block.
ESC-CTRL/O	Close currently open output file and open new output file. Prompts for new output file name.
ESC-CTRL/I	Close currently open input file and open specified new input file. Prompts for new input file name.
ESC-CTRL/P	Print first "Marked Block" on printer.
ESC-CTRL/D	Output first "Marked Block" to currently open output file. Does NOT leave Editor.
ESC-CTRL/E	Leave Text Editor and output Text in RAM to specified file.

CTRL/character means depress CTRL key and appropriate character key SIMULTANEOUSLY.

ESC commands mean depress ESC key FOLLOWED by SIMULTANEOUSLY depressing CTRL and appropriate character keys.

EXTENDED BASIC STATEMENTS

LET	A = expression or A,B,C.....= expression
IF expression relational operators expression ...
THEN	any BASIC statement or expression.
ELSE	alternate action to "THEN" in "IF" statement.
GOTO n	Branches to line number "n."
GOSUB n	Branches to subroutine at "n" and "returns" to statement following GOSUB upon "RETURN" statement in subroutine.
RETURN	Returns to next statement after GOSUB which called it.
ON v GOTO n1,n2,...	
ON v GOSUB n1,n2,...	"ON" acts same as GOTO/GOSUB with multiple way branch dependent on value of "v" = 1,2,...
FOR i = j to k [STEP n]	
EXIT n	Branches to line number specified and terminates all active FOR/NEXT loops.
NEXT [v]	Ends FOR loop.
DIM	Sets size of array.
DIMØ	Establishes origin all of arrays to Ø. Default is 1 if no DIMØ.
CHAIN "<d>filename"	Loads program from disk and continues execution. Deletes Line Numbers in calling program greater than first Line of newly loaded program. "Run-Time-Environment" of calling program not destroyed. "Chained" program must be "saved" with SAVEF.
INPUT	Accepts input from keyboard.
INPUT1	Accepts input from keyboard, leaves cursor at position after last input character.
INP (p)	8080 in from port "p" (in decimal).
OUT p	8080 out to port "p."
PRINT v,v1,v2,...	Displays on video monitor values of the list of variables or expressions.
PRINT: c,v,v1,v2,...	Prints on printer values of the list of variables or expressions.
RESTORE [n]	Restores "pointer" for next READ statement to first DATA statement or Line Number "n."
CLEAR	Clears all variables to Ø.

DATA List of numeric or string data. String data elements must be enclosed in quotes.

READ v,v1,v2... Reads string or numerical variables from DATA statement.

REM Remark. Not executed.

PAUSE n Pauses n clock ticks. (1/60 sec.)

WAIT Stops execution and waits for operator to depress any key.

DEFNv User defined function. (See manual.)

PLOT x,y,z Plots a point at "x,y" coordinate. Plots bright if value of "z" is "odd," dark if "z" is "even."

PLOT: "array name" Acts in same manner as PLOT, but takes each consecutive three elements from array as the x, y, and z arguments.

MAT MAT statement acts upon matrices as an implied FOR/NEXT loop.

ON ERROR "BASIC" statement Performs statement specified when error occurs. Variables LINE & ERR contain the line no. and error code.

ON ESCAPE "BASIC" statement Performs statement when operator types CTRL/Y.

DUMP Displays values of all scalars and dimensions of all dimensioned arrays.

FILE: c, LIST Attaches Universal Printer Driver to specified channel.

BASIC DISK FILE STATEMENTS

INPUT: INPUT:c,v [,v1,v2.....]
PRINT: PRINT:c,v [,v1,v2.....]
OPEN FILE:c,OPEN,"filename," INPUT (or OUT, or INOUT)
CLOSE FILE:c,CLOSE
REW FILE:c,REW
POS FILE:c,POS,n
DEF FILE:c,DEF,Address1,Address2,Address3
 Allows user to define machine language file management routine.

EXTENDED BASIC COMMANDS

(Brackets indicate optional specification to be supplied by the user.)

LIST [:c[[n]], n]] Lists the program currently in RAM to the video display, printer, or disk.

RUN [n] Executes the program currently in RAM. If no line number specified, clears all variables to 0 and executes from the beginning.

XREF [v,[v,...]] Prints a Cross Reference of variables to the Line Numbers in which used. If no variables specified, does it for all variables. May be output to video monitor, printer or disk.

SCR Deletes current BASIC source program and data from RAM.

REN [n, [nl]] Renumbers program lines beginning with Line Number n with an increment of nl.

DEL n [,nl] Deletes program lines from line n to nl.

EXEC Returns control to System 88 EXEC without closing files. Can CONTINUE from EXEC.

BYE Returns control to System 88 EXEC. Closes files and cannot CONTINUE from EXEC.

LOAD, <d>filename Loads specified file into RAM from disk storage.

SAVE, <d>filename Saves BASIC file on disk.

SAVE; <d>filename Saves w/auto-execute.

SAVEF, <d>filename Saves in token form.

CON Continues execution from point in program where it was interrupted by CTRL/Y or STOP statement.

CTRL/Y Interrupts currently executing program or BASIC command.

WALK Causes single program statement execution of BASIC program upon depression of appropriate key:
 a. X Single Step Execution
 b. D Single Step Execution with a "dump" display.
 c. G Exits WALK Command and "RUN"s program.

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EXTENDED BASIC—INTRINSIC FUNCTIONS

ARITHMETIC FUNCTIONS

SGN	Returns 1, 0, or -1 if sign of argument is +, 0, or -.
ABS	Absolute value of argument.
INT	Largest integer smaller than argument.
SIN	Sine of expression in radians.
COS	Cosine of expression in radians.
TAN	Trig function tangent.
ATAN	Inverse trig function arctangent.
ASIN	Inverse trig function arcsine.
MOD	The Modulo function.
LOG	Log to the Base e.
LOGT	Log to the Base 10.
EXP	Exponential function.
SQRT	Square root function.

HYPERBOLIC FUNCTIONS

SINH	Hyperbolic Sine
COSH	Hyperbolic Cosine
TANH	Hyperbolic Tangent

ARRAY FUNCTIONS

SUM	Returns sum of the array.
PROD	Returns product of array.
MAX	Returns maximum array element and set "#" indexing variable.
MIN	Returns minimum array element and sets "#" indexing variable.
MEAN	Returns the mean of array.
STD	Returns standard deviation of array.

STRING FUNCTIONS

LEN	Returns number of characters in string.
VAL	Returns numeric value of string.
ASC	Returns decimal value of ASCII of first character in string.
CHR\$	Returns decimal value of ASCII argument expression.
STR\$	Returns string of specified numeric value.
LEFT\$	LEFT\$ (A\$,n) returns the "n" leftmost characters in string.
RIGHT\$	RIGHT\$ (A\$,n) returns the "n" rightmost characters in string.
MID\$	MID\$ (A\$,n,n1) returns the nth through n1st characters in string.

MISCELLANEOUS FUNCTIONS

TIME (expression)

Returns 16-bit value of real time clock. If argument is 0, reset clock to 0.

RND (expression)

Returns a "random number." If "exp" > 1 returns integer between 1 and N. If "exp" < 1 & > 0 returns a number less than 1. If "exp" = 0 returns "next" number less than 1. RND (TIME (1)/65536) "randomizes" generator.

PEEK (storage location)

Returns value of storage location specified in argument.

POKE storage location, expression

Enters value of expression into storage location specified.

FREE (0)

Returns amount of unused RAM.

MEM (v)

Returns memory address of v.

CALL ("only",A,BC,DE,HL)

CALL (addr,A,BC,DE,HL)

Calls overlay or machine lang. routine with register setup.

ARITHMETIC OPERATORS

+	Addition
-	Subtraction
*	Multiplication
/	Division
^	Exponentiation

RELATIONAL OPERATORS

<	Less than
<=	Less than or equal to
>	Greater than
>=	Greater than or equal to
=	Equal to
<>	Not equal to

OUTPUT FORMAT SPECIFICATION

%	Begin Format Specification.
#	Set this specification to default format.
\$	Enter a "floating \$" in format.
C	Enter commas in format.
nI	Print as integer with "n" digits.
nFd	Print "floating point" number in "n" spaces with "d" decimal place.
nEd	Print "scientific notation" in "n" spaces with "d" digits to right of decimal point.

ARITHMETIC PRECISION

Arithmetic done in Binary Coded Decimal with 8 or 14 digits of precision.