

Logo PLUS

Quick Reference Card

Note: A Logo object can be a word (number) or list.

* If there are fewer or more than the indicated number of inputs, enclose the expression in parentheses.

EX: (WORD "C "A "T ")

Command **Brief Explanation**
(Abbreviation)

Graphics Commands

BACK <i>num</i>	Moves turtle backward (BK)
BACKGROUND <i>num</i>	Changes background color (BG)
CLEARSCREEN	Clears graphics screen (CS)
COLORUNDER	Returns the color of the dot at the turtle's location
DOT	Places a dot (of current pen color) at the turtle's location
DOT?	Returns TRUE if a dot is present at turtle's position; otherwise FALSE
DOTXY <i>x y</i>	Places a dot (of current pen color) at given coordinates
DRAW	Clears graphics screen—homes turtle
FILL	Fills a closed area with the current pen color
FORWARD <i>num</i>	Moves turtle forward (FD)
FULLSCREEN	Full graphics screen (CTRL-F)
HEADING	Returns turtle's heading in degrees
HFLIP	Flips the graphics screen horizontally to its mirror image
HIDETURTLE	Makes turtle disappear (HT)
HOME	Moves turtle to center of screen, sets heading to 0
LEFT <i>num</i>	Rotates turtle to the left in degrees (LT)
NODRAW	Enters text mode and clears screen (ND)
NOWRAP	Exits wrap mode
PENCOLOR <i>num</i>	Sets color of lines drawn by turtle (PC)
PENDOWN	Causes turtle to draw when it moves (PD)
PENERASE	Sets the turtle's pen to erase mode; cancel with PD (PE)
PENUP	Allows turtle to move without drawing (PU)

RIGHT <i>num</i>	Rotates turtle to the right in degrees (RT)
SDOT	Lights a single pixel at the turtle's location
SDOT?	Returns TRUE if a single pixel is present at the turtle's location; otherwise FALSE
SDOTXY <i>x y</i>	Lights a single pixel at the given coordinates
SETHEADING <i>num</i>	Points turtle toward a specified heading in degrees (SETH)
SETX <i>x</i>	Moves turtle horizontally to the point with the given x-coordinate
SETXY <i>x y</i>	Moves turtle to the point with the given x- and y-coordinates
SETY <i>y</i>	Moves turtle vertically to the point with the given y-coordinate
SHOWTURTLE	Makes turtle appear (ST)
SPLITSCREEN	Mixed graphics and text on screen (CTRL-S)
TEXTSCREEN	Full text screen (CTRL-T)
TOWARDS <i>x y</i>	Returns heading from turtle to the point with the given x- and y-coordinates
TURTLESTATE	Returns list of four items giving status of turtle (TS)
VFLIP	Flips the graphics screen vertically to its mirror image
WRAP	Places screen in wrap mode
XCOR	Returns x-coordinate of turtle's position
YCOR	Returns y-coordinate of turtle's position
ZOOM	Allows detailed editing of the graphics screen; exit with <CTRL> C
<u>Colors</u>	0 black 1 white 2 green 3 violet 4 orange 5 blue 6 reverse

Graphics Screen Text Commands

<Open-Apple> W	Enters or exits the graphics screen editor
GCURSOR <i>x y</i>	Places the underline cursor at column <i>x</i> and row <i>y</i>
GCURSORPOS	Returns the column and row of the text cursor's position

GMODE <i>num</i>	Determines how text is entered and deleted 1 - Replace mode (standard) 2 - Overprint mode 3 - Keep mode 4 - Inverse mode
GPRINT <i>word/list</i> *	Prints the input on the graphics screen (GPR)
GPRINT1 <i>word/list</i> *	Prints the input on the graphics screen, not followed by return
GREADCHARACTER*	Returns a character input to the graphics screen (GRC)
GREQUEST *	Returns a list input from the graphics screen (GRQ)
GSTYLE <i>num</i>	Sets the graphics screen text style (uses numbers 0-7)
GWRITE	Enters the graphics screen text editor (exit with <ESC>)

Word and List Operations

<i>object</i> = <i>object</i>	Compares inputs and returns TRUE or FALSE
BUTFIRST <i>obj</i>	Returns all but the first element of <i>obj</i> (BF)
BUTLAST <i>obj</i>	Returns all but the last element of <i>obj</i> (BL)
COUNT <i>obj</i>	Returns the number of elements in <i>obj</i>
EMPTY? <i>obj</i>	Returns TRUE if <i>obj</i> is an empty word or list; otherwise FALSE
FIRST <i>obj</i>	Returns the first element of <i>obj</i>
FPUT <i>obj list</i>	Returns a list in which <i>obj</i> is placed as the first element of <i>list</i>
ITEM <i>num obj</i>	Returns the specified element of <i>obj</i>
LAST <i>obj</i>	Returns the last element of <i>obj</i>
LIST <i>obj obj</i> *	Combines its inputs into a single list
LIST? <i>obj</i>	Returns TRUE if <i>obj</i> is a list
LPUT <i>obj list</i>	Returns a list in which <i>obj</i> is placed as the last element of <i>list</i>
MEMBER? <i>obj obj</i>	Returns TRUE if the first input is contained in the second
SENTENCE <i>obj obj</i> *	Combines all elements of its inputs into a single list (SE)
WORD <i>word word</i> *	Combines the input words into a single word
WORD? <i>obj</i>	Returns TRUE if <i>obj</i> is a word (or number)

Shape Editing Commands

CLEARSHAPES	Clears the current set of shapes from memory
COPYSHAPE <i>n1 n2</i>	Copies the contents of shape number <i>n1</i> to shape number <i>n2</i>
EDSHAPE <i>n1 n2</i>	Enters the shape editor with shape <i>n1</i> and exits the editor defining it as shape <i>n2</i>
ERASESHAPES <i>file</i>	Erases a shape file from disk
LOCKHEADING	Keeps the turtle shape at its current heading (LOCKH)
READSHAPES <i>file</i>	Reads the named shape file
SAVESHAPES <i>file</i>	Saves the current set of shapes under the given name
SETCOLOR <i>num</i>	Sets the color of the shape
SETSHAPE <i>num</i>	Sets the turtle shape to shape number <i>num</i> (SS)
SETSIZE <i>num</i>	Sets the size of the shape
SHAPEROOM	Returns the amount of memory (in bytes) remaining for shapes
STAMP	Stamps the current shape at its screen location
STAMPXY <i>x y</i>	Stamps the current shape at the given coordinates
TCOLOR	Returns the color of the current shape
TOTALSHAPES	Returns the maximum number of currently defined shapes
TSHAPE	Returns current shape number
TSIZE	Returns size of the current shape
UNLOCKHEADING	Restores the turtle shape to its true heading (UNLOCKH)

In the Shape Editor

Arrow keys	Move from box to box in grid
Space bar	Fill or clear a box
H	Flip shape horizontally
V	Flip shape vertically
B	Return to beginning of shape
<CTRL> F	Display Full screen
<CTRL> S	Display Split screen
<CTRL> T	Display Help screen
<CTRL> X	Clear all boxes in shape
<CTRL> C	Complete shape
<CTRL> G or <ESC>	Cancel shape



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Numeric Operations

+ Addition	- Subtraction
* Multiplication	/ Division
> Greater than	< Less than
ATAN <i>n1 n2</i>	Returns arctangent of quotient of two inputs
COS <i>angle</i>	Returns cosine of given angle (in degrees)
INTEGER <i>num</i>	Truncates fractional part of a number
NUMBER? <i>num</i>	Returns TRUE if its input is a number
QUOTIENT <i>n1 n2</i>	Returns integer part of the quotient of two inputs
RANDOM <i>num</i>	Returns a random number between 0 and <i>num</i> - 1
RANDOMIZE *	Varies the input seed for RANDOM; takes an optional input, a number
REMAINDER <i>n1 n2</i>	Returns integer part upon dividing the first number by the second
ROUND <i>num</i>	Returns nearest integer
SIN <i>angle</i>	Returns sine of given angle (in degrees)
SQRT <i>num</i>	Returns the square root of <i>num</i>

Input and Output

ASCII <i>character</i>	Returns ASCII code of input character
CHAR <i>num</i>	Returns the character whose ASCII code is the specified integer
CLEARINPUT	Clears the character input buffer
CLEARTEXT	Clears the text screen and homes the cursor
COPYDEF <i>old new</i>	Copies the definition of command, name or procedure <i>old</i> to the name <i>new</i>
CURSOR <i>col row</i>	Positions cursor at numbered column & row
CURSORPOS	Returns a list (column and row) of the cursor's position.
LOWERCASE <i>obj</i>	Returns input as lowercase characters
NOTE <i>pitch duration</i>	Sounds note of specified pitch and duration
OUTDEV <i>num</i>	Designates an output device (slot <i>num</i>)
PADDLE <i>num</i>	Takes a number 0-3 to specify the paddle used and returns a number 0-255 indicating the current paddle dial setting
PADDLEBUTTON <i>n</i>	Takes a number 0-2 and returns TRUE or FALSE indicating if the specified paddlebutton is pressed
PRINT <i>obj</i> *	Prints the input on the screen (PR)
PRINT1 <i>obj</i> *	Prints the input on the screen, not followed by a return character
PRINTSCREEN <i>sl sz</i>	Prints graphics screen to ImageWriter printer in slot <i>sl</i> (a size <i>sz</i> of 1 = small, 2 = large)
RC?	Returns TRUE if a character is pending from the keyboard
READCHARACTER*	Returns character entered from the keyboard, waiting for input (RC)
REQUEST *	Returns list entered at keyboard (RQ)
SETDISK <i>drive slot</i>	Directs file commands to the specified drive and slot
SHOWTEXT	Prints contents of editor to screen
UPPERCASE <i>obj</i>	Returns input as uppercase characters

Naming

LOCAL <i>variablename</i>	Makes a variable visible only to the current procedure
MAKE <i>name value</i>	Gives named variable the specified value
THING <i>variablename</i>	Returns the value of the named variable
THING? <i>word</i>	Returns TRUE if input is name of a variable

Conditionals

ALLOF <i>exp exp</i> *	Returns TRUE if all inputs are true
ANYOF <i>exp exp</i> *	Returns TRUE if any input is true
ELSE	Used in IF...THEN...ELSE
IF <i>exp</i> THEN <i>instr</i>	Tests <i>exp</i> and, if true, performs the instructions following THEN (optional)
IF <i>exp</i> THEN <i>instr</i> ... ELSE <i>instr</i>	Tests <i>exp</i> and, if true, performs the instructions following THEN; if false, performs the instructions following ELSE
IFFALSE <i>instr</i>	Executes remainder of line if preceding TEST was false (IFF)
IFTRUE <i>instr</i>	Executes remainder of line if preceding TEST was true (IFT)
NOT <i>exp</i>	Returns FALSE if input expression is true and TRUE if input is false
TEST <i>exp</i>	Tests a condition for use with IFFALSE and IFTRUE

Defining and Editing Commands

DEFINE <i>procname list</i>	Used by procedures to define other procedures
EDIT	Enters edit mode; optional procedure name(s) can be used as input (ED)
END	Signals the end of a procedure
ERASE <i>procname</i>	Erases a procedure or list of procedures from the workspace (ER)
ERNAME <i>name</i>	Removes global variable from workspace
TEXT <i>procname</i>	Returns the text of the procedure as a list
TO	Enters edit mode to define procedures

Screen Editing Commands

Arrow keys	Move cursor in direction of arrow
<DELETE>	Erases character to left of cursor
<CTRL> A	Moves cursor to beginning of line
<CTRL> B	Displays previous screen of text
<CTRL> C	Exits editor, confirming changes
<CTRL> D	Deletes character at cursor
<CTRL> E	Moves cursor to end of line
<CTRL> F	Displays next screen of text
<CTRL> G	Exits without processing changes
<CTRL> L	Centers cursor line vertically
<CTRL> O	Opens new line at cursor
<CTRL> X	Deletes all characters on line to right of cursor
<CTRL> Y	Restores most recently deleted line(s)

Non-Editing Control Characters

<CTRL> F	Full graphics screen
<CTRL> G	Stops program execution
<CTRL> P	Recalls previous line
<CTRL> S	Split screen
<CTRL> T	Full text screen
<CTRL> W	Pauses during listing
<CTRL> Z	Pauses program execution

Debugging

CONTINUE	Resumes execution after a PAUSE (CO)
NOTRACE	Turns off tracing
PAUSE	Stops program execution; resume with CONTINUE (<CTRL> Z)
SHOW <i>obj</i>	Displays input with all brackets and quote marks
TRACE	Causes Logo to pause before executing each instruction
TRACEBACK	Shows route taken to this command in program (TB)

Control

GO <i>label</i>	Transfers control to a line with that label
GOODBYE	Clears the workspace and restarts Logo
OUTPUT <i>obj</i>	Causes the current procedure to stop and return <i>obj</i> to calling procedure (OP)
REPEAT <i>num list</i>	Executes the given list of instructions the specified number of times
RUN <i>list</i>	Executes the given list of instructions
STOP	Halts current procedure and returns control to calling procedure
TOPLEVEL	Stops all procedures and returns to Logo toplevel (? prompt sign)
WAIT <i>num</i>	Causes a delay of the specified length (in 20ths of a second)

Filing and Managing Workspace

APPEND <i>filename</i>	Opens an existing data file in order to add data to the end
BLOAD <i>filename</i>	Loads a file that has been assembled for use with Logo
BSAVE <i>filename</i>	Saves an assembled program from Logo
CATALOG	Displays the names of files on the current volume or directory
CLOSE	Closes the currently open file
COPY <i>old new</i>	Copies the contents of file <i>old</i> into file <i>new</i>
DELETE <i>filename</i>	Deletes the named file from the disk (include file extension)
DISKREAD <i>filename</i>	Opens a data file for reading
DISKWRITE <i>filename</i>	Opens a data file for writing
DOS <i>list</i>	Runs the input instruction list as commands to the operating system
DPOSITION <i>num</i>	Reads or writes data at the specified location in a data file

EOF?	Returns TRUE if the end of a data file has been reached
ERASEDIR <i>dirname</i>	Erases an empty directory
ERASEFILE <i>file</i>	Deletes the named .LOGO file from the disk
ERASEPICT <i>file</i>	Deletes the named .PICT file from the disk
ERNAME <i>varname</i>	Removes the named variable from the workspace
FILE? <i>filename</i>	Returns TRUE if the named file is present in the current volume or directory
LOCK <i>filename</i>	Protects a file from being altered or deleted
MAKEDIR <i>dirname</i>	Creates a new directory in the current volume or directory
NAMES	Returns a list of all global variable names
ONLINE	Displays names and locations of all available volumes
PO ALL	Displays entire contents of the workspace
PO DEFS	Displays all definitions created using COPYDEF
POTS	Prints out the names of the procedures in the workspace
PREFIX	Returns the current prefix
PRINTOUT <i>obj</i>	Prints the text of the named procedure(s) (PO)
QUIT	Exits Logo (to another application)
READ <i>filename</i>	Reads a .LOGO file into the workspace
READFONT <i>filename</i>	Reads a .CHAR font file from the disk
READPICT <i>filename</i>	Reads a .PICT file onto the graphics screen
READTEXT <i>filename</i>	Reads a .LOGO file into the editor
RENAME <i>old new</i>	Renames the file <i>old</i> to name <i>new</i>
SAVE <i>filename</i>	Saves the contents of the workspace to disk
SAVEPICT <i>filename</i>	Saves the picture on the screen to disk
SAVETEXT <i>filename</i>	Saves the contents of the editor to disk
SETPREFIX <i>path</i>	Sets the prefix to the specified volume or directory
TITLES	Returns a list of all procedure names in the workspace
UNLOCK <i>filename</i>	Unlocks the specified file
VCAT <i>path</i>	Shows a catalog list of the named volume or directory

Miscellaneous Commands

.ASPECT <i>num</i>	Changes the vertical scale at which Logo graphics are drawn
.BPT <i>num</i>	Sends control to machine language monitor
.CALL <i>num num</i>	Calls a machine language subroutine in memory (inputs: address and integer input)
.CONTENTS	Returns a list of all words known to Logo
.DEPOSIT <i>num num</i>	Deposits a byte of data at designated memory location
.EXAMINE <i>num</i>	Returns the value of a byte of data stored at designated memory location
.GCOLL	Forces garbage collection
.NODES	Returns number of free nodes (in workspace)
;(semi-colon)	Causes rest of line not to be evaluated (for comments)