

Commands

SETORIGIN [**<origin x>** , **<origin y>**]
Sets the origin anywhere, even off the screen.

SORT AS, **<direction>**
or
SORT A%, **<direction>**
or
SORT A, **<direction>**

Sorts an array in ascending
<default> or descending order.
<direction> is A for ascending, D
for descending.

SOUND CLEAR
Resets VOLUME, ADSR, TONE, and
WAVE values for all three voices.

SOUND FREEZE
Stops all automatic sound se-
quences until the program
encounters SOUND GO.

SOUND GO
Starts automatic sound sequences.

SOUND OFF
Turns the master volume to zero.

SOUND ON
Restores the volume level after
SOUND OFF.

SPRITE <sprite number>
Checks for sprite-to-sprite collision.
<sprite number> range is 1 to 8.

SPRITE <sprite number> ANIMATE OFF
Turns off animation for an individual
sprite. <sprite number> range is
1 to 8.

SPRITE <sprite number> ANIMATE ON
Turns on animation for individual
sprites. <sprite number> range is
1 to 8.

**SPRITE <sprite number> ANIMATE
<shape1> , [**<shape2>**]...**SPEED
<speed>****

Selects the shapes to flip between.
SPEED controls how quickly the
program goes through the shape
changes. SPEED range is 0 to 127.
<sprite number> range is 1 to 8.
<shape> range is 1 to 16.

**SPRITE <sprite number> AT <sprite
x> , <sprite y>**
Positions sprites at specified screen
locations. <sprite number> range
is 1 to 8.

SPRITE [<sprite number>**] CLEAR HIT**
Clears a single sprite's, or all
sprites', sprite-collision flags.
<sprite number> range is 1 to 8.

**SPRITE <sprite number> COLOR <sprite
color>**
Sets the color for a sprite. <sprite
number> range is 1 to 8. <sprite
color> range is 0 to 15.

SPRITE FREEZE
Stops sprite animation or movement
until the next SPRITE MOVEMENT.

SPRITE <sprite number> HIRES
Puts an individual sprite into HIRES
mode. <sprite number> range is
1 to 8.

**SPRITE LOAD " <filename> "[, <device
number>]**
Loads the sprite shapes that were
saved through SPRITE SAVE or
were created by the SPRITE Editor.
<device number> defaults to 8.

SPRITE MOVE
Turns on sprite movement or anima-
tion after SPRITE FREEZE.

SPRITE <sprite number> MULTI
Puts an individual sprite into MULTI
mode. <sprite number> range is
1 to 8.

**SPRITE <sprite multicolor1> , <sprite
multicolor2>**
Defines two colors for multicolor
sprites. <sprite multicolor> is in
the range 0 to 15.

SPRITE <sprite number> OFF
Turns an individual sprite off. <sprite
number> range is 1 to 8.

SPRITE <sprite number> ON
Turns an individual sprite on.
<sprite number> range is 1 to 8.

**SPRITE <sprite number> ON
BACKGROUND**
Places a sprite on top of the back-
ground in front of all other charac-
ters or graphics. <sprite number>
range is 1 to 8.

**SPRITE <sprite number> UNDER
BACKGROUND**
Places a sprite behind any character
or graphics. <sprite number>
range is 1 to 8.

**SPRITE SAVE <first shape> , <last
shape> , " <filename> "[, <device
number>]**
Saves sprite shapes to disk or cas-
sette. <device number> defaults
to 8.

Commands

**SPRITE <sprite number> SHAPE
<shape number>**
Assigns a shape to the selected
shape. <sprite number> range is
1 to 8.

**SPRITE <sprite number> SPEED
<x speed> , <y speed>**
Defines the selected sprite's x and y
speeds. <sprite number> range is
1 to 8. <x speed> , <y speed>
range is 127 to -128.

**SPRITE <sprite number> XYSIZE
<x factor> , <y factor>**
Sets a selected sprite's horizontal
and vertical size. <sprite number>
range is 1 to 8. <x factor> ,
<y factor> range is 1 to 2.

TEXT
Places your computer into TEXT
mode.

**TEXT [FROM <firstline>]
[TO <lastline>]**

or
TEXT TO <line>
or
TEXT FROM <line>
Splits the screen into two sections:
one for text and one for the previous
graphics mode. <firstline> and
<lastline> range is 1 to 25.

TEXT LOAD " <filename> "[, <device>]
Loads the text screen from disk
created by TEXT SAVE or the BACK-
GROUND 1 font editor. <device>
defaults to 8.

TEXT SAVE " <filename> "[, <device>]
Saves the text screen to disk.
<device> defaults to 8.

UNNEW
Reverses the action of the NEW
command.

**VOICE <voice number> ADSR
<attack> , <decay> , <sustain> ,
<release>**
Determines the form of the volume
envelope for a selected voice.
<voice number> range is 1 to 3.
All ADSR elements are in the range
0 to 15.

VOICE <voice number> FREEZE
Stops the automatic voice se-
quence. <voice number> range is
1 to 3.

VOICE <voice number> GO
Starts the automatic voice se-
quence. <voice number> range is
1 to 3.

VOICE <voice number> OFF
Turns off a single voice. <voice
number> range is 1 to 3.

VOICE <voice number> ON
Turns on a single voice. <voice
number> range is 1 to 3.

**VOICE <voice number> PLAY [CONT]
<tone> [; <note duration>] [; <release
time>] , ... [<->] [SPEED <speed>]**
Defines a voice's tone sequence for
automated sounds. <voice num-
ber> range is 1 to 3. The total
number of notes for any one voice
is 63.

**VOICE <voice number> TONE <tone
number>**
Sets a voice's tone. <voice num-
ber> range is 1 to 3. <tone num-
ber> range is 0 to 65535.

**VOICE <voice number> WAVE <wave
number> [, <pulse width>]**
Selects a voice's waveform. <voice
number> range is 1 to 3. <wave
number> range is 1 to 4. <pulse
width> range is 0 to 1024.

VOLUME <level>
The master volume control for all
three voices. <level> range is
0 to 15.

**WINDOW [<lowerleft x> , <lowerleft y> ,
<upperright x> , <upperright y>]**
or
WINDOW
Sets up a window on the screen.

XPOS <sprite number>
Returns the selected sprite's
x-coordinate. <sprite number>
range is 1 to 8.

YPOS <sprite number>
Returns the selected sprite's y-
coordinate. <sprite number>
range is 1 to 8.

Programmers' BASIC Toolkit

Quick Reference Guide for Commodore 64® and 128™

LOAD Toolkit Basic

1. Turn on the TV or monitor, disk drive, and computer.
2. On Commodore 128, set the computer to the Commodore 64 mode.
3. Insert the Programmers' BASIC Toolkit disk into the drive, label side up.
4. At the Commodore 64 BASIC READY prompt, type **LOAD "*" ,8,1**
5. Press **RETURN**.

LOAD Sprite Editor

1. At the Commodore 64 BASIC READY prompt, type **LOAD "SPRITE" ,8,1**
2. Press **RETURN**.

LOAD Background/Font Editor

1. At the Commodore 64 BASIC READY prompt, type **LOAD "BGFONT" ,8,1**
2. Press **RETURN**.

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Commands

BACKGROUND < color >

Changes the TEXT screen's background color. < color > range is 0 to 15.

BACKGROUND (< sprite number >)

Checks for sprite-to-background collision. < sprite number > range is 1 to 8.

BACKUP

Creates a backup copy of the Programmers' BASIC Toolkit. The backup is for archival purposes only. This command prompts you through the backup process.

BORDER < color >

Changes the border color. < color > range is 0 to 15.

BOX < corner x >, < corner y > [XYSIZE < x >, < y >] [TO < corner x >, < corner y >]

Draws rectangular boxes on the HIRES and MULTI screens. < corner x >, < corner y > locates the box's left corner. XYSIZE determines the size. TO specifies the upper right corner.

CHANGE " < old string > " TO " < new string > "

Finds all occurrences of the < old string > and replaces them with the < new string >.

CHAR (< ascii >) = < n >, < n >

Redefines characters into a RAM character set. < ascii > is the display code (in decimal) of the character that you wish to redefine. < n > ... < n > are the values (in decimal) that represent the redefined character.

CHAR (< ascii >, n) = " < an 8-character string > "

Redefines characters into a RAM character set through visual representation. < ascii > is the display code (in decimal) of the character that you wish to redefine. n is the row number in the visual character.

CHAR LOAD " < filename > "[, < device >]

Loads the entire character set redefined through CHAR (< ascii >), CHAR (< ascii >, n), or the background/font editor.

CHAR RAM

Switches to the character set redefined through CHAR (< ascii >) or CHAR (< ascii >, n).

CHAR RESET MEMORY

Removes protection from the RAM character set.

CHAR ROM

Redisplays the standard Commodore character set after you've used a character set from CHAR RAM.

CHAR SAVE " < filename > "[, < device >]

Saves your redefined character set to disk. < device > defaults to 8.

CHAR SET MEMORY

Reserves and protects the memory you'll need for redefined characters.

CIRCLE < center x >, < center y > XYSIZE < x size >, < y size > [FROM < starting angle >] [TO < ending angle >] [STEP < angle >]

Draws circles, ellipses, arcs, and regular polygons.

CLEAR [- < BYTE >]

Fills the HIRES and MULTI screen memory with < byte >. < byte > range is 0 to 255.

COLOR HIRES < color >

or

COLOR MULTI < color >

Selects the color to be used with the DOT and LINE commands. < color > range is 0 to 15.

COPY HIRES TO PRINTER

Prints the present graphics (that are within the WINDOW) to the 1525 Graphics Printer or the Gemini series printer.

COPY HIRES TO SPRITE < sprite number >

Transfers the image under the sprite and puts it into the sprite shape data. < sprite number > range is 1 to 8.

COPY LOWERCASE TO RAM

Copies character-definition data from ROM into the reserved 2K RAM character set.

COPY MULTI TO PRINTER

Prints the current image (within the WINDOW) on a 1525 Graphics Printer or a Gemini series printer.

COPY MULTI TO SPRITE < sprite number >

Transfers the image under the sprite and puts it into the sprite shape data. < sprite number > range is 1 to 8.

COPY SPRITE < sprite number > TO HIRES

Displays predefined sprite shapes. < sprite number > range is 1 to 8.

COPY SPRITE < sprite number > TO MULTI

Displays predefined sprite shapes. < sprite number > range is 1 to 8.

Commands

COPY TEXT TO HIRES

Copies the current characters on the TEXT screen to the HIRES screen.

COPY TEXT TO PRINTER

Prints the current characters on the TEXT screen to a compatible printer.

COPY UPPERCASE TO RAM

Copies character-definition data from RAM into the reserved 2K RAM character set.

CREATE

Creates an auto-booting disk from a Toolkit BASIC program.

DIR [< device number >]

Displays a given device's disk directory.

DISK [, < device number >]

Displays the error status for disk drive < device number >. < device number > defaults to 8.

DISK " < command string > "[, < device number >]

Sends standard disk drive commands to disk drive < device number >. < device number > defaults to 8.

DO < procedure name > [< variable1 >, ..., < variablen >]

Executes a procedure and passes given variables as parameters.

DOT < x >, < y >

or

DOT < x >, < y >; < x >, < y >; < x >, < y > ...

Plots a dot or series of dots at location (x,y).

ELSE < statement >

or

ELSE < line number >

Use ELSE with the IF...THEN command. When IF...THEN is false, control passes to ELSE.

FILL < x >, < y >

Fills an enclosed object with the current color on the HIRES screen.

FIND " < search string > "

Displays all the lines in your program that contain < search string >.

GOTO < line number >

Branches to a specified < line number > or to a < line number > created by a variable.

GPRINT

or

GPRINT < output data >

or

GPRINT AT < Col >, < Row >, < output data >

or

GPRINT AT < Col >, < Row > XYSIZE

< x >, < y >, < output data >

Prints letters and numbers on HIRES and MULTI screens.

HELP

Displays a list of Programmers' BASIC Toolkit commands with descriptions. Type HELP only after the READY prompt.

HIRES

Switches your screen to hires mode from either the TEXT or the MULTI modes.

HIRES FROM TO

HIRES FROM TO splits the screen into two sections: one for text and one for high-resolution graphics.

HIRES COLOR < foregroundcolor > ON < backgroundcolor >

Defines the principal foreground and background colors. Color numbers must be in the range 0 to 15.

HIRES LOAD " < filename > "[, < device number >]

Load a high-resolution image from the given device. < device number > defaults to 8.

HIRES SAVE " < filename > "[, < device number >]

Saves a high-resolution image to the selected device. < device number > defaults to 8.

JOY < joystick number >

Returns a value that corresponds to the present joystick position.

KEY (< key number >) = " < string > "

Assigns a specified string to a specified function key.

KEY LIST

Lists what operations are currently assigned to what function keys.

KEY LOAD " < filename > "[, < device >]

Loads the present function-key assignments from the < device >. < device > defaults to 8.

KEY OFF

Turns off the function keys for Toolkit BASIC.

KEY ON

Turns on the function keys for Toolkit BASIC.

Commands

KEY SAVE " < filename > "[, < device >]

Saves the current function-key assignments to < device >. < device > defaults to 8.

LINE [< x >, < y >] [TO < x >, < y >] [TO < x >, < y >]..

or

LINE < x >, < y >

or

LINE < x >, < y > TO < x >, < y >

or

LINE TO < x,y >

or

LINE TO < x >, < y > TO < x >, < y > ...

Draws a line from one point to another.

LIST

Lists the program.

LLIST

or

LLIST < line number > - < line number >

or

LLIST DIR

or

LLIST " < filename > ", < device number >

or

LLIST < line number > - < line number >

Lists the program to the printer. < line number > - < line number > selects a line number range. DIR lists the directory. < device number > defaults to 8.

LPRINT

Sends output to the printer.

MULTI

Switches the screen to multicolor mode.

MULTICOLOR

< color1 >, < color2 >, < color3 >

Selects the three principal colors for the MULTI screen. < color > range is 0 to 15.

MULTI [FROM < firstline >] [TO < lastline >]

or

MULTI TO < line >

or

MULTI FROM < line >

Splits the screen from < firstline > to < lastline > in MULTI mode. < firstline > and < lastline > range is 1 to 25.

MULTI LOAD " < filename > "[, < device >]

Loads a MULTI screen image from < device >. < device > defaults to 8.

MULTI SAVE " < filename > "[, < device >]

Saves a multicolor image to < device >. < device > defaults to 8.

ON ERROR GOTO < line number >

When an error occurs, the program jumps to < line number >.

ON ERROR OFF

Turns off error trapping by the ON ERROR GOTO Command.

ON ERROR ON

Turns on error trapping and causes the program to branch to the line number specified in ON ERROR GOTO.

PADX(< port number >)

or

PADY(< port number >)

or

PADB(< port number >)

Reads inputs from the bitpad.

PRINT AT < x >, < y > [,] [\ < data >]

On the TEXT screen, PRINT AT prints the specified data at cursor position < x >, < y >.

PROCEDURE < procedure name > [< variable1 >, ..., < variablen >]

.

.

.

RETURN

Begins the definition of a procedure that the DO command will execute.

REN [< increment >], [< starting line number >]

Resequences a program's line numbers and modifies all line references. < increment > and < starting line number > default to 10.

RESET

Returns sound, graphics, and sprites to normal.

RESTORE [< line number >]

Sets the pointer to the next DATA element to the beginning of the specified < line number >.

ROLL < direction > < number of characters > [WINDOW < min x >, < min y >, < max x >, < max y >]

Rolls the selected part of the screen in the specified direction.

SCALE [< x range >, < y range >]

Changes the scale for both the HIRES and the MULTI screens. < x range > and < y range > have limits of 1 to 10,000.

SCROLL < direction > < number of characters > [WINDOW < min x >, < min y >, < max x >, < max y >]

Scrolls the selected part of the screen in the specified direction.