



# Reference

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## Data

### Composite

#### Array

An array is a list of data

#### ArrayList

An `ArrayList` stores a variable number of objects

#### FloatDict

A simple table class to use a `String` as a lookup for a float value

#### FloatList

Helper class for a list of floats

#### HashMap

A `HashMap` stores a collection of objects, each referenced by a key

#### IntDict

A simple class to use a `String` as a lookup for an int value

#### IntList



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## JSONArray

A JSONArray is an ordered sequence of values

## JSONObject

A JSONObject is an unordered collection of name/value pairs

## Object

Objects are instances of classes

## String

A string is a sequence of characters

## StringDict

A simple class to use a String as a lookup for an String value

## StringList

Helper class for a list of Strings

## Table

Generic class for handling tabular data, typically from a CSV, TSV, or other sort of spreadsheet file

## TableRow

Represents a single row of data values, stored in columns, from a Table

## XML

This is the base class used for the Processing XML library, representing a single node of an XML tree

## Array Functions

### append()

Expands an array by one element and adds data to the new position

### arrayCopy()

Copies an array (or part of an array) to another array

### concat()

Concatenates two arrays

### expand()

Increases the size of an array

### reverse()

Reverses the order of an array

### shorten()



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`sort()`

Sorts an array of numbers from smallest to largest and puts an array of words in alphabetical order

`splice()`

Inserts a value or array of values into an existing array

`subset()`

Extracts an array of elements from an existing array

## Conversion

`binary()`

Converts an `int`, `byte`, `char`, or `color` to a `String` containing the equivalent binary notation

`boolean()`

Converts an `int` or `String` to its boolean representation

`byte()`

Converts any value of a primitive data type (`boolean`, `byte`, `char`, `color`, `double`, `float`, `int`, or `long`) to its byte representation

`char()`

Converts any value of a primitive data type (`boolean`, `byte`, `char`, `color`, `double`, `float`, `int`, or `long`) to its numeric character representation

`float()`

Converts an `int` or `String` to its floating point representation

`hex()`

Converts a `byte`, `char`, `int`, or `color` to a `String` containing the equivalent hexadecimal notation

`int()`

Converts any value of a primitive data type (`boolean`, `byte`, `char`, `color`, `float`, `int`, or `long`) or `String` to its integer representation

`str()`

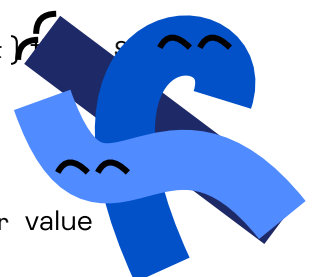
Converts a value of a primitive data type (`boolean`, `byte`, `char`, `int`, or `float`) to its `String` representation

`unbinary()`

Converts a `String` representation of a binary number to its equivalent integer value

`unhex()`

Converts a `String` representation of a hexadecimal number to its equivalent integer value



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### `boolean`

Datatype for the Boolean values `true` and `false`

### `byte`

Datatype for bytes, 8 bits of information storing numerical values from 127 to -128

### `char`

Datatype for characters, typographic symbols such as A, d, and \$

### `color`

Datatype for storing color values

### `double`

Datatype for floating-point numbers larger than those that can be stored in a `float`

### `float`

Data type for floating-point numbers, e

### `int`

Datatype for integers, numbers without a decimal point

### `long`

Datatype for large integers

## String Functions

### `join()`

Combines an array of `Strings` into one `String`, each separated by the character(s) used for the `separator` parameter

### `matchAll()`

This function is used to apply a regular expression to a piece of text

### `match()`

The function is used to apply a regular expression to a piece of text, and return matching groups (elements found inside parentheses) as a `String` array

### `nf()`

Utility function for formatting numbers into strings

### `nfc()`

Utility function for formatting numbers into strings and placing appropriate commas to its of 1000



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## `nfs()`

Utility function for formatting numbers into strings

## `splitTokens()`

The `splitTokens()` function splits a `String` at one or many character "tokens"

## `split()`

The `split()` function breaks a string into pieces using a character or string as the divider

## `trim()`

Removes whitespace characters from the beginning and end of a `String`

# Input

## Files

### `BufferedReader`

A `BufferedReader` object is used to read files line-by-line as individual `String` objects

### `createInput()`

This is a function for advanced programmers to open a Java `InputStream`

### `createReader()`

Creates a `BufferedReader` object that can be used to read files line-by-line as individual `String` objects

### `launch()`

Attempts to open an application or file using your platform's launcher

### `loadBytes()`

Reads the contents of a file or url and places it in a byte array

### `loadJSONArray()`

Takes a `String`, parses its contents, and returns a `JSONArray`

### `loadJSONObject()`

Loads a JSON from the data folder or a URL, and returns a `JSONObject`

### `loadStrings()`

Reads the contents of a file or url and creates a `String` array of its individual lines

### `loadTable()`



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Reads the contents of a file or URL and creates an `XML` object with its values

`parseJSONArray()`

Takes a `String`, parses its contents, and returns a `JSONArray`

`parseJSONObject()`

Takes a `String`, parses its contents, and returns a `JSONObject`

`parseXML()`

Converts `String` content to an `XML` object

`selectFolder()`

Opens a platform-specific file chooser dialog to select a folder

`selectInput()`

Open a platform-specific file chooser dialog to select a file for input

## Time & Date

`day()`

Returns the current day as a value from 1 - 31

`hour()`

Returns the current hour as a value from 0 - 23

`millis()`

Returns the number of milliseconds (thousandths of a second) since starting an applet

`minute()`

Returns the current minute as a value from 0 - 59

`month()`

Returns the current month as a value from 1 - 12

`second()`

Returns the current second as a value from 0 - 59

`year()`

Returns the current year as an integer (2003, 2004, 2005, etc)

## Keyboard

`key`



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### keyCode

Used to detect special keys such as the UP, DOWN, LEFT, RIGHT arrow keys and ALT, CONTROL, SHIFT

### keyPressed

The boolean system variable that is `true` if any key is pressed and `false` if no keys are pressed

### keyPressed()

Called once every time a key is pressed

### keyReleased()

Called once every time a key is released

### keyTyped()

Called once every time a key is pressed, but action keys such as Ctrl, Shift, and Alt are ignored

## Mouse

### mouseButton

Shows which mouse button is pressed

### mouseClicked()

Called once after a mouse button has been pressed and then released

### mouseDragged()

Called once every time the mouse moves and a mouse button is pressed

### mouseMoved()

Called every time the mouse moves and a mouse button is not pressed

### mousePressed

Variable storing if a mouse button is pressed

### mousePressed()

Called once after every time a mouse button is pressed

### mouseReleased()

Called every time a mouse button is released

### mouseWheel()

The code within the `mouseWheel()` event function is run when the mouse wheel is moved

### mouseX

The system variable that always contains the current horizontal coordinate of the mouse



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### pmouseX

The system variable that always contains the horizontal position of the mouse in the frame previous to the current frame

### pmouseY

The system variable that always contains the vertical position of the mouse in the frame previous to the current frame

## Constants

### HALF\_PI

HALF\_PI is a mathematical constant with the value 1.57079632679489661923

### PI

PI is a mathematical constant with the value 3.14159265358979323846

### QUARTER\_PI

QUARTER\_PI is a mathematical constant with the value 0.7853982

### TAU

An alias for TWO\_PI

### TWO\_PI

TWO\_PI is a mathematical constant with the value 6.28318530717958647693

## Typography

### PFont

Grayscale bitmap font class used by Processing

## Loading & Displaying

### createFont()

Dynamically converts a font to the format used by Processing

### loadFont()

Loads a font into a variable of type PFont



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`text()`

Draws text to the screen

## Attributes

`textAlign()`

Sets the current alignment for drawing text

`textLeading()`

Sets the spacing between lines of text in units of pixels

`textMode()`

Sets the way text draws to the screen

`textSize()`

Sets the current font size

`textWidth()`

Calculates and returns the width of any character or text string

## Metrics

`textAscent()`

Returns ascent of the current font at its current size

`textDescent()`

Returns descent of the current font at its current size

## Rendering

`PGraphics`

Main graphics and rendering context, as well as the base API implementation for processing

`blendMode()`

Blends the pixels in the display window according to a defined mode

`clip()`

Limits the rendering to the boundaries of a rectangle defined by the parameters

`strokeWeight()`



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## `hint()`

This function is used to enable or disable special features that control how graphics are drawn

## `noClip()`

Disables the clipping previously started by the `clip()` function

# Shaders

## `PShader`

This class encapsulates a GLSL shader program, including a vertex and a fragment shader

## `loadShader()`

Loads a shader into the `PShader` object

## `resetShader()`

Restores the default shaders

## `shader()`

Applies the shader specified by the parameters

# Image

## `PImage`

Datatype for storing images

## `createImage()`

Creates a new `PImage` (the datatype for storing images)

# Pixels

## `blend()`

Copies a pixel or rectangle of pixels using different blending modes

## `copy()`

Copies the entire image

## `filter()`

Converts the image to grayscale or black and white

## `get()`



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### `loadPixels()`

Loads the pixel data for the display window into the `pixels[]` array

### `mask()`

Masks part of an image with another image as an alpha channel

### `pixels[]`

Array containing the values for all the pixels in the display window

### `set()`

Writes a color to any pixel or writes an image into another

### `updatePixels()`

Updates the display window with the data in the `pixels[]` array

## Loading & Displaying

### `imageMode()`

Modifies the location from which images draw

### `image()`

Displays images to the screen

### `loadImage()`

Loads an image into a variable of type `PImage`

### `noTint()`

Removes the current fill value for displaying images and reverts to displaying images with their original hues

### `requestImage()`

Loads images on a separate thread so that your sketch does not freeze while images load during `setup()`

### `tint()`

Sets the fill value for displaying images

## Textures

### `textureMode()`

Sets the coordinate space for texture mapping

### `textureWrap()`



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Sets a texture to be applied to vertex points

## Shape

### PShape

Datatype for storing shapes

### createShape()

The `createShape()` function is used to define a new shape

### loadShape()

Loads geometry into a variable of type `PShape`

## 2d Primitives

### arc()

Draws an arc in the display window

### circle()

Draws a circle to the screen

### ellipse()

Draws an ellipse (oval) in the display window

### line()

Draws a line (a direct path between two points) to the screen

### point()

Draws a point, a coordinate in space at the dimension of one pixel

### quad()

A quad is a quadrilateral, a four sided polygon

### rect()

Draws a rectangle to the screen

### square()

Draws a square to the screen

### triangle()

A triangle is a plane created by connecting three points



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## Vertex

### `beginContour()`

Begins recording vertices for the shape

### `beginShape()`

Using the `beginShape()` and `endShape()` functions allow creating more complex forms

### `bezierVertex()`

Specifies vertex coordinates for Bezier curves

### `curveVertex()`

Specifies vertex coordinates for curves

### `endContour()`

Stops recording vertices for the shape

### `endShape()`

the companion to `beginShape()` and may only be called after `beginShape()`

### `quadraticVertex()`

Specifies vertex coordinates for quadratic Bezier curves

### `vertex()`

All shapes are constructed by connecting a series of vertices

## Curves

### `bezierDetail()`

Sets the resolution at which Beziers display

### `bezierPoint()`

Evaluates the Bezier at point *t* for points *a*, *b*, *c*, *d*

### `bezierTangent()`

Calculates the tangent of a point on a Bezier curve

### `bezier()`

Draws a Bezier curve on the screen

### `curveDetail()`

Sets the resolution at which curves display

### `curvePoint()`

Evaluates the curve at point *t* for points *a*, *b*, *c*, *d*



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## `curveTightness()`

Modifies the quality of forms created with `curve()` and `curveVertex()`

## `curve()`

Draws a curved line on the screen

## 3D Primitives

### `box()`

A box is an extruded rectangle

### `sphereDetail()`

Controls the detail used to render a sphere by adjusting the number of vertices of the sphere mesh

### `sphere()`

A sphere is a hollow ball made from tessellated triangles

## Attributes

### `ellipseMode()`

The origin of the ellipse is modified by the `ellipseMode()` function

### `rectMode()`

Modifies the location from which rectangles draw

### `strokeCap()`

Sets the style for rendering line endings

### `strokeJoin()`

Sets the style of the joints which connect line segments

### `strokeWeight()`

Sets the width of the stroke used for lines, points, and the border around shapes

## Loading & Displaying

### `shapeMode()`

Modifies the location from which shapes draw

### `shape()`

Displays shapes to the screen



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# Math

## PVector

A class to describe a two or three dimensional vector

### Calculation

#### `abs()`

Calculates the absolute value (magnitude) of a number

#### `ceil()`

Calculates the closest int value that is greater than or equal to the value of the parameter

#### `constrain()`

Constrains a value to not exceed a maximum and minimum value

#### `dist()`

Calculates the distance between two points

#### `exp()`

Returns Euler's number  $e$  (2.71828...) raised to the power of the `value` parameter

#### `floor()`

Calculates the closest int value that is less than or equal to the value of the parameter

#### `lerp()`

Calculates a number between two numbers at a specific increment

#### `log()`

Calculates the natural logarithm (the base- $e$  logarithm) of a number

#### `mag()`

Calculates the magnitude (or length) of a vector

#### `map()`

Re-maps a number from one range to another

#### `max()`

Determines the largest value in a sequence of numbers

#### `min()`

Determines the smallest value in a sequence of numbers



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`pow()`

Facilitates exponential expressions

`round()`

Calculates the integer closest to the `value` parameter

`sq()`

Squares a number (multiplies a number by itself)

`sqrt()`

Calculates the square root of a number

## Trigonometry

`acos()`

The inverse of `cos()`, returns the arc cosine of a value

`asin()`

The inverse of `sin()`, returns the arc sine of a value

`atan2()`

Calculates the angle (in radians) from a specified point to the coordinate origin as measured from the positive x-axis

`atan()`

The inverse of `tan()`, returns the arc tangent of a value

`cos()`

Calculates the cosine of an angle

`degrees()`

Converts a radian measurement to its corresponding value in degrees

`radians()`

Converts a degree measurement to its corresponding value in radians

`sin()`

Calculates the sine of an angle

`tan()`

Calculates the ratio of the sine and cosine of an angle



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## Operators





Combines addition with assignment

`+` (addition)

Adds two values or concatenates string values

`--` (decrement)

Subtracts the value of an integer variable by 1

`/` (divide)

Divides the value of the first parameter by the value of the second parameter

`/=` (divide assign)

Combines division with assignment

`++` (increment)

Increases the value of an integer variable by 1

`-` (minus)

Subtracts one value from another and may also be used to negate a value

`%` (modulo)

Calculates the remainder when one number is divided by another

`*` (multiply)

Multiplies the values of the two parameters

`*=` (multiply assign)

Combines multiplication with assignment

`-=` (subtract assign)

Combines subtraction with assignment

## Bitwise Operators

`&` (bitwise AND)

Compares each corresponding bit in the binary representation of the values

`|` (bitwise OR)

Compares each corresponding bit in the binary representation of the values

`<<` (left shift)

Shifts bits to the left

`>>` (right shift)

Shifts bits to the right



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## Random

`noiseDetail()`

Adjusts the character and level of detail produced by the Perlin noise function

`noiseSeed()`

Sets the seed value for `noise()`

`noise()`

Returns the Perlin noise value at specified coordinates

`randomGaussian()`

Returns a float from a random series of numbers having a mean of 0 and standard deviation of 1

`randomSeed()`

Sets the seed value for `random()`

`random()`

Generates random numbers

## Output

### Files

`PrintWriter`

Allows characters to print to a text-output stream

`beginRaw()`

To create vectors from 3D data, use the `beginRaw()` and `endRaw()` commands

`beginRecord()`

Opens a new file and all subsequent drawing functions are echoed to this file as well as the display window

`createOutput()`

Similar to `createInput()`, this creates a Java `OutputStream` for a given filename or

`createWriter()`

Creates a new file in the sketch folder, and a `PrintWriter` object to write to it

`endRaw()`

Complement to `beginRaw()`; they must always be used together

`endRecord()`



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### `saveBytes()`

Opposite of `loadBytes()` , will write an entire array of bytes to a file

### `saveJSONArray()`

Writes the contents of a `JSONArray` object to a file

### `saveJSONObject()`

Writes the contents of a `JSONObject` object to a file

### `saveStream()`

Save the contents of a stream to a file in the sketch folder

### `saveStrings()`

Writes an array of strings to a file, one line per string

### `saveTable()`

Writes the contents of a `Table` object to a file

### `saveXML()`

Writes the contents of an `XML` object to a file

### `selectOutput()`

Opens a platform-specific file chooser dialog to select a file for output

## Text Area

### `printArray()`

Writes array data to the text area of the Processing environment's console.

### `print()`

Writes to the console area of the Processing environment

### `println()`

Writes to the text area of the Processing environment's console

## Image

### `saveFrame()`

Saves a numbered sequence of images, one image each time the function is run

### `save()`

Saves an image from the display window



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## COLOR

### Creating & Reading

`alpha()`

Extracts the alpha value from a color

`blue()`

Extracts the blue value from a color, scaled to match current `colorMode()`

`brightness()`

Extracts the brightness value from a color

`color()`

Creates colors for storing in variables of the `color` datatype

`green()`

Extracts the green value from a color, scaled to match current `colorMode()`

`hue()`

Extracts the hue value from a color

`lerpColor()`

Calculates a `color` or `colors` between two `colors` at a specific increment

`red()`

Extracts the red value from a color, scaled to match current `colorMode()`

`saturation()`

Extracts the saturation value from a color

### Setting

`background()`

Sets the color used for the background of the Processing window

`clear()`

Clears the pixels within a buffer

`colorMode()`

Changes the way Processing interprets color data

`fill()`

Sets the color used to fill shapes



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### `noStroke()`

Disables drawing the stroke (outline)

### `stroke()`

Sets the color used to draw lines and borders around shapes

## Lights Camera

### Lights

#### `ambientLight()`

Adds an ambient light

#### `directionalLight()`

Adds a directional light

#### `lightFalloff()`

Sets the falloff rates for point lights, spot lights, and ambient lights

#### `lightSpecular()`

Sets the specular color for lights

#### `lights()`

Sets the default ambient light, directional light, falloff, and specular values

#### `noLights()`

Disable all lighting

#### `normal()`

Sets the current normal vector

#### `pointLight()`

Adds a point light

#### `spotLight()`

Adds a spot light

### Material Properties

#### `ambient()`

Sets the ambient reflectance for shapes drawn to the screen



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Sets the emissive color of the material used for drawing shapes drawn to the screen

`shininess()`

Sets the amount of gloss in the surface of shapes

`specular()`

Sets the specular color of the materials used for shapes drawn to the screen, which sets the color of highlights

## Camera

`beginCamera()`

The `beginCamera()` and `endCamera()` functions enable advanced customization of the camera space

`camera()`

Sets the position of the camera

`endCamera()`

The `beginCamera()` and `endCamera()` functions enable advanced customization of the camera space

`ortho()`

Sets an orthographic projection and defines a parallel clipping volume

`perspective()`

Sets a perspective projection applying foreshortening, making distant objects appear smaller than closer ones

`frustum()`

Sets a perspective matrix defined through the parameters

`printCamera()`

Prints the current camera matrix to the Console (the text window at the bottom of Processing)

`printProjection()`

Prints the current projection matrix to the Console

## Coordinates

`modelX()`

Returns the three-dimensional X, Y, Z position in model space

`modelY()`

Returns the three-dimensional X, Y, Z position in model space



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### screenX()

Takes a three-dimensional X, Y, Z position and returns the X value for where it will appear on a (two-dimensional) screen

### screenY()

Takes a three-dimensional X, Y, Z position and returns the Y value for where it will appear on a (two-dimensional) screen

### screenZ()

Takes a three-dimensional X, Y, Z position and returns the Z value for where it will appear on a (two-dimensional) screen

## Transform

### applyMatrix()

Multiplies the current matrix by the one specified through the parameters

### popMatrix()

Pops the current transformation matrix off the matrix stack

### printMatrix()

Prints the current matrix to the Console (the text window at the bottom of Processing)

### pushMatrix()

Pushes the current transformation matrix onto the matrix stack

### resetMatrix()

Replaces the current matrix with the identity matrix

### rotateX()

Rotates a shape around the x-axis the amount specified by the `angle` parameter

### rotateY()

Rotates a shape around the y-axis the amount specified by the `angle` parameter

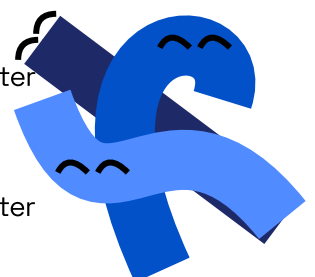
### rotateZ()

Rotates a shape around the z-axis the amount specified by the `angle` parameter

### rotate()

Rotates a shape the amount specified by the `angle` parameter

### scale()



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### `shearX()`

Shears a shape around the x-axis the amount specified by the `angle` parameter

### `shearY()`

Shears a shape around the y-axis the amount specified by the `angle` parameter

### `translate()`

Specifies an amount to displace objects within the display window

## Structure

### `[]` (array access)

The array access operator is used to specify a location within an array

### `=` (assign)

Assigns a value to a variable

### `catch`

The `catch` keyword is used with `try` to handle exceptions

### `class`

Keyword used to indicate the declaration of a class

### `,` (comma)

Separates parameters in function calls and elements during assignment

### `//` (comment)

Explanatory notes embedded within the code

### `{}` (curly braces)

Define the beginning and end of functions blocks and statement blocks such as the `for` and `if` structures

### `/** */` (doc comment)

Explanatory notes embedded within the code

### `.` (dot)

Provides access to an object's methods and data

### `draw()`

Called directly after `setup()` and continuously executes the lines of code contained in `Draw` block until the program is stopped or `noLoop()` is called







## `extends`

Allows a new class to *inherit* the methods and data fields (variables and constants) from an existing class

## `false`

Reserved word representing the logical value "false"

## `final`

Keyword used to state that a value, class, or method can't be changed

## `implements`

Implements an *interface* or group of *interfaces*

## `import`

The keyword `import` is used to load a library into a Processing sketch

## `loop()`

Causes Processing to continuously execute the code within `draw()`

## `/* */` (multiline comment)

Explanatory notes embedded within the code

## `new`

Creates a "new" object

## `noLoop()`

Stops Processing from continuously executing the code within `draw()`

## `null`

Special value used to signify the target is not a valid data element

## `()` (parentheses)

Grouping and containing expressions and parameters

## `popStyle()`

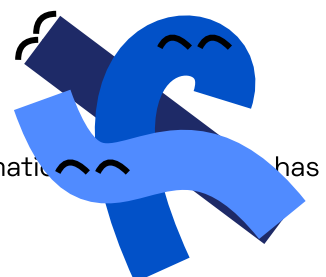
Saves the current style settings and `popStyle()` restores the prior settings

## `pop()`

The `pop()` function restores the previous drawing style settings and transformations that have been changed them

## `private`

This keyword is used to disallow other classes access to the fields and methods within





## `pushStyle()`

Saves the current style settings and `popStyle()` restores the prior settings

## `push()`

The `push()` function saves the current drawing style settings and transformations, while `pop()` restores these settings

## `redraw()`

Executes the code within `draw()` one time

## `return`

Keyword used to indicate the value to return from a function

## `;` (semicolon)

A statement terminator which separates elements of the program

## `setLocation()`

The `setLocation()` function defines the position of the Processing sketch in relation to the upper-left corner of the computer screen

## `setResizable()`

By default, Processing sketches can't be resized

## `setTitle()`

The `setTitle()` function defines the title to appear at the top of the sketch window

## `setup()`

The `setup()` function is called once when the program starts

## `static`

Keyword used to define a variable as a "class variable" and a method as a "class method"

## `super`

Keyword used to reference the superclass of a subclass

## `this`

Refers to the current object (i

## `thread()`

Launch a new thread and call the specified function from that new thread

## `true`

Reserved word representing the logical value "true"

## `try`

The `try` keyword is used with `catch` to handle exceptions



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Keyword used to indicate that a function returns no value

## Control

### Conditionals

#### `break`

Ends the execution of a structure such as `switch`, `for`, or `while` and jumps to the next statement after

#### `case`

Denotes the different names to be evaluated with the parameter in the `switch` structure

#### `?: (conditional)`

A shortcut for writing an `if` and `else` structure

#### `continue`

When run inside of a `for` or `while`, it skips the remainder of the block and starts the next iteration

#### `default`

Keyword for defining the default condition of a `switch`

#### `else`

Extends the `if` structure allowing the program to choose between two or more blocks of code

#### `if`

Allows the program to make a decision about which code to execute

#### `switch`

Works like an `if else` structure, but `switch` is more convenient when you need to select between three or more alternatives

### Relational Operators

#### `== (equality)`

Determines if two values are equivalent

#### `> (greater than)`

Tests if the value on the left is larger than the value on the right

#### `>= (greater than or equal to)`

Tests if the value on the left is larger than the value on the right or if the values are equivalent



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Determines if one expression is not equivalent to another

`<` (less than)

Tests if the value on the left is smaller than the value on the right

`<=` (less than or equal to)

Tests if the value on the left is less than the value on the right or if the values are equivalent

## Iteration

`for`

Controls a sequence of repetitions

`while`

Controls a sequence of repetitions

## Logical Operators

`&&` (logical AND)

Compares two expressions and returns `true` only if both evaluate to `true`

`!` (logical NOT)

Inverts the Boolean value of an expression

`||` (logical OR)

Compares two expressions and returns `true` if one or both evaluate to `true`

## Environment

`cursor()`

Sets the cursor to a predefined symbol, an image, or makes it visible if already hidden

`delay()`

The `delay()` function causes the program to halt for a specified time

`displayDensity()`

Returns `"2"` if the screen is high-density and `"1"` if not

`displayHeight`

Variable that stores the height of the computer screen



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variable that stores the width of the computer screen

### `focused`

Confirms if a Processing program is "focused"

### `frameCount`

The system variable that contains the number of frames displayed since the program started

### `frameRate`

The system variable that contains the approximate frame rate of the software as it executes

### `height`

System variable which stores the height of the display window

### `noCursor()`

Hides the cursor from view

### `noSmooth()`

Draws all geometry and fonts with jagged (aliased) edges and images with hard edges between the pixels when enlarged rather than interpolating pixels

### `pixelDensity()`

It makes it possible for Processing to render using all of the pixels on high resolutions screens

### `pixelHeight`

The actual pixel height when using high resolution display

### `pixelWidth`

The actual pixel width when using high resolution display

### `fullScreen()`

Opens a sketch using the full size of the computer's display

### `frameRate()`

Specifies the number of frames to be displayed every second

### `settings()`

Used when absolutely necessary to define the parameters to `size()` with a variable

### `size()`

Defines the dimension of the display window in units of pixels

### `smooth()`

Draws all geometry with smooth (anti-aliased) edges

### `width`

System variable which stores the width of the display window



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Processing is an open project initiated by [Ben Fry](#) and [Casey Reas](#). It is developed by a team of volunteers around the world.



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