



PROCESSING COOKING TOOLS

creative
scripting
meals



Start Up

Processing official Web Site
<http://processing.org/>

PROCESSING

Processing is an open source programming language, development environment, and online community. Since 2001, Processing has promoted software literacy within the visual arts and visual literacy within technology.

Initially created to serve as a software sketchbook and to teach computer programming fundamentals within a visual context, Processing evolved into a development tool for professionals. Today, there are tens of thousands of students, artists, designers, researchers, and hobbyists who use Processing for learning, prototyping, and production.

- » Free to download and open source
- » Interactive programs with 2D, 3D or PDF output
- » OpenGL integration for accelerated 3D
- » For GNU/Linux, Mac OS X, and Windows
- » Over 100 libraries extend the core software
- » Well documented, with many books available

Processing was initiated in 2001 by **Casey Reas** and **Benjamin Fry**, both formerly of the Aesthetics and Computation Group at the MIT Media Lab. One of the stated aims of Processing is to act as a tool to get non-programmers started with programming, through the instant gratification of visual feedback. The language builds on the Java language, but uses a simplified syntax and graphics programming model.

DOWNLOAD

Operation Systems: Windows, Apple, Linux
<https://processing.org/download/?processing>

GETTING STARTED

Overview: Please spend some time to read and engage with Processing. This text is a short introduction to the Processing software and projects from the community.
<http://processing.org/overview/>

Environment: The Processing Environment includes a text editor, a compiler, and a display window. It enables the creation of software within a carefully designed set of constraints.
<http://processing.org/reference/environment/>

Libraries: Extend Processing beyond graphics and images into audio, video, and communication with other devices.
<http://processing.org/reference/libraries/>

Tools: Extend the capability of the Processing Environment (PDE) beyond the core functionality.
<http://processing.org/reference/tools/>



EXAMPLES

Short, prototypical programs exploring the basics of programming with Processing.

These examples are running online through Processing.js using HTML5 Canvas and WebGL for rendering. There are many more examples included with the Processing application; please look there if you don't find what you're looking for here.

Here's a style guide that helps with writing examples for beginners.
<http://processing.org/examples/>

OPEN PROCESSING PLAYGROUND

A website to share Processing sketches, share your sketches with others, help and collaborate with the community, improve and polish your programming skills, follow classes around the world teaching processing

<http://www.openprocessing.org/>

PROCESSING TUTORIAL

A collection of step-by-step lessons covering beginner, intermediate, and advanced topics.

Processing Examples from Processing: <http://processing.org/tutorials/>

Daniel Shiffman: <http://shiffman.net/>

Daniel Shiffman: <http://www.learningprocessing.com/tutorials/>

CreativeApplications: <http://www.creativeapplications.net/processing/geometry-textures-shaders-processing-tutorial/>

GENERAL READING

Books: <http://processing.org/books/>

Codeanticode: <http://codeanticode.wordpress.com/>

Florian Jenett: <http://www.florianjenett.de/>

EXHIBITION

A curated collection of projects created with Processing. New software added each month.

<http://processing.org/exhibition/>

OVERVIEW

The Processing Development Environment (PDE) makes it easy to write Processing programs. Programs are written in the Text Editor and started by pressing the Run button. In Processing, a computer program is called a sketch. Sketches are stored in the Sketchbook, which is a folder on your computer.

PROCESSING DEVELOPMENT ENVIRONMENT (PDE)

The PDE consists of a simple text editor for writing code, a message area, a text console, tabs for managing files, a toolbar with buttons for common actions, and a series of menus. The menus options change from mode to mode.

Programs written using Processing are called sketches. These sketches are written in the text editor. It has features for cutting/pasting and for searching/replacing text. The message area gives feedback while saving and exporting and also displays errors. The console displays text output by Processing sketches including complete error messages and text output from sketches with the `print()` and `println()` functions.

BUTTONS



RUN

Runs the sketch. In Java mode, it compiles the code and opens a new display window.



STOP

Terminates a running sketch



NEW

Creates a new sketch (project) in the current window. To create a new sketch in its own window, use File > New.



OPEN

Provides a menu with options to open files from anywhere on your computer (Open...), from the Example Menu (Examples...), or one of the programs in the Sketchbook. Opening a sketch from the toolbar will replace the sketch in the current window. To open a sketch in a new window, use File > Open.



SAVE

Saves the current sketch to its current location. If you want to give the sketch a different name, select "Save As" from the File menu.



EXPORT

In Java mode, it exports the current sketch as a Java application and the folder containing the files is opened.

SKETCHES AND SKETCHBOOK

All Processing projects are called sketches. Each sketch has its own folder. The main file for each sketch has the same name as the folder and is found inside. For example, if the sketch is named «Sketch_123», the folder for the sketch will be called «Sketch_123» and the main file will be called «Sketch_123.pde». The PDE file extension is an acronym for the Processing Development Environment.

A sketch folder sometimes contains other folders for media files and other code. When a font or image is added to a sketch by selecting «Add File...» from the Sketch menu, a «data» folder is created. Files may also be added to your Processing sketch by dragging them into the text editor. Image and sound files dragged into the application window will automatically be added to the current sketch's «data» folder. All images, fonts, sounds, and other data files loaded in the sketch must be in this folder.

- A) to select the correct board from the Tools > Board and,
- B) to select the correct Serial Port Tools > Serial Port.

RENDERER

Processing has three built-in renderers. The default renderer is for drawing two-dimensional shapes. P2D is a faster, but less accurate renderer for drawing two-dimensional shapes. P3D is for three-dimensional geometry, it can also control the camera, lighting, and materials. The P2D and P3D renderers are accelerated if your computer has an OpenGL compatible graphics card. The renderer used for each sketch is specified through the size() function. If a renderer is not explicitly defined in size(), it uses the default renderer.

LIBRARIES

<http://processing.org/reference/libraries/>

Install with the «Add Library...» tool

New for Processing 2.0: add contributed libraries by selecting «Add Library...» from the «Import Library...» submenu within the Sketch menu. Not all available libraries have been converted to show up in this menu. If a library isn't there, it will need to be installed manually by following the instructions below.

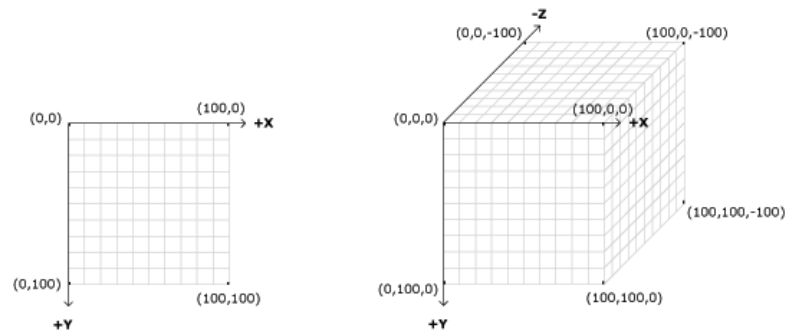
Manual Install

Contributed libraries may be downloaded separately and manually placed within the libraries folder of your Processing sketchbook. As a reminder, the sketchbook is where your sketches are saved. To find (and change) the Processing sketchbook location on your computer, open the Preferences window from the Processing application (PDE) and look for the «Sketchbook location» item at the top. Copy the contributed library's folder into the libraries folder at this location. You will need to create the libraries folder if this is your first contributed library. By default the following locations are used for your sketchbook folder. **For Mac users the sketchbook folder is located inside ~/Documents/Processing. For Windows users the sketchbook folder is located inside folder 'My Documents'/Processing.**

COORDINATES

Processing uses a Cartesian coordinate system with the origin in the upper-left corner. If your sketch is 320 pixels wide and 240 pixels high, coordinate (0, 0) is the upper-left pixel and coordinate (320, 240) is in the lower-right. The last visible pixel in the lower-right corner of the screen is at position (319, 239) because pixels are drawn to the right and below the coordinate.

Using the three-dimension coordinate system of P3D, the z-coordinate is zero at the surface of the image, with negative z-values moving back in space. When drawing in 3D, the camera is positioned in the center of the screen.



TABS MULTIPLE FILES CLASSES

It can be inconvenient to write a long program within a single file. When Processing sketches grow to hundreds or thousands of lines, breaking them into modular units helps manage the different parts. Processing manages files with the Sketchbook and each sketch can have multiple files that are managed with tabs.

The arrow button to the right of the tabs in the Processing Development Environment is used to manage these files. Click this button to reveal options to create a new tab, rename the current tab, and delete the current tab. If a project has more than one tab, they can also be hidden and revealed. Hiding a tab temporarily removes that code from the sketch (it will not be compiled with the sketch when you press Run).

Tabs are intended for more advanced users, and for this reason, the menu that controls the tabs is intentionally made less prominent.

When a program with multiple tabs is run, the code is grouped together and the classes in other tabs become inner classes. Because they're inner classes, they cannot have static variables. Simply place the «static» variable outside the class itself to do the same thing (it need not be explicitly named «static» once you list it in this manner). If you don't want code to be an inner class, you can also create a tab with a .java suffix, which means it will be interpreted as straight java code. It is also not possible to use static classes in separate tabs. If you do this, however, you'll need to pass the PApplet object to that object in that tab in order to get PApplet functions like line(), loadStrings() or saveFrame() to work.

PROGRAMMING MODES

Processing has different programming modes to make it possible to deploy sketches on different platforms and program in different ways. The current default programming modes are Java and Experimental. Other programming modes, such as JavaScript and Android, are added by selecting «Add Mode...» from the menu in the upper-right corner of the PDE.

JAVA MODE

This mode makes it possible to write short programs to draw to the screen, but also enables complex Java programs as well. It's can be used simply by beginners, but it scales to professional Java software development. Sketches written in this mode can be exported as Java Applications to run on Linux, Mac OS X, and Windows operating systems.

EXPERIMENTAL MODE

This is a prototype of a potential future version of the Processing Development Environment. It includes features to check for errors in the code while it's written, to follow variables as they change, to debug a program with break points, and more.

JAVASCRIPT MODE

Sketches written in this mode can be exported to run inside web browsers using HTML5 and WebGL. This mode is documented on the JavaScript page of the Processing Wiki. To add this mode, click on the mode button in the upper-right corner of the PDE and select «Add Mode...»

ANDROID MODE

Sketches written in this mode can be exported to run on Android phones and tablets. This mode is documented on the Processing for Android page of the Processing Wiki. To add this mode, click on the mode button in the upper-right corner of the PDE and select «Add Mode...»

EXPORT

The Export information and Tips page on the Processing Wiki covers the details of exporting Applications from Java mode.

Exporting from JavaScript mode is discussed on the JavaScript page of the Processing Wiki.

Exporting from Android mode is discussed on the Android page of the Processing Wiki.