

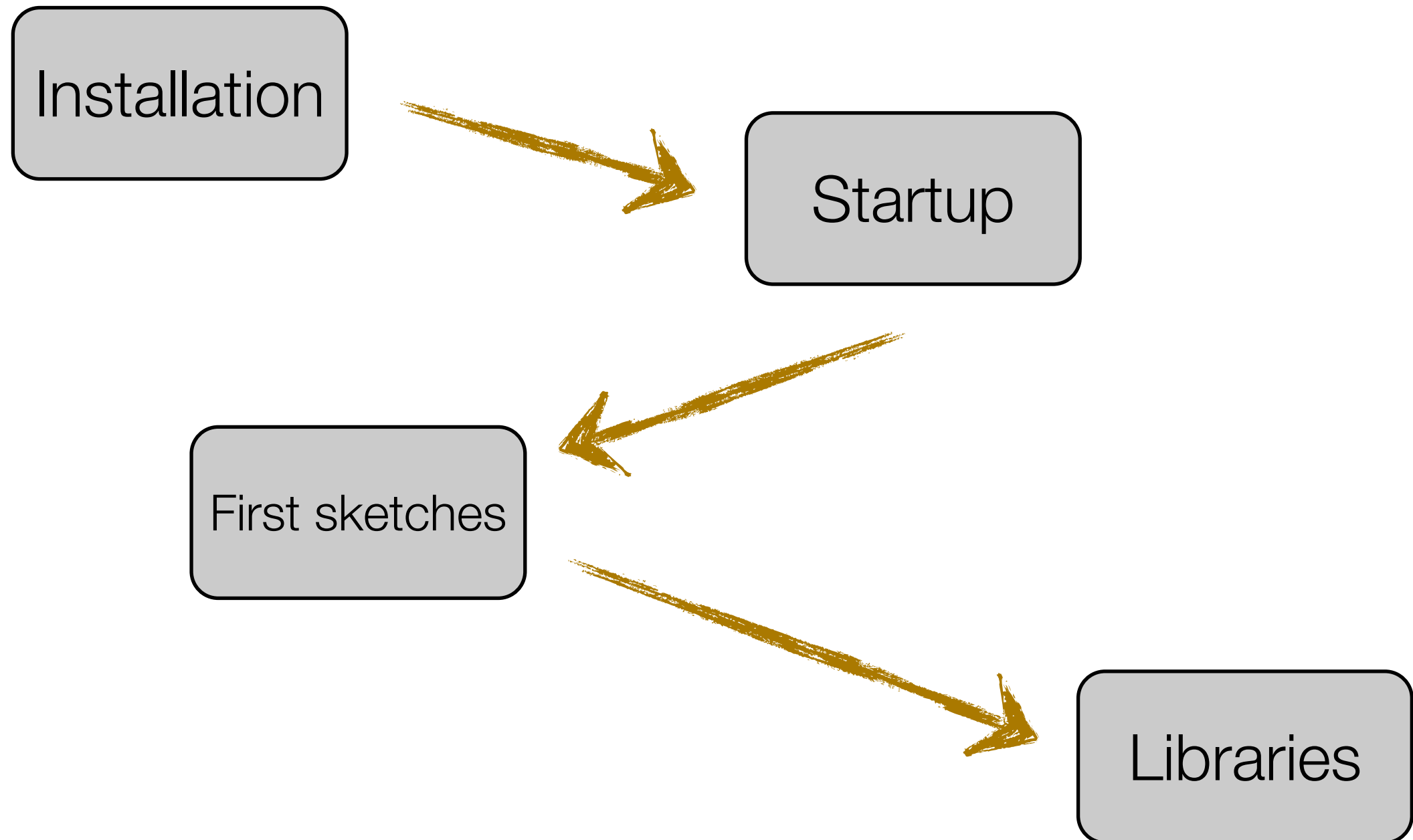
# Processing Introduction Workshop

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Mathias Funk (ID DI), Fall 2012

# What we do today

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# Installation

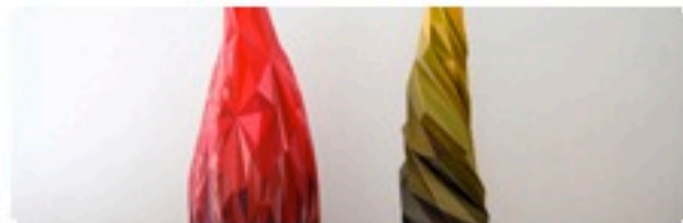
# Get Processing

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[www.processing.org](http://www.processing.org)



» Exhibition



Digital Natives and Glitched Realities

» Download Processing

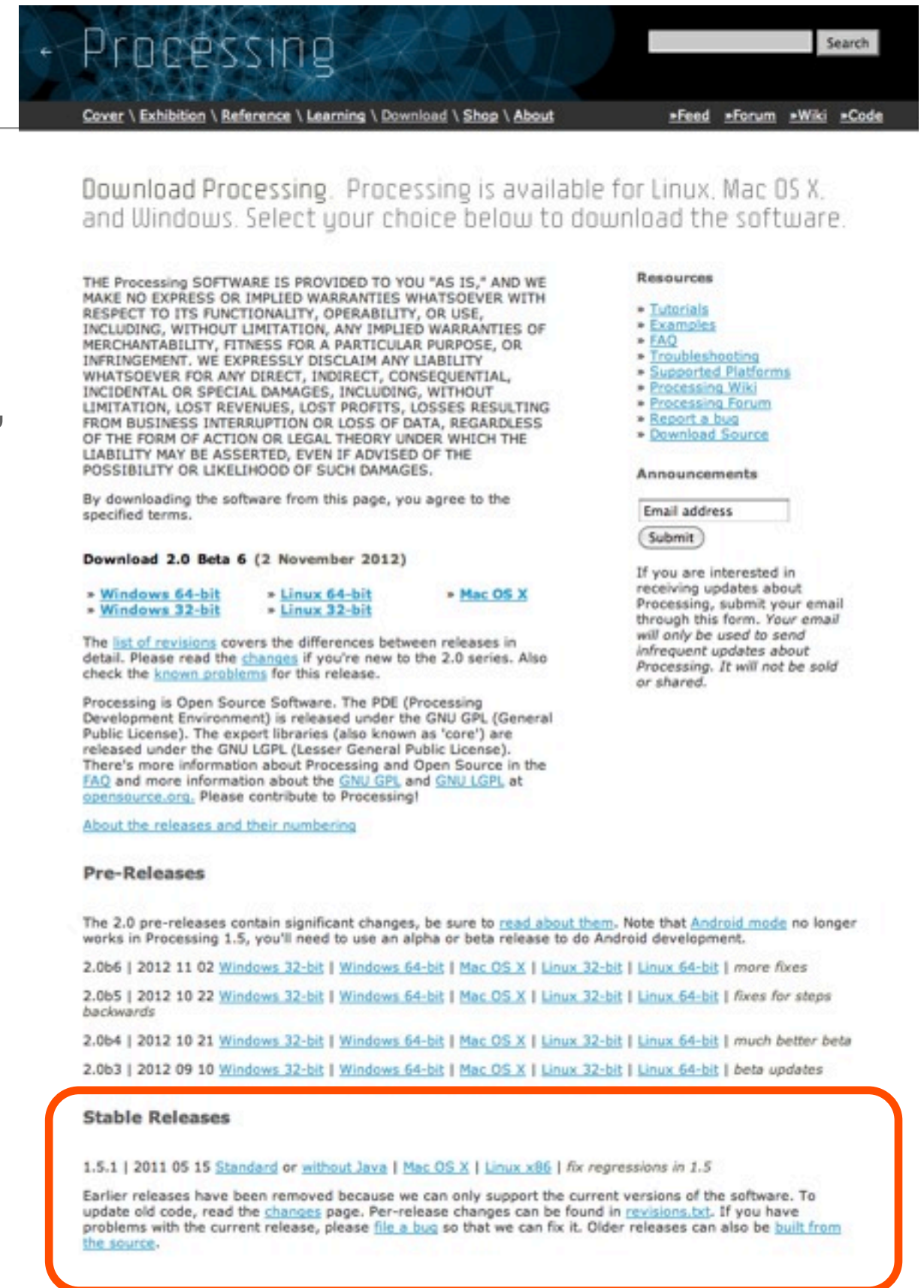
» Play with Examples

» Browse Tutorials

Processing is an open source programming language and environment for people who want to create images, animations, and interactions. Initially developed to serve as a software

# Get Processing

- You want the latest **stable** release
- There are two versions, one with Java, one without. If you are not sure, download the one with Java.
- Windows:
  1. Create a directory "Programs" on the C: disk, in the root. If "C:\Programs" exists already, skip this step.
  2. Extract the entire directory to **C:\Programs** (note, not "C:\Program Files"). if you are reinstalling Processing, remove the entire processing directory first.
  3. Create a shortcut on your desktop to "**Processing.exe**" for easy access.
- Mac OS X:
  1. Extract downloaded file (double click), move **Processing.app** to Applications folder.



The screenshot shows the Processing website's download page. At the top is a navigation bar with links: Cover, Exhibition, Reference, Learning, Download, Shop, About, Feed, Forum, Wiki, and Code. A search bar is also present. The main heading is "Download Processing. Processing is available for Linux, Mac OS X, and Windows. Select your choice below to download the software." Below this is a large block of legal disclaimer text. To the right, there are links for Resources (Tutorials, Examples, FAQ, Troubleshooting, Supported Platforms, Processing Wiki, Processing Forum, Report a bug, Download Source) and an Announcements section with an email sign-up form. The "Download 2.0 Beta 6 (2 November 2012)" section lists links for Windows 64-bit, Windows 32-bit, Linux 64-bit, Linux 32-bit, and Mac OS X. Below this is a link to the list of revisions and a link to known problems. The "Processing is Open Source Software" section explains the GPL and LGPL licenses. A link to "About the releases and their numbering" is provided. The "Pre-Releases" section lists various beta versions (2.0b6 to 2.0b3) with their dates and download links for different operating systems and architectures. The "Stable Releases" section, highlighted with an orange border, lists version 1.5.1 (2011 05 15) with download links for Standard or without Java, Mac OS X, and Linux x86, and notes that earlier releases have been removed.

Processing

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Download Processing. Processing is available for Linux, Mac OS X, and Windows. Select your choice below to download the software.

THE Processing SOFTWARE IS PROVIDED TO YOU "AS IS," AND WE MAKE NO EXPRESS OR IMPLIED WARRANTIES WHATSOEVER WITH RESPECT TO ITS FUNCTIONALITY, OPERABILITY, OR USE, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR INFRINGEMENT. WE EXPRESSLY DISCLAIM ANY LIABILITY WHATSOEVER FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST REVENUES, LOST PROFITS, LOSSES RESULTING FROM BUSINESS INTERRUPTION OR LOSS OF DATA, REGARDLESS OF THE FORM OF ACTION OR LEGAL THEORY UNDER WHICH THE LIABILITY MAY BE ASSERTED, EVEN IF ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH DAMAGES.

By downloading the software from this page, you agree to the specified terms.

**Download 2.0 Beta 6 (2 November 2012)**

» [Windows 64-bit](#) » [Linux 64-bit](#) » [Mac OS X](#)  
» [Windows 32-bit](#) » [Linux 32-bit](#)

The [list of revisions](#) covers the differences between releases in detail. Please read the [changes](#) if you're new to the 2.0 series. Also check the [known problems](#) for this release.

Processing is Open Source Software. The PDE (Processing Development Environment) is released under the GNU GPL (General Public License). The export libraries (also known as 'core') are released under the GNU LGPL (Lesser General Public License). There's more information about Processing and Open Source in the [FAQ](#) and more information about the [GNU GPL](#) and [GNU LGPL](#) at [opensource.org](#). Please contribute to Processing!

[About the releases and their numbering](#)

**Pre-Releases**

The 2.0 pre-releases contain significant changes, be sure to [read about them](#). Note that [Android mode](#) no longer works in Processing 1.5, you'll need to use an alpha or beta release to do Android development.

2.0b6 | 2012 11 02 [Windows 32-bit](#) | [Windows 64-bit](#) | [Mac OS X](#) | [Linux 32-bit](#) | [Linux 64-bit](#) | [more fixes](#)

2.0b5 | 2012 10 22 [Windows 32-bit](#) | [Windows 64-bit](#) | [Mac OS X](#) | [Linux 32-bit](#) | [Linux 64-bit](#) | [fixes for steps backwards](#)

2.0b4 | 2012 10 21 [Windows 32-bit](#) | [Windows 64-bit](#) | [Mac OS X](#) | [Linux 32-bit](#) | [Linux 64-bit](#) | [much better beta](#)

2.0b3 | 2012 09 10 [Windows 32-bit](#) | [Windows 64-bit](#) | [Mac OS X](#) | [Linux 32-bit](#) | [Linux 64-bit](#) | [beta updates](#)

**Stable Releases**

1.5.1 | 2011 05 15 [Standard or without Java](#) | [Mac OS X](#) | [Linux x86](#) | [fix regressions in 1.5](#)

Earlier releases have been removed because we can only support the current versions of the software. To update old code, read the [changes](#) page. Per-release changes can be found in [revisions.txt](#). If you have problems with the current release, please [file a bug](#) so that we can fix it. Older releases can also be [built from the source](#).

# Good to know

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- Documentation --> Reference
- New Features --> Libraries
- Other humans --> Forum

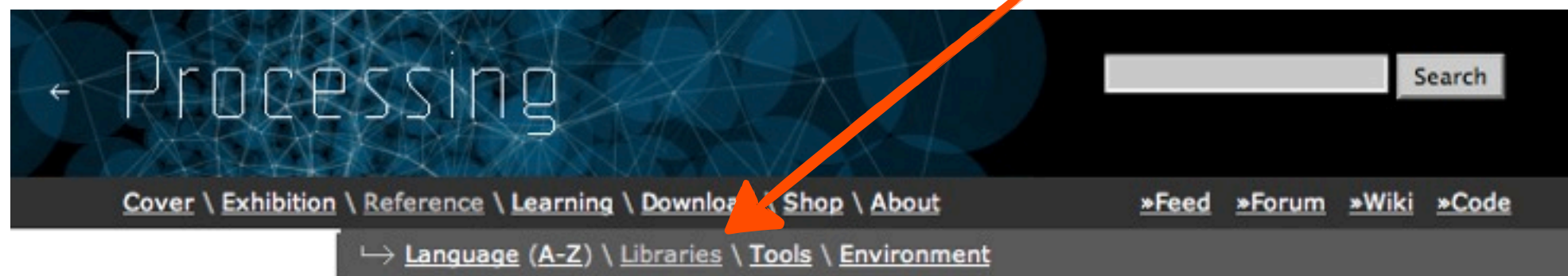




# Good to know

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Libraries. Extending Processing beyond graphics and image, libraries enable audio, video, and communicating with other devices.

*The following libraries are included with the Processing software. To include a library, select its name from the "Import Library..." option in the Sketch menu. These libraries are open source; the code is distributed with Processing.*

## Video

Read images from a camera, play movie files, and create movies.

## PDF Export

Create PDF files. These vector graphics files can be scaled to any

## » Minim

Uses JavaSound to provide an easy-to-use audio library while still

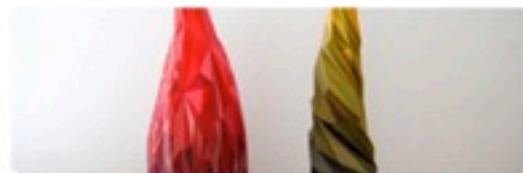
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» Exhibition



Digital Makers and Glitched Realities

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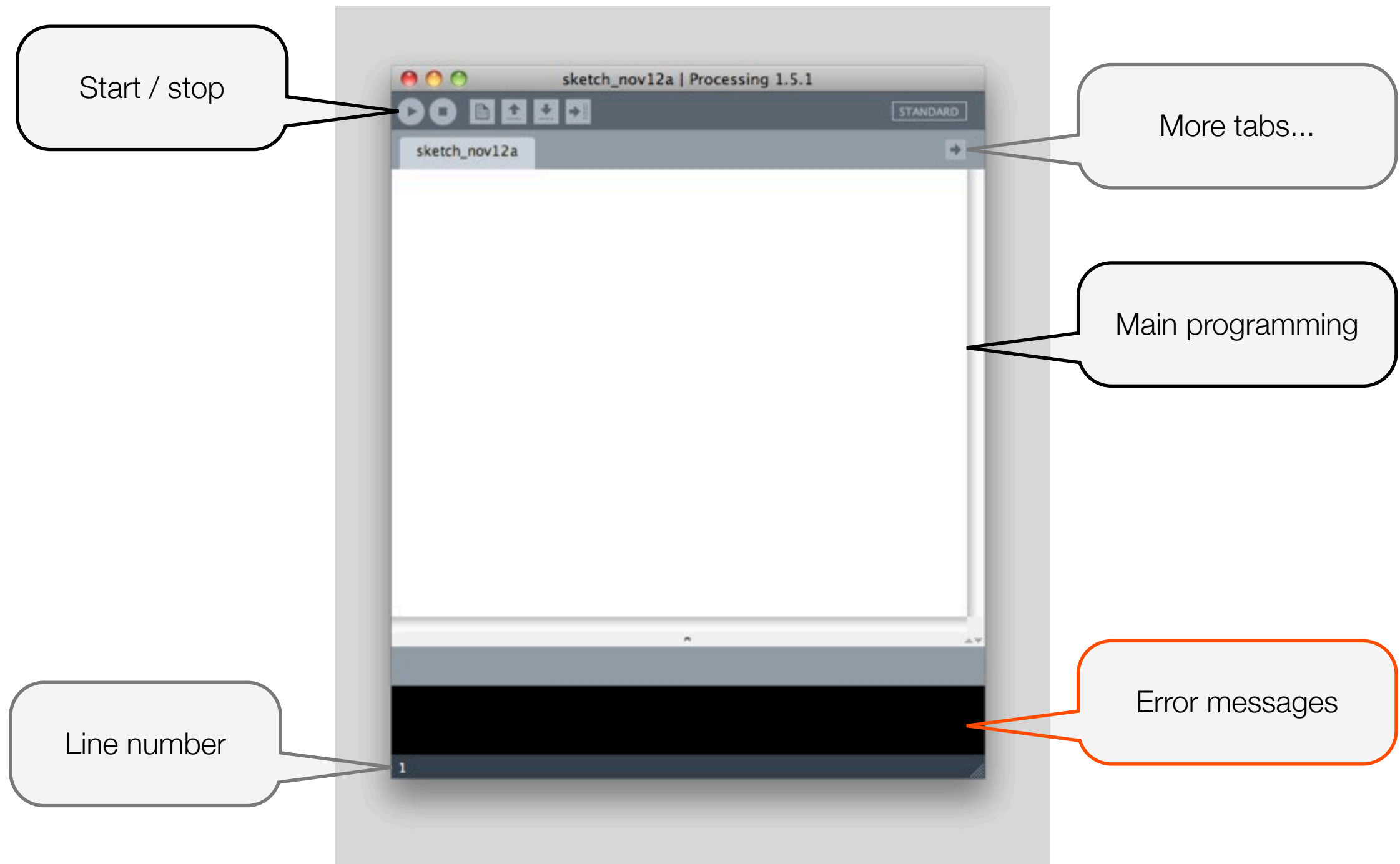
Processing is an open source programming language and environment for people who want to create images, animations, and interactions. Initially developed to serve as a software



Starting up

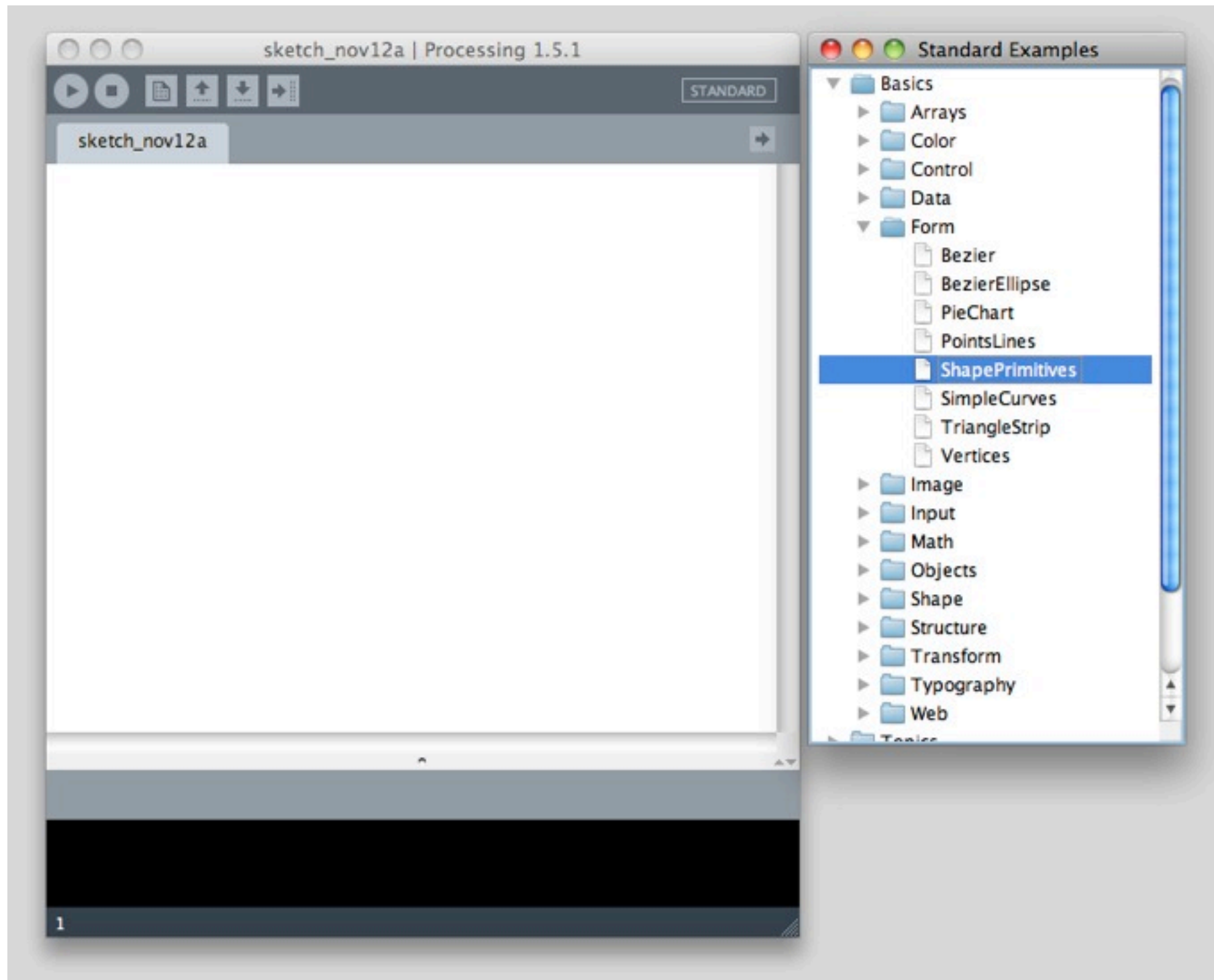
# Starting up

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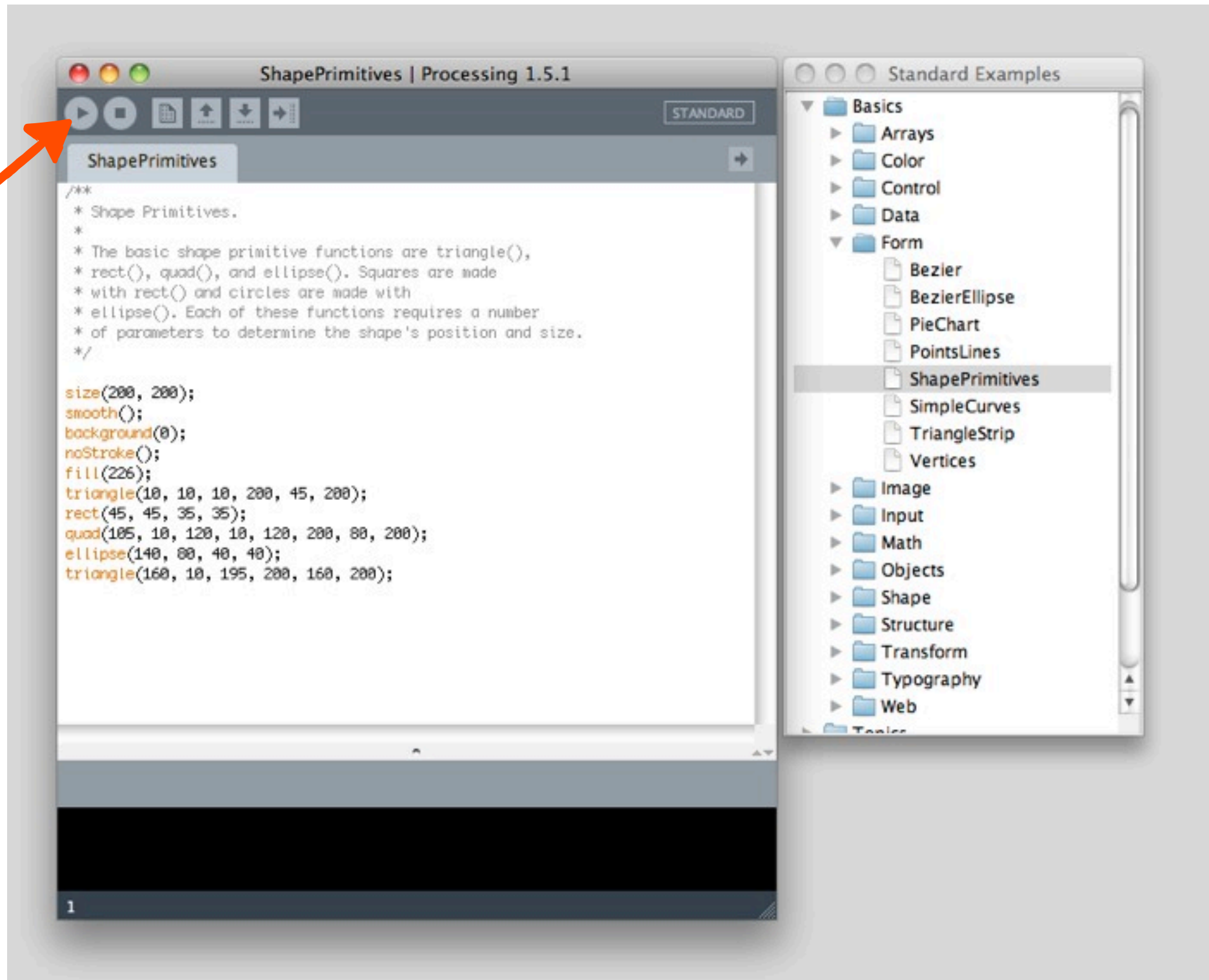


# Starting up for real

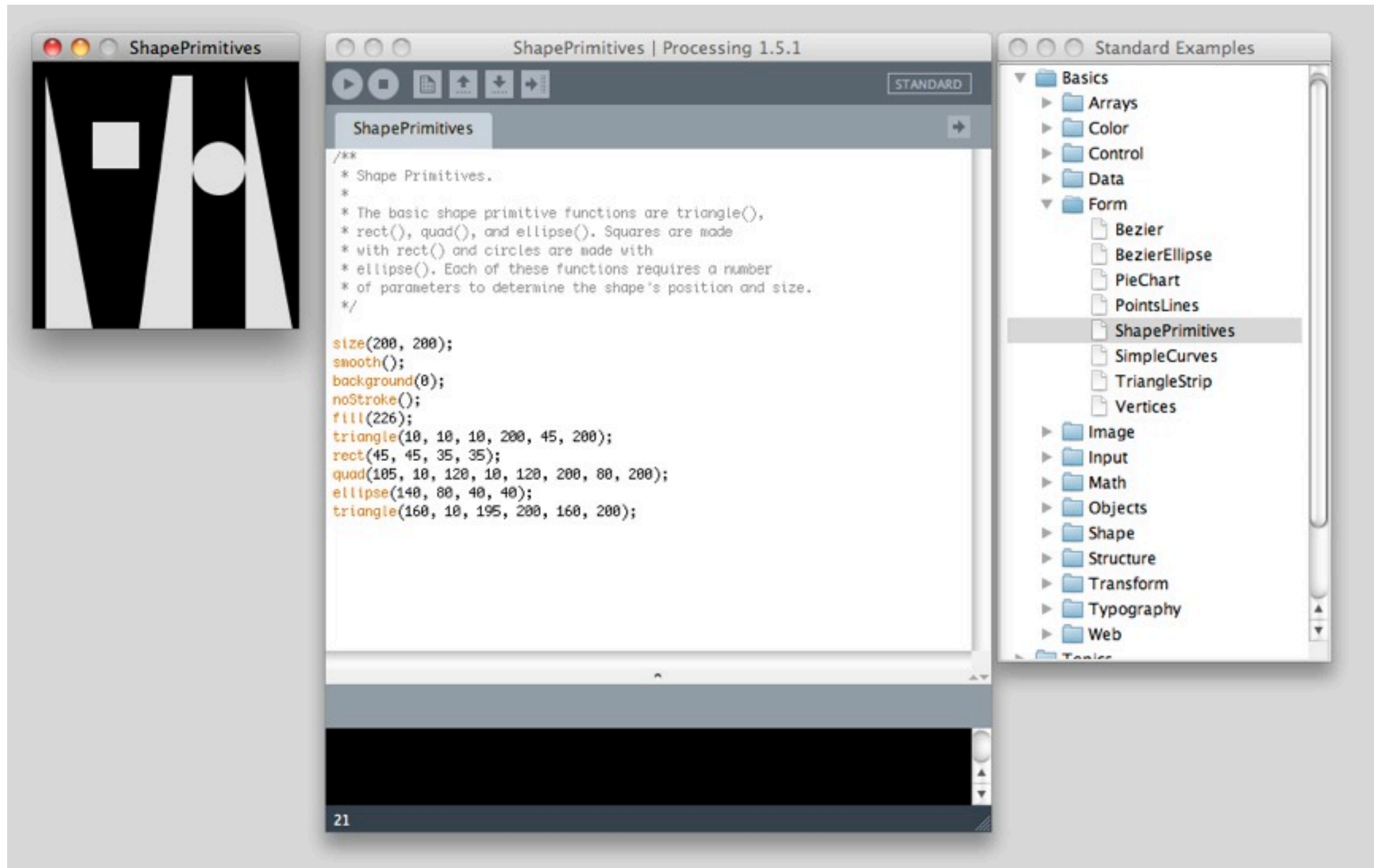
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# Starting up for real



# First running sketch

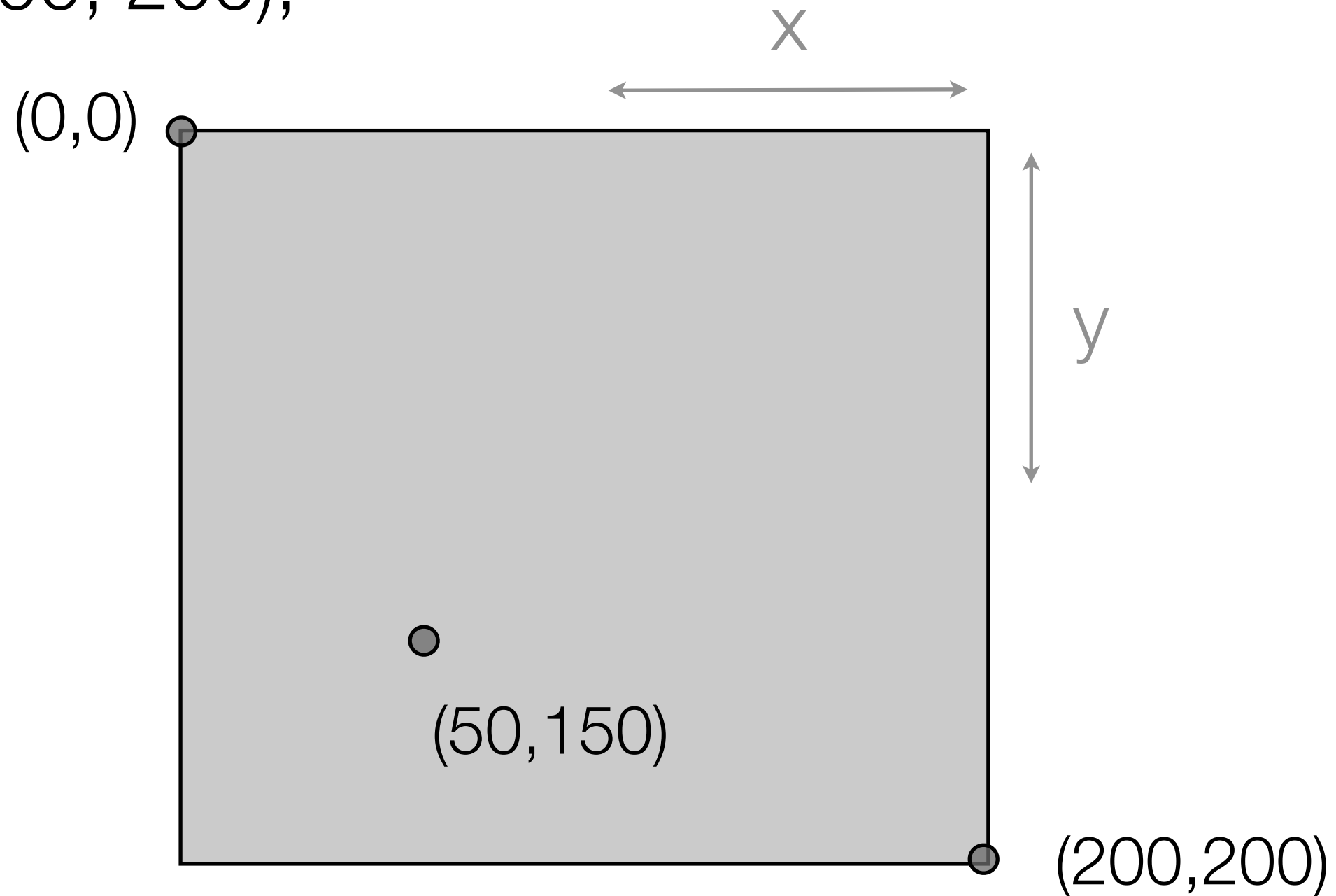




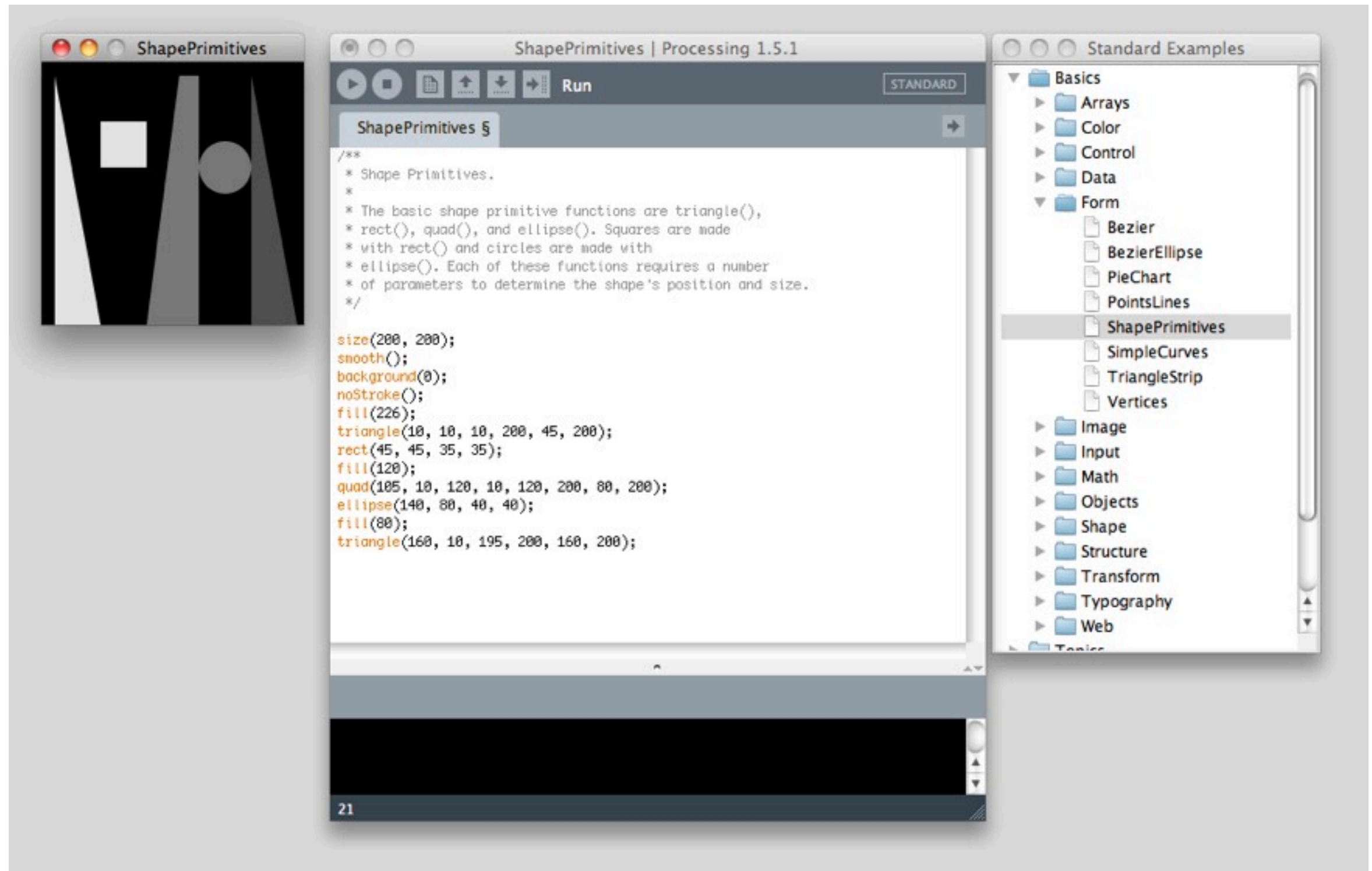
# Coordinate system

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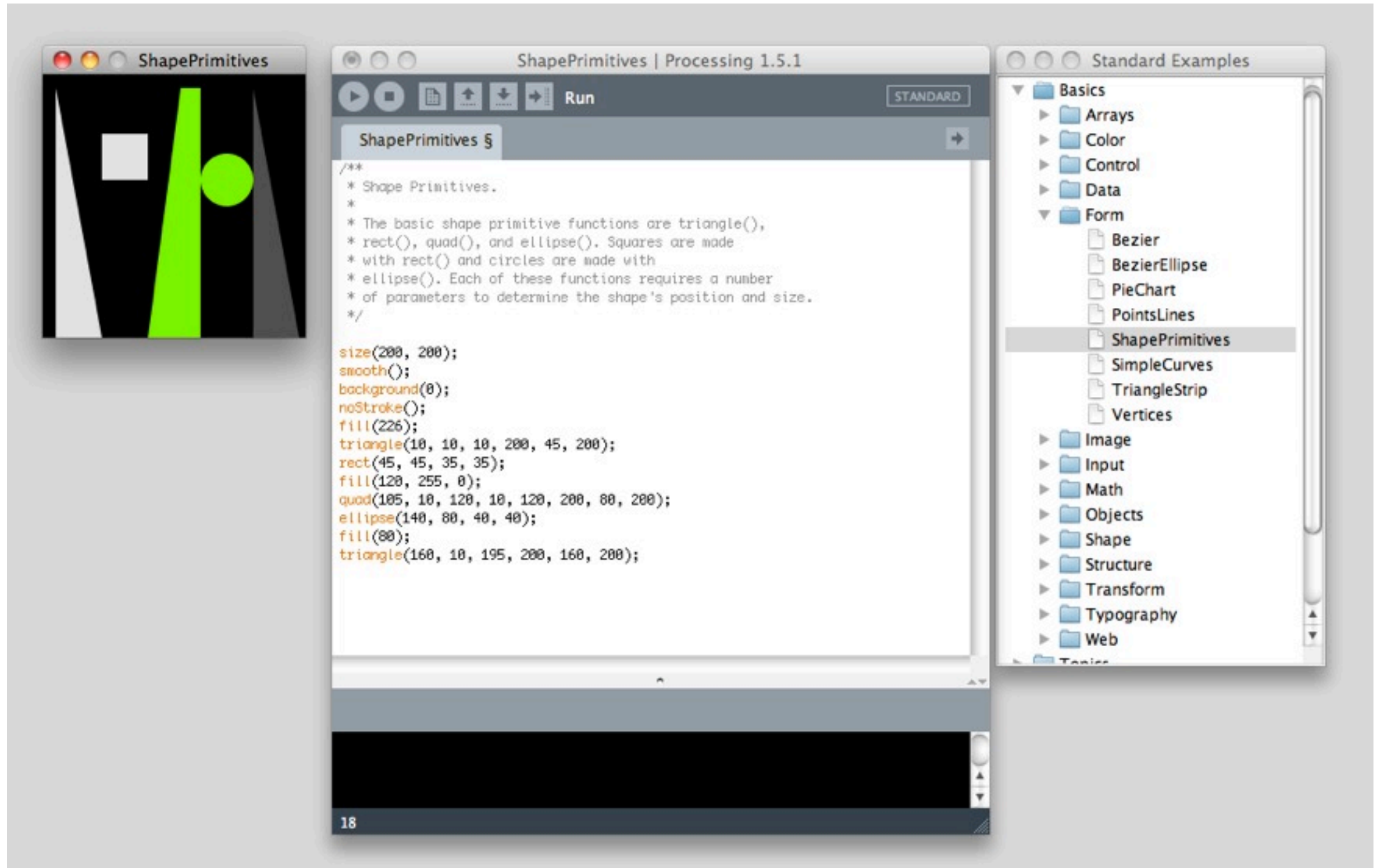
`size(200, 200);`



# Colors...



# Colors, really

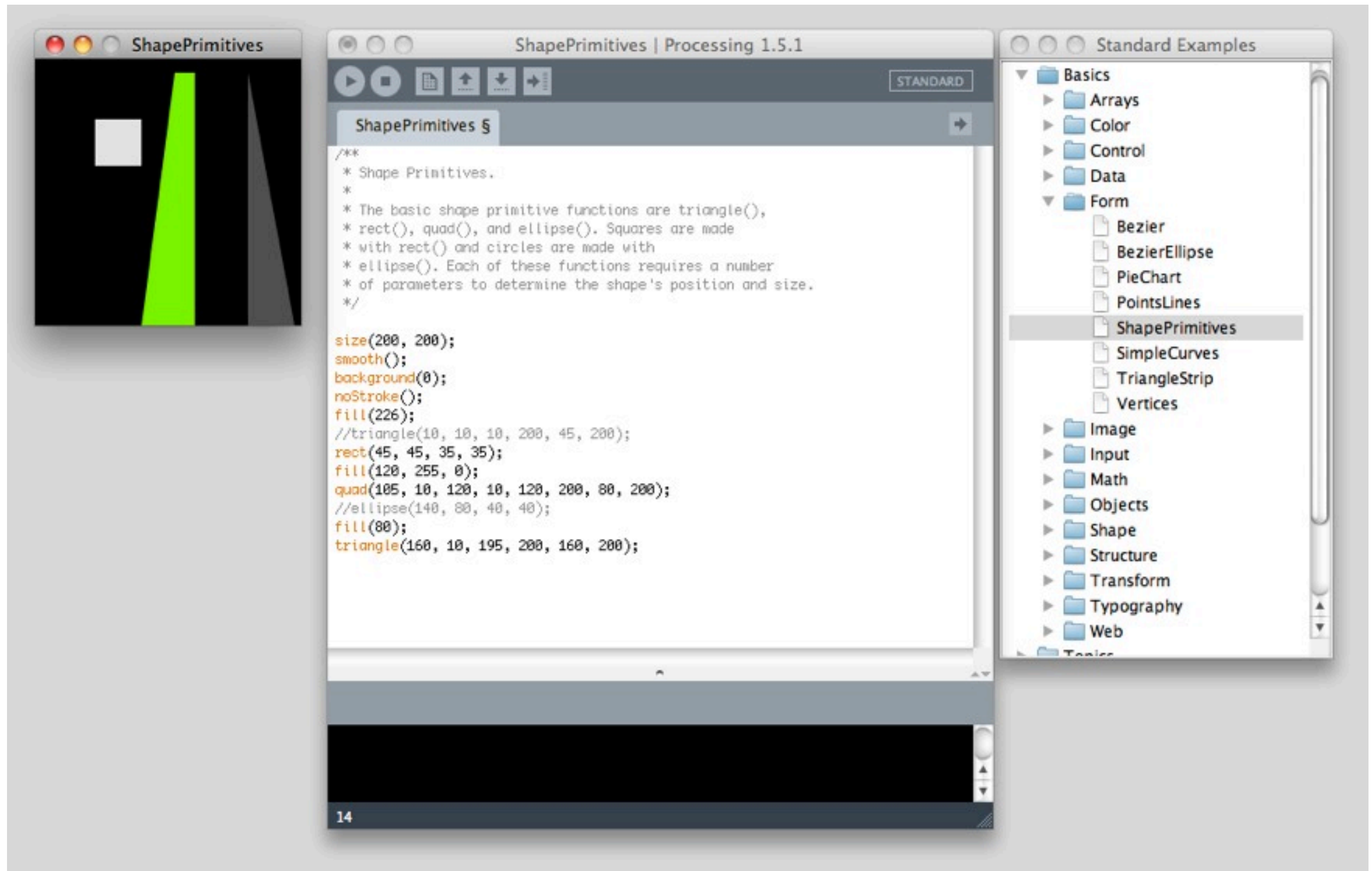


# How colors work in Processing

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- Color rendering in Processing works in the additive color model: RGB
- `fill (<RED>, <GREEN>, <BLUE>);` // all values from 0 - 255 possible
- `fill(255, 0, 0);` // pure red
- `fill(0, 0, 130);` // dark blue
- How to get yellow?
- When all values are same you will get grayscale colors (or white or black).
- “`fill(120)`” is a shortcut for “`fill(120, 120, 120)`”

# Commenting code

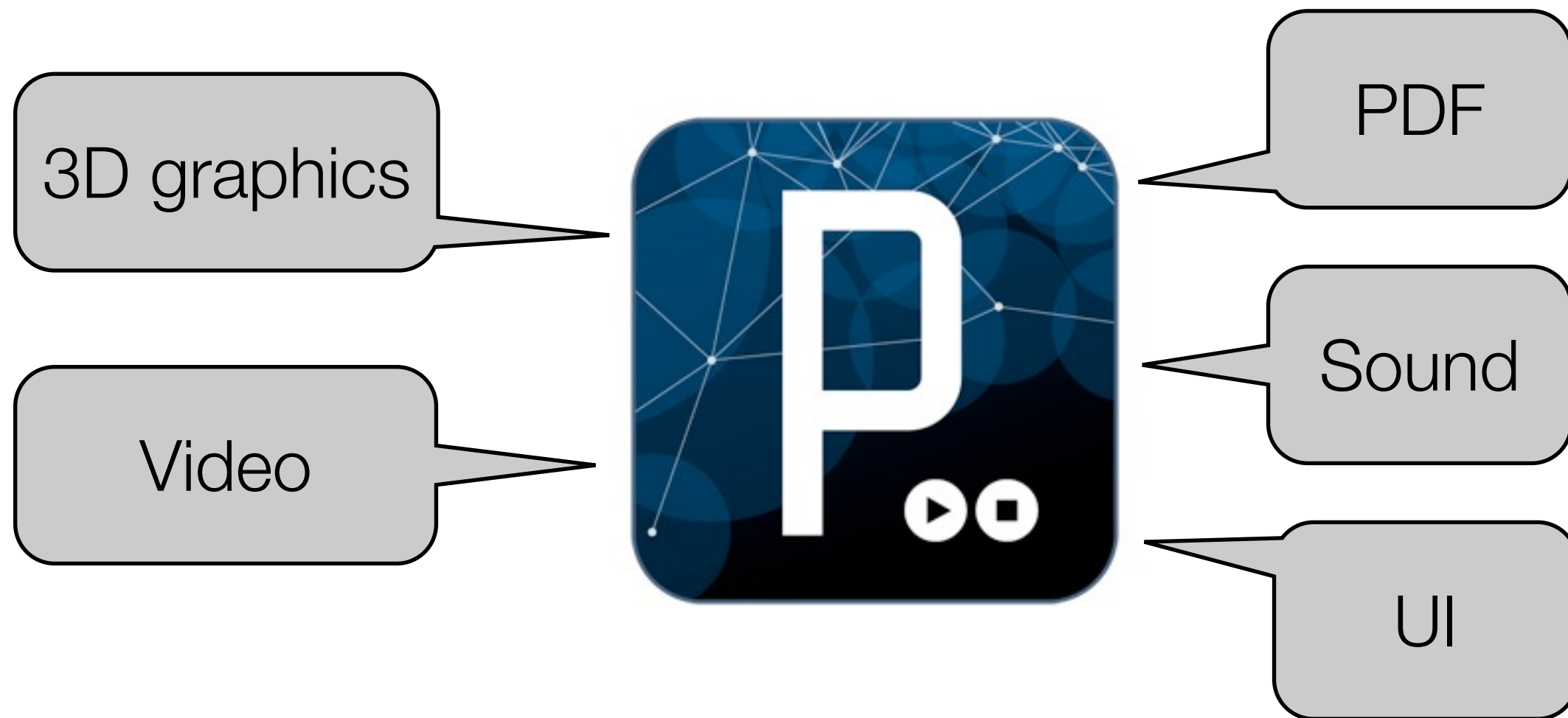




Libraries

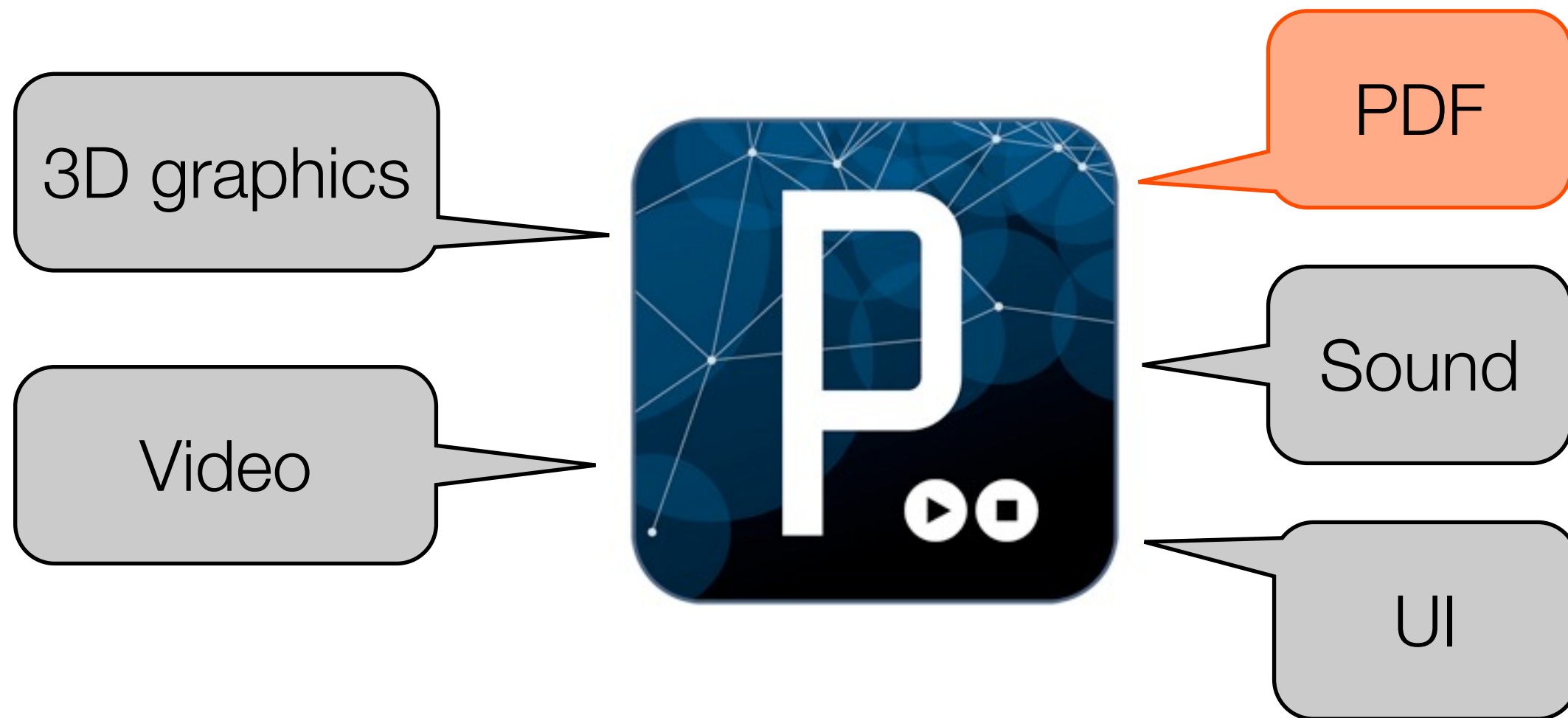
# Libraries?

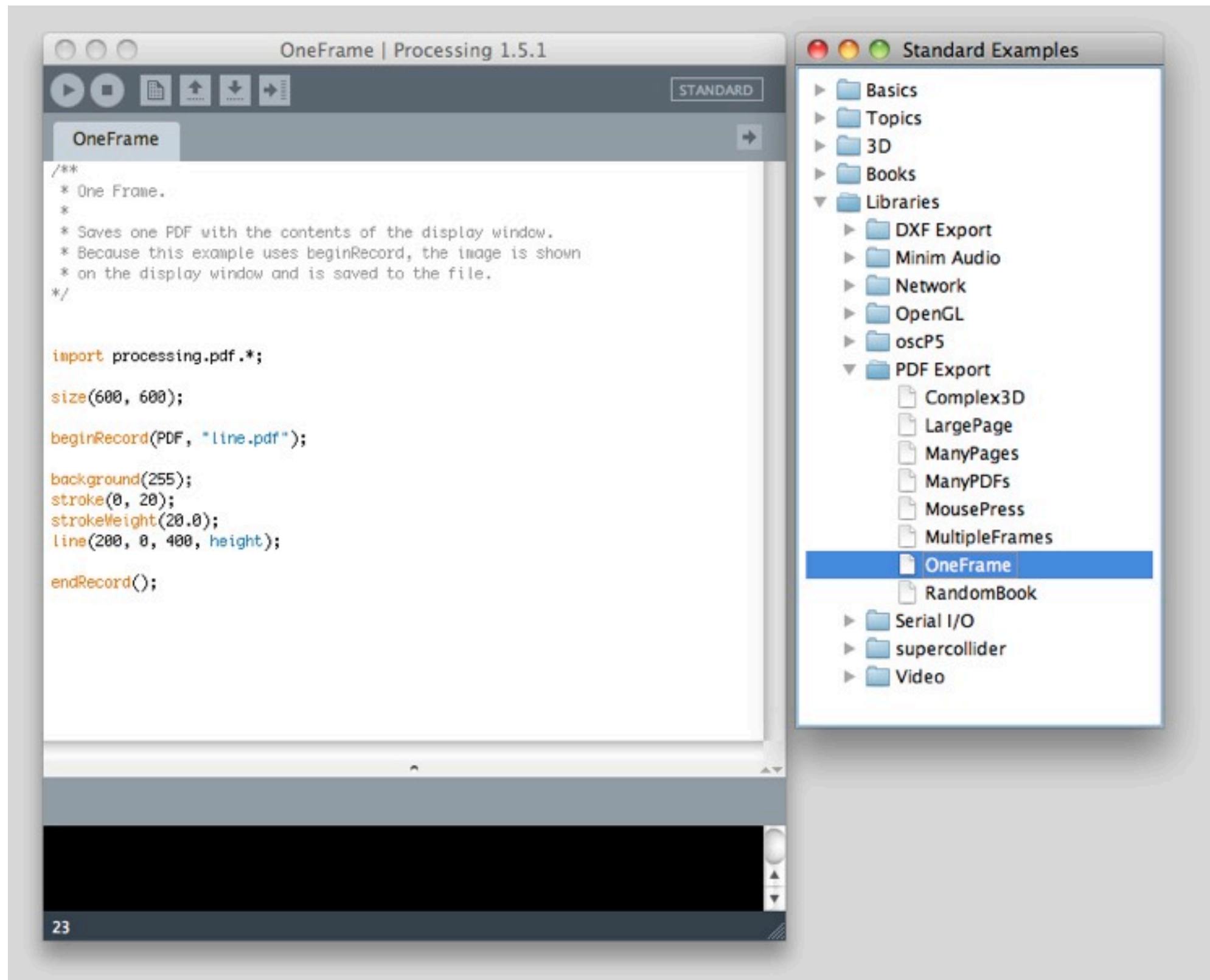
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# Libraries?

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Before you run, save the sketch on your Desktop!

# How to use a library?

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import the  
library

use the  
library

```
/**
 * One Frame.
 *
 * Saves one PDF with the contents of the display window.
 * Because this example uses beginRecord, the image is shown
 * on the display window and is saved to the file.
 */

import processing.pdf.*;

size(600, 600);

beginRecord(PDF, "line.pdf");

background(255);
stroke(0, 20);
strokeWeight(20.0);
line(200, 0, 400, height);

endRecord();
```

Always look at the **examples** first, they show how it works!



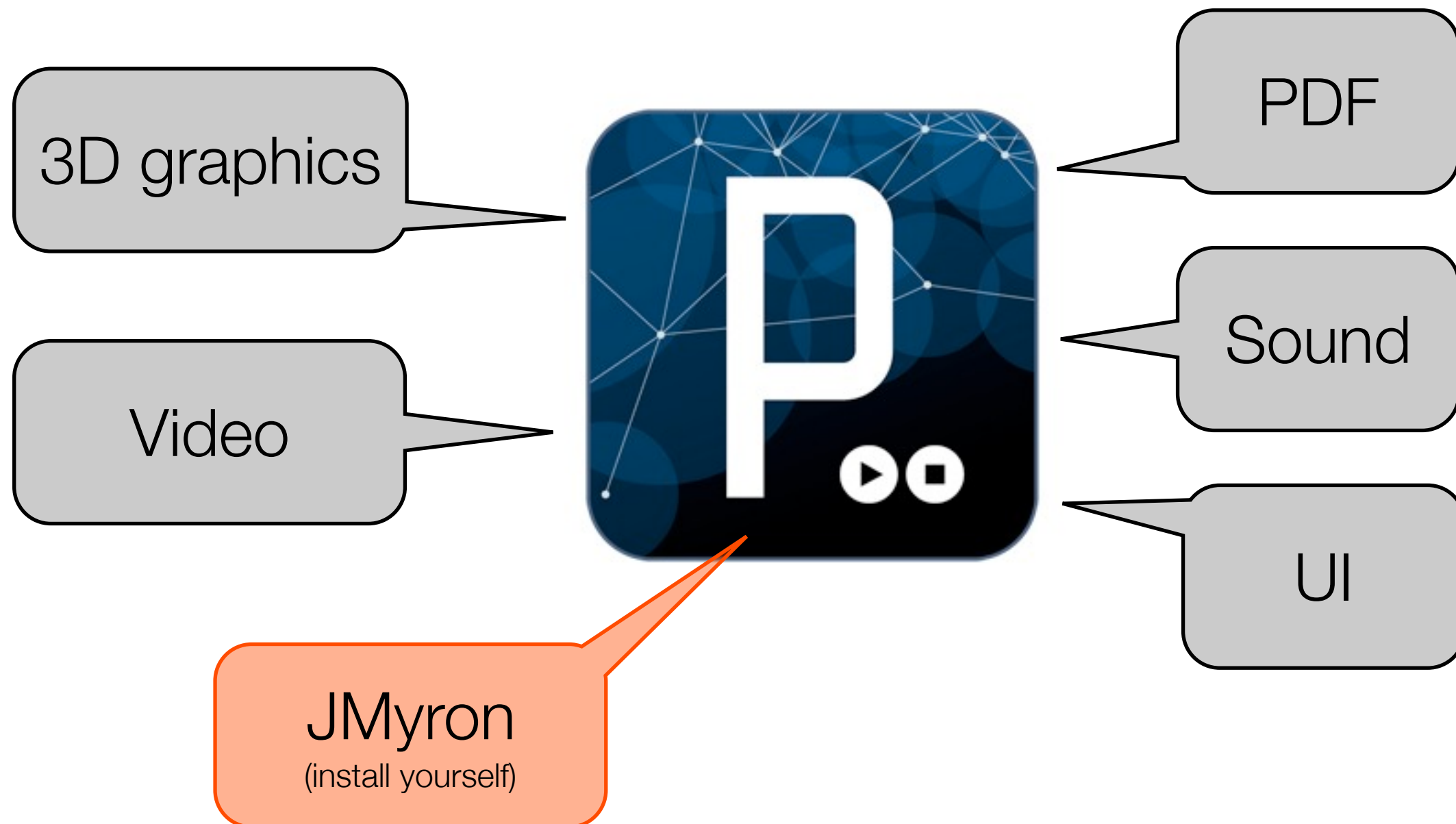
# Other libraries

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- Check out the examples
- Check out the processing website

# Included libraries, what else?

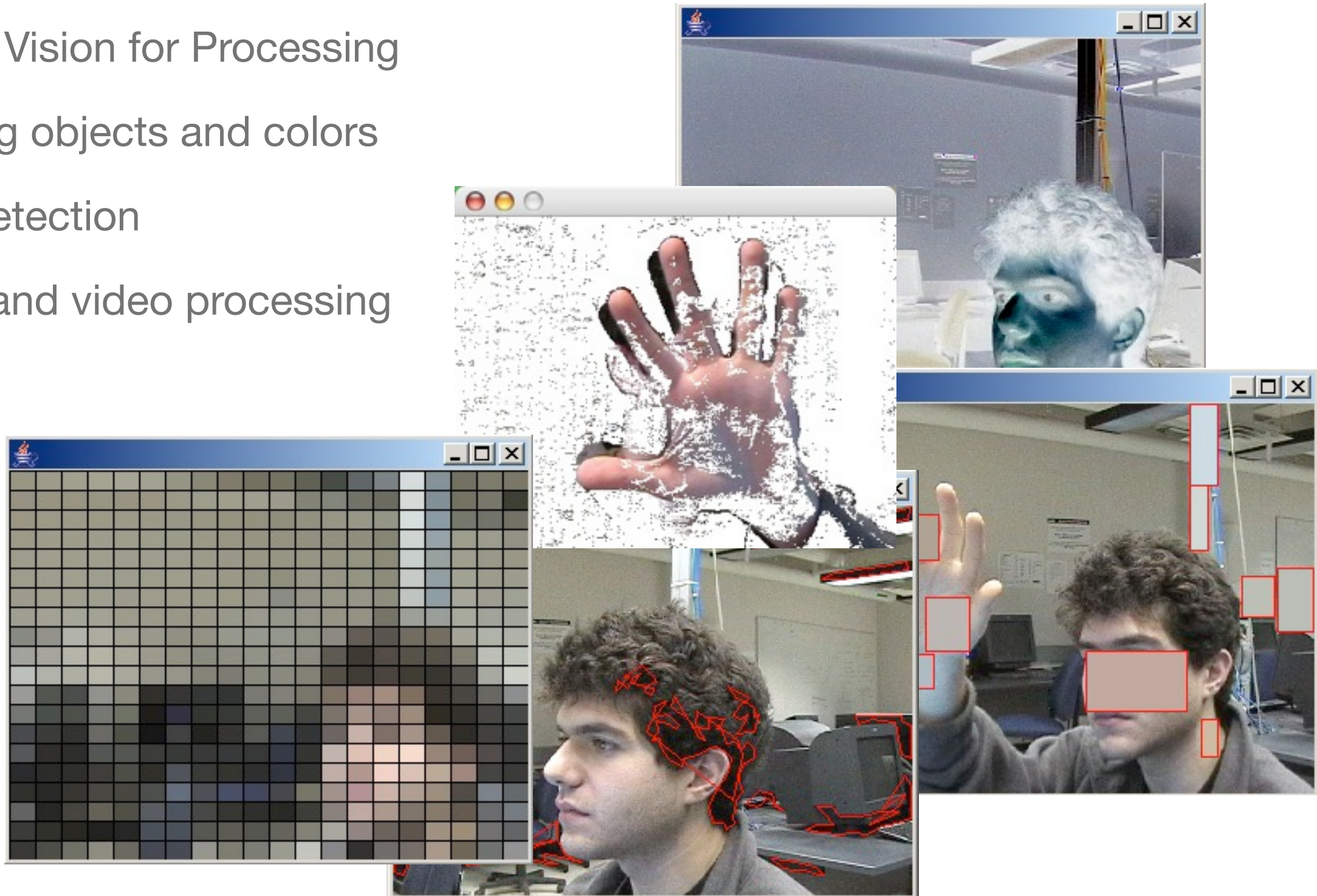
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# JMyron

## Computer Vision for Processing

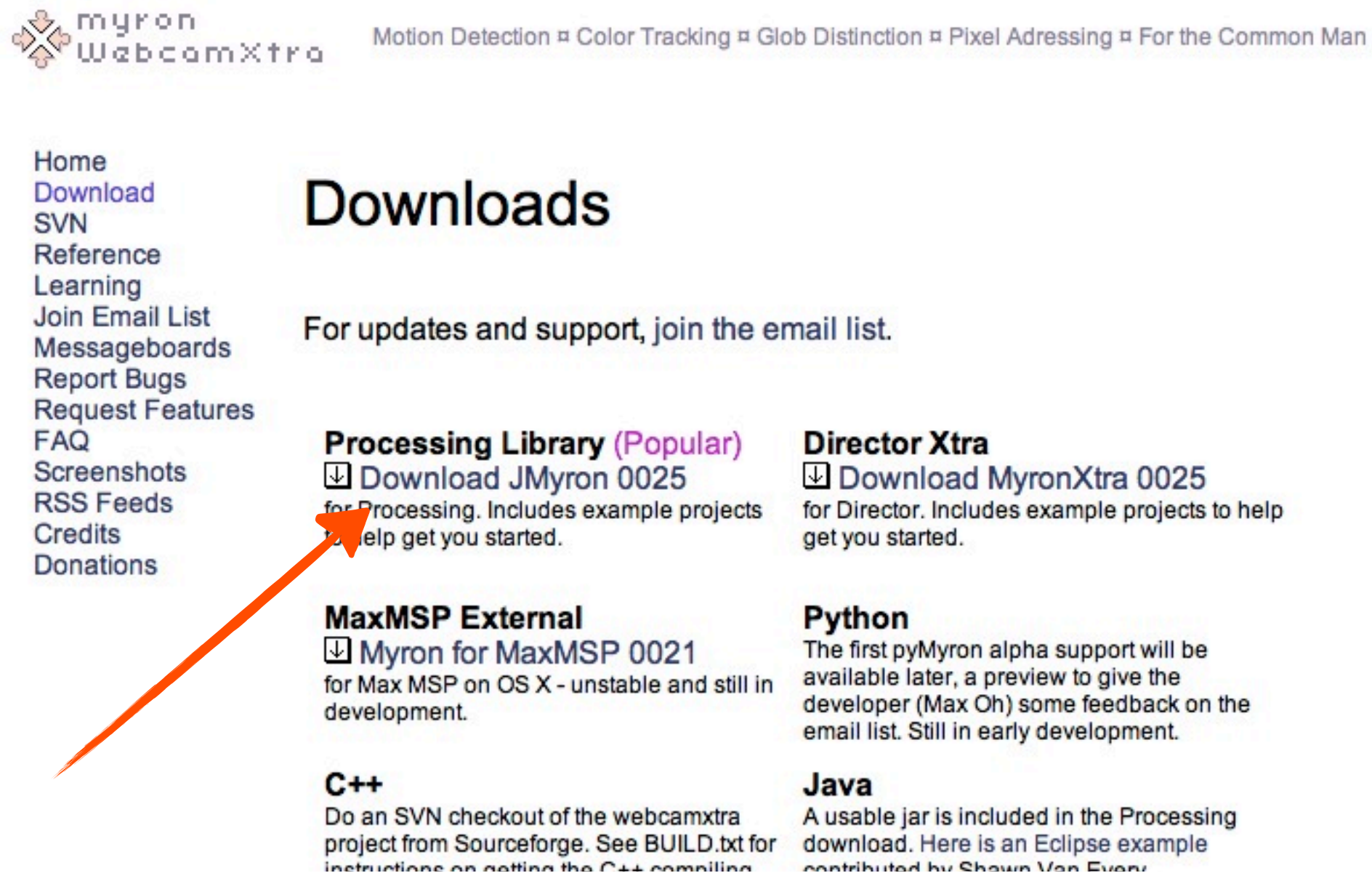
- Tracking objects and colors
- Face detection
- Image and video processing
- ...



# Install JMyron

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- <http://webcamxtra.sourceforge.net/download.shtml>



The screenshot shows the 'Downloads' page of the myron WebcamXtra website. The page has a navigation menu on the left with links: Home, Download, SVN, Reference, Learning, Join Email List, Messageboards, Report Bugs, Request Features, FAQ, Screenshots, RSS Feeds, Credits, and Donations. The main content area is titled 'Downloads' and includes a link to join the email list. Below this, there are six download sections arranged in a 3x2 grid. An orange arrow points from the bottom left towards the 'Processing Library (Popular)' section.

**myron WebcamXtra** Motion Detection ▣ Color Tracking ▣ Glob Distinction ▣ Pixel Addressing ▣ For the Common Man

Home  
Download  
SVN  
Reference  
Learning  
Join Email List  
Messageboards  
Report Bugs  
Request Features  
FAQ  
Screenshots  
RSS Feeds  
Credits  
Donations

## Downloads

For updates and support, join the email list.

<b>Processing Library (Popular)</b> ⬇ Download JMyron 0025 for Processing. Includes example projects to help get you started.	<b>Director Xtra</b> ⬇ Download MyronXtra 0025 for Director. Includes example projects to help get you started.
<b>MaxMSP External</b> ⬇ Myron for MaxMSP 0021 for Max MSP on OS X - unstable and still in development.	<b>Python</b> The first pyMyron alpha support will be available later, a preview to give the developer (Max Oh) some feedback on the email list. Still in early development.
<b>C++</b> Do an SVN checkout of the webcamxtra project from Sourceforge. See BUILD.txt for instructions on getting the C++ compiling.	<b>Java</b> A usable jar is included in the Processing download. Here is an Eclipse example contributed by Shawn Van Every.



# JMyron Installation

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1.) Download the zip file - folders and files need to be copied EXACTLY like this:

2.) JMyron Examples --> copy the folder to:

Processing/modes/java/examples/Topics

3.a) For **Windows**:

- Extra DLLs --> copy all files inside directly into the Processing installation folder (*this is where Processing.exe is*)
- JMyron --> copy the folder to Processing/modes/java/libraries

3.b) For **Mac OS X**:

- Replace the file “libJMyron.jnilib” inside the JMyron folder with the one downloaded from <http://www.jibberia.com/projects/libJMyron.jnilib.zip>
- JMyron --> copy the folder to Processing.app/Contents/Resources/Java/modes/java/libraries (do a right click on Processing.app > “Show package contents” to get there)



# JMyron FAQ (for Windows problems)

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For Windows platforms: If you got an error message saying "JMyron.dll can not find dependent libraries" or something similar, please check first whether you have copied the DLL **files** to required directory. If you are sure you have done it correctly, follow the following steps to install additional DLLs:

- Download [msvc71.zip](http://bit.ly/U19EQu) (<http://bit.ly/U19EQu>)
- unzip it, copy both `msvcp71.dll` and `msvcr71.dll` to
- `C:\Windows\system`, if you are running 64bit Windows.
- `C:\Windows\system32`, if you are running 32bit Windows.

If the camera image is mirrored and you can not adjust it from the settings of the camera, you might need [ManyCam Virtual Webcam](http://cnet.co/5Jo5SS) (<http://cnet.co/5Jo5SS>)

# Books

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## Must-have

*Getting Started with Processing*, by Casey Reas, Ben Fry  
e-Book and hard copy available from [O'Reilly](#)

## Recommended-to-have

*Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction*  
Daniel Shiffman.  
Published August 2008, Morgan Kaufmann. 450 pages. Paperback.  
Available from LUCID, or from [Amazon](#)

*Programming Interactivity: A Designer's Guide to Processing, Arduino, and openFrameworks* (Paperback) by Joshua Noble  
(Author). **Very good one, covers many topics in Competency II.**  
Available from LUCID. Also see <http://programminginteractivity.com>

*Processing: Creative Coding and Computational Art (Foundation)*  
Ira Greenberg (Foreword by Keith Peters).  
Published 28 May 2007, Friends of Ed. 840 pages. Hardcover.  
Available from LUCID

*Making Things Talk: Practical Methods for Connecting Physical Objects*  
Tom Igoe.  
Published 28 September 2007, O'Reilly. 428 pages. Paperback.  
Available from LUCID

More help...

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<http://wiki.id.tue.nl/creapro/>