

# DramaLab



**#3  
Hacking  
Session**

ENJOY THE NEW PROJECT BASED SESSIONS  
#3 HACK A PROJECTOR,  
PLAY IT WITH SENSORS!  
06.12.14 - SER F1.FREIRAUM  
14:00 - 19:00

# TODAY

- working with Processing
- combining Arduino and Processing

Processing p5.js Processing.py

# Processing 2

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» **Download Processing**

» Play With Examples

» Browse Tutorials


Processing is a 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


» **Hello Processing Videos**

This first look at Processing for total beginners is an introduction to programming in the context of the visual arts. Short video lessons


» **Exhibition**



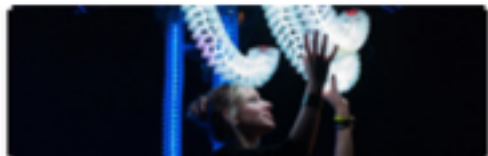
**Filament Sculptures**  
by Lia



**Fall in Love - Phantogram**  
by Timothy Saccenti and Joshua Davis



**Keyflies**  
by Miles Peyton



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## » Play With Examples

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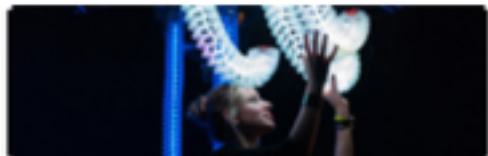
[Filament Sculptures](#)  
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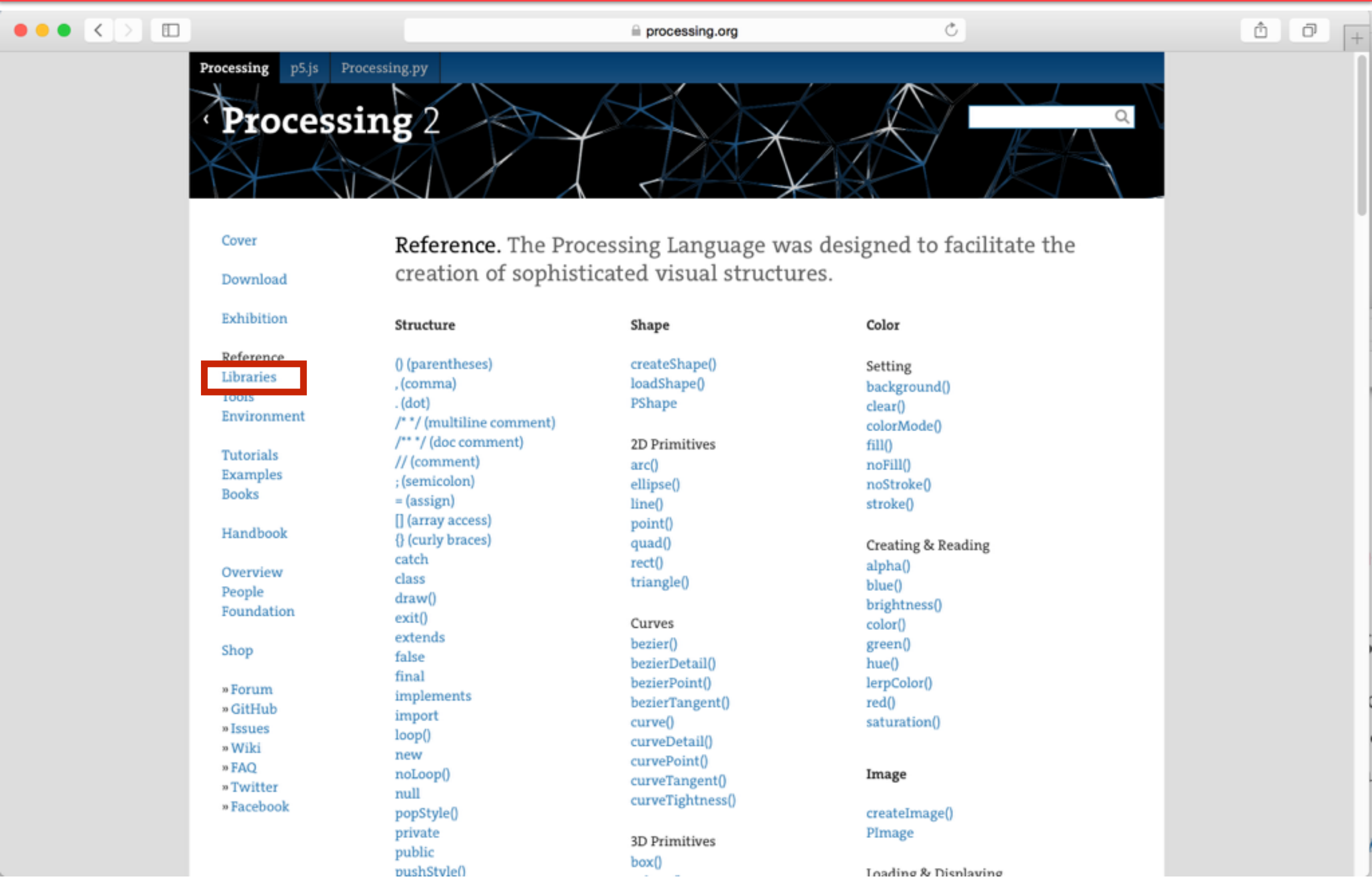


[Fall in Love - Phantogram](#)  
by Timothy Saccenti and Joshua Davis

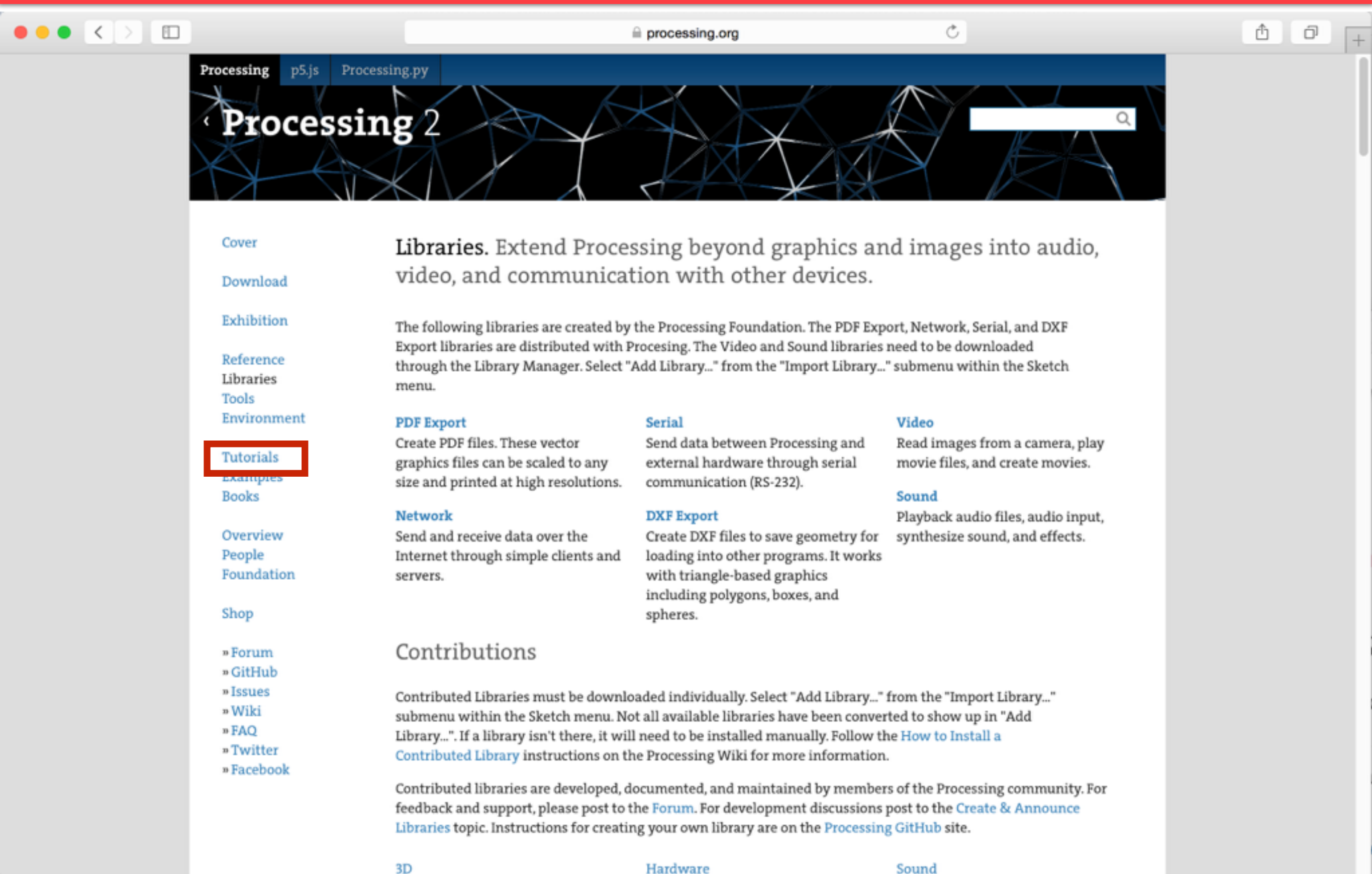


[Keyflies](#)  
by Miles Peyton









The screenshot shows the Processing.org website in a web browser. The browser's address bar displays 'processing.org'. The website's header features a dark blue navigation bar with tabs for 'Processing', 'p5.js', and 'Processing.py'. Below this, a large banner with a white geometric pattern contains the text 'Processing 2' and a search bar. A left sidebar lists various site sections, with 'Tutorials' highlighted by a red rectangular box. The main content area is titled 'Libraries. Extend Processing beyond graphics and images into audio, video, and communication with other devices.' It provides an overview of libraries created by the Processing Foundation and lists several specific libraries: PDF Export, Serial, Video, Sound, Network, and DXF Export, each with a brief description of its functionality. Below the library list, a 'Contributions' section explains how to install contributed libraries and where to seek support. At the bottom, there are links for '3D', 'Hardware', and 'Sound'.

Processing p5.js Processing.py

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## Libraries. Extend Processing beyond graphics and images into audio, video, and communication with other devices.

The following libraries are created by the Processing Foundation. The PDF Export, Network, Serial, and DXF Export libraries are distributed with Processing. The Video and Sound libraries need to be downloaded through the Library Manager. Select "Add Library..." from the "Import Library..." submenu within the Sketch menu.

### PDF Export

Create PDF files. These vector graphics files can be scaled to any size and printed at high resolutions.

### Serial

Send data between Processing and external hardware through serial communication (RS-232).

### Video

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

### Sound

Playback audio files, audio input, synthesize sound, and effects.

### Network

Send and receive data over the Internet through simple clients and servers.

### DXF Export

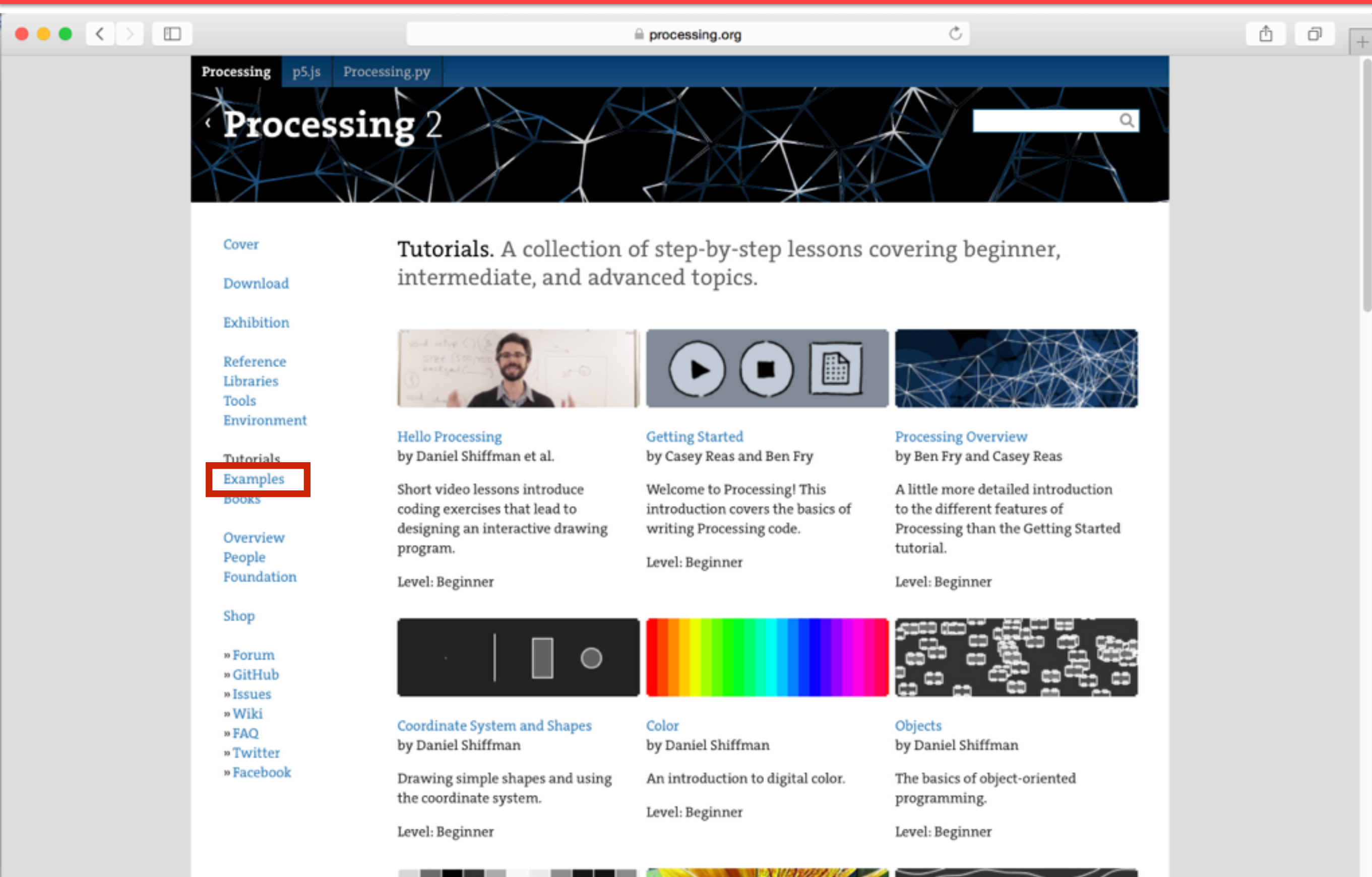
Create DXF files to save geometry for loading into other programs. It works with triangle-based graphics including polygons, boxes, and spheres.

## Contributions

Contributed Libraries must be downloaded individually. Select "Add Library..." from the "Import Library..." submenu within the Sketch menu. Not all available libraries have been converted to show up in "Add Library...". If a library isn't there, it will need to be installed manually. Follow the [How to Install a Contributed Library](#) instructions on the Processing Wiki for more information.

Contributed libraries are developed, documented, and maintained by members of the Processing community. For feedback and support, please post to the [Forum](#). For development discussions post to the [Create & Announce Libraries](#) topic. Instructions for creating your own library are on the [Processing GitHub](#) site.

3D Hardware Sound







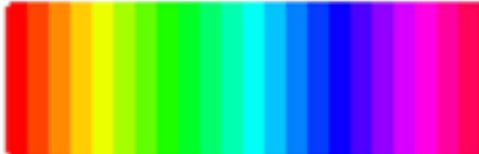

The screenshot shows the Processing.org website. The browser's address bar displays 'processing.org'. The website's navigation bar includes links for 'Processing', 'p5.js', and 'Processing.py'. The main header features the 'Processing 2' logo and a search bar. A left sidebar contains a list of navigation links: 'Cover', 'Download', 'Exhibition', 'Reference', 'Libraries', 'Tools', 'Environment', 'Tutorials', 'Examples' (highlighted with a red box), 'Books', 'Overview', 'People', 'Foundation', 'Shop', and a list of social media links: '» Forum', '» GitHub', '» Issues', '» Wiki', '» FAQ', '» Twitter', and '» Facebook'. The main content area is titled 'Tutorials. A collection of step-by-step lessons covering beginner, intermediate, and advanced topics.' Below this, there are three columns of tutorial cards. Each card includes a thumbnail image, a title, the author, a brief description, and the difficulty level. The first row of cards includes 'Hello Processing' by Daniel Shiffman et al., 'Getting Started' by Casey Reas and Ben Fry, and 'Processing Overview' by Ben Fry and Casey Reas. The second row includes 'Coordinate System and Shapes' by Daniel Shiffman, 'Color' by Daniel Shiffman, and 'Objects' by Daniel Shiffman. The bottom of the page shows a row of small thumbnail images.

Processing p5.js Processing.py

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

Thumbnail	Title	Author	Description	Level
	<a href="#">Hello Processing</a>	by Daniel Shiffman et al.	Short video lessons introduce coding exercises that lead to designing an interactive drawing program.	Level: Beginner
	<a href="#">Getting Started</a>	by Casey Reas and Ben Fry	Welcome to Processing! This introduction covers the basics of writing Processing code.	Level: Beginner
	<a href="#">Processing Overview</a>	by Ben Fry and Casey Reas	A little more detailed introduction to the different features of Processing than the Getting Started tutorial.	Level: Beginner
	<a href="#">Coordinate System and Shapes</a>	by Daniel Shiffman	Drawing simple shapes and using the coordinate system.	Level: Beginner
	<a href="#">Color</a>	by Daniel Shiffman	An introduction to digital color.	Level: Beginner
	<a href="#">Objects</a>	by Daniel Shiffman	The basics of object-oriented programming.	Level: Beginner

The screenshot shows the Processing.org website. The browser's address bar displays 'processing.org'. The website's header features the 'Processing 2' logo and a navigation bar with tabs for 'Processing', 'p5.js', and 'Processing.py'. A search bar is located on the right side of the header.

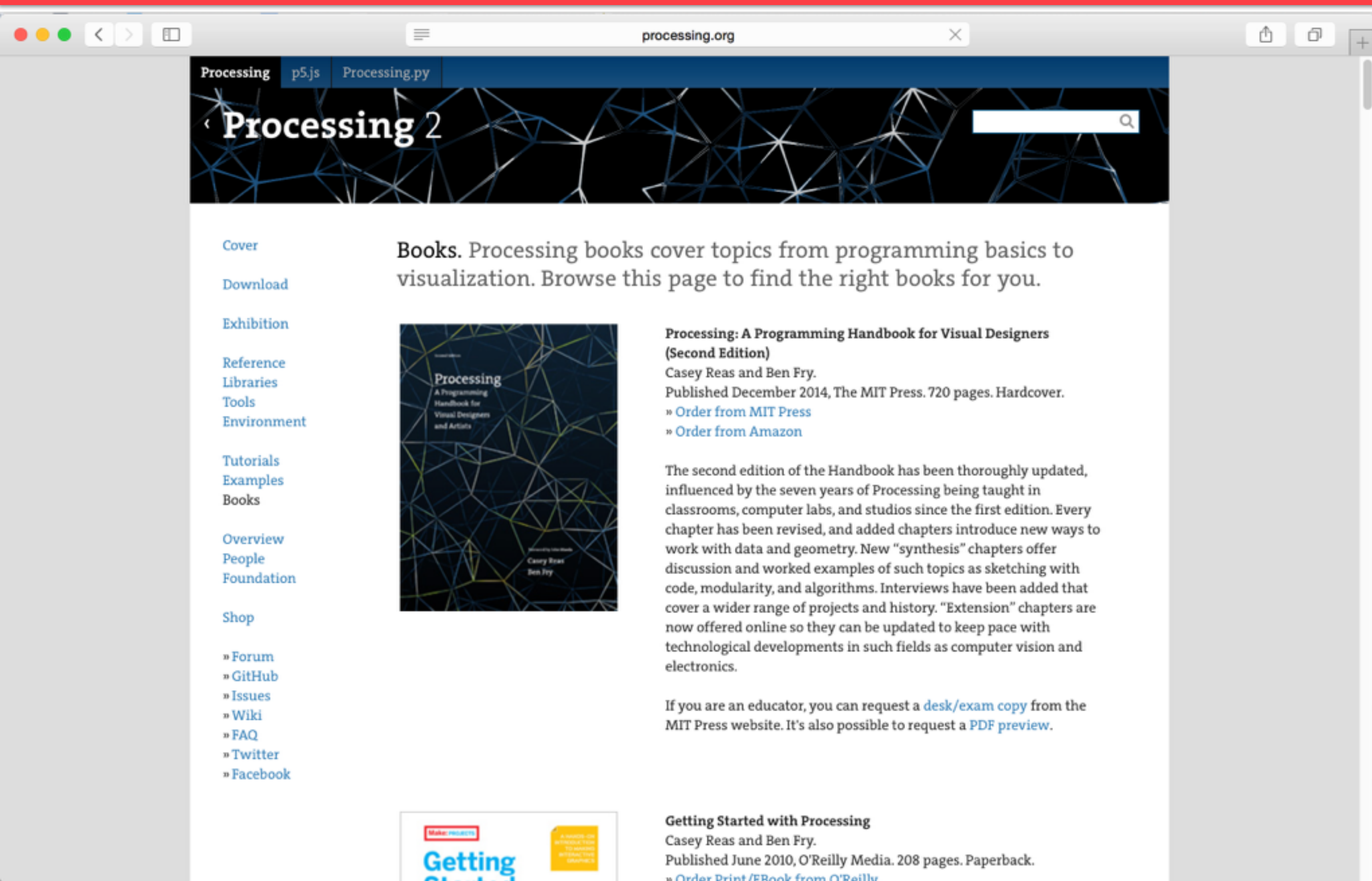
The main content area is titled 'Examples. Short, prototypical programs exploring the basics of programming with Processing.' Below this, a pink text block states: 'These examples are running online through Processing.js using HTML5 Canvas and WebGL for rendering. There are many more examples included with the Processing application; please look there if you don't find what you're looking for here.'

A sidebar on the left contains a list of links. The 'Books' link is highlighted with a red rectangle. Other links include 'Cover', 'Download', 'Exhibition', 'Reference', 'Libraries', 'Tools', 'Environment', 'Tutorials', 'Examples', 'Overview', 'People', 'Foundation', 'Shop', '» Forum', '» GitHub', '» Issues', '» Wiki', '» FAQ', '» Twitter', and '» Facebook'.

The main content area is divided into four columns of links:

- Structure**
  - Statements and Comments
  - Coordinates
  - Width and Height
  - Setup and Draw
  - No Loop
  - Loop
  - Redraw
  - Functions
  - Recursion
  - CreateGraphics
- Image**
  - Load and Display Image
  - Background Image
  - Transparency
  - Alphamask
  - CreateImage
  - Pointillism
- Input**
  - Mouse 1D
  - Mouse 2D
  - MousePress
  - Mouse Signals
  - Easing
  - Constrain
  - Storing Input
  - Mouse Functions
  - Keyboard
  - Keyboard Functions
  - Milliseconds
  - Clock
- Form**
  - Points and Lines
  - Shape Primitives
  - Pie Chart
  - Regular Polygon
  - Star
  - Triangle Strip
  - Bezier
- Shape**
  - Load and Display SVG
  - Disable Style
  - Scale Shape
  - Get Child
- Color**
  - Hue
  - Saturation
  - Brightness
  - Color Variables
- Transform**
  - Translate
  - Scale
  - Rotate
  - RotateXY
  - RotatePushPop





The screenshot shows a web browser window with the address bar displaying 'processing.org'. The website has a dark blue header with navigation links: 'Processing', 'p5.js', and 'Processing.py'. Below the header is a large banner with the text 'Processing 2' and a search bar. The main content area is titled 'Books. Processing books cover topics from programming basics to visualization. Browse this page to find the right books for you.' It features a sidebar with various links and two book listings.

**Processing 2**

**Books.** Processing books cover topics from programming basics to visualization. Browse this page to find the right books for you.

**Processing: A Programming Handbook for Visual Designers (Second Edition)**  
Casey Reas and Ben Fry.  
Published December 2014, The MIT Press. 720 pages. Hardcover.  
» [Order from MIT Press](#)  
» [Order from Amazon](#)

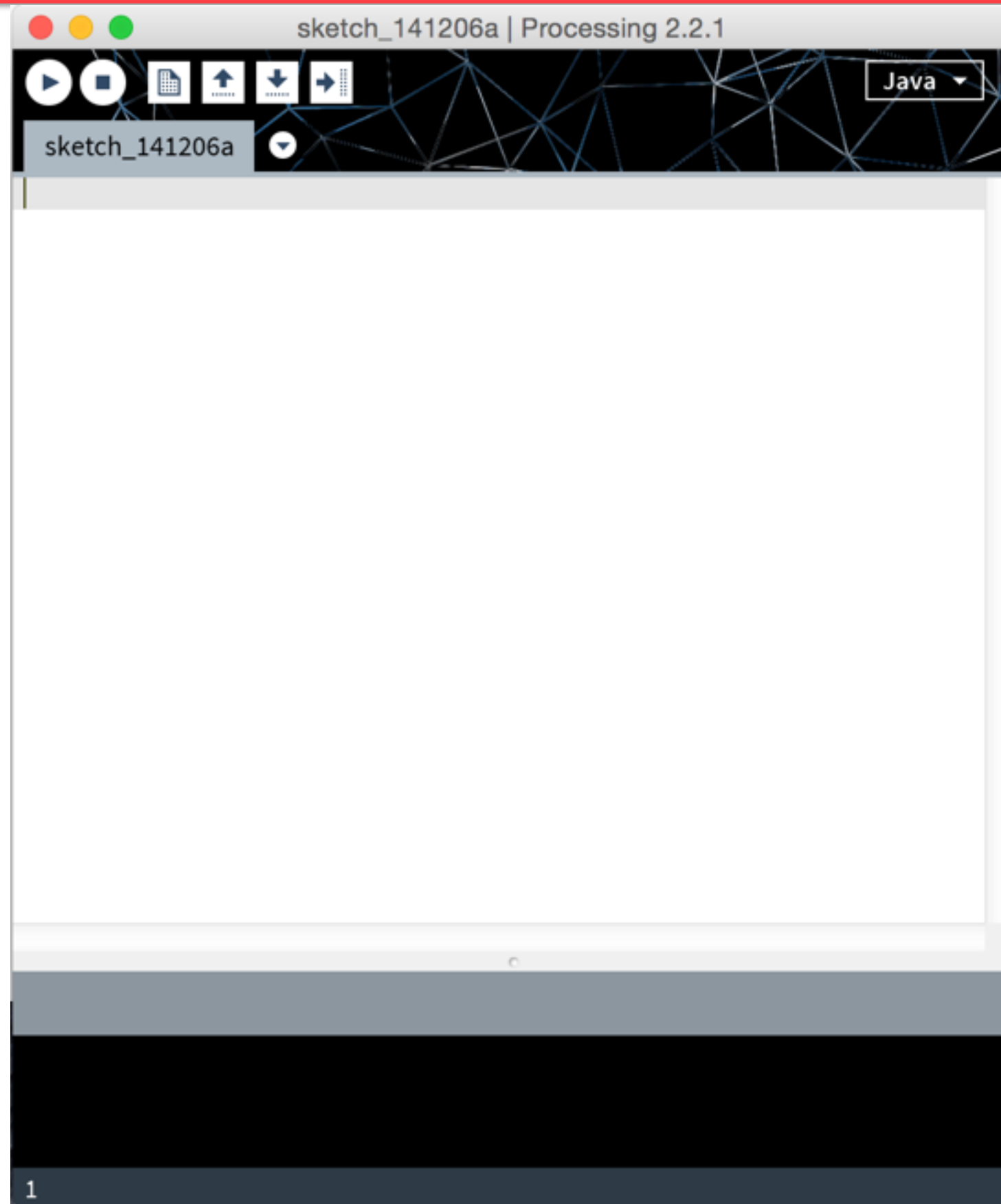
The second edition of the Handbook has been thoroughly updated, influenced by the seven years of Processing being taught in classrooms, computer labs, and studios since the first edition. Every chapter has been revised, and added chapters introduce new ways to work with data and geometry. New “synthesis” chapters offer discussion and worked examples of such topics as sketching with code, modularity, and algorithms. Interviews have been added that cover a wider range of projects and history. “Extension” chapters are now offered online so they can be updated to keep pace with technological developments in such fields as computer vision and electronics.

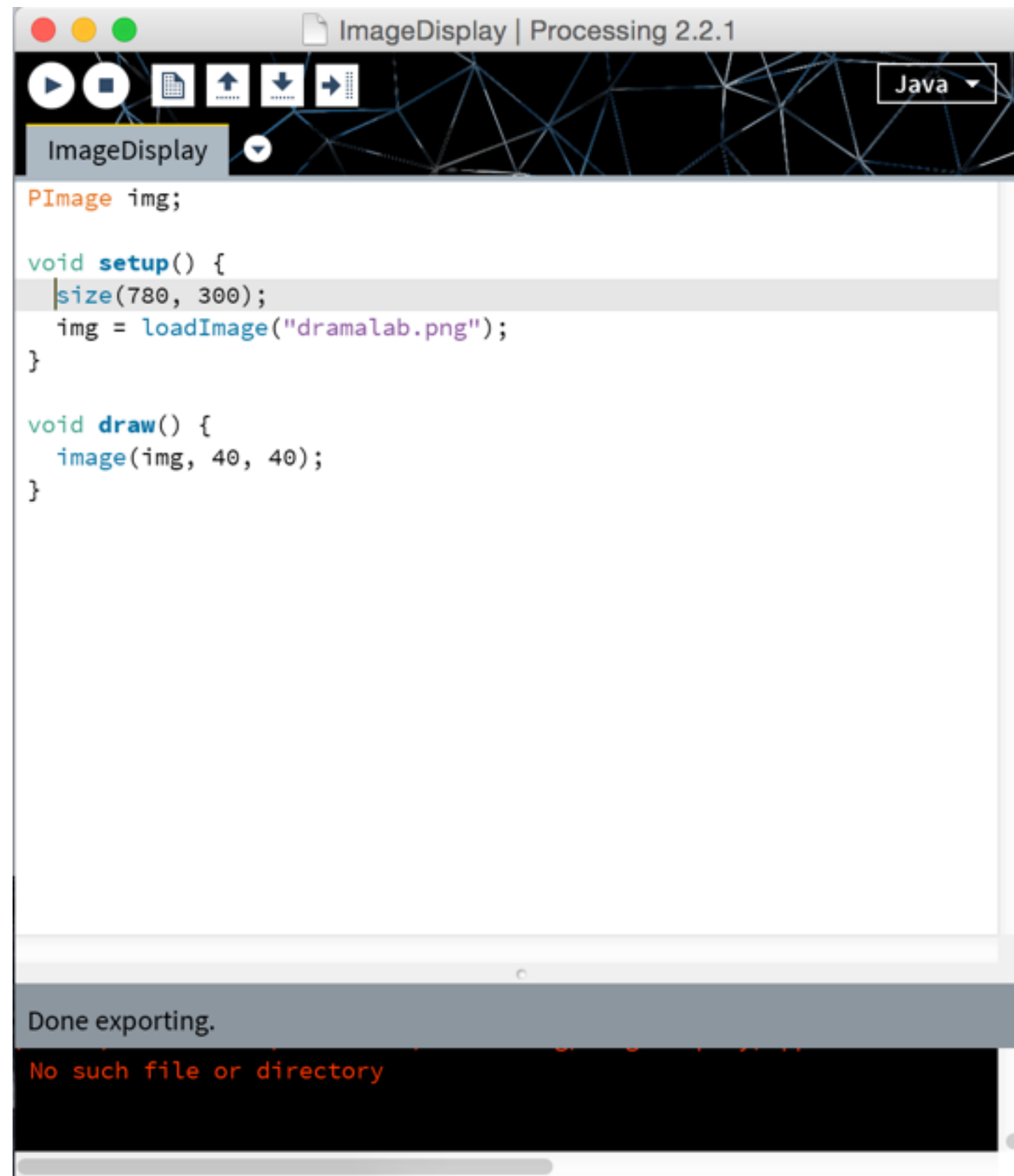
If you are an educator, you can request a [desk/exam copy](#) from the MIT Press website. It’s also possible to request a [PDF preview](#).

**Getting Started with Processing**  
Casey Reas and Ben Fry.  
Published June 2010, O’Reilly Media. 208 pages. Paperback.  
» [Order Print/EBook from O’Reilly](#)

**Navigation Links:**

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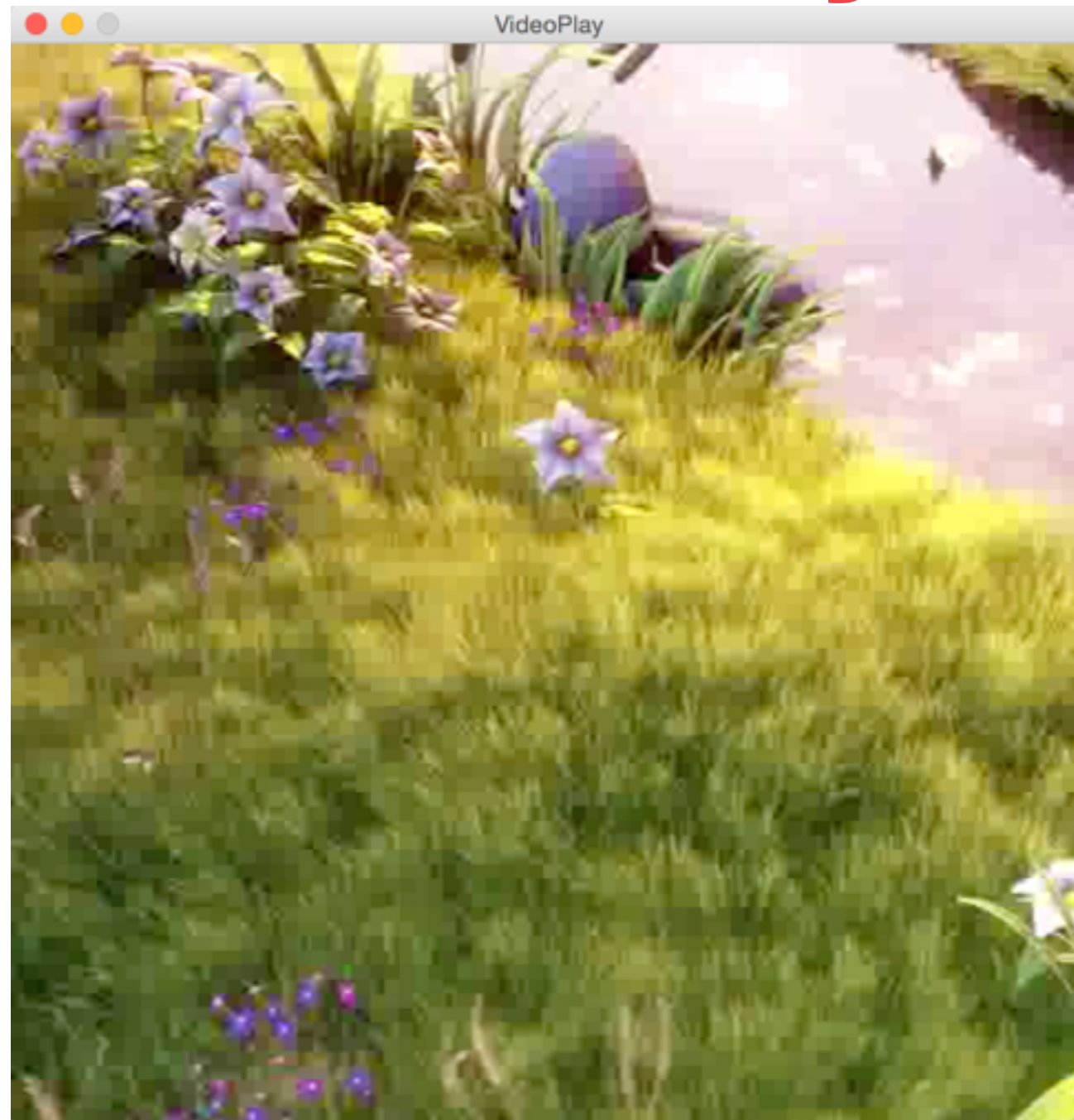




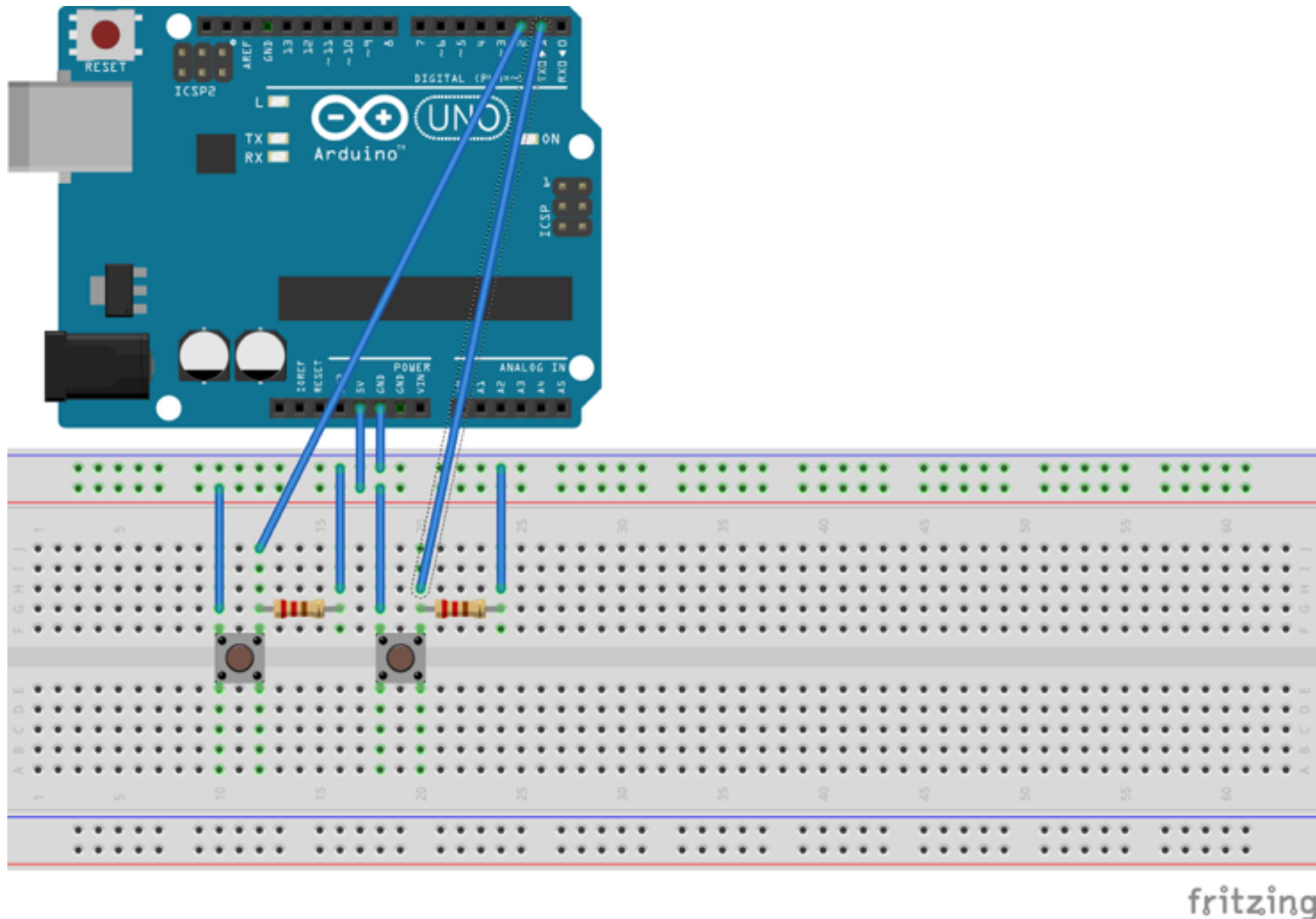




# Video Player



# Video Player With Arduino



# Video Player With Arduino



The screenshot shows the Processing IDE window titled "ProcessingButtons | Arduino 1.5.8". The code editor contains the following sketch:

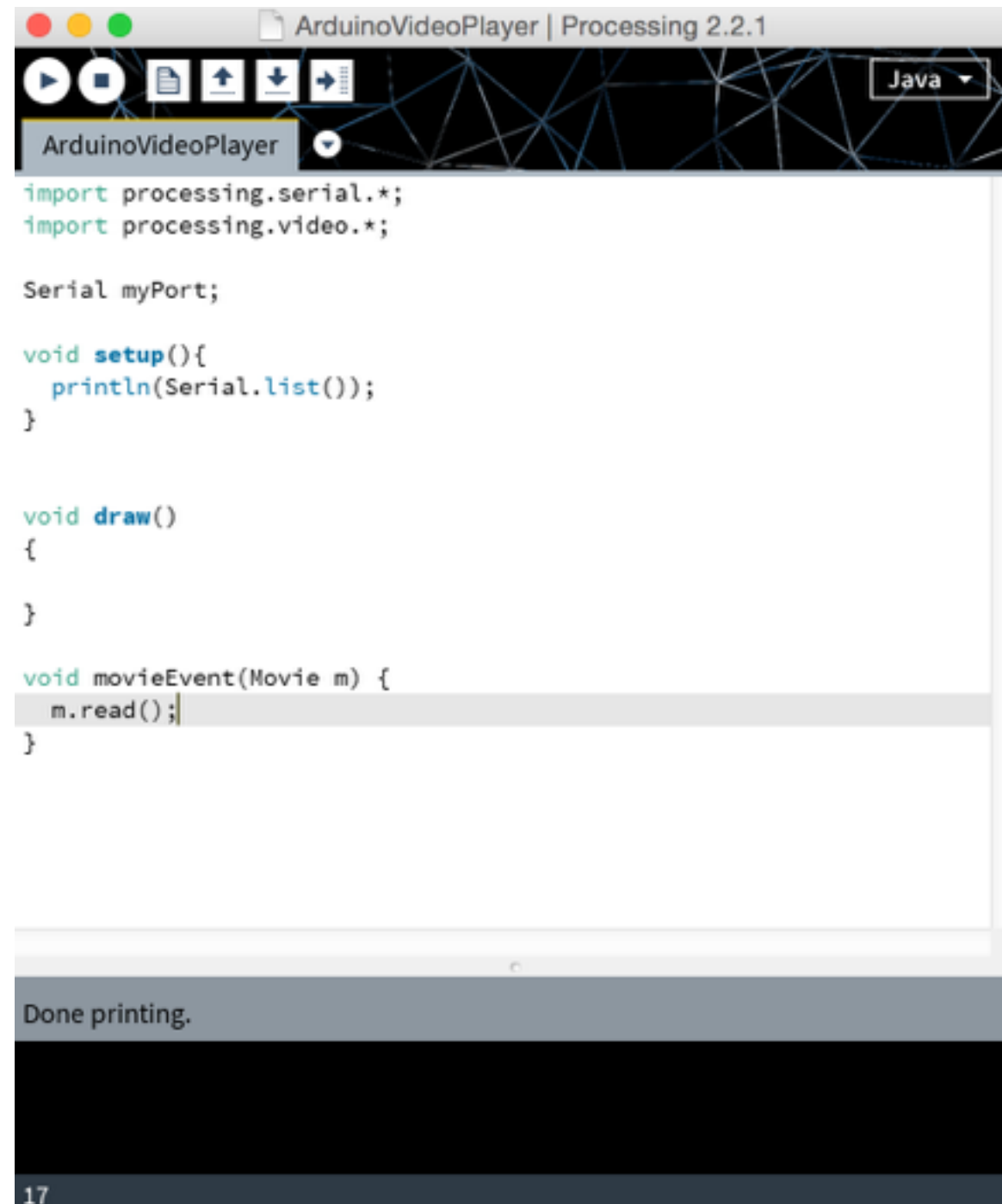
```
ProcessingButtons S
int firstButtonPin = 2;
int secondButtonPin = 3;

void setup(){
  Serial.begin(9600);
  pinMode(firstButtonPin, INPUT);
  pinMode(secondButtonPin, INPUT);
}

void loop()
{
  |
}
```

Below the code editor is a console window with a teal header "Drucken abgeschlossen". The console shows the number "12" on the left and "Arduino Uno on /dev/tty.usbmodem14131" on the right.

# Video Player With Arduino

A screenshot of the Processing IDE window titled 'ArduinoVideoPlayer | Processing 2.2.1'. The window has a toolbar with icons for play, stop, new, open, save, and zoom. Below the toolbar is a dropdown menu showing 'ArduinoVideoPlayer'. The main text area contains the following Java code:

```
import processing.serial.*;
import processing.video.*;

Serial myPort;

void setup(){
  println(Serial.list());
}

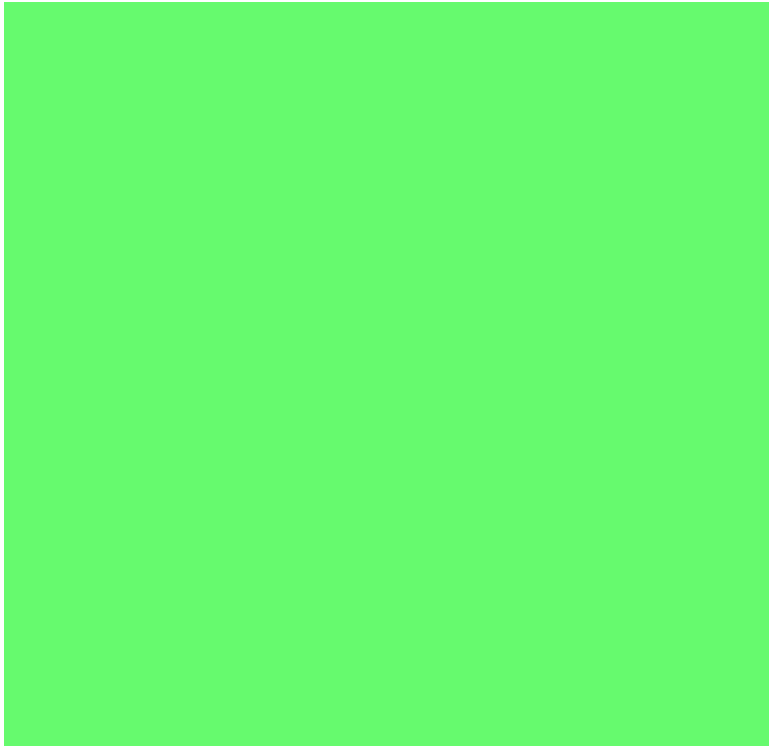
void draw()
{
}

void movieEvent(Movie m) {
  m.read();
}
```

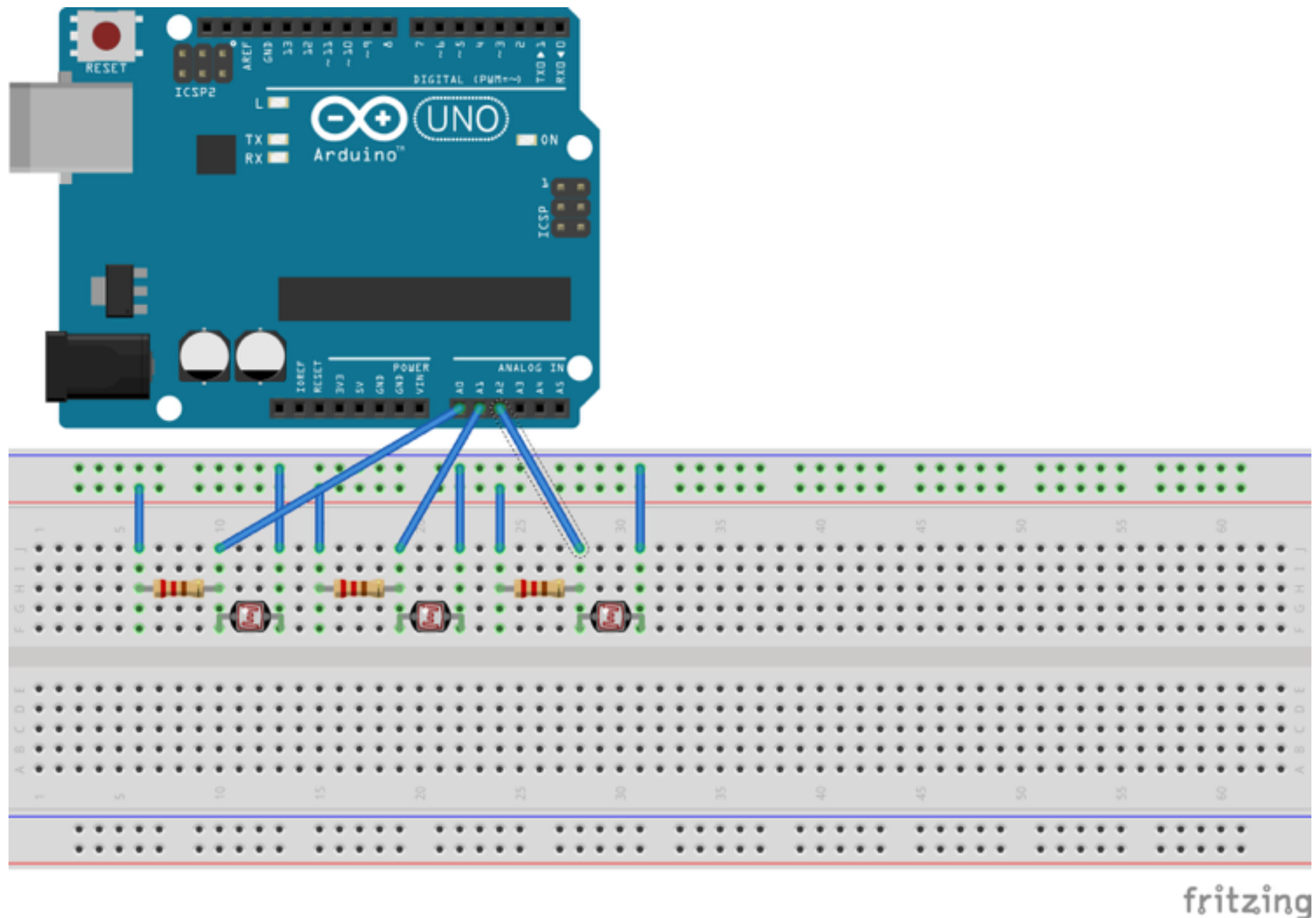
The code is written in a monospaced font with syntax highlighting. The 'movieEvent' function is currently selected. At the bottom of the window is a console area with a grey header that says 'Done printing.' and a black area below it. The number '17' is visible in the bottom left corner of the console area.




# Colored Wall



# Colored Wall



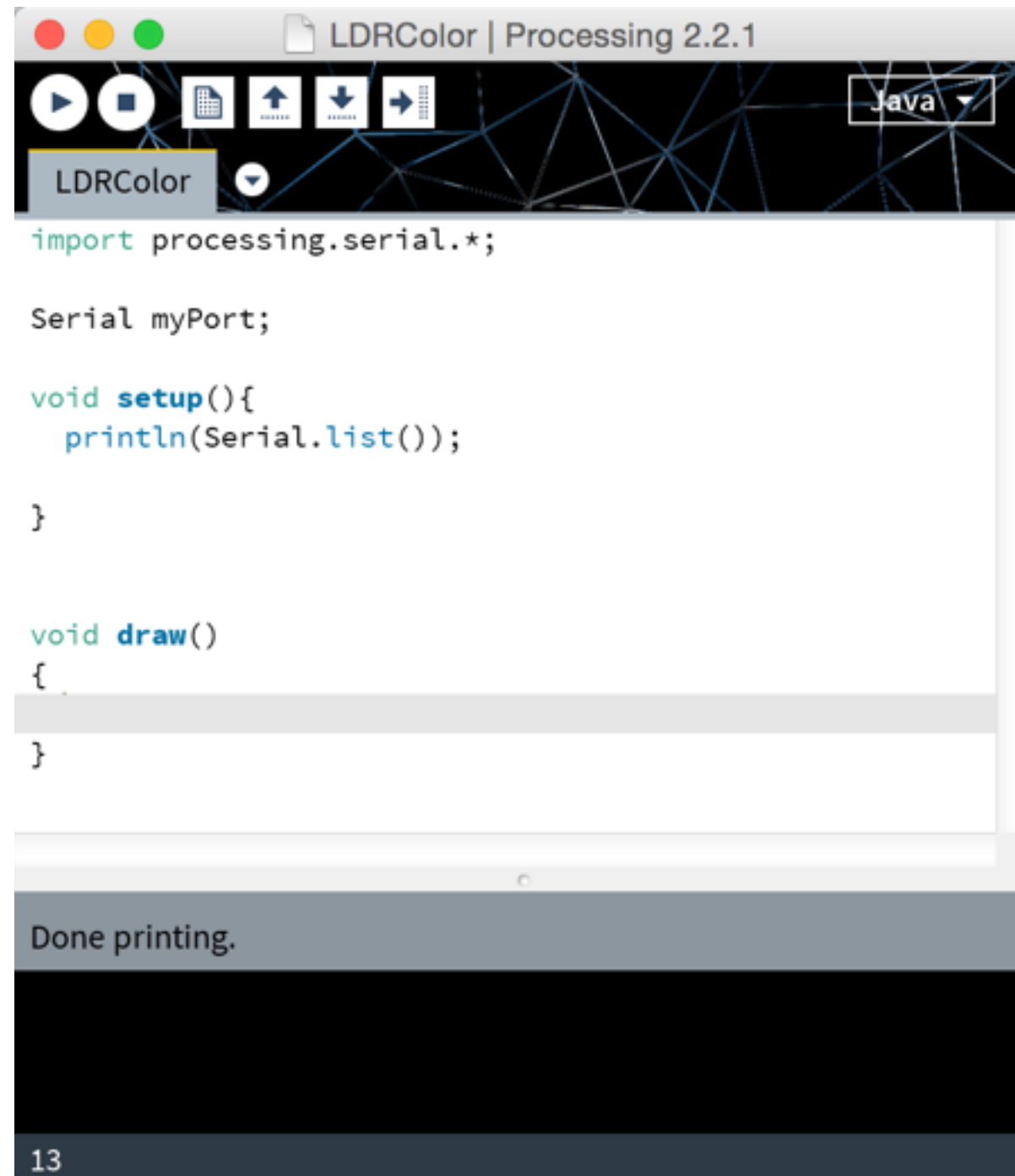
# Colored Wall



```
ProcessingLDR | Arduino 1.5.8  
ProcessingLDR §  
int firstLDRPin = A0;  
int secondLDRPin = A1;  
int thirdLDRPin = A2;  
  
void setup(){  
  Serial.begin(9600);  
  pinMode(firstLDRPin, INPUT);  
  pinMode(secondLDRPin, INPUT);  
  pinMode(thirdLDRPin, INPUT);  
}  
  
void loop()  
{  
  |  
}
```

14 Arduino Uno on /dev/tty.usbmodem14131

# Colored Wall



The screenshot shows the Processing IDE interface. The title bar reads 'LDRColor | Processing 2.2.1'. The toolbar includes icons for running, stopping, opening, saving, and zooming. A dropdown menu shows 'LDRColor' and a 'Java' language selector. The code editor contains the following Java code:

```
import processing.serial.*;

Serial myPort;

void setup(){
  println(Serial.list());
}

void draw()
{
  .
}
```

Below the code editor is a console window with the text 'Done printing.' and a line number '13' at the bottom.



# Dots

Dramalab

unibz

# Dots

