Introduction to Writing Processing Programs

With Processing, I have bad news, and I have good news. The bad news is that you have to write a program. This will involve some learning. The good news is that you get to write a program. You will end up being ever-so-more knowledgeable than you started out, and, once you get the hang of this, there is nothing you won’t be able to do with it!

Colors for Processing Programs

Colors are formed with combinations of red, green, and blue. The smallest number you can use is 0. The largest number you can use is 255.

- Black: 0 0 0
- White: 255 255 255
- Red: 255 0 0
- Orange: 255 128 0
- Yellow: 255 255 0
- Green: 0 255 0
- Cyan: 0 255 255
- Blue: 0 0 255
- Magenta: 255 0 255

Use the Color Selector from the Tools menu to pick your own color numbers.

The Tools Menu

- Interactively select and edit a color
- Create Font...
- Color Selector...
- Archive Sketch
- Movie Maker
- Add Tool...
The Color Selector from the Tools Menu

The color in Hue-Saturation-Brightness measurements.
The color in Red-Green-Blue measurements
The color in RGB hexadecimal (base 16).
(You care about this if you are doing web development.)

```
colorMode( RGB );
fill( 152, 101, 101 );
colorMode( HSB );
fill( 0, 33, 59 );
```

Hue-Saturation-Brightness (HSB) -- Another way to specify additive color

```
0 ≤ h, s, b ≤ 255
0 ≤ r, g, b ≤ 255
```

Writing Processing Programs

```
void setup( )
{
  size( 800, 600 );
colorMode( RGB );
  background( 200, 200, 255 );
}
void draw( )
{
  stroke( 0, 0, 0 );
  fill( 255, 50, 50 );
  rect( 100, 200, 150, 50 );
}
```

Typing in Processing Programs

```
You must add code to the setup( ) function.
Processing calls this once when your program starts,
You must add code to the draw( ) function.
Processing calls this every time it wants to re-draw the scene.
```

Running Your Processing Programs

```
Click here to run your program
```

Enjoying the Output of Your Processing Programs
### Other Functions to use when Writing Processing Programs

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>background(x, y, r, g, b)</td>
<td>Set the background to (r, g, b) at (x, y)</td>
</tr>
<tr>
<td>fill(x, y, r, g, b)</td>
<td>Set the fill color to (r, g, b) at (x, y)</td>
</tr>
<tr>
<td>stroke(x, y, r, g, b)</td>
<td>Set the stroke color to (r, g, b) at (x, y)</td>
</tr>
<tr>
<td>rect(x, y, w, h)</td>
<td>Draw a rectangle from (x, y) to (x + w, y + h)</td>
</tr>
<tr>
<td>ellipse(x, y, w, h)</td>
<td>Draw an ellipse with center (x, y) and width/height (w, h)</td>
</tr>
<tr>
<td>circle(x, y, r)</td>
<td>Draw a circle with center (x, y) and radius r</td>
</tr>
<tr>
<td>line(x1, y1, x2, y2)</td>
<td>Draw a line from (x1, y1) to (x2, y2)</td>
</tr>
<tr>
<td>frame()</td>
<td>Draw a frame around the entire canvas</td>
</tr>
<tr>
<td>size(width, height)</td>
<td>Set the size of the canvas</td>
</tr>
<tr>
<td>colorMode</td>
<td>Set the color mode to either RGB or HSB</td>
</tr>
</tbody>
</table>

### What if You Mis-type Something?

Processing will underline your mistake in red.

```java
setup() {
  size(800, 600);
  colorMode(RGB);
  background(200, 200, 255);
}
```

### What if You Try to Run it Anyway?

Processing gets a little nastier.

Processing will underline your mistake in red.