# Homework 4: Homer, Marge, Bart, Lisa & Maggie

Goal: You will familiarize yourself with the Processing language by working out how to draw the Simpsons by programming. Besides getting experience with Processing, you will learn how to transfer a design to the screen, an idea we will use all term.

Advertising

Some of the most creative ideas come from advertising. Look at this Lego Ad, which won awards in 2012. Do you recognize these Lego constructions?
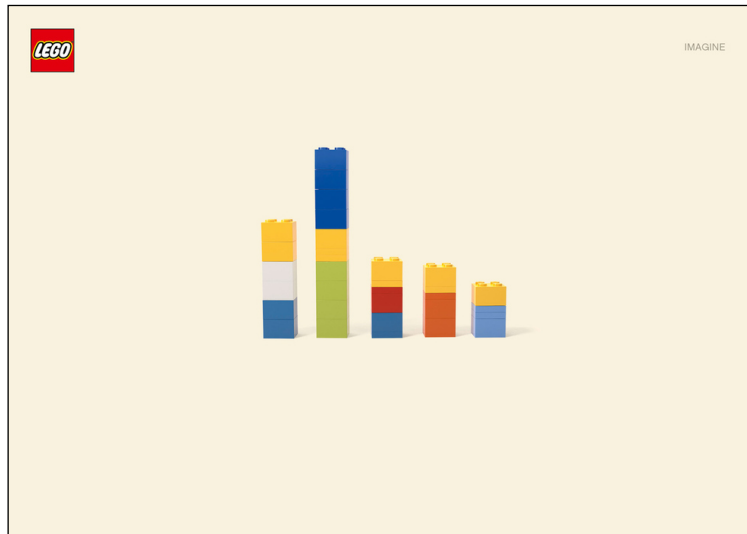
Although they are just five stacks of Lego blocks, the colors and sizes have been chosen to remind us of the Simpsons cartoon characters. The homework task is to display these five figures on the screen.

Specifications

The five stacks of blocks have specific sizes:

Homer	Marge	Bart	Lisa	Maggie
40 x 45	40 x 95	40 x 30		
40 x 50	40 x 35	40 x 30	40 x 30	40 x 25
40 x 45	40 x 95	40 x 30	40 x 55	40 x 40

Tip: When we give sizes of objects on the screen, we always give them "width first"

For example, Marge's blue hair is a rectangle that is 40 pixels wide and 95 pixels high.

The fill colors for the blocks are only an approximation. It is possible to adjust these colors so they more closely match the ad. Begin with the colors given, but then adjust as you wish.

Color Palette	
Face Yellow:	250, 193, 35
Homer White:	245, 245, 245
Pants Blue:	89, 79, 217
Marge Blue:	41, 82, 240
Bart Shirt:	240, 71, 41
Lisa Dress:	229, 77, 35

A good background color is: 255, 245, 220, and a good canvas size is: 900 x 800.

Start The Simpsons Program

Open a Processing Window for a program of the five Simpsons characters.
To start, you must
1) define the size of your canvas using the size( ) function
2) define the color of the canvas background using the background( ) function
3) tell Processing you don't want lines around your boxes using the noStroke( ) function

Use these commands like they are used in the class examples, but if you forget how they were used, you can get their specifications on the Help > Reference page.

Drawing a Character

To draw one of the Simpsons, write a comment in your program saying which one it is. Comments begin with // and run to the end of the line, as in // Bart

The blocks are rectangles, drawn using the function rect(x, y, w, h) where x, y gives the screen position of the rectangle's upper left corner, and w, h gives its width and height. So, to draw Marge's blue hair might use the command
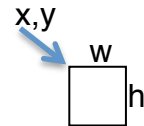
```
rect(360, 340, 40, 95);        //Draw Marge's Hair
```

which would draw a 40 x 95 rectangle with it's upper left corner 360 pixels in from the left and 340 pixels down from the top. **You must figure out** the positioning of all blocks.

The color is set with the fill(r, g, b) function, where r, g and b are the three color values. Once set, all rectangles, circles, etc. are filled with that color until a new fill( ) command changes to a new color. So, to set the color of Marge's hair, the command

      fill(41,82,240);   //Set Marge's Hair Color

must be given *before* the rectangle is drawn.

The Result

Your program should have a comment on each non-blank line, and the instructions for drawing each of the five Simpsons should be grouped together. The resulting screen display is shown at right.
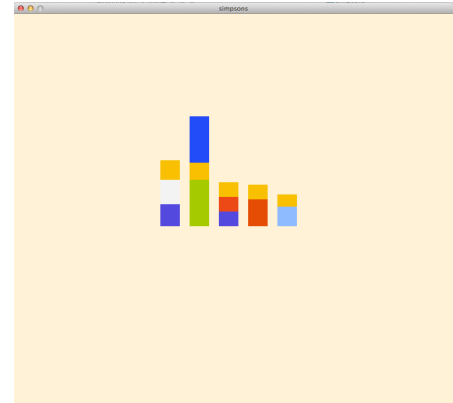
Challenge

The Simpsons picture is pretty good, but it is incomplete. Where is Maggie's pacifier?

Using the Processing reference page (Help > Reference), read about the function used to draw circles (hint, check ellipses). Then improve your program to help Maggie out by drawing her pacifier. Your result will look like this.
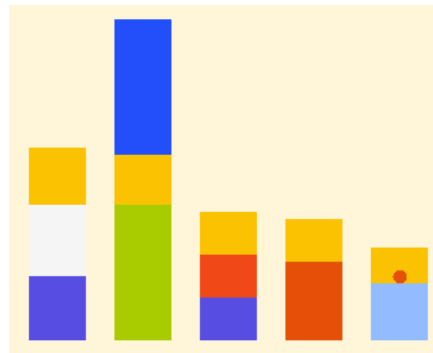
Wrap Up

You've programmed Processing for the first time! You've learned that the pixels of the screen are counted with a coordinate system that starts with 0,0 in the upper left corner of the window, and you've learned a few handy Processing functions, which were new today, but you will use them throughout the term.

Rename a copy of the .pde file with your name, and submit it into the class drop box.

Extra Credit: More credit? Do another ad: http://moresay.com/03/25/2012/imagine-lego-campaign-hamburg-by-jung-von-matt/ The turtles are easy, Burt & Ernie are cute.