

Programming Assignment 1

CMSC 101 / IS 101Y – Fall 2014

Due Thursday, September 4

Collaboration Policy

- This assignment **must be completed individually**. You may discuss the requirements with other students, but you must do your own work, and you may not share your work with any other students, or use solution material that was created by anyone but yourself.

Processing Assignment 1: Installation and Testing

Download Processing version 2.2.1 onto your own laptop (if you have one) or desktop computer.

1. Visit <http://processing.org/download> and follow the steps to install Processing on your machine (Mac, Windows, or Linux). The version you install should be version 2.2.1.
 - a. On a Windows machine, right-click the .zip file that is downloaded, and select “Extract All” to extract the contents of the zip file. This will create a new folder, which you should drag to your program files or desktop. Open the folder and double-click “processing.exe” to launch Processing.
 - b. On a Mac, double-click the .zip file to unzip it and drag the resulting Processing icon to your Applications folder. You may also want to drag the icon into your applications dock for ready access.
 - c. On a Linux machine, extract the contents of the .tar.gz file by opening a terminal window and typing “tar xvfz processing-xxxx.tgz” (where “xxxx” is the version number as it appears in the tar file). To run Processing, cd into the “processing-2.0” folder and type “./processing”.
2. You should now see the Processing main window. ***If you have had any trouble with the installation, or the window does not appear, you should immediately ask the course staff for help via email or blackboard!***
3. Visit <http://processing.org/tutorials/gettingstarted/> and go through the “Your First Program” exercise. Read the “Show” and “Save” sections so that you know how to run your program and save your program (which is called a “sketch” in Processing) to a file. (These sections of the tutorial are also reprinted in chapter 2 of your textbook, on pages 8-12.)
 - a. Feel free to go through the other sections of the tutorial (“Share” and “Examples and Reference” – pages 12-14 in your textbook), but you can skip them for now if you want.

4. The “Save” icon will save to a default directory, which isn’t always easy to find later. Use the “Save As” command under the “File” menu at the top of the screen to save your sketch somewhere that you’ll be able to find it.
 - a. If you haven’t already created a folder for this class, now would be a good time to make a “CMSC101” or “IS101” folder in your “My Documents” main directory. You can save your sketch there.
 - b. Note that Processing first creates a folder with the name of your sketch, and then saves the “.pde” file with the same name in that directory.
5. Once your code is running and you have created a new directory for your sketch, experiment with changing the size of the window and the colors of the circles that are drawn.
 - a. The “size(480,120);” command creates a display window that is exactly 480 pixels wide and 120 pixels high. Change the size of the window to at least 750 pixels wide by 300 pixels high by editing this command.
 - b. The “fill(255);” command tells Processing to fill the circles that are drawn by moving the mouse when the mouse button isn’t pressed with a white color. Similarly, “fill(0)” tells Processing to fill the circles that are drawn while the mouse button is clicked with a black color. If you give *three* numeric arguments (in the range [0, 255]) to the “fill” command, it will use the RGB (red, green, blue) color scheme to color the circles. Try changing the white circles to red by changing the command “fill(255);” to “fill(255,0,0)”. Try changing the black circles to blue by changing the command “fill(0);” to “fill(00,0,255)”.
6. The last step in this assignment is to save out the picture you created. Type (or cut and paste) the following code at the end of your program:

```
void keyPressed() {  
    if (key == 's') {  
        save("circles.png");  
    }  
}
```

(Explanation for those who are interested: Processing invokes the “keyPressed” function every time any key is pressed. This function checks to see if “s” was pressed, and if so, it saves out the display image to a file called “circles.png”.)

Save this new version of your program as “NewCircles”.

Run your program using the “Play” button, and create an image with two circle colors (i.e., moving the mouse while the button is up and then holding the mouse down while moving the mouse some more). Then type the “s” key, which will save an image file called “circles.png” into your sketch directory.

7. **Submit Your Assignment:**
 - a. Log into Blackboard and go to the CMSC101 course page.
 - b. Go to “Assignments” and to the “PA1” assignment.
 - c. Attach your “NewCircles.pde” program file (this file should be in your sketch directory, in the “NewCircles” subdirectory).
 - d. Attach your “circles.png” file (which will be in the same directory as your “NewCircles.pde” file).

- e. If you were unable to get this assignment working, or to save the “.png” file, ***you can still receive full credit***. The way you get credit is by creating a document (.docx in Word or .txt in NotePad) that explains carefully and thoughtfully how far you got, what you tried, and what exactly went wrong. Note that “My program wouldn’t work” will ***not*** receive full credit. “When I tried hitting ‘s’ to save the file, it gave me the following error message: <INCLUDE MESSAGE HERE>. I thought perhaps the directory didn’t exist, so I double-checked to be sure it was there, but that didn’t fix the problem” is more likely to receive full credit. Upload this explanatory document into Blackboard.