

CS 141 – Fall 2012

Programming Assignment: Avatar Browser

Many virtual worlds allow you to create an “avatar” to represent yourself in the environment – a pictorial representation of a person that you can customize in appearance. Another way to think about this is it’s a modern day version of Mr. Potato Head – you can build a character with interchangeable facial characteristics.

As a class, we are going to build a program that lets you browse through various avatars. Each member of the class will design a program that draws the face of an avatar, consisting of eyes, hair, and a mouth. The trick is that everyone will build their drawing through the use of functions, allowing different combinations of eyes, hair, and mouths to be combined when everyone is done.

To make it easy for to combine facial features designed by different people, we will use the following guidelines. We will assume everyone’s avatar is being designed for a face that is a circle of radius 300. When we put the final product together, however, we may need to draw a face on different sections of the screen. Therefore, the location of the center may vary, and your drawing functions (for the eyes, hair, and mouth) must be able to draw the facial characteristics anywhere on the screen. To enable this, each of your drawing functions will take two arguments corresponding to the (x, y) position of the center of the 300-radius circle.

What you need to do:

- Create a new Python program and save it as `avatar_lastname_firstname.py`, replacing *lastname* and *firstname* with your names.
- Your program should be broken into four functions, called `draw_eyes_description`, `draw_hair_description`, `draw_mouth_description`, and `main`. For each of the first three functions, replace the description part with a good description of the kind of feature you’re drawing. For instance, you might create functions called `draw_eyes_brown_with_glasses`, `draw_hair_short_curly_blonde`, and `draw_mouth_happy_face_lots_of_teeth`.
- The `main` function should do these things in order:
 - Open a canvas large enough to hold a 300-radius circle.
 - Draw a 300-radius circle somewhere.
 - Call your eyes, mouth, and hair functions in that order, passing appropriate arguments to the functions so they know where on the canvas to draw.
 - Wait for a mouse click on the canvas.
 - Close the canvas.

- The other three functions should each take two arguments, corresponding to the center of the circle representing the avatar's face. Each function should call appropriate drawing functions (from the CS 141 Graphics Library) to draw the facial characteristics. The facial characteristics can be embellished with other appropriate things in that area of the face. For instance, you may also draw a nose in your mouth function, or ears in the hair function.

Remember that your drawing functions should not assume the location of the circle for the face is at a fixed location! For instance, don't start by drawing eyes using `draw_circle(200, 300, 50)`. That `(200, 300)` location for the left eye might work well for a circle centered at `(300, 300)`, but your drawing functions can't assume that's where the face is. You must calculate appropriate locations based on the `centerx` and `centery` arguments supplied.

You should use the following program structure:

```
# CS 141, Fall 2012
# Programming Project 1: Avatar Browser
# Your name

from simplegraphics import *

def main():
    # open canvas
    # draw circle
    # call eyes, mouth, hair
    # wait for mouse click and close canvas

def draw_eyes_blahblah(centerx, centery):
    # draw here

def draw_hair_blahblah(centerx, centery):
    # draw here

def draw_mouth_blahblah(centerx, centery):
    # draw here

# Call the main function.
main()
```