CS106 W20 - Lab 06

Randomness and Noise

Due: Tuesday, February 23 at 11:59 PM

Remember to include your name and student ID in each sketch you submit for all labs and assignments. Marks are deducted if these are not included.

- Put your name in line1 (using //)
- Put your student ID in line 2 (using //)
- Leave line 3 blank.

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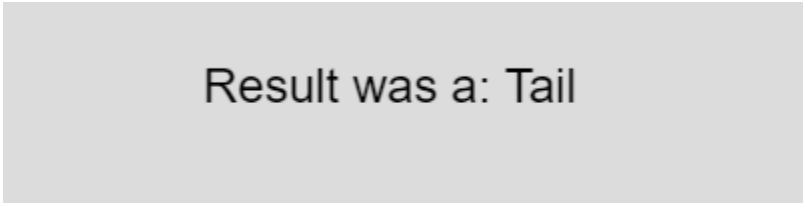
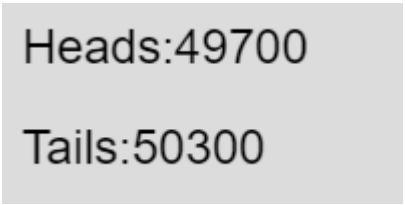
1) Write a function oneFlip(). It has no arguments and returns a value. It flips a coin and determines whether the flip is a head or a tail. It returns "head" or "tail". Running the program might result in the following canvas:



Use the following starter code: https://openprocessing.org/sketch/1106380

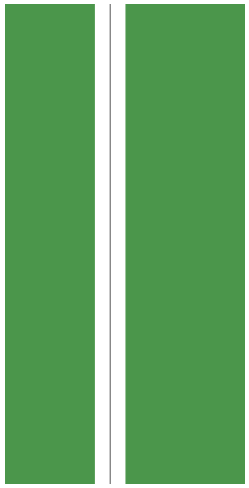
2) Write a function manyFlips(n). It has one argument 'n' and returns nothing. It flips a coin n times and determines whether each flip is a head or a tail. It uses text() to display the number of heads and tails to the canvas. So for example, manyFlips(1000000) might result in the following canvas.



Use the following starter code: https://openprocessing.org/sketch/1106389

3) There is no starter code.
Watch the following video before you begin: https://vault.cs.uwaterloo.ca/s/CaxoXYTxezt2YH3

a) Create a sketch of size 400×800.
b) In the `draw()` function, give it a background colour of green. Any green colour is fine. It is meant to represent grass.
c) Next, you'll draw a white road through the green grass. To draw the road, draw a horizontal one-pixel-wide white line in every row of pixels in the canvas (i.e. there are 800 rows of pixels and thus you will draw 800 white lines (in a loop)). (see the video above)
    a. Make each horizontal white line 50 pixels long. Have the x position of the line always be 150. Your line drawing, within your loop, will be done with code something like the following "line(150, i, 200, i);".
d) Put a black line down the middle of the white road (do this after the loop as you only need to draw the black line once).
    a. Your canvas should look like the following:



4) Driving the noise() Function

Create a simple driving game in which the white road is generated using (the one-dimensional version of) the `noise()` function. A video is at: https://vault.cs.uwaterloo.ca/s/3Lk3rMeeBYwBRXg

Follow these steps:

1. Start with the sketch from the lectures: Week6_MovingMountains.
2. As shown in the video above, get rid of the black mountains, and keep the line.
3. Slow down the movement from left to right.
4. Make the road a bit smoother.
5. Change the sketch size to 600x600.
6. As shown in the above video, make a variable for y.
7. For each point on the line, draw a vertical one-pixel-wide white line. Make the line 100 pixels long. This will create the white road (see the video)
8. Have a ball 300 pixels from the left-hand side of the canvas. The ball should stay exactly in the middle of the white road.

Submitting

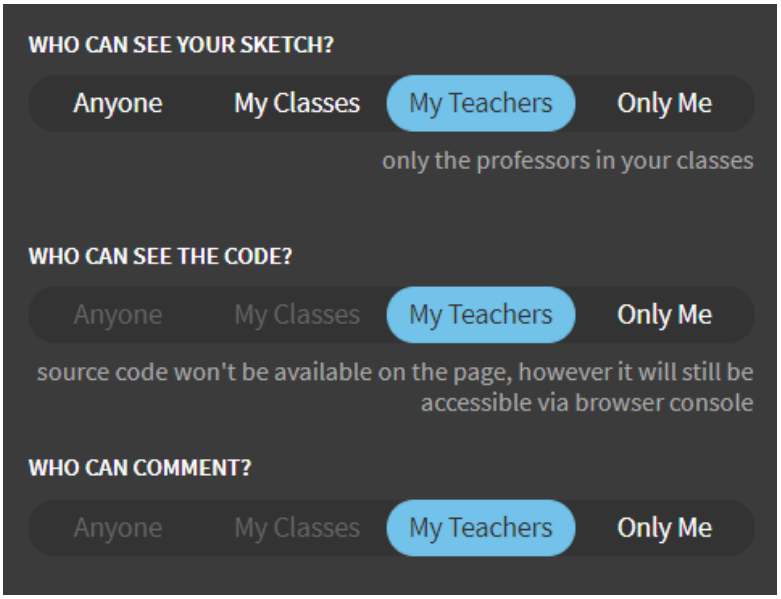
Use the template file in Word "CS106 Lab Template" in LEARN to create your Lab 06 submission.

Please ensure that your URLs are hot links. The TAs need to be able to click on each link in your pdf and go directly to your sketch.

So for example, don't have a link like this: https://openprocessing.org/sketch/1050954

but rather have that link as a hot link as follows:
https://openprocessing.org/sketch/1050954

Ensure that each URL you submit has its settings so that the access is as follows:



Submit that pdf file to the Lab 06 dropbox on LEARN.

An example of how to do submit a Lab is shown in the following video:

https://vault.cs.uwaterloo.ca/s/9Xx7AGsewaea773

It is your responsibility to submit to the correct dropbox with the correct files before the deadline. Otherwise you may receive a mark of 0.