

# CS106 W21 - Assignment 04

Due: Friday, February 26, 11:59 PM

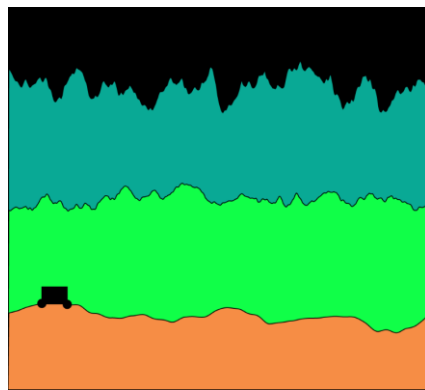
Assignment 4 is graded out of 22 marks.

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In computer games you will sometimes see a vehicle on a terrain, and mountains in the background. See the following example: <https://youtu.be/QODQw3sZUyU> Here is a screen shot from the above video:



Here is what our solution looks like. This video also has lots of programming hints: <https://vault.cs.uwaterloo.ca/s/kyioazXjnb9zdGc>



Your task is to mimic what you see in our video. There is no starter code.

- a) [ 1 mark ] Set the background to black and canvas size to 500x500..
- b) [ 4 marks ] Create a function drawMountain2(). Use that function to draw the farthest away mountain and have it moving right to left. It is this colour: 
- Mountain2 should move the slowest. You must use noise() and beginShape/endShape to draw the mountain.
- [ 1 mark ] The mountains are a blue color.
  - [ 1 mark ] The mountains move right to left.
  - [ 1 mark ] The mountains move slower than mountain1 (mountain1 is described below).
  - [ 1 mark ] noise() and beginShape/endShape are used to create the mountain2 shape.
- c) [ 4 marks ] Create a function drawMountain1(). Use that function to draw a mountain in the foreground on top of mountain2, and have it moving right to left at a faster speed than mountain2. It is this colour: 
- [ 1 mark ] The mountains are a green color.
  - [ 1 mark ] The mountains move right to left.
  - [ 1 mark ] The mountains move faster than the mountain2.
  - [ 1 mark ] noise() and beginShape/endShape are used to create the mountain1 shape.
- d) [ 8 marks ] Create a function drawCar(). Use that function to draw the car and the moving terrain under the car. The terrain is this colour: 
- [ 1 mark ] The terrain is a beige color: 
  - [ 1 mark ] The terrain moves right to left.
  - [ 1 mark ] The terrain move faster than the mountain1 and mountain2.
  - [ 1 mark ] noise() and beginShape/endShape are used to create the terrain shape.
  - [ 2 marks ] The car must have at least two wheels. The wheels must move up and down with the terrain.
  - [ 2 marks ] The body of the car (which in our solution is drawn with a rect()) must also move up and down with the terrain. The bottom of the rect() must

be the average y height of the two wheels. That is, it must move with the wheels. (see the video)

## [ 5 marks ] Coding Style and Efficiency

Follow the course coding style for whitespace and comments. Consult the “**Code Style Guide**” on LEARN. For example:

- 1) [ 0.5 ] Include your name on the first line of code and your student ID number on the second line of code.
- 2) [ 0.5 ] Leave the third line blank.
- 3) [ 0.5 ] Comment your code appropriately. Avoid superfluous comments.
- 4) [ 0.5 ] Correctly and consistently indent your code blocks.
- 5) [ 0.5 ] Use correct inline spacing for variable declaration and assignment.
- 6) [ 0.5 ] Use good line spacing to chunk sections of your code.
- 7) [ 0.5 ] There are no variables that are declared or assigned, but not used.
- 8) [ 0.5 ] There are no unnecessary variables that are duplicates of other variables.
- 9) [ 0.5 ] There is no unnecessarily repeating the same code in multiple places.
- 10) [ 0.5 ] Semicolons were used appropriately ( i.e. at the end of most lines).

## Restrictions

- You may not use any functions or statements not covered in lecture or labs. This includes, but is not limited to:
  - No `translate()`, `rotate()`, or `scale()` functions.

## Submitting

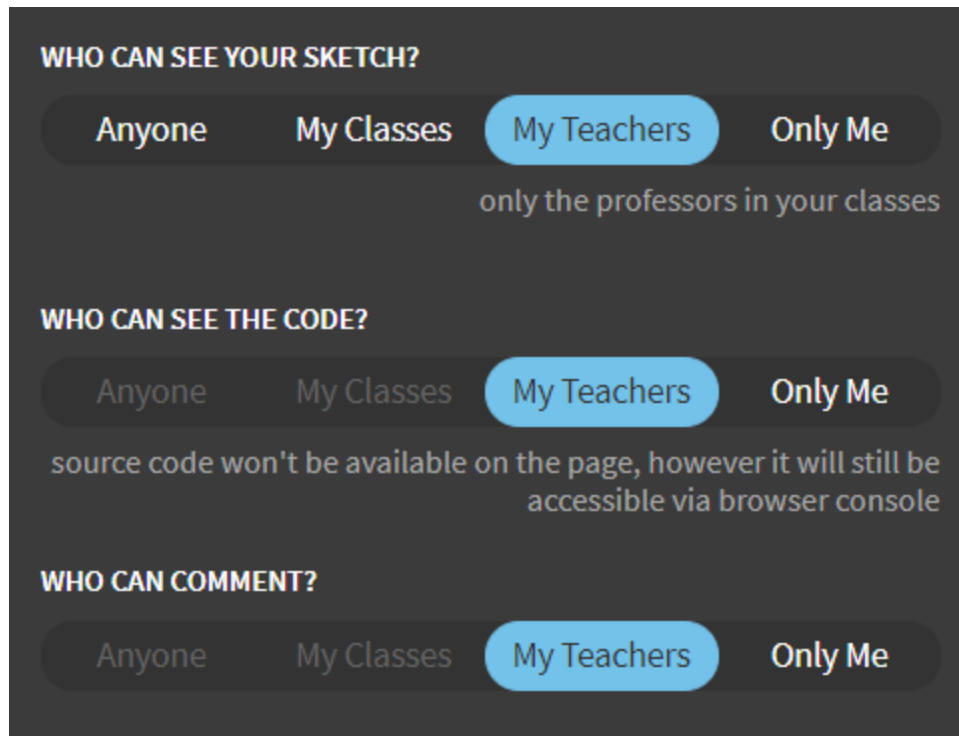
Use the template file in Word “CS106 Assignment Template” in LEARN to create your Assignment 04 submission.

Then convert your Word file to pdf. 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 Assignment 04 dropbox on LEARN.

An example of how to 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 file before the deadline. Otherwise you may receive a mark of 0.

## Academic Integrity

All assignments in CS106 are done individually. Group work and sharing of code is not allowed.

Detecting Plagiarism:

- We monitor Reddit, File Trading Sites, past year CS106 assignments, etc.
- Measure Of Software Similarity (MOSS)
  - automatic system for determining the similarity of code

Discipline

- Discipline (Policy 71)
  - <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>