

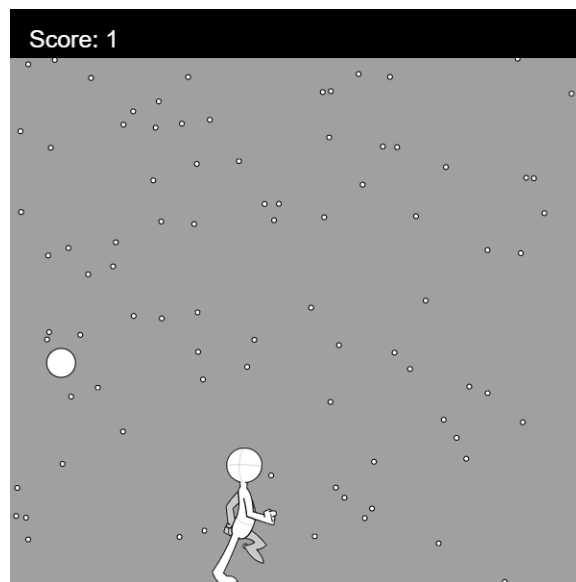
CS106 W20 - Assignment 01

Due: Friday, January 10, 11:59 PM

This assignment is a recap of topics covered in CS105, and reviewed in the first week of CS106.

You are to write a JavaScript p5 program to mimic what you see in the video:

<https://youtu.be/r-QfKJlkyqI>



Begin with this starter code: A01_StarterCode

Create a folder: CS106_A01

Save your sketch folder as A1_basic, in the CS106_A01 folder.

Requirements and Grading

We suggest you proceed as follows:

Examine the starter code in detail, to ensure you understand it as this will give you insights into how to use the starter code with the code you write. You will note the following from the starter code:

- The sketch is 600x600.
- You will need a function “newGameInitialization()” that runs once to initialize all variables and arrays.
- Note that the x and y values for each snowflake must be stored in the arrays “snowflakeX”, “snowflakeY”, and “snowflakesSpeed”.
- Note that the images for the walking person are in an array “walkcycle”. The creation and initialization of that array is provided in the starter code, in the function preload()).
- You will need a function “drawSnowflakes()” to draw 100 snowflakes on each frame.
- You will need a function “drawSnowball()” that draws the snowball on each frame.
- You will need a function “drawScore()” that shows the black rectangle and the score, on each frame.
- You will need a function “drawPerson()” to draw the animated person walking either right or left, on each frame.
- The movement is controlled by the right and left arrow keys (you will need to use the keyPressed() function to detect the keys being pressed).
- You will need to write a function “hitTestSnowballPerson()” to determine on each frame whether the snowball hits the person. If so, the score goes up by one and a new snowball appears randomly at the top of the canvas.
- Note that the image for the person is a rectangle. Thus the hit test is to determine whether an ellipse (i.e. the snowball) hits a rectangle (i.e. the person).

General Correctness

- One mark will be deducted for files or directories named incorrectly (the zip file, etc.)
- One mark will be deducted if the wrong canvas size is used.
- One or more marks will be deducted if the program crashes (depending on the severity).

Assignments that do not run may receive a grade of 0. Even if you don't complete the entire assignment, don't leave it in a broken state. Make sure it runs so we can find ways to give you part marks.

[2 marks] Coding Style and Efficiency

Coding style is evaluated in both sketches.

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

- Comment your code appropriately. Avoid superfluous comments.
- Correctly and consistently indent your code blocks.
- Use correct inline spacing for variable declaration and assignment.
- Use good line spacing to chunk sections of your code.
- Pay special attention to inline spacing for your conditional statements.
- Use semicolons.
- Use let or const, never var.

One or more marks may be deducted for solutions that have obvious inefficiencies.

- Variables that are declared or assigned, but not used.
- Unnecessarily variables that are duplicates of other variables.
- Unnecessarily repeating the same code in multiple places.
- Too many “magic numbers”: the same number appears in many places indicating a variable should have been used instead.

[2 marks] Functionality or Visual Design Enhancements

Once you have basic functionality above working, enhance the functionality or the visual design in a sketch called A1_enhanced.

These basic requirements must still be followed:

- The canvas size must be the same size as A1_basic.
- It must maintain the functionality from a1_basic (i.e. it must have the snowflakes, snowball, score, and hit test).
- Some ideas:
- Visually enhance the snowflakes so that they look more like snowflakes.
- In the demo video on youtube, the person can move off the screen on the left or right. Modify the code so that the person cannot move off the screen.
- Add sound.
- Add a “splash screen” which is a graphic that initially fills the canvas and disappears when the user presses a certain key such as spacebar to start the game.

It’s ok to not add enhancements or be extra creative if you’re running out of time: a correct basic solution with excellent coding style should still achieve a grade of 88%.

Restrictions

In general, you may not use any functions, libraries, or statements not covered in lecture or labs unless not specifically exempted below or in a post by a TA or instructor on this assignment discussion board. For example:

- NO translate(), rotate(), or scale() functions
- No classes
- You MAY use bezier, arc, and other standard drawing functions

If in doubt, make a post to ask about using a specific statement of function.

Functionality marks will be deducted for using forbidden functions/statements.

Submitting

Zip your assignment sketch folders (A1_basic and A1_enhanced) into one zip file CS106_A01, and submit it the correct assignment dropbox. Consult “How to Submit” on Learn for more information on how to create a ZIP.

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