

CS106 W19 - Assignment 01

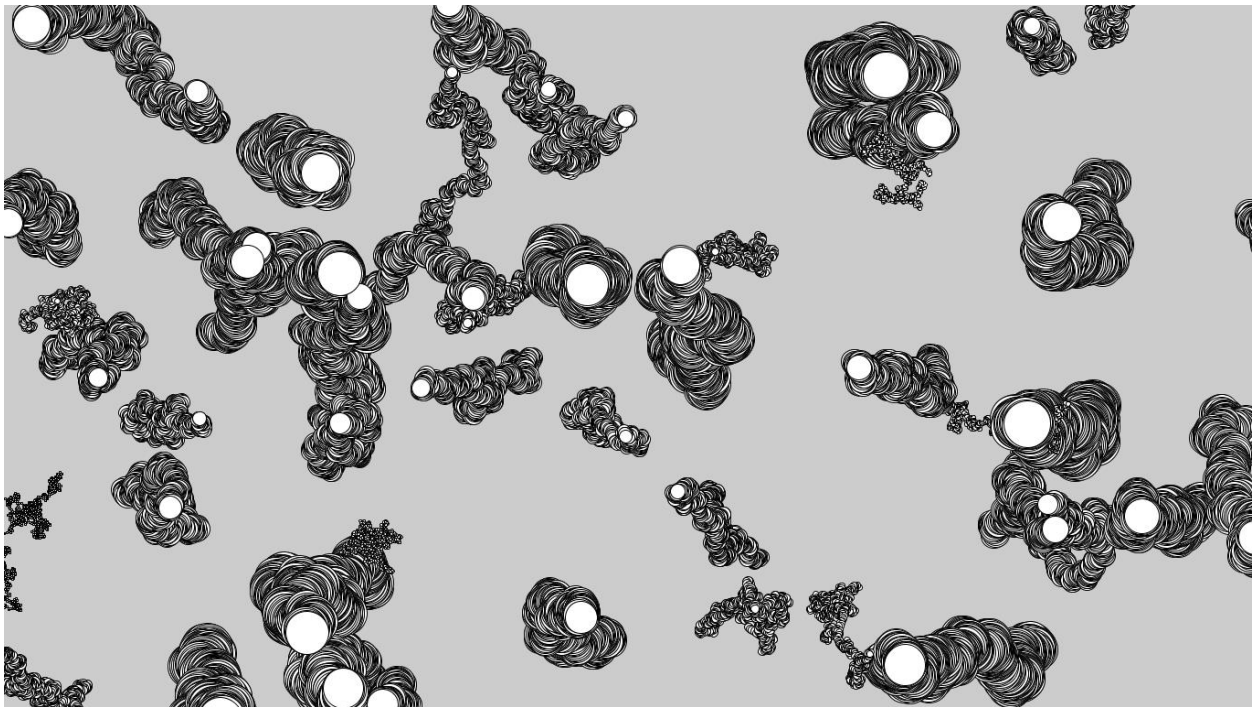
Due: Friday, January 11, 11:59 PM

This assignment uses Objects and Generative Art.

Objects were covered in CS105 and reviewed in class on the week of January 7th. If you need to refresh yourself regarding Objects then review the slides that were presented in class and the demo code examples that were provided. They are both on LEARN.

Generative Art is a new topic and was introduced in the week of January 7. The slides and demo code are available on LEARN.

The following code was provided in Lab 01. Copy the code from your Lab 01 as starter code for this Assignment 01. After a minute or so it produces a screen like the following:



```

JitterBug[] bugs = new JitterBug[50];

void setup() {
  fullscreen();
  // Create object and pass in parameters
  for (int i=0; i<bugs.length; i++) {
    int s = i + 2;
    bugs[i] = new JitterBug(random(width), random(height), s);
  }
}

void draw() {
  for (int i=0; i<bugs.length; i++) {
    bugs[i].move();
    bugs[i].display();
  }
}

class JitterBug {
  float x;
  float y;
  int diameter;
  float speed = 2.5;

  JitterBug(float tempX, float tempY, int tempDiameter) {
    x = tempX;
    y = tempY;
    diameter = tempDiameter;
  }

  void move() {
    x += random(-speed, speed);
    y += random(-speed, speed);
  }

  void display() {
    ellipse(x, y, diameter, diameter);
  }
}

```

QUESTION 1 (50% of A01)

Modify the starter code so that your result mimics the following as shown on Youtube:

<https://youtu.be/uP4krMhJT1g>

Note that your solution does not need to match the Youtube video exactly but you must do the following:

- You must have a margin that is very noticeable in size (perhaps a centimeter or two) on all sides as in the Youtube video. You will probably do this by modifying the method “void move()” in the class JitterBug. (Remember, methods are just functions so you can add code to a method just as you can add code to any function you write.)
- You must not draw ellipses, but rather you must draw rectangles (see the Youtube video).
- Each of the 50 rectangles must be a random color. To do this you probably will create a new variable of type “color” and assign a random color to each rectangle. This is somewhat similar to the following variable in the starter code: “int s = i + 2; “. The variable s in the starter code is used to for the size of each of the 50 rectangles. You will probably have a variable of type color that is used to for the color of each of the 50 rectangles. See the video to see the resulting colors.

QUESTION 2 (50% of A01)

You must enhance one of the following:

The demo code: generative2.pde

Or

The demo code: generative3.pde

Or

Your code from Question 1 above.

You must document your enhancements so that we know what you have done as enhancements. As an example of enhancements you may enhance “generative2.pde” so that:

- Lines are of different colors
- Lines are of different thickness
- Draw rectangles instead of lines
- Draw ellipses instead of lines
- Frame number 1,000 is saved to a jpg file
- The current frame is saved to a jpg file whenever the user presses “s” or “S”.

Code to save to a jpg file will look something like the code to the right.

```
void keyPressed () {
  if ((key == 's') || (key == 'S')) {
    saveFrame("screenshot.jpg");
  }
}
```

Requirements and Grading

QUESTION 1:

[6 marks] Correctness

- The sketch must meet the three requirements listed above.

[2 marks] Coding Style

- Comment your code appropriately. Avoid superfluous comments.
- Correctly and consistently indent your code blocks.
- Use correct inline spacing in function calls, function definitions, and variable declaration and assignment.
- Use good line spacing to chunk sections of your code.
- Pay special attention to inline spacing for your conditional statements

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

- Variables that are declared or assigned, but not used.
- Unnecessarily repeating the same code in multiple places.

[2 marks] Visual Design and Creativity

- Higher marks will be given to sketches with extra details for creativity and artistic appeal.

QUESTION 2:

[4 marks] Correctness

- The sketch must include a minimum of two enhancements.
- **You must document your enhancements so that we know what enhancements you have added. Marks will be deducted if you do not document your enhancements.**

[2 marks] Coding Style

- Comment your code appropriately. Avoid superfluous comments.
- Correctly and consistently indent your code blocks.
- Use correct inline spacing in function calls, function definitions, and variable declaration and assignment.
- Use good line spacing to chunk sections of your code.
- Pay special attention to inline spacing for your conditional statements

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

- Variables that are declared or assigned, but not used.
- Unnecessarily repeating the same code in multiple places.

[4 marks] Visual Design and Creativity

- Higher marks will be given to sketches with extra details for creativity and artistic appeal.

Submitting

Create a folder “A01_username”, but replace “username” with your UW id. So if your email is “jac926@edu.uwaterloo.ca” you would create a folder “A01_jac926”.

SAVE your sketches in that folder as “A01Q01_username” and “A01Q02_username”. Again, replace username with your UW id.

Zip your “A01_username” folder (with “username” replaced by your UW id) and submit it the correct assignment dropbox.

It is your responsibility to submit to the correct dropbox with the correct files before the deadline. Otherwise you will have marks deducted.

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>