THE **NATURE** OF **CODE**

DANIEL SHIFFMAN

SESSION 5 RESOURCES

GENETIC ALGORITHMS INSTRUCTIONS

1: Project Specifications

Use genetic algorithms to evolve the parameters of a system. Here are some ideas:

- How would you implement crossover and mutation between two parents in an ecosystem modeled after the bloops? Try implementing an algorithm so that two creatures meet and mate when within a certain proximity.

- Try using the weights of multiple steering forces as a creature's DNA. Can you create a scenario in which creatures evolve to cooperate with each other?

- Use the idea of interactive selection to evolve the design of fractal trees (or some other pattern.)

- Biological evolution between predators and prey (or parasites and hosts) is often referred to as an "arms race," in which the creatures continuously adapt and counter-adapt to each other. Can you achieve this behavior in a system of multiple kinds creatures?

- One of the greatest challenges in ecosystem simulations is achieving a nice balance. You will likely find that most of your attempts result in either mass overpopulation (followed by mass extinction) or simply mass extinction straight away. What techniques can you employ to achieve balance? Consider using the genetic algorithm itself to evolve optimal parameters for an ecosystem.

2: Submission Instructions

- Create a zip file with the following components:
  - Sketch File named sketch.js
  - Include all p5 libraries used

- Submit your file to Assignment 5 Genetic Algorithms Coursework
- After submitting, go to the Course Gallery for Assignment 5: Genetic Algorithms and leave a constructive comment on at least 2 other student's work.

3: Peer Assessment

- There is a component of peer assesessment for this coursework. Please see the following page for detailed instructions on how to complete the peer asessment.

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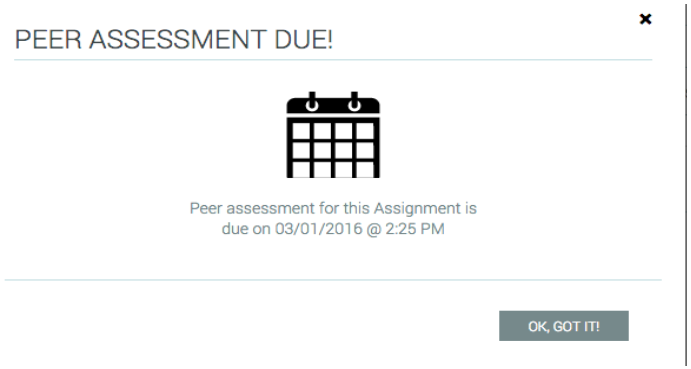
HOW TO COMPLETE PEER ASSESSMENT

1: Submit your assignment

- Once you submit your comic you will get a pop up that lets you know there is a component of peer assessment to this assignment.

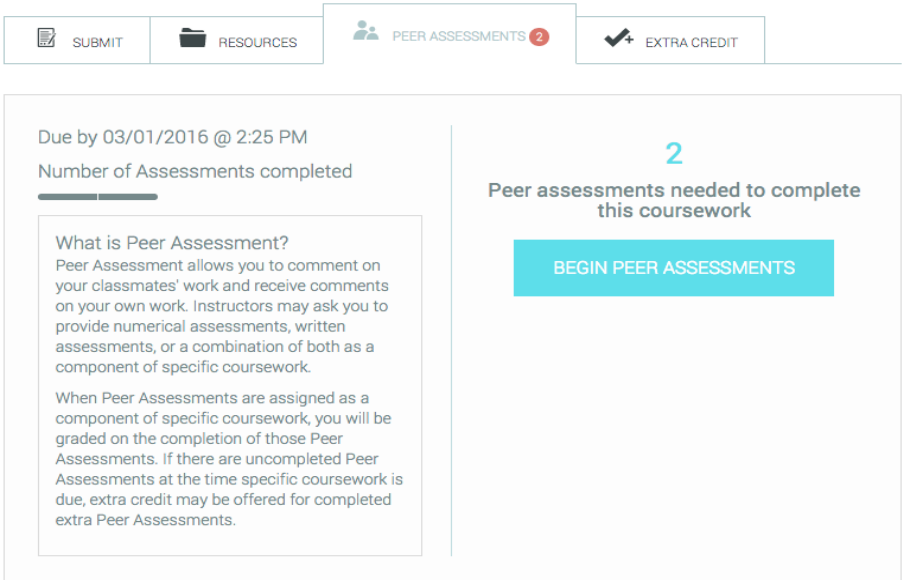


2: Wait for other submissions and check back

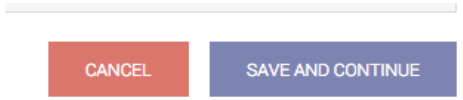
- Check back on the coursework page after the due date. Once there is another submission you will see a notification in the peer assessment area.

3: Complete the Peer Assessment

- Read the criteria carefully and give a point value and written feedback to the artist.



- Once you are complete save your peer assessment.



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