2022-2023 High School Coding Competition

Introduction

This year's competition is an invitation to students to get creative. In creative coding the programmer is an artist who designs visual, auditory, and perhaps even tactile experiences. The code often incorporates mathematical, physical, and behavioral elements inspired by nature. See the links in the resources section for some examples.

Task

Take a look at *The Nature of Code*, Daniel Shiffman's online textbook on creative simulation coding based on the processing language. At the end of each chapter, he describes a step toward creating an "ecosystem" using the concepts taught in that chapter. Your task is to learn as much as you can about modeling mathematics and physics using code and create your own ecosystem, incorporating as many concepts as you can from the rubric section below.

While doing so, we encourage you to keep an eye toward art and inspiration, making your ecosystem both aesthetically pleasing and a showcase for interesting interactions and themes.

Rules

You can enter the competition as a team or as an individual. No more than 5 people per team. Every team must have a sponsor from their school. This can be a teacher or counselor.

We encourage you to use the JavaScript framework p5.js, which is a JavaScript port of the Processing language. However, you may use any framework that you want as long as you can effectively present your ecosystem to the judges.

Be sure to credit any frameworks, code snippets, and algorithms that you borrow from other creators.

Rubric

Each of the below bullet points will be rated from 0 to 5 by the judges, except for the last item. The discretionary item will be rated 0 to 20 by each judge to allow for interesting elements that an ecosystem incorporates that are not captured by the rubric.

- Physical forces (gravity, friction, wind, oscillation,etc)
- Particle systems
- Multiple creatures
- Collision detection
- Behaviors (flocking, steering, pursuit, flow fields)
- Nested complex systems
- Cellular automata
- Genetic algorithms
- AI behaviors (Step 10)
- Aesthetics
- Engagement / Interactivity with viewer
- Discretionary (with explanation from the judge)

Resources

- Creative coding:
  - https://openprocessing.org/
  - https://medium.com/dare-to-be-better/want-to-try-creative-coding-start-here-35bb88c5fb04
- Cinder library: https://libcinder.org/
- Processing home page: https://processing.org/
- Daniel Shiffman's The Nature of Code online textbook: https://natureofcode.com/book/ online
- p5.js home page: https://p5js.org/
- p5.js online editor: https://editor.p5js.org/
- Craig Reynolds's Web page: http://www.red3d.com/cwr/
- Daniel Shiffman's The Coding Train YouTube channel on creative coding: https://www.youtube.com/channel/UCvjgXvBlbQiydffZU7m1_aw

Important Dates

No later than **January 9**th- Sign your team up
February 1st- Turn in Project (Directions of how to submit will be sent to you)
February 13th- In Person Presentation at Pellissippi State Community College Hardin Valley Campus

To sign up and for more details and resources: https://forms.gle/jYuZnWvsioPhwzNr7
For Questions Contact: Laura Grosek lmgrosek@pstcc.edu