IntroCS2 Final Project Proposal

Hwankyu Song, Shantanu Jha
May 19, 2015

Overview

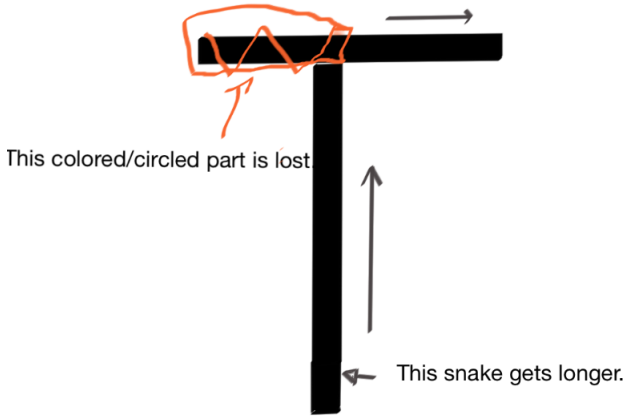
For our Intro to Computer Science 2 final project, we have decided to make a multiplayer snake game. Users from around the world will be able to compete against each other. Though there will be different servers on which users can compete on, on a specific server everyone will simultaneously be playing each other. Examples of similar games include, agar.io and cursors.io. Our main development problems will be creating the actual game with Javascript, HTML, and python. This multiplayer game site will not have set accounts as every time a user plays the game they will have to choose their player nickname and then begin with the base size snake.

1 Game Cases

Our game will be based of the classic game of snake. However, in our game there will be several ways to increase snake length and die. There are five ways a snake can come in contact with another snake. For the purpose of explanation we defined the term the "head" of the snake to be the box on the snake that is first when a snake travels, the "tail" to be the last box, and every other box the "body". Also the field on which the snakes travel will be sprinkled with the little dots or "apples" that the snakes can eat to get longer. One apple = one box increase in a snake's length.

The head of another snake can contact the head of another snake either directly on or at a perpendicular. If the contact is direct, then the larger snake will "eat" the smaller snake and if the snakes are the same size they will bounce off each other and travel in a direction opposite to that which they were traveling in before. To "eat" another snake is to kill the snake that you are eating and then grow in length by a certain value; that value is a percentage of the size of the snake that is being eaten.

One of the remaining cases is that the head of a snake contacts the body of another snake, obviously at a perpendicular. For the sake of our argument let us define the "attacking" snake as the one that is driving it's head into any other body part of another snake. If the attacking snake is shorter then the snake that is being attacked then the attacking snake dies. If the attacking snake is equal to the size of the snake that is being attacked then the attacked snake will continue and the attacking snake will reverse direction. If the attacking snake is larger then the snake that is attacked loses everything



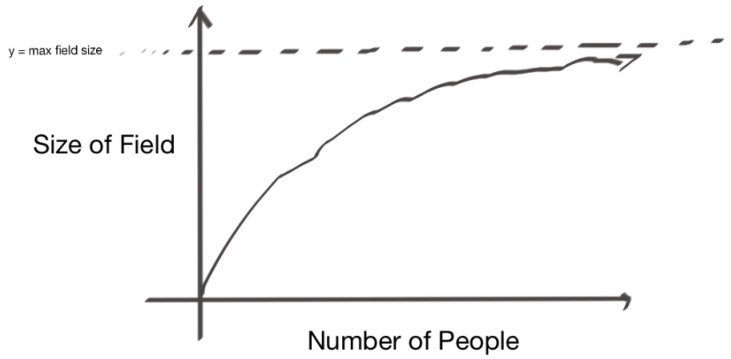
as shown:

The last cases are when the head of one snake contacts the tail of another. If the contact is at a perpendicular then the contact is treated like the case when the head of a snake hits the body of the snake. However, if it is straight on, then if the attacking snake is smaller the attacking snake will die, and if it is the same size then the attacking snake will reverse and the attacked snake will continue like nothing happened. If the attacking snake is larger then the attacked and attacking snake will combine, effectively killing the attacked snake and lengthening the attacking snake, then the head of the attacked snake will become the head of the attacking snake, the length of the combined snake might be decreased by a percent that is a function of the total length of the final snake.

The last ways to die are like those in regular snake, which are running into the boundaries of the field that you are playing on, or running into yourself.

2 Boundaries of the Game

Though the game has a set boundary/field. The size of the field is a function of the amount of people playing. This is a graph of a possible relation between the amount of people playing and the size of the field. We may or may not cap the amount of people that can compete in a certain server (for example US West, US East, Canada ... etc.):



And so there will be a maximum field size. The field itself will be a square shape. We might even make a server in which there are no boundaries.

3 Features

Main Features:

- Temporary Nickname for User
- Actual Snake Game Programming
- Elegant Fast User Interface
- Multiplayer interactions between different players
- Variable Boundary setting ability or field making ability (including sprinkling the field with apples
- Leader-board that scores the top ten longest snakes on a server and displays it constantly to the User

Additional Features:

- Different Servers on which people can play
- Polished Graphics User Interface
- Other Features?

4 Development Tools

Some tools we will use in our website:

- Github Orginization + Github Pages
- Javascript
  - PaperScript or paper.js
  - node.js
  - learning a lot of things
  - Python and HTML

5 Roadmap

1. Start Project - Write Proposal
2. Chose how we will develop snake game
3. Develop Basic Snake Game that will include a basic field setup + apples + the classic snake game
4. Test Phase - show to friends and family and get feedback on snake game
5. Add multiple users to game + add ability to give users temporary names and temporary snakes
6. Add snake interactions
7. Test Phase - show to friends and family get feedback
8. Fix all the bugs that were found
9. Work on making field a variable of people on server
10. Polish GUI and work on optimizing snake game
11. Add leader-board
12. Test Phase - get feedback from friends and family
13. Fix all the bugs
14. Polish Game and begin working on multiple servers
15. Create a server with no boundaries
16. Polish and Optamize
17. Test Phase - show friends and family
18. Fix all the bugs
19. Optimize and Polish
20. Pre-release - make it known on Facebook and ask for feedback from users through an attached google form
21. Fix Bugs
22. Submit Project + Release