

Criterion E: Evaluation

Evaluation of the product

- To have a simple menu: simple instructions before the game
 - +
- To have a link or a button that directs to the game from the instruction
 - +
- To have a randomly spamming snack
 - +
- To have a score at the top of the canvas
 - +
- To be able to pause the game, resume the game by pressing space
 - - there were some challenges when coding this part, even though the final code was expected to work the reality turned out that there was a bug and the client noticed it. Nevertheless, the client was not upset as the game could refresh and the ability to go through the snake made the gamer easier and drove out the need to have a pause.
- To have a 2D array - snake
 - +
- To make sure that the snake can eat the snack
 - + The snack was gone as soon as a snake would collide with it and the new snack would spawn in a different random place
- To make sure that the snake grows with each snack
 - +
- To make sure that score changes in response to snack disappearance(eating)
 - +
- To make sure that when the user presses up, left, right, down arrow key snake goes up, left, right, down
 - + the client noted that these were one of the most essential features as they were the bases of the snake game. He was satisfied with the functions that were handling these features.
- To make sure that if the snake goes up it cannot go left(same with the opposite to each other directions)
 - +
- Snake cannot go over the walls, else it is a game over
 - + The client also paid close attention to this as this is the only way to lose the game. The client said that game over conditions worked properly without any bugs.
- The snake should grow as soon as it eats the snack
 - +
- The coordinates should be at the top
 - + the client really likes this idea as the students won't be interrupted with pause and a black screen covering the position of the snake.

- The coordinates should change in response to snack coordinates change
 - This was the second major function that was implemented in the game. The function worked well, however, after seeing it he suggested the idea of putting the whole coordinate system. It is considered in improvements.
- The button New Game should reload the page
 - +
- The color of the coordinates should change
 - +
- After the game over, a banner with a game over should appear
 - +
- The snake should have a constant speed
 - +
- To make sure that snake is transparent - can go through itself(clients request)
 - + the client was pleased with this feature as right now students could play the snake game longer.
- The color of the snake should change when the score is 10
 - +
- The canvas color should change once it heats a score of 10
 - The client didn't expect the change color to be so rapid and bright, he was amazed by the design change that was happening. Although he was hoping for one color change, he liked the random colorizer more.

Recommendations for Further Development

Minor Improvements:

1. Fix the bug with the pause so that students could have more useful features.
2. Add a color change of the whole game so that more clients could be satisfied.
3. Put some sounds in the game to make the game more interesting. Moreover, the sound will support the collision and maybe some students will be able to focus on the coordinates while listening to the sound of the game.
4. Recording of the highest points can be made so that people can compete.

Major Improvements:

1. Design the snake. Instead of just different cubes animation can be made to support the game's design.
2. Create different modes with different levels or put different coordinate systems. Make the game more complex. Maybe start asking questions whenever the snake eats an apple.
3. Make a google extension that is more visible to the screen as students still don't even need a half screen to play the game.
4. The game can be fully online, people can compete in the snake game. Different competitions can involve math questions or coordinate findings.

Extensibility:

Even though minor errors were relevant to the game, the client stayed very satisfied with its quality. After leaving the game for several days, I had a meeting with the client and we discussed the game. He suggested including the following modifications:

- ❖ Speeding up the snake in a different mode so that the memory of the students could work faster.
- ❖ When the game over displays all the coordinates of the snack that were in the game.
- ❖ Still, he wanted to have a pause to conserve the number of points.

The rest of the modifications were added to the major and minor improvements sections. Further evidence can be found in the appendix.