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ECE 290

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Report Document – Vinu (snake game)

One of the three games that we created for this project is snake. Snake is the game where there is a moving snake and an apple and the objective of the game is to control the snake and eat as many apples to get as long as possible. Every time the snake eats an apple it grows by one unit and the only way to lose is if the snake hits itself.

We created the games on an eight by eight LED board, which we thought was small, so we made it so there were no walls on the sides of the board. So, if the snake goes to the top of the board it will come out the bottom and if it goes to the side then it will come out the other side.

The code was programmed so the game would play on an eight by eight 2d array and then that array would be printed onto the LED board. The code was difficult to piece together, but when we finished, the main code was broken down to three parts: Movement of the Snake, Collision Detection with the Apple, and Collision Detection with Itself.

**Movement of the Snake**

The way we coded the Movement of the Snake part was by using the “follow the leader” method. Basically the button pressed or current direction will dictate where the snake head is to go and the tail right behind it will go to where the head just was and the tail behind that will go to where the tail ahead of it just was and so on. The state diagram for this section is not too difficult.

Is button pressed?

YES

Move snake in current direction

Move snake in new direction

NO

**Collision Detection with Apple**

The coding for this section was not too difficult. Basically what happens is if the head of the snake eats the apple, then the snake length should increase by one unit and a new apple should be placed in a new random spot on the playing field. Here is the state diagram for this section.

Did snake eat apple?

YES

Nothing Happens

NO

Snake Grows by 1

New apple placed

**Collision Detection with Itself**

When coding this section we used a for loop because we thought that was the most efficient way to do it. In the loop, we would check whether or not the head of the snake would be moving into a position that was already occupied by its tail. If a collision is detected, then the game ends. Here is the state diagram for this section.

Did snake hit itself?

YES

NO

Nothing Happens

Gameover

Start new game