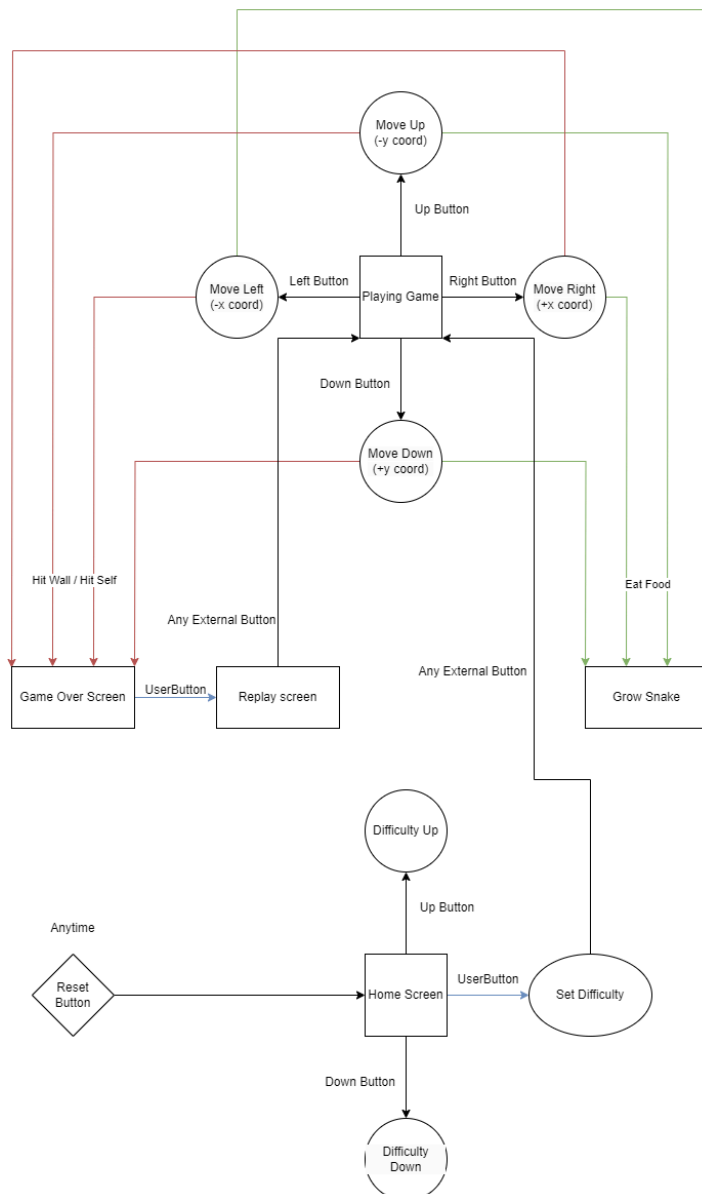


Snake Game!

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The system that I have created for my midterm project is a version of the well known game Snake Game. My system includes 4 external buttons, the user button, the reset button, a piezo buzzer, and the LCD screen. To play the game, you have to control a snake that moves around on the LCD screen using the external buttons. You are able to move up, down, left, and right. The snake starts off as a singular block, but if you eat the food on the screen it will grow, and a point will be added to your score. The snake will continue to grow as you eat the food, until you either run into yourself, or run into the walls. When this happens the game will end and your score will be saved. You can change the difficulty of the game when you first enter, which will change the speed of the snake. You can replay the game multiple times to try to beat your high score! I believe that this system uses a significant amount of course concepts, while expanding beyond it by having an interactable moving LCD screen.

Finite State Diagram:



Finite State Table:

Current State	Input	Next State	Output
Start	Up Button	Start	Move highlight to difficulty above (set according speed)
Start	Down Button	Start	Move highlight to difficulty below (set according speed)
Start	User Button	Playing	Select Difficulty
Playing	Up Button	Playing	Update snake direction (up).
Playing	Left Button	Playing	Update snake direction (left).
Playing	Right Button	Playing	Update snake direction (right).
Playing	Down Button	Playing	Update snake direction (down).
Playing	Collision With Wall	Game Over	Display "Game Over" message.
Playing	Collision With Self	Game Over	Display "Game Over" message.
Playing	Consume Food	Playing	Increase score and length of snake. Generate new food location.
Game Over	User Button	Restart	Reset game variables, clear "Game Over" message.
Restart	Up Button	Playing	Update snake direction (up).
Restart	Left Button	Playing	Update snake direction (left).
Restart	Right Button	Playing	Update snake direction (right).
Restart	Down Button	Playing	Update snake direction (down).