Project report in ET 095G: Snake Game Johannes Joujo

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I made a simple snake game that works on the mbed application board. I made three bitmaps that are equal to each other, one for the snake head, one for the tail and one for the food that makes it grow. There is a global value for score that adds one score every time the snake head eats a food and stores it on the microcontroller. When the snake head eats the food the snake grows and the food is moved to a random position. When the user has eaten 5, 10, 15, 20, 50 or 100 food the RGB light will flash green color. To move the snake the player has to use the joystick that sends signals through pin 12, 13, 14, 15, 16. When the player loses the score will be compared with a top score from a data.txt file if the new score is larger it will override the old score stored in the text file. To change the speed of the snake i used pot1. When the player loses they can play again by pressing the joystick in the center to call an interrupt that sets up the game again with the score reset.

2 Implementation analysis

At the start of the game the game over is set to false so that the player can start playing the game but when the snake head hits a wall or its tail the game over is set to true and the player lose when that happens the player can see two different things, if they beat the top score they will see their new top score at the top left hand side and a message that says “press center to play”. If they do not beat the top score they see their score that they scored during the game and the top score with a message that says “press center to play”. The player can move the snake head direction with the joystick which changes the direction of the snake. The snake head changes direction because when the user toggles the joystick up the signal on pin 15 is set to 1 while the other directions are set to 0. there is a if statement for every direction that says if example up == 1 then the snakes y-position is decreased by one and the x-position is still the same. This if statement is similar for the other joystick toggles but with slight modification that makes the snake move in the correct way, example if the joystick is toggled down then all the other directions are set to 0 and only down is set to 1, and the y-position is instead increased by one until the direction is changed or until it is game over it will continue going that direction.

There is an if statement that checks if the score is equal to 5, 10, 15, 20, 50 or 100 so that a green light can turn on for a little bit of time. When the if statement is true the light is going to be active for 2 milliseconds.

2.1

The RGB is controlled by the if statement because it is only going to turn on only if the if statement is true. When the if statement is true pin number 23 is going to activate and give us the green color.

2.2

The movement of the snake head is controlled with the toggle of the joystick. When the joystick is being toggled one pin is going to be activated and the others will not. Then the pin is activated the snake moves in the direction with the help of the if statements.

2.3

The top score is saved in a file, if the score is greater than what is in the textfile.

2.4

Pot1 decides how fast the snake is moving.

2.5

The game is restarted with the help of an interruption.

Discussion

Something that could be improved is to show the score during gameplay, because of the small lcd screen i had to prioritize away the score during game and use the RGB light to show when the user has hit certain milestones such as 5, 10, 15, 20, 50 or 100. The game is also not too responsive to inputs from the joystick at slower moving speeds. I only used interrupt to restart the game, i could perhaps use it to control the snake as well. It is a simple snake game which does not need too much memory to work.