Amr Elsisy
June 3, 2015

Custom Lab Report

For my custom lab I created a modified version of the nokia snake game, and I called it diagnake. In Diagnake the snake can't move up or down, it can only move sideways and diagonally. My snake grows when it eats food, which there is always one of placed at a random pixel on the screen. The way I setup my snake movement makes it impossible for the snake to die, and thus I added an extra rule to my game, were the game will automatically end after the snake has eaten five times. One last modification I added to my game is that my food has eyes that can only see up and down, and therefore will relocate if it sees that the snake is right on top of it, or right below it.

Rules:
➔ Snake can only move left, right, and diagonal
➔ To change direction from left to right, or right to left, the snake has to be moving horizontally. Cant change direction while the snake is moving diagonally
➔ If you are moving left diagonally, your only possible next move would be left horizontally, same applies for when you are moving right diagonally.
➔ Game ends after you eat five foods
➔ There are no borders, and therefore its impossible for the snake to kill it self

Controls:
➔ four direction buttons: up, down, right, left (up/down would move you up/down diagonally)
➔ Boost button to speed up the snake
➔ Pause button
➔ Reset button (Same as the boost button, becomes reset button if you are in the paused state)

Components:
➔ Nokia 5110 lcd screen
➔ 6 buttons
➔ Speaker play a tone
➔ Atmega1284 controller

Link to demo video:
-> https://youtu.be/yx3FZWPV85o

Link to each source file:

➔ PCD8544.c :
https://drive.google.com/drive/folders/0B4wZb2BJ8NvaflJuTFpkeEtveHo1VDY2RmRWWXhvMHE0cWo4ZzdTc21SaWozdTRyb01hOUk

➔ PCD8544.h:
https://drive.google.com/drive/folders/0B4wZb2BJ8NvaflJuTFpkeEtveH
o1VDY2RmRWWXhvMHE0cWo4ZzdTc21SaWozdTRyb01hOUk

PCD Files: Driver for Nokia5110 LCD screen

➔ Timer.h:
https://drive.google.com/drive/folders/0B4wZb2BJ8NvaflJuTFpkeEtveH
o1VDY2RmRWWXhvMHE0cWo4ZzdTc21SaWozdTRyb01hOUk

Timer file: To help run my state machines on a synchronous clock

➔ Bit.h:
https://drive.google.com/drive/folders/0B4wZb2BJ8NvaflJuTFpkeEtveH
o1VDY2RmRWWXhvMHE0cWo4ZzdTc21SaWozdTRyb01hOUk

Bit file: To support the Getbit and Setbit functions

➔ Diagnake.c:
https://drive.google.com/drive/folders/0B4wZb2BJ8NvaflJuTFpkeEtveH
o1VDY2RmRWWXhvMHE0cWo4ZzdTc21SaWozdTRyb01hOUk

Diagnake file: The actual source code for my game

Connection to the microcontroller: