Hangman

Custom Project Final Report

Spring 2019
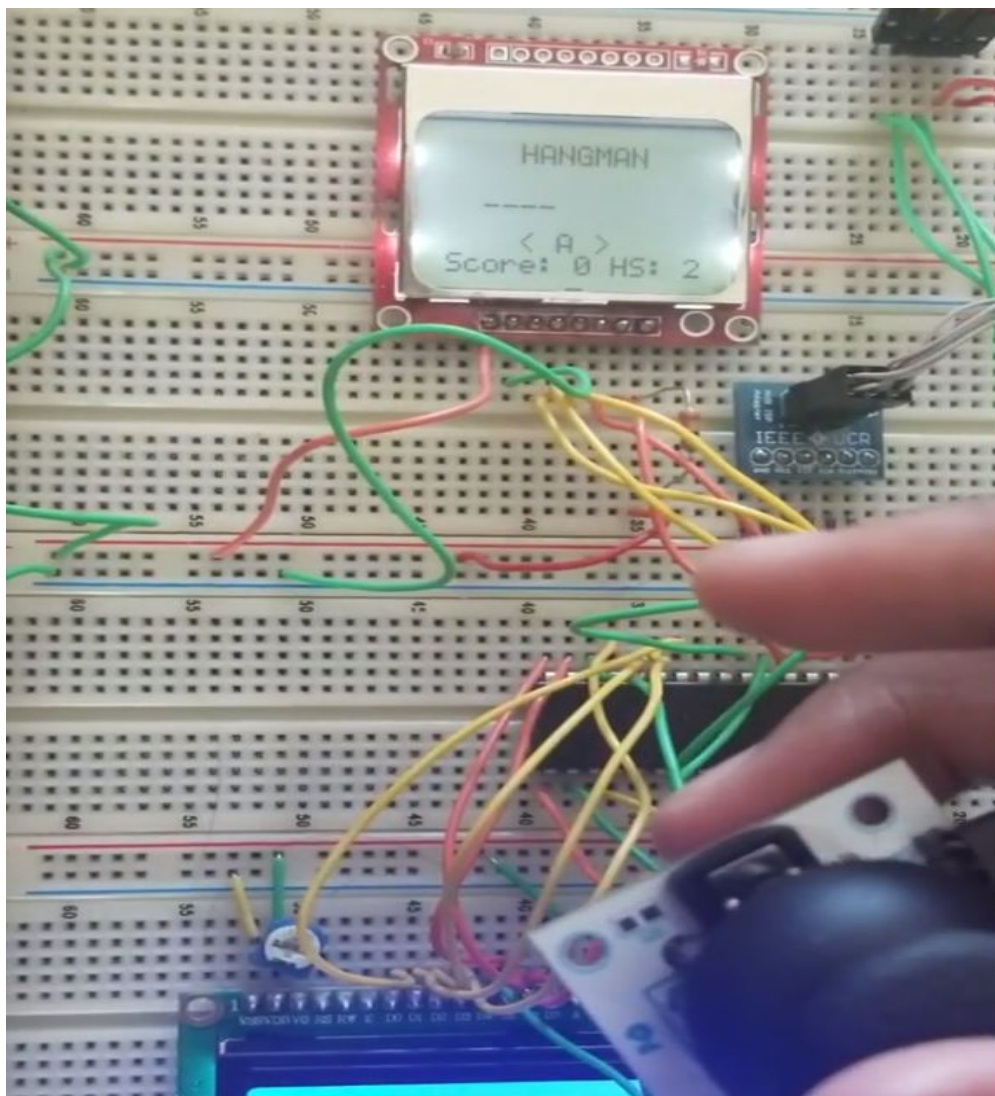
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Introduction

I created a simple game of hangman. The user scrolls through the letters of the alphabet using the up direction(left arrow) and right direction(right arrow) on the joystick. In order to submit their letter, they pull down on the joystick. If they put a letter that exists in the word it displays on the underscores, otherwise it starts to build a hangman. If the hangman builds completely(10 wrong guesses), the game gives a game over screen and then gets a new word for the user.

Hardware

Parts List

The hardware that was used in this design is listed below. The equipment that was not taught in this course has been bolded.

- ATMega1284p microcontroller
- Nokia 5110 LCD
- **Joystick**
- 16x2 LCD Screen

Pinout

Software

- io.c - CS120B src file for 16x2 LCD
- main.cpp - main file including game logic
- LCD.cpp - src file for interfacing Nokia 5110 LCD
- ADC_C.c - Used to get input from joystick
- other headers in includes(i.e. hangmanOne.h,hangmanTwo.h,etc) - used for bitmaps to display on Nokia 5110 LCD

Complexities

Completed Complexities(3 & 1/2):

- Integrating and calibrating the joystick
- Using EEPROM to save the high score (1/2)
- Interfacing a Nokia 5110 LCD
- Game Logic

Incomplete complexities(1/2):

- 4 bit mode for 16x2 LCD

Youtube Link

- https://youtu.be/pd5GwuXIK1o

Known Bugs and Shortcomings

- If you are at letter 'A' in the letter array, you cannot loop around to letter 'Z', this is likely because I'm not updating the index for the letter array properly.

Future work

- If I was to work on this project I would implement a menu in which the user could choose 3,4,5,etc length words to make the game more uniform.

Acknowledgements:

- 2013 Radu Motisan from pocketmagic.com- I used his Nokia 5110 LCD header and src files in order to display bitmaps to my Nokia 5110 LCD.