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Lab: Lab\_03

Class: ECET 30903

Date:1/15/2019 Due:1/21/2019 11:59 PM

1. Understand the Program’s Purpose
   1. State the problem/purpose:

The problem/purpose of this lab is creating a physical way of getting a keypad to understand how to be pressed and learning the coding practice for a basic 4 by 4 Matrix Keypad and using parallel arrays. As well as integrating the simulation to a real keypress.

* 1. Then Identify
     + Inputs: List the hardware input(s) needed?
       - A Keypress on the 4x4 Matrix Keypad
     + Process: Simples steps needed to preform program logic
       - Find that there is a keypress
       - Go through the functions to find exactly which key if any have been pressed
       - Display out on the LEDs
     + Outputs: List the hardware output(s) needed?
       - Outputs will be the dedicated from the Keypress onto the LEDs

1. Design/Assign the hardware configuration. (For embedded system design)
   * + What hardware I/Os are needed? Identify each I/O by hardware name.
       - 4x4 Matrix Keypad & 8-bit LEDs
         * Assign I/O hardware pin/port names and memory mapped Port address:
       - 4x4 Matrix Keypad are controlled by PORTA at bit 0-7
       - 8-bit LEDs are controlled by PORTC at memory mapped address 0x04
         * Set the I/O’s data directional register accordingly. Is the I/O used as an input or an output?
       - Keypad is used as inputs: since all I/Os default as inputs you do not need to set the corresponding Data directional register.
       - LEDs are used as outputs: 0-7 bits of PORTC are used for the LEDs. Meaning we need to set the bits as outputs DDRC =0xFF;
2. Design the Program Logic:

Turn the stepper Motor

* 1. Develop an algorithm pseudo code for your program:

Pseudo Code Here

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* + - * Setting a Keypad press in the main function
      * Calling the DetectedNumericKey & CheckAsciid functions.
      * Each function is in the Keypad.c file that will then work through
      * The DetectedNumericKey function will grab the detectedKeyPress array and find when a key has been pressed. Search for that keypress numerical array number in the numericVal. If cannot find returns 0xFF.
      * The CheckAscii function will do the same thing by grabbing from the detectedKeyPress array and find when a key has been pressed. Search for that keypress within its ascii array in the asciiVal. If it can not find results it too will return 0xFF.
      * The Final result will be passed to a Variable as well as a passing variable going between blocks.

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* 1. Flowchart the program’s algorithm:

