

Assignment #5 – Serial Output and LCDs

Objectives

- Students will be able to output text to a serial LCD.
- Students will be able to output variable data to a serial LCD.

Goal

Use a 2 x 16 LCD to display text, user defined characters, and numbers from variables.

Materials

- Breadboard – wire w/ 5V power regulator, switch, and LED
- Jumpers
- Solid copper wire
- Wire strippers
- Non-serrated needle nose pliers
- 9 V battery clip
- PIC18F45K22
- 9 V battery
- Computer w/ MPLAB XC8
- PICkit™ 3
- Newhaven 5V Serial LCD
- Documentation for the LCD - <http://www.newhavendisplay.com/specs/NHD-0216K3Z-NSW-BBW-V3.pdf>

Directions

- You will be documenting your work in your lab notebook.
- Draw the schematic in your lab notebook of the circuit that you will build to connect the LCD to your breadboard with the PIC18F45K22.
- Build the circuit that you drew.
- Task 1: Make the LCD display, “Hello World!” Show Mr. Evans.
- Task 2: Make the LCD count from 1 to 100 and then stop. Previous characters cannot remain on the screen and the screen cannot flash. Show Mr. Evans.
- Task 3: Make the LCD display on the first line, “Counting to 255” and on the next line display “counter =” and count from 0 to 100. The screen cannot flash. Show Mr. Evans.
- Task 4: Make your own character(s) and display it on the LCD. The screen cannot flash. Show Mr. Evans
- Task 5 (if time permits): Make a short line segment chase around the full display in a “circular path”.
- Include your code in your lab notebook

Grading

- When functioning as planned, have Mr. Evans inspect.
- Task 1: _____ (5 points)
- Task 2: _____ (5 points)
- Wiring: _____ (1 point)
- Efficiency of code: _____ (5 points)
- Lab notebook: _____ (10 points)
- Task 3: _____ (5 points)
- Task 4: _____ (5 points)
- Turn this sheet in with your notebooks together.