Instrumentation & Control Design Project

Aim

Using Proteus, to design a microcontroller circuit to read the value of an analogue input signal and convert it to a digital signal so that the result can be displayed on an HD44780 LCD screen. Figure 1 shows a circuit that may be used to display messages on an HD44780 LCD screen based upon the value read on pin A0.

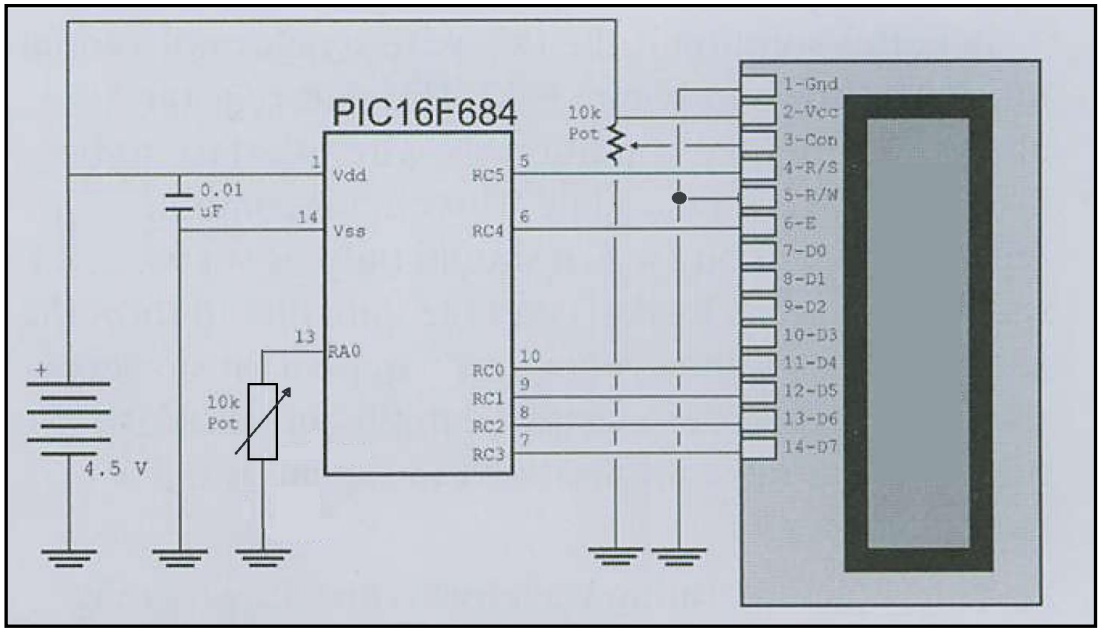

Figure 1: PC16F684 microcontroller A to D LCD (4-bit) Circuit

Task

1. **On Proteus, using the PIC16F684 (or the PIC16F88) design a circuit that will read the value of a variable resistor and display messages on the LCD screen depending on the resistance.**

2. **Replace the variable resistor with a resistive-based sensor in a potential divider circuit as shown in Figure 2.**

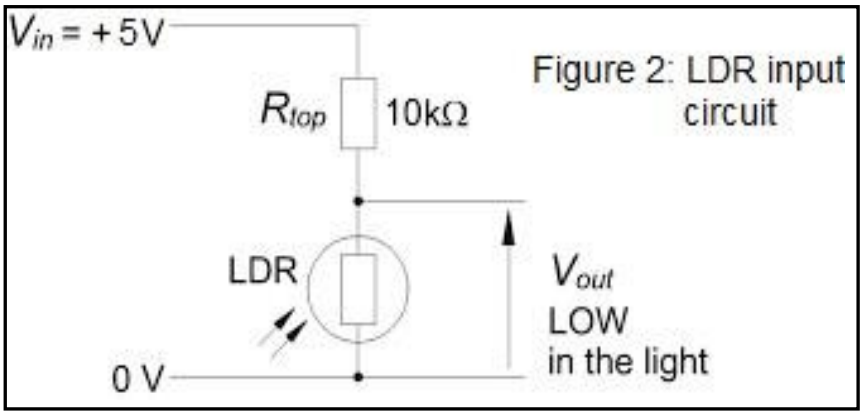

Figure 2: LDR input circuit

3. **Display on the LCD screen messages depending upon the level of light.**

4. **Add other inputs and output as you feel necessary to the project, the greater the complexity then the greater the marks.**

Marks will be awarded for programming of PIC, fully working project, additional working features on project such as more inputs and outputs etc. Marks will be deducted for failure to work and handing in something that shows little more then I give you.

This assessment is worth 60% of the total module mark.

The project must be complete and submitted through Moodle, you will submit:

- **PIC code listing as text file with notes; by 3rd of June 2020.**
- **Proteus project in project format and Workspace file;**
- **A single-page report (one-side) on the development of the design, what is does, what problems you faced, how you overcame problems. More importantly what you have learned from this experience.**