

QIP Program on ‘Microcontroller Architectures and Hands-on-sessions on Embedded Systems

Day-2, June 18, 2019 (Tuesday)

LCD INTERFACING with PIC Microcontroller

Problem Statement:

- a) Interface 16x2 LCD (alpha-numeric) with PIC18F4550 and display “Your Name in CAPS” in the first row and “Today’s Date” in the second row of the LCD.
- b) Let the “**part-a**” be displayed on 16x2 LCD. Now, read the updated data from the 4-bit DIP switch on the Aurum board and superimpose the updated 4-bit data in an integer format (0-15) after the date displayed on the second row on 16x2 LCD (Keep 2 spaces between Date and the updated data).

Notes on LCD interfacing:

Part a) Configuration of PORTS:-

- Pins 0, 1 and 2 of PORTE are connected to RS (register select), RW (read/write) and EN (enable) pins of LCD respectively.
- PORTD is connected to data pins of LCD.
- PORTE should be configured as digital I/O by setting proper bits in ADCON1 register (refer to data-sheet for details of ADCON1 register.)

*** PORTD and PORTE should be configured as output lines using corresponding TRIS registers.**

Part b) Steps involved in sending data or commands to LCD module:-

Sending commands to LCD:-

Perform steps as follows:-

RS = 0;

RW = 0;

PORTD = command to be sent (for example 0x80)

Set EN pin

Give some delay

Clear EN pin

Sending data to LCD:-

Perform steps as follows:-

RS = 1;

RW = 0;

PORTD = data to be sent (for example 0x41)

Set EN pin

Give some delay

Clear EN pin

Part c) Steps involved in initializing the LCD:-

Common way to initialize LCD:-

Perform the steps as follows:-

Send command 0x38. This configures LCD in 8-bit mode.

Send command 0x01. This will clear the LCD screen.

Send command 0x0C. This will switch the cursor OFF.

Send command 0x80. This will put the cursor position to first line at 0th point of LCD screen, i.e. top left corner.

Important point: Give sufficient delays between successive commands to LCD.

***for more details, please refer to “PIC18F4550_overview” document and “HD44780_LCD_data-sheet”.**