## Lab 07: LCD Interfacing

#### Objective:

- 1. To interface the LCD with 8051 in 8 bit mode
- Code 8051 for display of alphabets on LCD

#### Introduction:

The LCD available on the 8051 development board is 2x16 LCD which means that this LCD can display 16 characters in a line and there are 2 lines. So maximum 32 characters can be displayed on the 16x2 LCD at a time.

Each character is displayed in a 5x7 pixel matrix. There are two registers in an LCD:

1) Data Register:

Data register contains the character to be displayed on the LCD. Data is the ASCII value of the character to be displayed

2) Command / Instruction Register:

Stores the command / instructions given to the LCD. A command or instruction performs the predefined task for the LCD. Some of the predefined tasks are clearing the screen, Moving / setting cursor, scrolling the display etc. Some of the commands / instructions are given in the Table 2.

Table 2: Pin Description of 16x2 LCD

PIN	SYMBOL	I/O	DESCRIPTION
1	V	-	Power supply (GND)
2	Vec	-	Power supply (+5V)
3	Ves	975	Contrast Adjustment
4	R:S	1	0 = Select command register
			1 = Select data register
5	R/W	1	0 = Write to LCD
			1 = Read from LCD
6	E	1	A high to low pulse (minimum 450ns wide) is given when data is sent to data pins
7	D80	1/0	Data bit line 0 (LSB)
8	DB1	I/O	Data bit line 1
9	D82	I/O	Data bit line 2
10	DB3	MO.	Data bit line 3
11	D84	1/0	Data bit line 4
12	D85	I/O	Data bit line 5
13	D86	I/O	Data bit line 6
1.4	D87	I/O	Data bit line 7 (MSB)
1.5	LED+	-	Backlight V <sub>cc</sub> +5V
16	LED-	100	Backlight GND 0V

# **Lab Manual For 8051 Microcontroller**

**Yi-Tong Ma** 

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