RCET 3375 Experiment 3

PIC16F883 Familiarization

Goals: The student will be able to:

- Read keyboard and display the key in the dot-matrix display.
- Describe the functions of the CPU registers (SP, PC, and Stack) during subroutine calls.
- Explain the function and operation of the instructions used in their programs.

Background Information
- Install MPLAB IDE X from Moodle.
- Study: PIC16F883 datasheet
- Study figure 1-1, pg. 18
- Read sections 2-1, 2-3, 3-4, 3-5, 14-0, 14-1, 14-2, 14-9, 15-0, 15-1, 15-2, 17-0, 17-1
- Download datasheet DLG7137 for the Dot matrix display

NOTE: for this lab **ONE** of your programs should be entered in your lab notebook in the following format. Include the assembly and machine codes. Computer printouts may be used if permanently attached to lab book. They must be clean cut with no folds.

Memory Location	Mnemonic	Operand	14 bit Opcode	Comments
0005	MOVLW	0XA3	11 0000 1010 0011	MOVE LITERAL INTO REGISTOR W
0006	MOVWF	0X20	00 0000 1010 0000	MOVE REGISTOR W INTO REGISTOR LOCATION 20
0007	DECFSZ	0X20,1	00 1011 1010 0000	DECREASE REGISTOR LOCATION 20 BY ONE AND PLACE THE NEW VALUE IN REGISTOR 20
0008	GOTO	0X07	10 1000 0000 0111	IF REGISTOR 20 NOT EQUAL TO ZERO GOTO MEMORY LOCATION 0007
0009	NOP		00 0000 0000 0000	DO NOTHING
000A				
000B				

No scanned copied or downloaded images may be used for the PIC micro controller information. Only your original may be used. Include Current and voltage loads on all digital IC's for all connections. Include flow charts for all programs. Include SFR tables for all those that are used during the lab and which bits are set and cleared. Be able to explain why.

RCET 3375 Experiment 3

Objectives:

** Remember to complete and document output loading calculations for **all** circuits.

1. Write a program that will have 8 inputs from dipswitches and display the corresponding number of the input on the dot matrix display. If no switch is pressed display a 0. If port B 1 is pressed then display a 1 and so on. Have the highest number have priority. Repeat this in an endless loop. Use port C for the display output and port B for the dipswitches.

2. Write a program that uses a keypad instead of dipswitches for the inputs and displays the corresponding key on the display.

3. Be prepared to explain (in detail) the purpose and operation of each instruction every machine cycle, which is used in any of your programs.

4. Write a procedure on how to make port B bit 0 and input using the block diagram for that pin and how to make port B bit 1 an output. (step by step)