FACULTY OF ENGINEERING AND IT

COMPUTER SYSTEMS ENGINEERING DEPARTMENT

Embedded Systems Lab Report

<7-Segment>

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Experiment Name:	7-Segment
Experiment No.:	3
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1. OBJECTIVES

This experiment aims to:

1. Learn about the 7-segment display board and how to operate it.
2. Learn how to connect the 7-segment display board to the PIC micro multiprogrammer board.
3. Use of external hardware interrupts in the PIC18.

2. INTRODUCTION

The 7-segment display, also written as “seven segment display” consists of seven LEDs arranged in a rectangular fashion. Each of the seven LEDs is called a segment because when illuminated the segment forms part of a numerical digit both Decimal and Hex to be displayed. As each LED has two connecting pins, one called the Anode and the other called the Cathode. An additional 8th LED is sometimes used within the same package thus allowing the indication of a decimal point, (DP) when two or more 7-segment displays are connected together to display numbers greater than ten.

This board provides a quad seven-segment common anode display, with an option to operate off only one port using links. This display requires two E-blocks ports to operate all four displays. If only one seven segment display is needed then only one E-block port is required and a jumper link of the board can be used to permanently engage one of the display digits.

3. COMPONENTS REQUIRED:

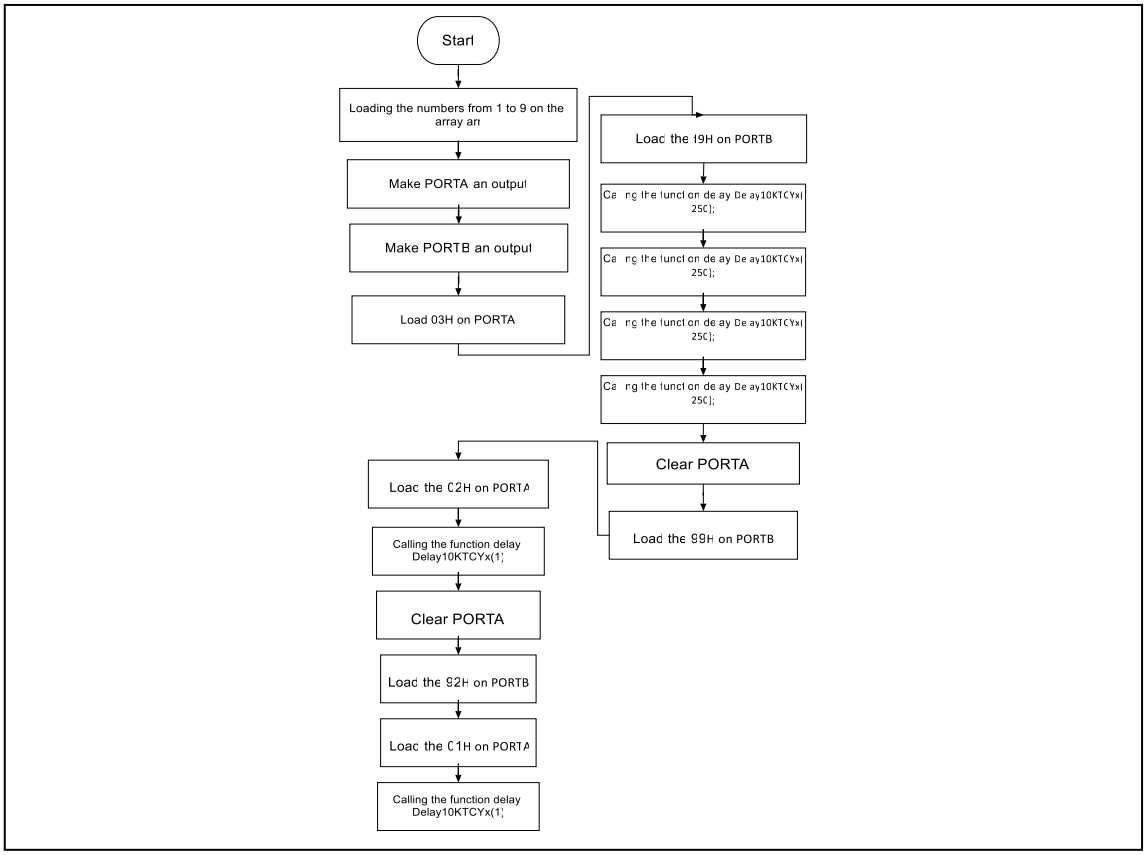
ID	Component name	Amount
1	PIC micro multiprogrammer board	1
2	7-segment display board	1
3	Switch board	1
4	Power source	1
5	Wires	2
6	MPLAB IDE Program	1
7	MLoader	1

4. TASKS

1. display the number 11 on the seven segment displays for two seconds, then display the number 54.

2. display the repeating sequence 10, 11 ,12, ... 19, 10, 11, ... etc. Use a 0.5 second delay between the steps. Whenever SW2 is pressed, the sequence is restarted from 10 (Use INT2).

5. FLOWCHART (USE ANY DIAGRAM APP LIKE DIAGRAMS.NET)



6. CODES

6.1. Task 1

```
Void main( ){
Char arr[ ]={0xc0 , 0xf9 , 0xa4 , 0xb0 , 0x99 , 0x92, 0x82 , 0xf8 , 0x80 , 0x98};
TRISA=0X00;
TRISB=0X00;
While(1){
PORTA= 0x03;
PORTB =arr[1];
Delay10KTCYx(250);
Delay10KTCYx(250);
Delay10KTCYx(250);
Delay10KTCYx(250);
While(1){
PORTA= 0x00;
PORTB =arr[4];
PORTA=0x02;
Delay10KTCYx(1);
PORTA =0x00;
PORTB =arr[5];
PORTA =0x01;
Delay10KTCYx(1);
}
}
}
```

6.2. Task 2

7. PROCEDURES

8. DISCUSSIONS AND CONCLUSIONS