Assignment 1. Writeup.

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a) Explain the registers PORTx, LATx, TRISx

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The 40 pin PIC18455O has five ports. They are port A, PORTB, PORTC, PORT D and PORTE. These can be used for input-outputs. In addition each port has of some functions such as ADC, timers, interupts etc. Here PORT A has 7 pins, PORT B and PORT C has 7 pins and port D has 3 pins.
Each port has 3 SFR's associated with it. They are PORTx, TRISx, LATx, TRIS stands for tristate and LAT for latch.

PORTx:

The register is used to read / write data. Writing 1s to PORTx will make the corresponding PORTx pins high and writing 0's to port x will make the corresponding PORTx pin low. There are 5 portx registers.

PORT A	F80H	Memory locations.
PORT B	F81H	
PORT C	F82H	
PORT D	F83H	
PORT E	F84H	

TRISx:

These registers are used to configure respective PORTx as input/output. They are known as tristate or data direction registers. Writing is to TRISx will make corresponding PORTx pins as inputs. Similarily writing 0's to TRISx will make corresponding PORTx pins as output.

TRISA	F92H	Memory Locations
TRISB	F93H	
TRISC	F94H	
TRISD	F95H	
TRISE	F96H	

LATx:

These are part latch registers, when data is written to PORTx registers, it is first stored in LATx registers then copied to the PORTx. If TRISx register is not 0, data is not copied to PORTx but remains in LATx, when data is read from PORT, it is first copied to LATx and then WREG. If TRISx is not 0xFF, data is not copied from PORTx but from LATx

LAT A	F89H	Memory Location
LAT B	F8AH	
LAT C	F8BH	
LAT D	F8CH	
LAT E	F8DH	

b] Write a note on Embedded C Programming ?

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1) Embedded C is an extension to standard 'C' programming language with additional features like addressing i/o, multiple, memory, addressing fixed point arthematic etc.

2) Both C and embedded C are ISO standards that have almost same, syntax, datatypes, functions etc.

3) C programming language is generally use for developing desktop applications, whereas, embedded is used in the development of microcontroller based applications.

Structure of an Embedded C program.

```
# include                    /* / Preprocessor
# define                        directives * /

Global variables
function declarations
main () {
  local variable
  function calls              // or infinite loops
  statement

}
Functions definations.
```