Lab-7
I/O port programming of PIC microcontroller using C language

Objective:

In this lab students will learn

- About the significance of programming in C language.
- How to create and simulate first project in C on MPLAB software?

Theory

Why program PIC in C language?

The following are some advantages for writing program in C than in assembly language.

- It is easier and less time consuming to write in C than in assembly.
- C is easier to modify and update.
- You can use code available in function libraries.
- C code is portable to other microcontrollers with little or no modifications.

Data types used in C

Data Type	Size in Bits	Data Range/Usage
unsigned char	8-bit	0 to 255
char	8-bit	–128 to +127
unsigned int	16-bit	0 to 65,535
int	16-bit	–32,768 to +32,767
unsigned short	16-bit	0 to 65,535
short	16-bit	–32,768 to +32,767
unsigned short long	24-bit	0 to 16,777,215
short long	24-bit	–8,388,608 to +8,388,607
unsigned long	32-bit	0 to 4,294,967,295
long	32-bit	–2,147,483,648 to +2,147,483,648

Lab Exercise

Write down complete steps for creating a project on MPLAB in C language.   **[5]**

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Write a C18 program to send hex values for ASCII characters of 0,1,2,3,4,5,A,B,C, and D to port B. Also observe the output. **[3]**

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Write a C18 program to toggle all the bits of PORTC continuously. Show simulations on PROTEUS. **[4]**

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Write a C18 program to toggle all the bits of PORTC 30000 times. Show simulations on PROTEUS. **[5]**

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**Write a C18 program to toggle all the bits of PORTC 30000 times with 250msec delay.
Show simulations on PROTEUS.**   **[5]**

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**Write a C18 program to monitor bit PC5. If it is low, send AAH to PORTD; otherwise send
55H to PORTD.**   **[5]**

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Write a C18 program to get the status of bit RB0 and send it to RC7 continuously.   **[2]**

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**Write a C18 program to toggle all the bits of PORTC continuously using inverting operator.
Show simulations on PROTEUS.**   **[5]**

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Conclusion   [5]

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