**1st Lab - General Purpose Input/Output Based LED Blinking Operation Using 8051 Microcontroller**

**Required Software:**

1. Keil (C51)
2. Proteus

**Implementation:**

**Keil:**

Open Keil µVision → Go to Project → New µVision Project → Set a project name and save it → In the Select Device for Target window, search and select AT89C51 → Click OK → When prompted, click No → In Project window, right-click Source Group 1 under Target 1 → Select Add New Item to Group 'Source Group 1' → Create and save a new C file → Write the code below and save:

**Source Code:**

#include <reg52.h>

sbit LED = P2 ^ 1;

void Delay();

void main()

{

    while (1)

    {

        LED = 0;

        Delay();

        LED = 1;

        Delay();

    }

}

void Delay()

{

    int i, j;

    for (i = 0; i < 10; i++)

    {

        for (j = 0; j < 10000; j++)

        {}

    }

}

→ Right-click Source Group 1 → Add Existing Files to Group → Select the saved .c file → Click Add and Close → Right-click Target 1 → Options for Target → Go to Output tab → Check "Create Hex File" → Go to Target tab → Set Xtal (MHz) to 11.0592 → Click OK → Press F7 to build the project → If there are no errors or warnings, your code is okay.

**Proteus:**

Open Proteus → Click New Project → Set project name → Keep clicking Next until Finish button appears → Click Finish → From the left sidebar, select Component Mode → Click P → Search and add AT89C51 and LED → Place all components on the graph → From the sidebar, select Terminals Mode → Select Ground → Place on the graph → Connect pin 22 of AT89C51 to LED anode (long leg) → Connect LED cathode to Ground → Double-click AT89C51 → Set clock frequency to 11.0592MHz → In Program File, browse and select the generated .hex file → Click OK → Click the Play button → If the LED blinks, your circuit and code are correct → Save the project.

**Diagram:**

