

INDIAN INSTITUTE OF TECHNOLOGY PATNA

EC3101: MICROCONTROLLER AND
EMBEDDED SYSTEM LAB



Experiment No: 01

Submitted by :

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Aim:

Interface 8 LEDs with a PIC16F84A microcontroller and control their blinking pattern using MikroC programming.

Apparatus :

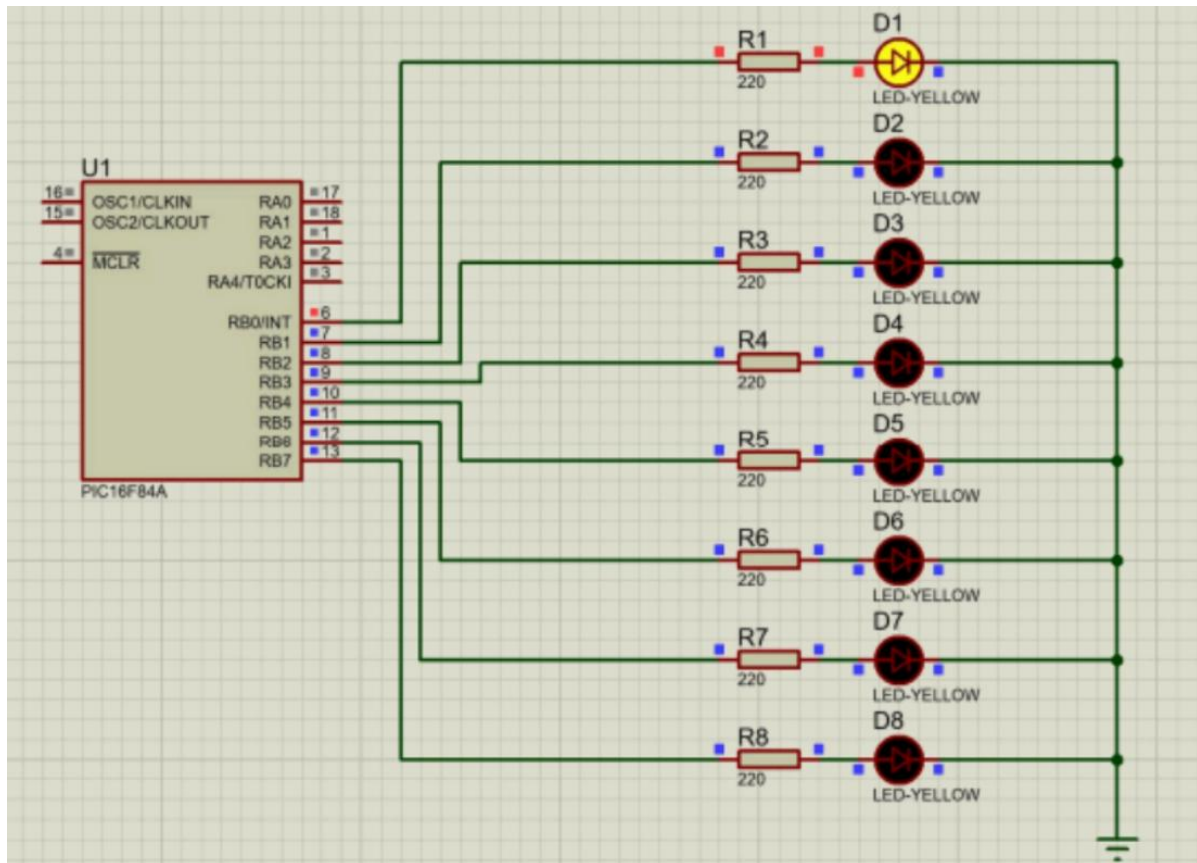
PIC16F84A (Microcontroller), LED, resistance, Proteus 8 Professional Software (for simulation), MikroC PRO for PIC Compiler

THEORY :

A Light Emitting Diode (LED) is a semiconductor device that emits visible light when an electric current passes through it. It is a special type of diode made from compound semiconductors such as gallium arsenide (GaAs), gallium phosphide (GaP), or gallium arsenide phosphide (GaAsP). When forward biased, electrons from the n-type region recombine with holes from the p-type region, releasing energy in the form of photons (light).

Working:

1. PORTB of PIC16F84A is configured as output.
2. LEDs are connected to PORTB pins through resistors.
3. Different binary values are sent to PORTB with a time delay to create LED patterns.



CODE A: Blinking of a LED light:

```
void main() {
    TRISB =
    0x00;

    PORTB =
    0x00;

    while(1) {
        PORTB = 0b00000001;
        Delay_ms(250);
        PORTB = 0b00000000;
        Delay_ms(250);
    }
}
```

Code B: Blinking of 8 LED sequence using loop:

```
void main() {  
    TRISB = 0x00;  
    PORTB = 0x00;  
    while(1) {  
        unsigned int x=0;  
        for(x=0;x<8;x++) {  
            PORTB=(1<<x);  
            delay_ms(100);  
        }  
    }  
}
```

Results:

The LEDs were successfully interfaced with the PIC16F84A. 1 In Program 2, LEDs turned ON one by one in a sequence (left to right). 2 In Program 1, a single LED blinked continuously with 250 ms delay.