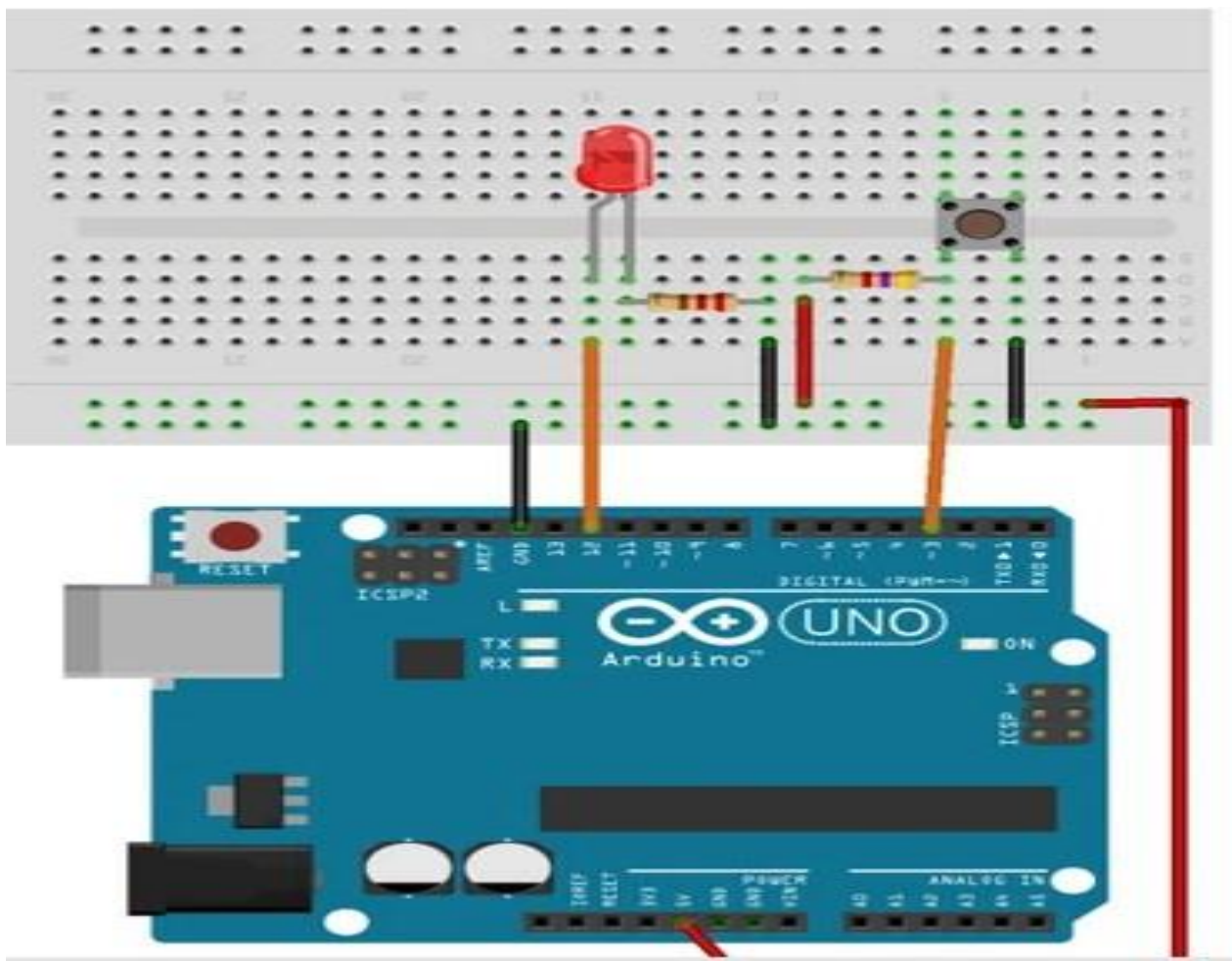|	**Marwadi University** **Faculty of Technology** **Department of Information and Communication Technology**
Subject: Foundation Skills in Sensor Interfacing (01CT11032)	**Aim:** Connect the LED with one of the GPIO pin and blink it by taking input from push button.
Experiment No: 01	**Date:16-12-21** · **Enrolment No: 92100133020**

Apparatus:

Arduino UNO, LED, Resistor, USB cable, Push button, PC.

Theory:

A push-button is **a simple switch mechanism to control some aspect of a machine or a process**. Buttons are typically made out of hard material, usually plastic or metal.

Interfacing Diagram:

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Code:

```
int duty_cycle_value = 1;

void setup() {

 // put your setup code here, to run once:

pinMode (9,OUTPUT);

}


void loop() {

 // put your main code here, to run repeatedly:

while(duty_cycle_value<300)

{

 analogWrite(9,duty_cycle_value);

 delay(10);

 duty_cycle_value++;

}

}
```
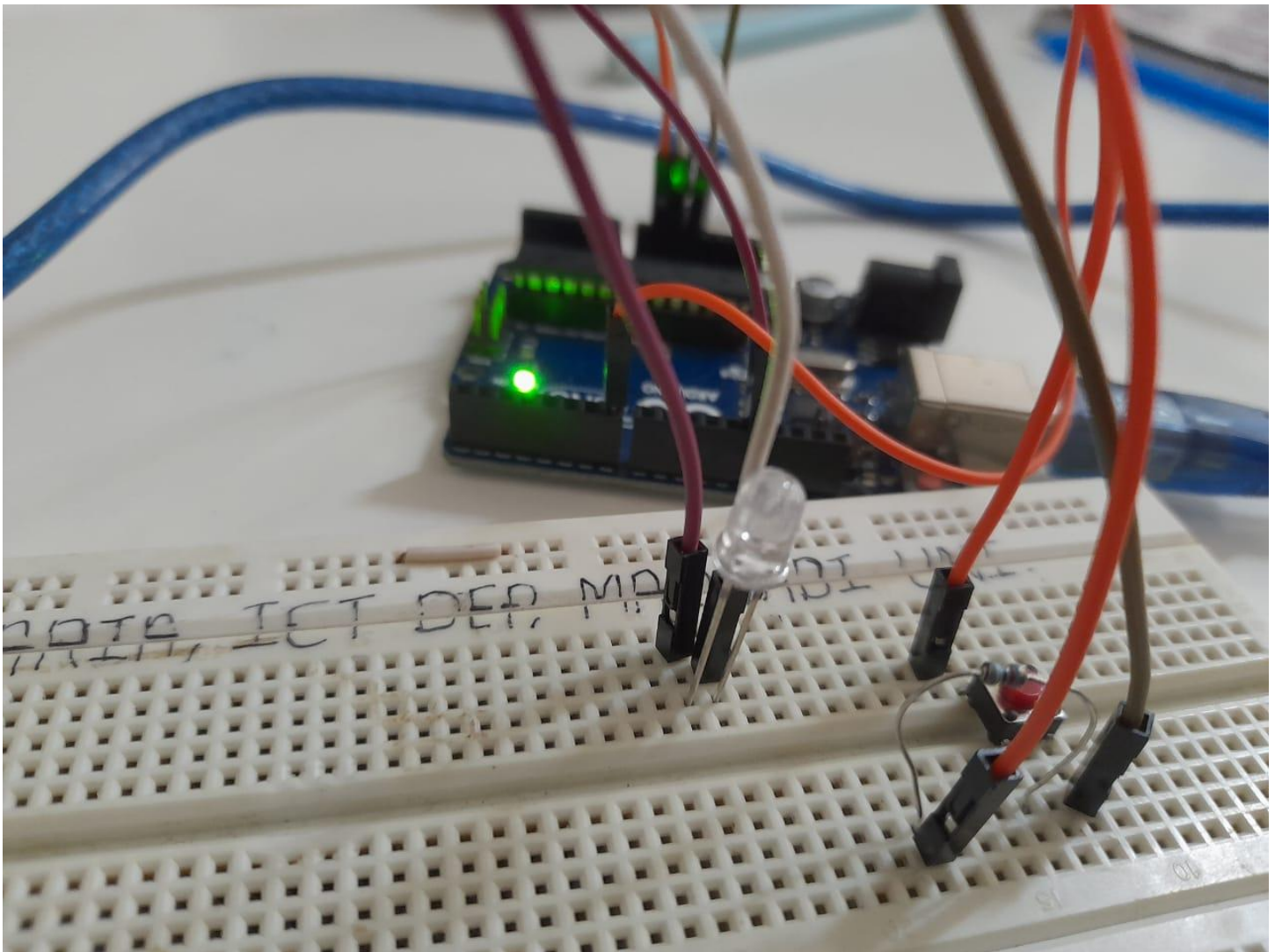
	Marwadi University **Faculty of Technology** **Department of Information and Communication Technology**	
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Output:

Observations:

If we made pull-down configuration when the button is pressed Led turns ON until we release it. As the code is written in such a way when that button state is high then print that "button is pressed" otherwise button state is low then print "button is not pressed" for pull-down configuration. And for pull-up configuration it is

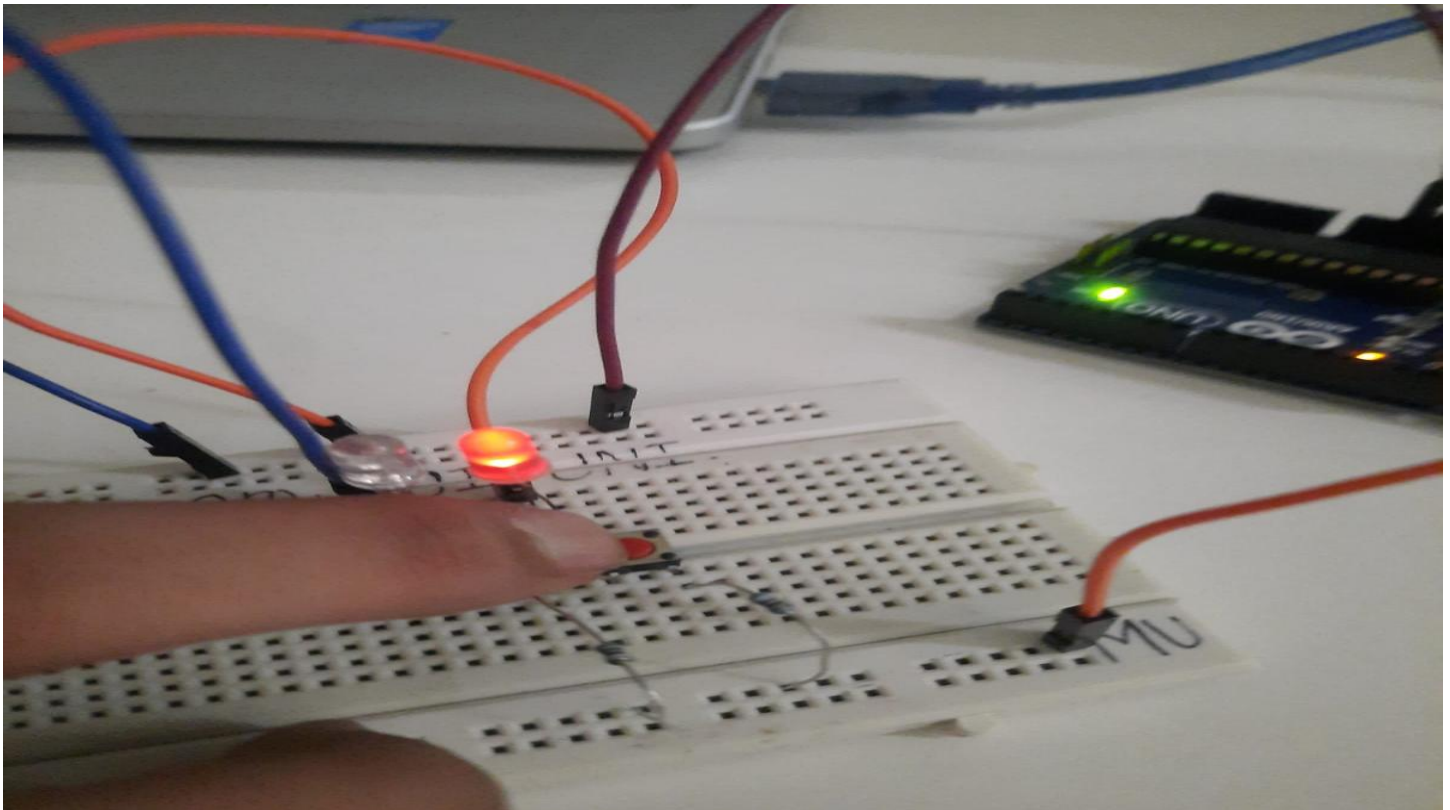|	**Marwadi University** **Faculty of Technology** **Department of Information and Communication Technology**	
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completely opposite. So, when button is not pressed LED is on and when button is pressed then LED will be off.

Conclusion:

From this experiment I learnt how push button works as switch. Designing this switch by using code or different if-else statements. Also learnt about pull-up and pull-down configuration of resistor and its uses.
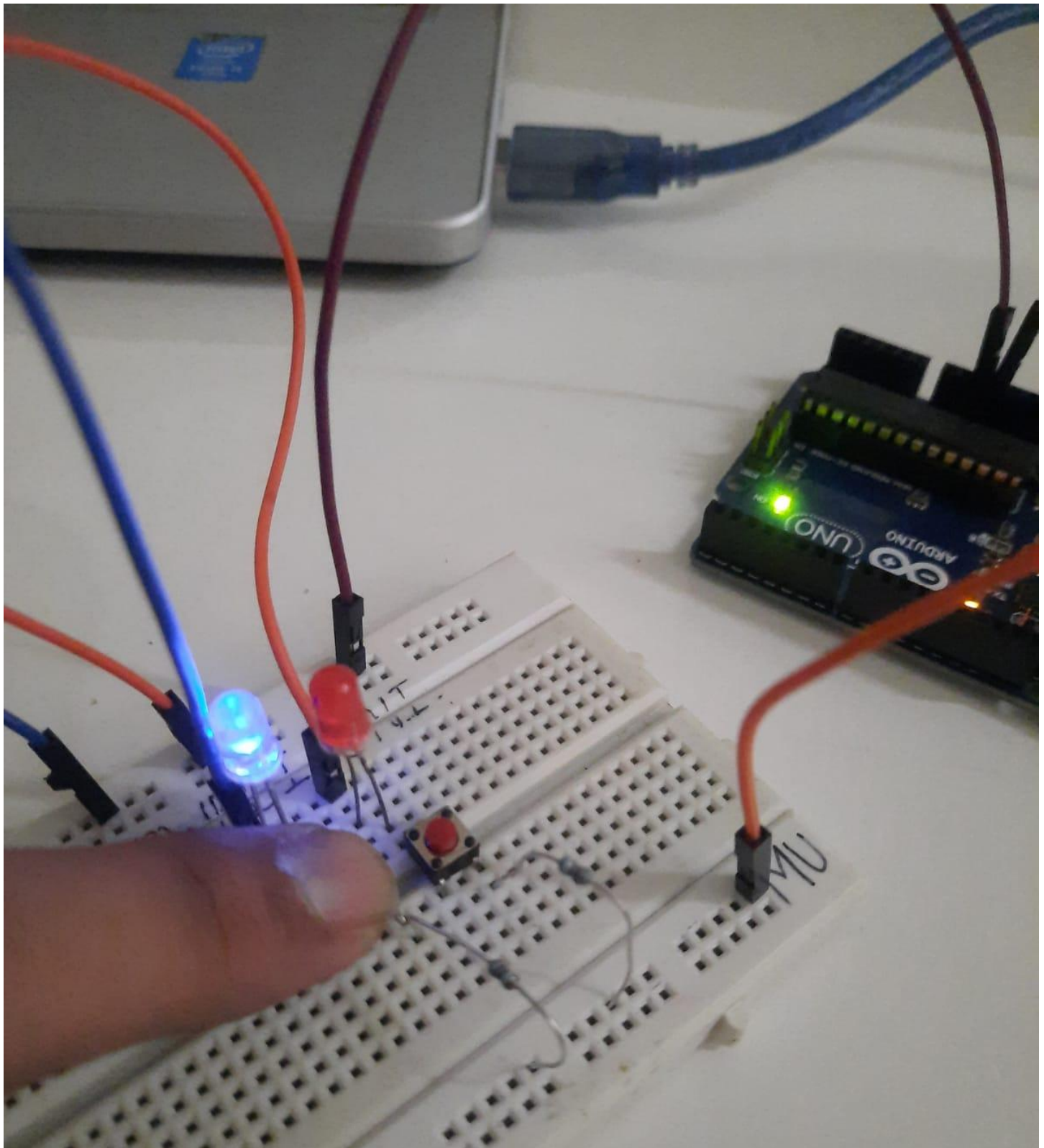
Post Session Exercise:

Task 1 : Take two buttons and two LED's, by pressing one push button led1 should blink and by pressing second push button led2 should blink

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Code:

```
#include <stdio.h>
#include <stdlib.h>
const int BUTTON1 = 2;
const int BUTTON2 = 4;
const int LED1 = 8;
const int LED2 = 12;
int BUTTONstate1 = 0;
int BUTTONstate2 = 0;

void setup()
{
pinMode(BUTTON1, INPUT);
pinMode(BUTTON2, INPUT);
pinMode(LED1, OUTPUT);
pinMode(LED2, OUTPUT);
}

void loop()
{
BUTTONstate1 = digitalRead(BUTTON1);
if (BUTTONstate1 == HIGH)
{
digitalWrite(LED1, HIGH);
}
else
{
digitalWrite(LED1, LOW);
}
BUTTONstate2 = digitalRead(BUTTON2);
if (BUTTONstate2 == HIGH)
{
digitalWrite(LED2, HIGH);
}
else
{
digitalWrite(LED2, LOW);
}
}
```
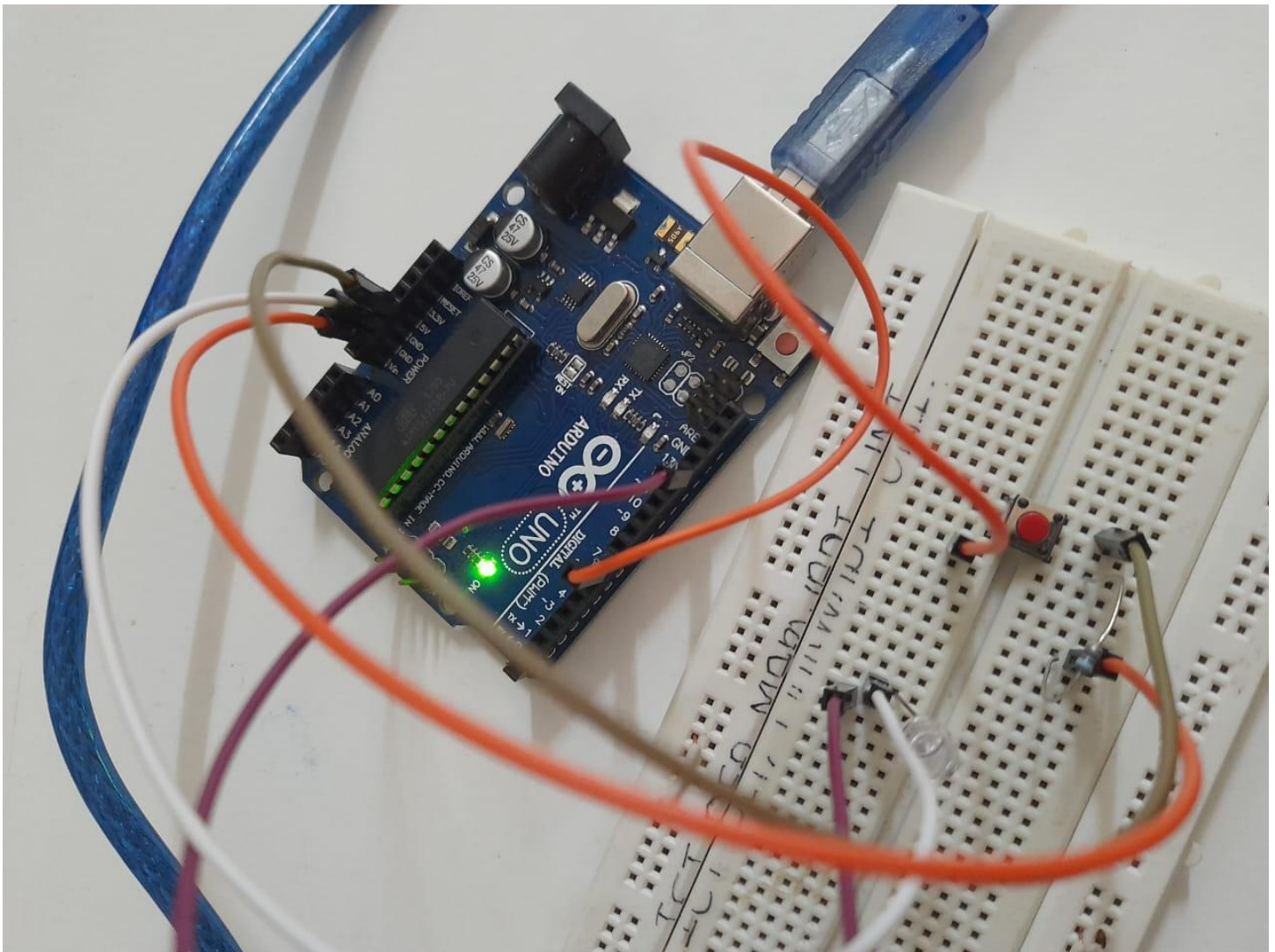
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Task 2 : **Toggle the LED state when push button is pressed.**

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Code:

```
int button = 2;
int led = 13;
int status = false;

void setup(){
pinMode(led, OUTPUT);
pinMode(button, INPUT_PULLUP);
}

void loop(){

if (digitalRead(button) == true) {
status = !status;
digitalWrite(led, status);
} while(digitalRead(button) == true);
delay(50);
}
```