Experiment No: 02

Experiment Title: Arduino with Simple Button Interfacing

Course Code: CSE 460

Course Title: IoT Laboratory

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Experiment 02: Arduino with Simple Button Interfacing

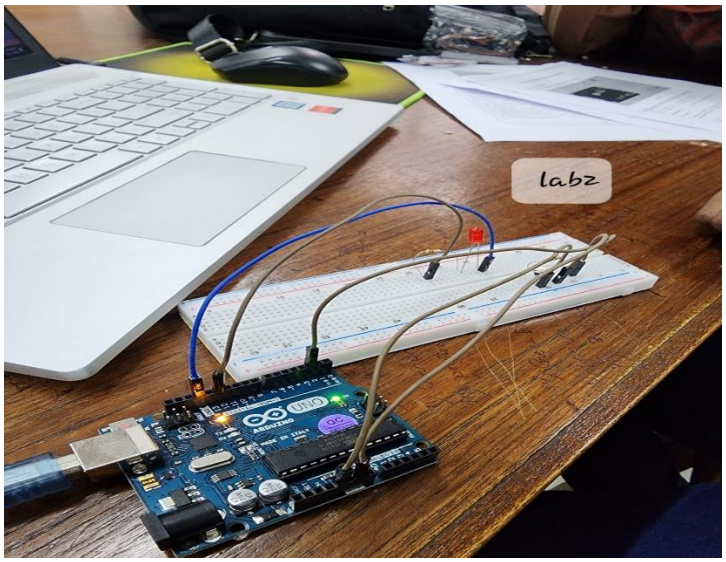
Objective:

In this project, the aim is to familiarize with the fundamental concepts of Arduino through the implementation of button experiment. We will acquire a foundational understanding of writing and uploading an Arduino sketch, enabling them to govern the actions of a button. This hands-on experience will provide insights into Arduino's digital output functionalities and establish a groundwork for tackling more intricate projects in the future.

Methodology:

1. **Arduino setup:**
   We have set up our Arduino ass followed:
   - We downloaded Arduino from here https://www.arduino.cc/en/software and installed it.
   - We added the cable of the Arduino with laptop and checked the port if its connected.

2. **Circuit connection:**
   1. Collect components
   2. Connect components according to following figure:



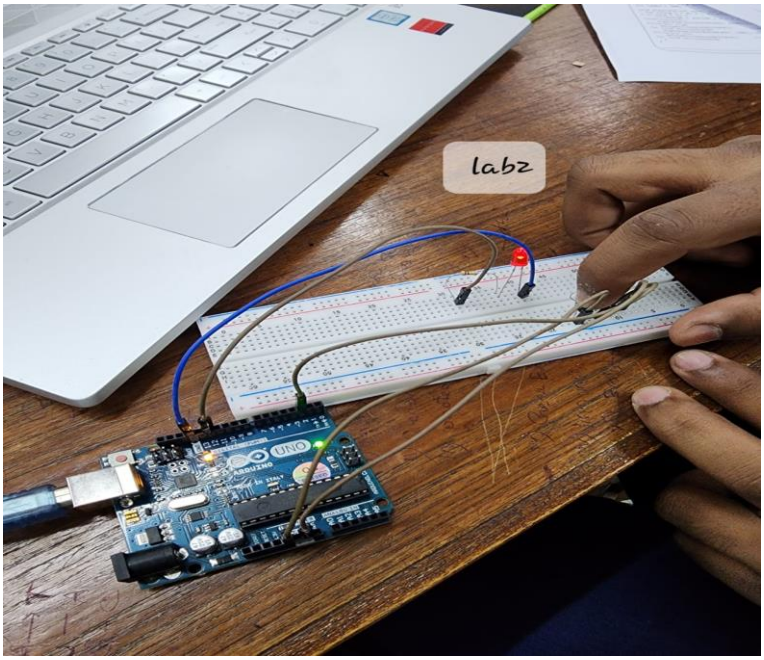
   - LED attached from pin 13 to ground through 220 ohm resistor
   - pushbutton attached to pin 2 from +5V
   - 10K resistor attached to pin 2 from ground

Source Code:

```
void setup() {
  pinMode(ledPin, OUTPUT);
  pinMode(buttonPin, INPUT);
}

void loop() {
  buttonState = digitalRead(buttonPin);
  if (buttonState == HIGH) {
    digitalWrite(ledPin, HIGH);
  } else {
       digitalWrite(ledPin, LOW);
  }
}
```

Output:



Discussion:

The Arduino button interfacing experiment serves as a practical entry point into electronics and programming. It imparts fundamental concepts like input, output, and digital signals, making it an ideal starting point for beginners. This experiment's simplicity fosters exploration and sets the stage for more complex projects, empowering users to delve deeper into the exciting realms of embedded systems and physical computing. As a foundational experience, it equips enthusiasts with the skills to embark on creative ventures in Arduino-based electronics.