University of Asia Pacific

Department of Computer Science and Engineering

CSE 316: Microprocessor and Microcontroller Lab

LAB REPORT

Experiment Number: 05

Experiment Title: Wireless theft detection using door sensor and buzzer

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1.Experiment Name:

Wireless theft detection using door sensor and buzzer

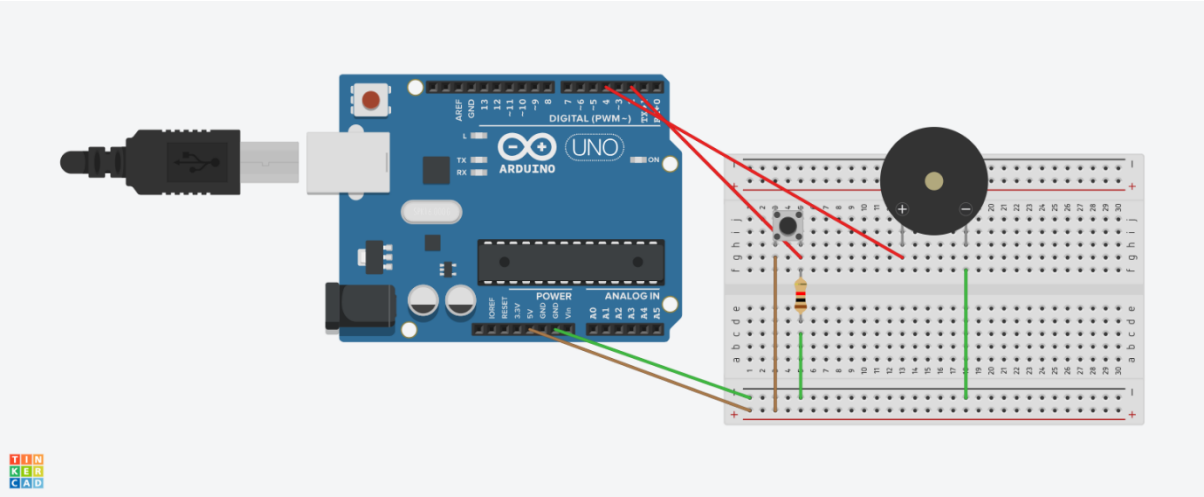
2.Objective:

- To design and implement a simple theft detection system using Arduino Uno.
- To use a push button as a door sensor for simulating door opening.
- To trigger a buzzer alarm whenever the push button is pressed (theft detected).
- To observe the system's response when the push button is released (theft not detected).
- To demonstrate the basic principle of intrusion detection systems using Arduino.

3.Apparatus:

- Arduino Uno
- Push Button
- Buzzer
- Jumper Wires
- Breadboard
- Resistor
- USB Cable
- Arduino IDE
- TinkerCAD

4.Circuit Diagram:



5.Code/ Assembly Program:

```
const int touchPin=2;

const int buzzerPin = 4;

int irState = 0;

void setup()

{
```

```
  pinMode(touchPin, INPUT);
  pinMode(buzzerPin, OUTPUT);
  Serial.begin(9600);
}

void loop()
{
 int touchState = digitalRead(touchPin);

  if (touchState == HIGH) {
    tone(buzzerPin, 1000, 20); // Beep short
    delay(200);
    Serial.println("Alert! Door opened!");
  }
  else {
    noTone(buzzerPin);
  }
}
```

6. Output / Observations:



- Initially, the buzzer remains silent because the push button is not pressed.
- When the push button is pressed (door opened → theft detected), the buzzer immediately produces a beep sound as an alert.
- Releasing the button (door closed → theft not detected) stops the buzzer, and the system returns to its silent state.

This demonstrates the system's ability to detect intrusion in real-time.

7.Result:

- The experiment was successfully implemented and functioned as expected.
- Pressing the push button to simulate theft or door opening immediately triggered the buzzer alarm.
- Releasing the push button turned off the buzzer.
- The push button effectively functioned as a door sensor.
- The system was confirmed to be reliable as a simple theft detection mechanism.
- The experiment demonstrated Arduino's ability to respond quickly and accurately to external input signals in real-time.

8.Conclusion:

- Learned how to use a push button as a digital input to simulate a door sensor.
- Understood how to control a buzzer as an alarm output using Arduino.
- Demonstrated the fundamental principle of theft detection systems.
- Showed how this simple model can be extended into more advanced wireless security applications.