

IoT Clap Switch Project Documentation

Overview

The IoT Clap Switch project is an innovative surveillance system that utilizes sound sensors and LED technology to create an immersive experience. Inspired by banking protocols, the system implements clap detection to enhance security measures. This project showcases the transformative potential of IoT in proactive security solutions.

Hardware Requirements

- **Arduino Board:** The Arduino board is used as the central processing unit for the project.
- **Sound Sensor:** The sound sensor module detects sound levels and outputs a digital signal based on the threshold set by the on-board potentiometer.
- **LED:** The LED is used to indicate the status of the system, turning on when a pulse is detected.
- **Breadboard:** The breadboard is used to connect the components.
- **Wires:** The wires are used to connect the components to the Arduino board.

Circuit and Connections

1. Sound Sensor Connection:

- **VCC:** Connect the VCC pin of the sound sensor to the 3.3V pin of the Arduino board.
- **GND:** Connect the GND pin of the sound sensor to the GND pin of the Arduino board.
- **OUT:** Connect the OUT pin of the sound sensor to any digital pin of the Arduino board.

2. LED Connection:

- **VCC:** Connect the VCC pin of the LED to the 5V pin of the Arduino board.
- **GND:** Connect the GND pin of the LED to the GND pin of the Arduino board.
- **Signal:** Connect the signal pin of the LED to any digital pin of the Arduino board.

Code

```
void setup() {  
  pinMode(2, INPUT);  
  pinMode(3, OUTPUT);  
  Serial.begin(9600);  
}  
  
void loop() {  
  bool pulse = digitalRead(2);  
  if (pulse == HIGH) {  
    digitalWrite(3, HIGH);  
    Serial.println("ON");  
  } else {  
    digitalWrite(3, LOW);  
    Serial.println("OFF");  
  }  
}
```

Working Principle

1. **Sound Detection:** The sound sensor module detects sound levels and outputs a digital signal based on the threshold set by the on-board potentiometer.
2. **Digital Signal Processing:** The Arduino board processes the digital signal and determines whether a pulse is detected.
3. **LED Response:** If a pulse is detected, the LED turns on; otherwise, it turns off.
4. **Serial Communication:** The Arduino board sends the status of the system (ON/OFF) to the serial monitor.

Implementation

1. **Hardware Setup:** Connect the sound sensor, LED, and Arduino board as described above.
2. **Upload Code:** Upload the provided code to the Arduino board.
3. **Serial Monitor:** Open the serial monitor to view the status of the system.

Conclusion

The IoT Clap Switch project demonstrates the integration of sound sensors and LED technology to enhance security measures. By implementing clap detection, the system provides a proactive solution to security breaches. This project showcases the

potential of IoT in transforming traditional security systems and highlights the importance of innovation in security solutions.