Burglar Alarm System

Sahil Kumarwar-201060035
Risheel Chheda-201060030
Lavanya Tembhurne-201060028
Vishwesh Jadhav-201060071

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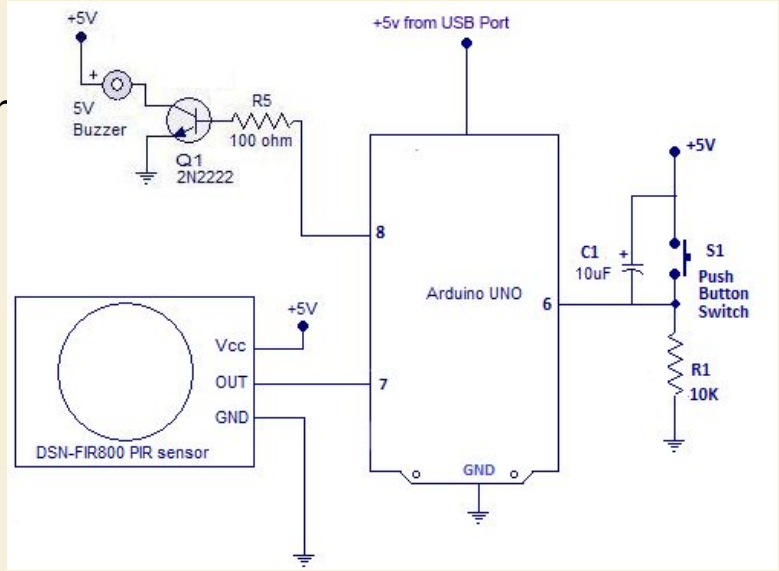
Introduction

- A burglar alarm system is a security system designed to detect unauthorized entry into a building or area.
- It plays a crucial role in protecting homes and properties from burglary and providing peace of mind to homeowners.

System Overview

- The burglar alarm system using Arduino consists of various components working together.
- Block diagram:
  - Arduino board: Acts as the brain of the system, controlling and coordinating the different components.
  - Sensors: Detect any unauthorized entry or movement.
  - Buzzer: Produces an audible alert when the system is triggered.
  - LED: Provides a visual indication of the system's status.
  - Power source: Supplies power to the Arduino and other components.

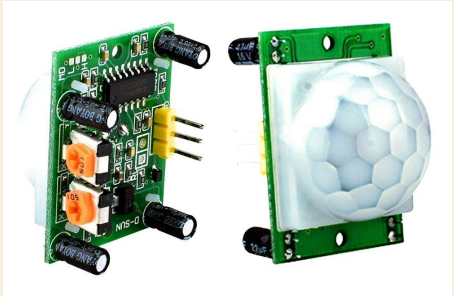


Arduino Board

- Arduino is an open-source
- microcontroller board widely used for building electronic projects.
- It provides an easy-to-use platform for programming and controlling various hardware components.

Sensors

- The burglar alarm system uses two types of sensors:
  - PIR (Passive Infrared) sensor: Detects changes in infrared radiation emitted by moving objects.
  - Magnetic contact sensor: Detects the opening or closing of doors and windows.
- These sensors are strategically placed to monitor potential entry points.

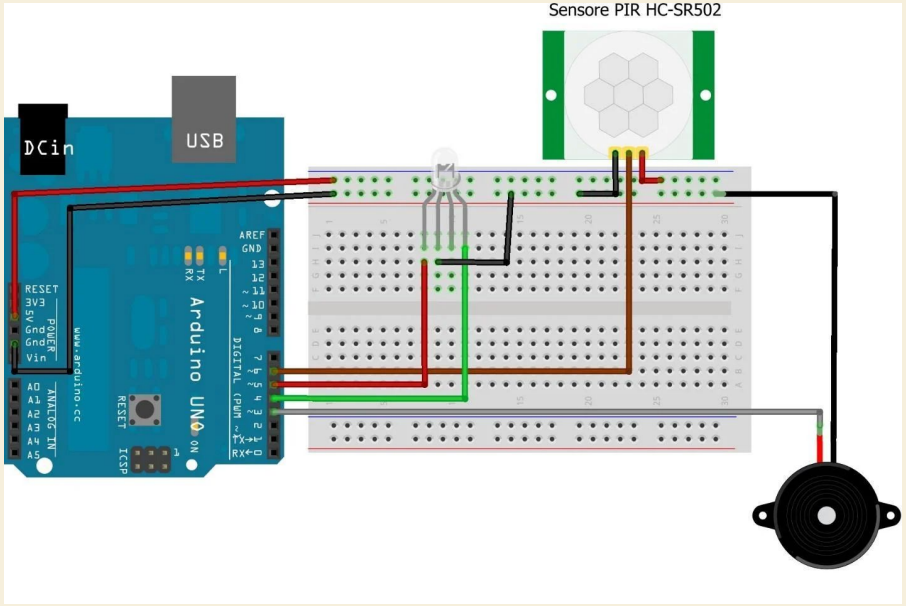


PIR Sensor

Magnetic contact sensor

Wiring Diagram

- Proper wiring is crucial for the correct functioning of the burglar alarm system.
- Make proper connections and replicate the circuit as shown in the image.



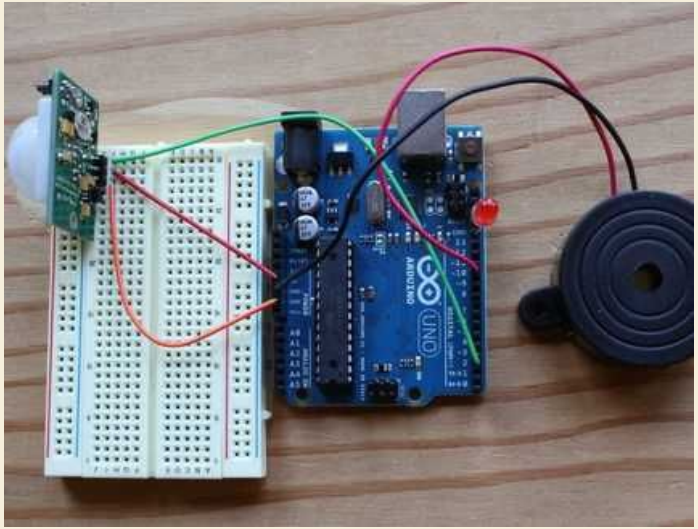
Programming

```
// Arduino code for burglar alarm system
void setup() {
  // Initialize the sensor pins as input
  pinMode(PIR_PIN, INPUT);
  pinMode(MAGNETIC_PIN, INPUT);

  // Initialize the buzzer and LED pins as output
  pinMode(BUZZER_PIN, OUTPUT);
  pinMode(LED_PIN, OUTPUT);
}

void loop() {
  // Check the status of the PIR sensor
  if (digitalRead(PIR_PIN) == HIGH) {
    // PIR sensor triggered, activate the alarm
    digitalWrite(BUZZER_PIN, HIGH);
    digitalWrite(LED_PIN, HIGH);
    delay(5000); // Alarm duration
    digitalWrite(BUZZER_PIN, LOW);
    digitalWrite(LED_PIN, LOW);
  }

  // Check the status of the magnetic contact sensor
  if (digitalRead(MAGNETIC_PIN) == HIGH) {
    // Magnetic contact sensor triggered, send an alert
    Serial.println("Unauthorized access detected!");
  }
}
```

Testing And Operation

After completing the wiring and programming, follow these steps to test the burglar alarm system:

1. Power on the Arduino and ensure all connections are secure.
2. Move in front of the PIR sensor to trigger the alarm.
3. Open or close a door/window connected to the magnetic contact sensor to check for alerts.
4. Observe the buzzer and LED response.



Thank You