Prepared by group5

Group 5 Project

Embedded and Real-Tim System

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Introduction

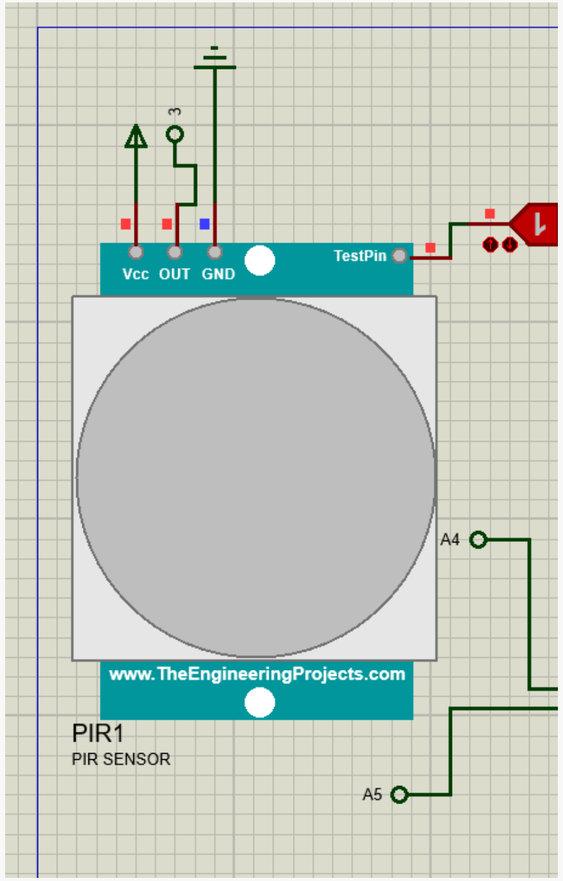
This home alarm security system is made to detect intruders/thieves/burglars using Arduino and PIR sensors. The PIR sensor is ideal for detecting human movement or occupancy in security systems.

Home Security Alarm System

Components Used:

1. PIR Motion Sensor

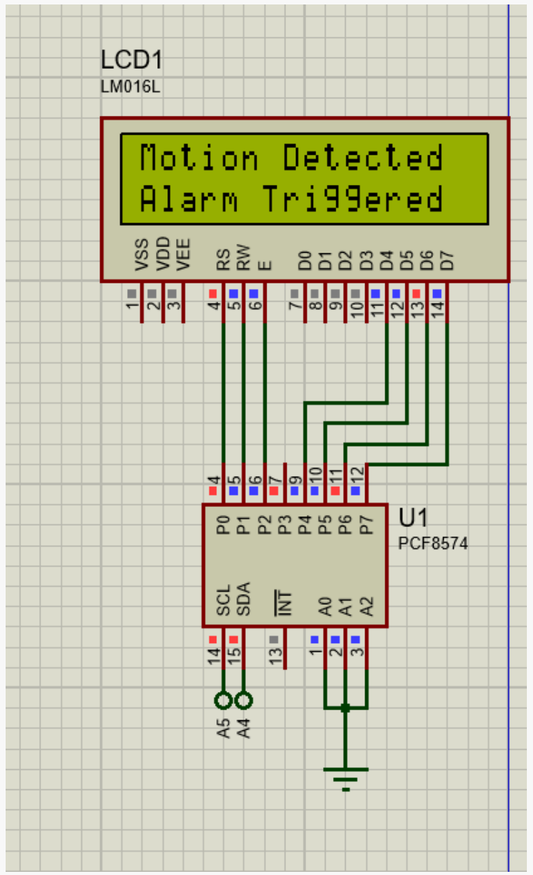
- Purpose: Detects motion by sensing infrared radiation emitted by warm objects, such as humans or animals.
- How It Works: The sensor measures changes in infrared levels to detect motion. It remains idle when the infrared levels are stable.
- Specifications:
  - Voltage: 5V
  - Range: Up to 7 meters
  - Delay



Home Security Alarm System

2. 16×2 LCD

- Purpose: Displays the status of the alarm system, providing clear text feedback to the user.
- How It Works: The LCD module uses a liquid crystal display to form characters and symbols by controlling the light passage through the crystals.
- Specifications:
- Resolution: 16 columns by 2 rows
- Interface: I2C for simpler connections



Home Security Alarm System

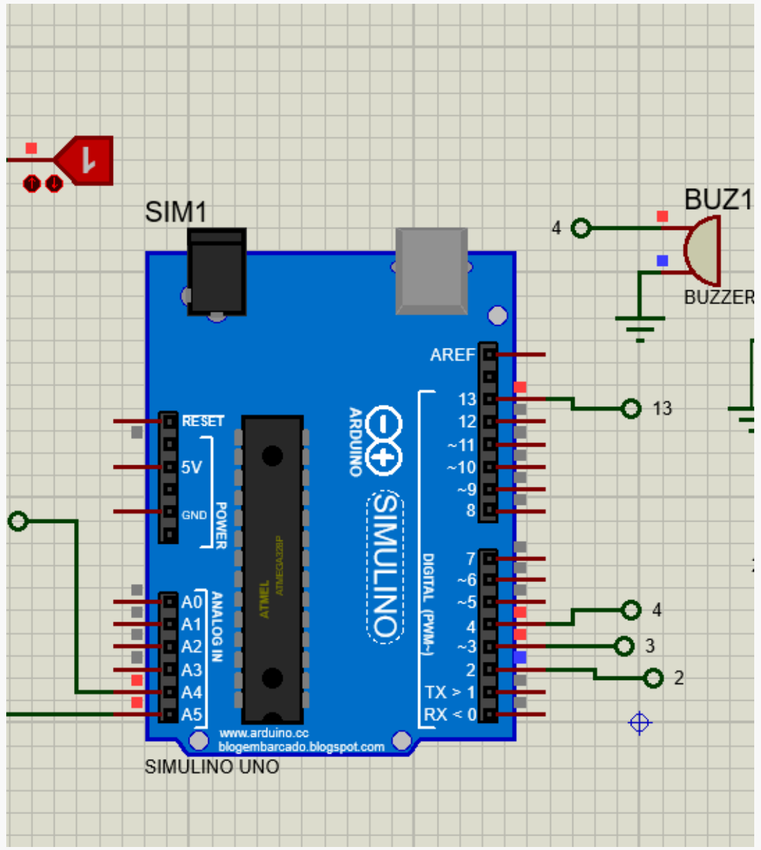
3. Sound Buzzer

- Purpose: Provides an audible alarm when motion is detected, alerting users of possible intrusions.
- How It Works: The buzzer generates sound by vibrating a diaphragm using an oscillating electronic signal.
- Specifications:
- Operating Voltage: 3-12V
- Sound Output: ~85 dB at 10cm

Home Security Alarm System

4. Arduino Uno

- Purpose: Serves as the main controller that processes sensor data and triggers the outputs.
- How It Works: The Arduino runs a program (sketch) to control the logic and timing of all connected components.
- Specifications:
- Microcontroller: ATmega328P
- Operating Voltage: 5V
- Digital I/O Pins: 14 (6 PWM outputs)



Home Security Alarm System

5. LED

- Purpose: Provides a visual indicator of alarm status, flashing when motion is detected.
- How It Works: The LED emits light when current flows through a semiconductor diode.
- Specifications:
- Operating Voltage: 2-3.3V
- Current: 20mA

Thank you