**SECURITY SYSTEM USING PIR SENSOR**

***COMPONENTS REQUIRED:***

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Components** | **Range** | **Quantity** |
| 01. | Arduino Board | UNO R3 | 1 |
| 02. | Resistor | 1KΩ | 1 |
| 03. | PIR Sensor | - | 1 |
| 04. | Piezo (Buzzer) | - | 1 |
| 05. | Bread Board | - | 1 |
| 06. | Jumper Cables (M-M & M-F) | - | As Required |

***PROCEDURE:***

* **Step 1**: Place the buzzer, LED and Resistor on the bread board.
* **Step 2**: Place the PIR Sensor adjacent to the Board.
* **Step 3**: Connect the 1KΩ resistor to the cathode terminal of the LED & the terminal of the Resistor to the Ground.
* **Step 4**: Connect the Anode terminal of the LED to the Digital Pin 9 (D9).
* **Step 5**: Connect the Positive terminal of the Piezo (Buzzer) to the Digital Pin 10 (D10).
* **Step 6**: Connect the Negative terminal of the Piezo (Buzzer) to the Ground.
* **Step 7**: Connect the Vcc terminal of the PIR Sensor to the 5 V pin of the Arduino Board.
* **Step 8**: Connect the ground terminal of the PIR Sensor to the ground pin of the Arduino Board.
* **Step 9**: Connect the Signal/Out terminal of the PIR Sensor to the Digital Pin 8 (D8).
* **Step 10**: Compile and upload the code to the Arduino Board through Arduino IDE Software.
* **Step 11**: Observe the output of the program in the Serial Monitor of the Arduino IDE Interface.

# (Note: You can connect the positive / Anode terminal of the components to any of the

***Digital Pins [0 - 13] present in the Arduino Board (D0 to D13) but the changes must be done accordingly while initializing the pin numbers in the Coding part).***

***Code for the Project:***

# # C PROGRAM #

int led = 9;

int sensor = 8; int buzzer = 10; int state = LOW; int val = 0;

void setup()

{

pinMode(led,OUTPUT); pinMode(sensor, INPUT); pinMode(buzzer,OUTPUT); Serial.begin(9600);

}

void loop()

{

val = digitalRead(sensor); if (val == HIGH)

{

// check if the sensor is HIGH digitalWrite(led,HIGH); delay(100);

if (state == LOW)

{

Serial.println("Motion Detected!"); tone(buzzer,1000);

state = HIGH;

}

}

else

{

digitalWrite(led,LOW); delay(200);

if (state == HIGH)

{

Serial.println("No Motion Detected"); noTone(buzzer);

state = LOW;}}}

***SCHEMATIC CONNECTION DIAGRAM***

A diagram of a circuit board

Description automatically generated

***EXPIREMENTAL RESULTS (USING TINKER CAD)***

*CIRCUIT DIAGRAM:*

A circuit board with wires

Description automatically generated

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Description automatically generated*

***Fig: 1 –*** *PIR Sensor activates when the motion is detected and triggers the alarm and LED*

A screenshot of a computer

Description automatically generated

***Fig: 2 –*** *Output at the serial Monitor when “No Motion” is detected by the PIR Sensor*

A screenshot of a computer

Description automatically generated

***Fig: 3 –*** *Output at the serial Monitor when “Motion” is detected by the PIR Sensor.*