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HOME SECURITY ALARM SYSTEM USING ARDUINO

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Abstract: The need for home security alarm systems nowadays is a serious demand. As the number of crimes are increasing every day, there has to be something that will keep us safe. We are all aware of the high end security systems present in the market but they are not easily available to everyone. We therefore intend to provide a solution by constructing a cost efficient electronic system that has the capability of sensing the motion of the intruders and setting off the alarm. The basic idea behind this project is that all the bodies generate some heat energy in the form of infrared which is invisible to human eyes. But, it can be detected by electronic motion sensor. The project involves the use of Arduino, motion sensor, buzzer, LCD display and a simple program. The sensor detect any motion in its permissible range and triggers the alarm. It will also send the signal to Arduino which processes the signal and set off the alarm along with detection message on display. With this system we can easily set up a security alarm in our home for unwanted intruders.

I. INTRODUCTION

We have designed an interesting and cheap home security alarm. This Gadget helps you to protect your house from thieves. In this project we are going to use an Arduino Uno R3 Board, P.I.R Sensor module, LCD and some other components. This Project can either powered with 9V Battery or with U.S.B of your computer. This is a basic motion-sensing alarm that detects when someone enters the area. When an intruder is detected, it activates a siren. Our body generates heat energy in the form of infrared which is invisible to human eyes. But it can be detected by electronic sensor. This type of sensor is made up of crystalline material that is Pyroelectric. In this project, we are using P.I.R. Motion Sensor Module as an infrared sensor that generates electric charge when exposed in heat and sends a signal to Arduino. According to level of the infrared in front of sensor, Arduino displays the status on L.C.D and start buzzing speaker and glows the L.E.D. A simple program is running on Arduino which checks sensor if anything is moved or new object has been detected.

Working:

This system is a basic motion activated alarm. It is built around an Arduino Microcontroller. It is connected to a PIR motion sensor, a buzzer, a resistor, and a pair of external terminals. The whole system is battery powered so that it is easily portable. Once you have the code, you can connect all the external parts. The easiest way to do this is with a breadboard. This will let you make temporary connections to test everything out.

Step 3: Connecting L.C.D to Arduino:

To wire your LCD screen to your Arduino, connect the following pins:

LCD RS pin to digital pin 12

LCD Enable pin to digital pin 11

LCD D4 pin to digital pin 5

LCD D5 pin to digital pin 4

LCD D6 pin to digital pin 3

LCD D7 pin to digital pin 2

Additionally, wire a 10K pot to +5V and GND, with its wiper (output) to LCD screens VO pin (pin3).

Step 4: Programming Arduino:

1. Download Arduino IDE 1.0.6 from <https://www.arduino.cc/en/main/software>.
2. Connect Your Arduino to your computer using USB Cable.
3. Open Arduino IDE, choose your correct board from Tools--Boards
4. Choose Your Correct Port from Tools--Serial Port
6. Copy the following sketch which appears in your Web Browser to your Arduino Sketch Page.
7. Click on Upload Icon or go to File—Upload

Step 5: Drill Holes in the Housing:

Next we need to drill a few holes in the housing so that we can mount all the parts. Start by using a ¼" hole in one end of the housing. This will be where we mount the buzzer. Then use a ¾" hole saw to drill a hole in the other side of the housing. This will be where we mount the motion sensor

Step 6: Glue the Motion Sensor and the Buzzer in Place

Apply a small amount of hot glue around the motion sensor where it lines up with the hole in the housing. Then press the motion sensor into the hole. Apply more hot glue around the outside and hold it in place until the glue cools. Then apply a small amount of hot glue to the face of the buzzer. Align the hole in the buzzer with the hole in the housing and press it in place. Hold the buzzer in this position until the glue dries.

Step 7: Close Up the Housing:

The last thing that you need to do is connect the battery and close up the housing.

II. CONCLUSION

Thus, we have designed a home security alarm system using Arduino and PIR motion sensor, which is handy, portable, cost-effective and highly effective as well. Such alarm systems are hugely in demand for security purposes, and thus the given system can be proved useful and effective in view of the above features.

REFERENCES**[1] Books**

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Software

[2] Arduino IDE 1.0.6 from <https://www.arduino.cc/en/main/software>.

World Wide Web

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[4] www.engineersgarage.com

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