

REAL TIME INTELLIGENT HOME AUTOMATION

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Abstract - Technology playing an important role in providing solutions to social problems. Automation is one of important methodology for providing solutions to raised problems. In these days we are facing some problems like home burglaries and fire accidents happening regularly. This paper provides cost effective solution to the above problems. It uses home security system to avoid burglaries happening in our home or in office. And also detects gas leakages to avoid fire accidents. It saves power by controlling appliances to turn on/off based on climatic conditions available in the room. If any intruder enters into room an alert will be sent to house owner.

Key Words: Arduino UNO, GSM, Relay, gas sensor, temperature sensor, keypad, LCD.

1. INTRODUCTION

In these days home automation technology plays an important role in our life. This is used to control our home appliances automatically without human involvement. Home automation mechanism is not only referring to reduce human effort but also time saving technique. The main objective of home automation mechanism and security system is controlling home appliances automatically based on climatic and security conditions available in the room. This mechanism helps the owner in case a burglar enters in to the house by sending a message which will inform them to protect their home from burglars. The system also helps old people by controlling home appliances automatically as they do not need to go to switch board to turn the appliances ON or OFF.

Main purpose of this home automation is to "SAVE ELECTRICITY". With this technology everyone can control the home appliances or office equipment automatically.

2. OBJECTIVE:

- To provide security to the house.
- To provide an alert when there is any gas leakages and fire accidents.
- Controlling appliances automatically based on room conditions.
- Reducing power wastage.
- Implementing with low cost.
- Providing intimation to owner when there is any miscellaneous activity.

3. LITERATURE SURVEY:

This paper [1] is beautifully designed with home security system. But there is no scope to control appliances available in the home, there is no power saving mechanisms in it and cost is also very high. Real time intelligent home automation is extension of this project by providing controlling mechanism and power saving techniques.

It [2] is mainly focus on controlling appliances in home by mobile phone and some other techniques through internet. But there is no security feature to automation technique. This drawback is rectified in Real time intelligent home automation and also included some other features like controlling appliances automatically.

It [3] is also having a feature of controlling appliances through internet of things. But there is no security feature in it. This drawback is rectified in Real time intelligent home automation by sending an SMS to owner when there is any miscellaneous activity.

4. SYSTEM OVERVIEW:

This paper is based on real time intelligent home automation. It mainly consists of two parts. First is about person detection whether he is an authorised person or not based on password entering system. If the entered password is matched with the predefined password then he is an authorized person otherwise it detects as an intruder then sends a SMS to the owner.

Second part consists of controlling appliances. Whenever entered password is correct then based on room conditions appliances will automatically switches on/off. If gas concentration is greater than normal value then buzzer will be goes to high irrespective of person is present in house or not.

HARDWARE DETAILS:

The construction of this project is on Arduino UNO as a microcontroller. First part of the circuit consists of IR sensors to count the number of persons entering into the room, keypad to enter password and LCD to display the password. Whenever entered password is correct it enables second circuit. Otherwise an alert will be sent to house owner by GSM.

Second part of circuit consists of temperature sensor used to know the room temperature, LDR used to know the light intensity, gas sensor to know the gas leakage happening or not. Based on these conditions relays will be in high/low states. Relay is used to handle AC powered appliances from dc voltages.

SOFTWARE DETAILS:

The Arduino IDE is the software used for coding. It is simple and easy to code. It uses embedded C coding language. It has number of inbuilt libraries which makes it easy to operate. To operate keypad we have to add a manual library to the Arduino IDE.

SYSTEM ARCHITECTURE:

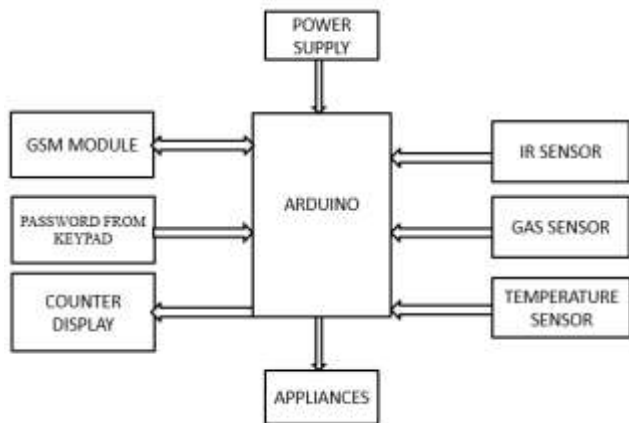


Fig: Block Diagram

5. ALGORITHM:

Step 1: Switch ON the power supply to GSM module, Arduino and relays.

Step 2: Counter counts the number of persons entered into the room.

Step 3: If count (no of persons) is not equal to zero then system asks to enter password otherwise all appliances will be in off state.

Step 4: If entered password is correct then it goes to next state otherwise it will continuously asking for password up to certain time limit. If entered password is wrong then it will alerts house owner with a message.

Step 5: In this step based on climatic conditions available in the room it will control appliances turn on/off.

If room temperature is high then fans will be in on and vice versa.

If light intensity is high then lights will be in off and vice versa.

Step 6: If count in a room is greater than zero then all the steps will follows otherwise counter waits for persons to enter.

6. FLOW CHART:

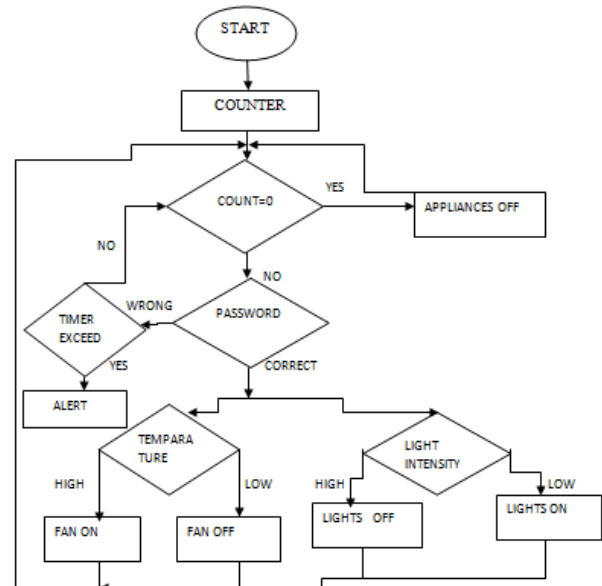


Fig: Flow Chart

7. RESULT:

This project is tested by considering different conditions. Whenever person enters into room it will display to enter password. If the entered password is correct then it will turns the appliances on/off. If the password entered is wrong then system will send a SMS to house owner by GSM. It sets alarm HIGH whenever there is a gas leakage happens. It will have a convenience to change password whenever it needs.

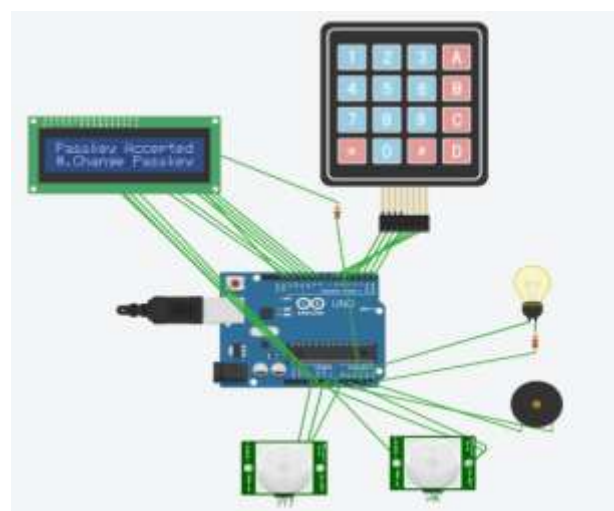


Fig: Security System

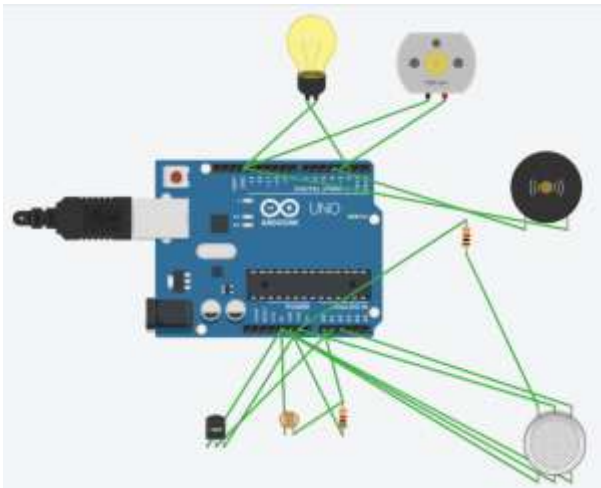


Fig: Controlling Appliances

8. CONCLUSIONS:

This project helps to give solutions to the home burglaries, fire accidents due to gas leakages and power wastages. With this project we can reduce home burglaries, gas leakages drastically. There is no power wastage with this technique. This is also a cost effective system and it can be affordable by poor people also. Mostly it is useful in rural areas.

This can be further developed by providing better security features such as cameras, storage devices and using internet connection.

9. REFERENCES:

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