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HOME AUTOMATION USING 5 DIFFERENT SENSORS

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Abstract - *Home automation Using Internet of Things is full of automation and the life of human beings is getting simpler as almost everything is automatic by replacing the old manual systems. Nowadays internet is the integral part of every human life to gather the knowledge of technology. Internet of things provides a platform that allows devices to connect, sensed by sensors and controlled by remote across a network infrastructure. In this paper, the different sensors is used such as flame sensor, gas sensor, touch sensor, soil moisture sensor, Infrared sensor where it is connected with arduino board and it is automatically controls the environment. The internet of things is applied in home appliances and most important sensor is Infrared sensor which can sense the movements of objects. The Infrared sensor is used in home such as it can set into car shed. When the car is get into the shed it can sense by infrared sensor and the light is automatically changed into on condition and if there is no object the light turns into off condition. The arduino board have microcontroller to control all the process occurred in home and it can be sensed by the various sensor and it can be alert to the owner by mail or any other process.*

1. INTRODUCTION

Home Automation using Internet of Things is a growing technology which is focus to lower the apparatus prices for people. The home automation project allows the user to providing more automated applications and the user to build and maintain the home as well turned to keep energy levels down. The home automation system will take benefit of its environment and allow flawless control whether the user is present or absent. Home automation system maintains the home activities by particular user and know the energy performance in home. Home automation is essential to create effective and simple to track together and it often granted to individuals who are willing to operate the home activities. The system can be defined as sensible home technology and the devices can manage the components in home environment. Home automation system can be operated by computer chip employing various kinds of features. A simple device like a lightweight may be activated by sensors. It can be operate remotely and mechanically to control the things in home by the respective users. The people can connect anyone with anywhere at anytime using these IOT and the connections will create and extend dynamically. The development of IOT will be dramatic change in the form of sectors in transportation, automation in financial services.

2. PROJECT DESCRIPTION

The main aim of developing the Home Automation Using Internet of Things will maintain all types of information about home activities and control by the remote process.

2.1 PROBLEM DEFINITION

Home computerization frameworks face four principle challenges, these are significant expense of proprietorship, rigidity, poor sensibility, also, trouble in accomplishing security. The primary goals of this exploration is to plan and actualize a home robotization framework utilizing IoT that is fit for controlling and mechanizing the greater part of the house machines through a simple reasonable web interface. The proposed framework has an extraordinary adaptability by utilizing Wi-Fi innovation to interconnect its circulated sensors to home robotization server. This will decline the sending cost and will build the capacity of overhauling, and framework reconfiguration.

2.1 PROPOSED SYSTEM

The proposed framework is a circulated home mechanization framework, comprises of server, sensors. Server controls and screens the different sensors, and can be effortlessly arranged to handle more equipment interface module. The Intel Galileo advancement board, with worked in wireless fidelity card port to which the card is embedded, goes about as web server. Computerization Framework can be gotten to from the internet browser of any neighborhood PC in the same LAN using server IP, or remotely from any PC or versatile handheld gadget associated with the web with fitting internet browser through server genuine IP. Wireless fidelity innovation is chosen to be the system foundation that interfaces server and the sensors. Wireless fidelity is picked to improve framework security, and to expand framework portability and adaptability.

3. WORKING PRINCIPLE

The arduino board is connected with the different sensors which is given like input such as flame sensor, gas sensor, touch sensor, IR sensor, soil moisture sensor and output as LED and buzzer. The arduino software is used in the system which is connected with arduino board using USB cable. Firstly, the flame sensor is connected with the system which is used to detect the flame in home environment.

For flame sensor, the cable is connected between the system and hardware then upload the code to execute for detecting the flame in fire. The flame sensor consists of vcc,ground and signal. The vcc can be connected into tbhe 5v in arduino board. The ground can be connected into ground in arduino board. The signal can be connected into pin 2 in arduino.

When flame is detected, then the buzzer gets active and provides sound.The benefits of flame sensor is described as if any fire in the environment the flame can sense the heat of the fire and calculate the value. If value is higher than given limit value it can alert the user by buzzer and it provides sound.

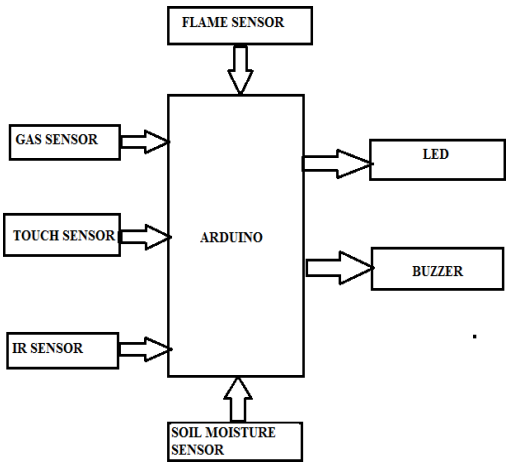

Fig -1: Design of Home Automation System

Secondly, the gas sensor is connected with the system which is used to detect the gas in home environment. For gas sensor, the MQ-2 sensor has two signals like analog and digital outputs, ground and vcc. The ground and volt signals are given common in breadboard. The gas sensor vcc is connected to 5v and the ground is connected to ground in arduino.

The analog signal in gas sensor is connected to A5 in arduino. The positive connection in the buzzer is connected into the pin 10 in arduino pin. The negative connection in the buzzer is connected into the one end of resistor. The other end of resistor is connected into the ground in breadboard. The two led bulb is connected in the breadboard. The positive end of one led is connected into pin 11 in arduino.

The negative end of one led is connected into the one end of resistor and that other end is connected into ground. The positive end of next led is connected into the pin 12 in arduino. The benefits of gas sensor is described as if any gas occur in the home it can sense by gas sensor and calculate the value.If value is higher than given limit the buzzer provides the sound.

Thirdly, the touch sensor is used to detect the touch of objects. When human can touch the touch sensor the led is active. When the person want to active the light in room,the touch sensor is connected into the glass and touch the glass to active the light. If any finger can be detected in the sensor the light is changed to on condition and the light is changed to off condition when there is no finger detected.

Next, the soil moisture sensor is used to detect the moisture content of the water for the plants. The one analog pin in arduino is connected into the analog pin in soil moisture sensor. The 5v pin in arduino is connected into the vcc pin in soil moisture sensor. The ground in arduino is connected in the ground in soil moisture sensor. When the soil content is decreased in the garden or lawn, the soil moisture sensor can analyze the moisture content and buzzer gets active and provides sound to alert the user.

Lastly, the IR sensor is used detect the movements of objects in home environment. An IR sensor is used in home such as it can set into car shed. When the car is get into the shed it can sense by IR sensor and the light is automatically changed into on condition and if there is no object the light turns into off condition. The arduino board have microcontroller to control all the process occurred in home and it can be sensed by the various sensor and it can be alert to the owner by any other process.

3. EXPERIMENTAL RESULT

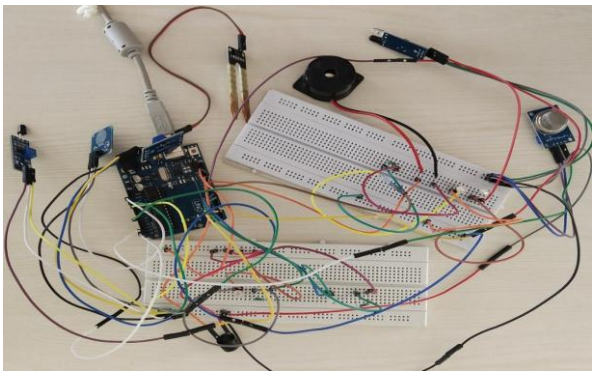

Fig -1: Home Automation System

4. CONCLUSIONS

The home automation system was designed and implemented using arduino as the microcontroller. The home appliances are monitored and controlled by the user remotely from anywhere around world. The system is capable of automating the operation of the appliances by analyzing the regular usage patter of the appliances by the user. This is not just saves a lot of human effort, but also helps in conserving energy.

The next phase for the Home automation market will occur based on a few key improvements in the technology available in Automation, such as improvement in Wireless Automation solutions as well as lowering of price points as the market begins to accept Home automation usage in larger volumes. As with any industry, as Automation for residences become common place, the market will eventually be crowded with several players, multiple product offerings and competitive pricing. The market for just Home automation is estimated to be 3.2$ Billion by 2020. This sort of a framework with particular changes can be actualized in the medical clinics for debilitate individuals or in ventures where human attack is unthinkable or risky, and it can likewise be executed for natural observing.

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