Home Automation

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ABSTRACT

Home automation develops the lifestyle by automating the appliances. It saves energy as well as time. This project aims to achieving the home automation using wireless technology. We are using Bluetooth technology for exchanging data within a short range. Many electrical appliances like fan, light can be controlled using android operating system. Our objective is to help the old aged people and disabled to control the appliances by using mobile phone.

Keywords- Arduino, automation, Bluetooth, operating system, technology

I. INTRODUCTION

HOME AUTOMATION, now a day’s home automation plays a very important role in day to day living. This is mostly used in mordan areas and the reason behind this is its flexibility in using it at different places. This will save money and time by reducing the human effort. On general basis the concept of home automation shows the quality and status of the person of which the particular house belongs. The main focus of the system is to manage all the household equipment’s like light, fan, TV etc, automatically. It’s very useful to senior citizens and the disables as compare to normal and middle age people. This technology is operated with the help of smartphone and sensor (The only thing which is needed is the automation system should be connected to the cellphone).

This system, home automation increases the quality of home appliances and maintains it wisely. The main purpose of home automation system is to “SAVE ELECTRICITY” when not is used as it is the important part of our daily life it should be save for further purpose when not in used. This system is able to control home and office equipment automatically and can be operated or controlled by any one. As the system is design for a particular purpose which is to save human effort money, time and electricity as well. This system is secured and flexible and user friendly in terms of operation. This is affordable and trustful system in which the people can spent their money on this system. This system is wireless and it can operated by Bluetooth connectivity.

It provides the capability to control and monitor the home appliances and other household activities. A home automation improves a person lifestyle to control the home devices, to provide comfort, security and also improve the status in society. This system can control the settings of lights (brightness, dimming, switch (ON/OFF), use of fans (speed high or low) as per the people present in particular room.

II. METHODOLOGY

In this proposed system we have used arduino uno for controlling the appliances and the Bluetooth model is used to controlling home appliances wirelessly. The home appliances like fan and light will turn on and off when user will touch button in the Bluetooth model app in smartphone.

![Fig. Block Diagram of Home Automation](image-url)

The uno is the microcontroller board based on the ATmega328p. uno means one in itali and was chose to mark the release of arduino software. It has used USB connection, a power jack, 14 power connection, 14 input/output pins, 6 analog input pins, an ccsp header and reset button. It contain...
everything needed to support the microcontroller. Simply connect it to a computer with a USB cable or power it with a AC to DC adapter. In above block diagram the bluetooth module is RX and TX pins are directly connected to the TX and RX pin of arduino relay used as a switch for turning on and off the home appliances. In arduino uno is a relay driver used for driving the relay the light and fan can connected through relay, a 5 volt voltage regular LM7805 is used to provide 230 volt for the whole circuit.

The home automation system makes use of a smartphone and Bluetooth technology. Bluetooth technology is low cost and secure. The Bluetooth is password protected to ensure that the system is secure and do not misused another people. The input and output part of the Bluetooth board and relay are used as interfacing with the device which are controlled. The range of the Bluetooth is 10 to 100 meters. The main use of Bluetooth technology is used for control the home appliances. Suppose we start the process we need to install the application that can be developed in our smartphone and then switch on the Bluetooth in our mobile, make sure our Bluetooth device is on condition or not, if it is not ON then turn it ON, ones the Bluetooth is turned ON given power supply to the HC-05 Bluetooth module and pair it with the smartphone, if the Bluetooth module is in our range then the device is already paired and got disconnect it can get paired automatically as it is already stored in phone memory, this is flexibility that is available with this Bluetooth module.

The arduino software were reference of arduino UNO envolve neware release. The UNO board is the series of USB arduino board, the circuit flowing in one circuit then causes the opening and closing of another circuit. The PIR (passive infrared) sensor allow one to sense motion, it is used it detect a human has moved in or out of the sensor range, the range of PIR sensor is allocated to a particular room.

III. PRIOR APPROACH

Earlier develop the appender that our module the overcome the home managing system and all work it just as one click app consists of all the switches for managing the home appliances but earlier the home appliances management like go to the switch board then on/off the appliances that was good for us, but the physically disable person and old age person cannot access it. Use of the smart phone to control home appliances from remote location the home automation system is used for real time monitoring and controlling of home appliances from remote location.

Most system would exchange data or communicated with the help of zigbee, GSM and wifi. These system have their own disadvantages. For example zigbee is very costly and used for high bandwidth as well as wifi is also having large bandwidth. These are wastage of essential. Bluetooth technology is very secured and covers the small area as much as we needed and it comes in low cost. This is effective system that we are using in our project.

IV. OUR APPROACH

Home Automation is achieved with a combination of Bluetooth and sensor. Java programming is used in android app to provide user interface. The input output ports of Bluetooth and relay are interfacing with the device which is to be controlled. The Bluetooth provides the range between 10 to 100 meters. The Bluetooth technology is very secured. However it cannot offer control when outside the home. The command which is given by an app will receive the Bluetooth and control the device properly.

Fig. System Diagram

Relays are connected to the digital pins of arduino uno. The fan and light is connected to the relay. The Rx and Tx pins of Bluetooth is connected to Rx and Tx pins of arduino uno to transmit and receive the data serially. 12v adapter is used to power the arduino and the circuit.

Whenever switch is pressed in the android app the Bluetooth module receive the corresponding data and transmit that to the arduino. Then arduino check and put appropriate pins high or low according to code. These pins control the relay which in turn controls the appliances.

If we select ON switch of fan using app then it transmit data to arduino and it will turns on the fan. Similarly, if we select OFF switch it will off the fan. The operation for light switching is same as the fan.

As we are using the combination of Bluetooth and sensor. Sensor is connected to the digital input pin 2 and the 5v supply pin of arduino uno. Whenever we enters in the home the sensor will sense or detect the motion of our body and turn on the light and fan and if we are not needed the light and fan on then we supposed to turn off it by android app.
V. CONCLUSION

The proposed project can be implemented to automate the home appliances. This home automation application is useful for the user to ON/OFF on electronic devices from their smartphones. This application can be used for to save the electricity and aim to save the money and energy of people. We can control the devices by using smartphone. This project totally based on aurdino and android.

The main objective of this project is to reduce the consumption of time during on left the switch and its very useful for old aged and handicapped person. The app is easy to understand, anyone can operate easily. Our programmer, designer and technicians are techies to the core with an in-depth understanding of home networking automation and home electronics.

We can add any feature according to user need easily. You can upgrade will be easy. This flexibility makes it the perfect choice for both new and renovated houses. The home automation system is easy to use therefore it will be user friendly and encourage standardization.

REFERENCES