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Home Automation using IOT

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ABSTRACT –

The world is moving fastly towards automation. People have less time to handle any work so automation is simple way to handle any device or machine will work to our desire. This paper aim is to develop and design a Home automation using Arduino with Bluetooth module. Home automation system gives a simple and reliable technology with Android application. Home appliances like fan, Bulb, AC, automatic door lock are controlled by Home automation system using Arduino Uno with Bluetooth module. The paper mainly focuses on the monitor and control of smart home by Andorid phone and provide a security based smart home, when the people does not present at home. This paper motive is controlled home appliances in smart home with user friendly, design at low cost, simple installation.

Keywords:Arduino, Home automation, Bluetooth, Smart phone, Security

INTRODUCTION

In the present day, security systems play an important role in the protection of lives and investment. This is achieved by the incorporation of various subsystems into the security system with a single control unit such as surveillance, intruder control, access control, fire detection, etc. A smart home is one that is equipped with lighting, heating, and electronic devices that can be controlled remotely by smartphone or via the internet. An internet based home automation system focuses on controlling home electronic devices whether you are inside or outside your home. Home automation gives an individual the ability to remotely or automatically control things around the home. A home appliance is a device or instrument designed to perform a specific function, especially an electrical device, such as a refrigerator, for household use. The words appliance and devices are used interchangeably. Automation is today's fact, where things are being controlled automatically, usually the basic tasks of turning ON/OFF certain devices and beyond, either remotely or in close proximity . Automation lowers the human judgment to the lowest degree possible but does not completely eliminate it. The concept of remote management of household devices over the internet from anywhere, any time in the world today can be a reality. Assume a system where from the office desk, the user could view the status of the devices and decides to take control by tuning his TV set to his favourite channel, turns on the cooling system, say the air conditioner, and switches on or off some of the lights. This user could walk back home and only find a very comfortable, pleasant home. The recent developments in technology which permit the use of Bluetooth and Wi-Fi have enabled different devices to have capabilities of connecting with each other. Using a WIFI shield to act as a Micro web server for the Arduino eliminates the need for wired connections between the Arduino board and computer which reduces cost and enables it to work as a standalone device. The Wi-Fi shield needs connection to the internet from a wireless router or wireless hotspot and this would act as the gateway for the Arduino to communicate with the internet. With this in mind, an internet based home automation system for remote control of home appliances is designed.

Methodology

Home automation describes a system of networked, controllable device that work together to make your home more comfortable, customized, efficient and secure. In this device there are five main parts Arduino, Bluetooth module, Relay drivers, android application and step down transformer. Firstly we provide power to the step down transformer, it step down the input voltage and given to the arduino with VIN pin. The Bluetooth module is also connected with arduino to Rx and Tx pin that provides the information to the microcontroller. Microcontroller reads the information and send to the relay drivers which work as switch. In Arduino we upload the program as per requirement then it performs some mathematical and logical operation to control the relay drivers.

Those all parts are connected as shown in figure 2(a).

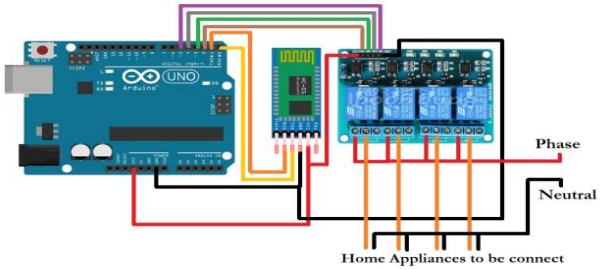


Fig 2(a)- circuit diagram of home automation.

Android application are connected to the arduino Bluetooth (HC-05). In the figure 2(b) there are four switches which is connected to relay drivers and four relay are connected to the home appliances.

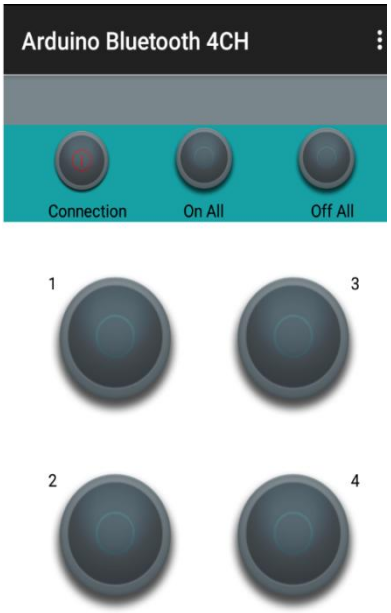


Fig. 2(b)-Mobile android application.

MAIN PURPOSE

The purpose of this study is to develop an intelligent street lighting system equipped with vehicle detection sensors which provide a better solution to reduce electricity wastage.

OVERVIEW OF THE SMART HOME

The basic block diagram of the smart home system is shown in figure 1. A micro-controller is used to obtain values of physical conditions through sensors connected to it. These integrated sensors such as the temperature IJSER International Journal of Scientific & Engineering Research, Volume 6, Issue 6, June-2015 796 ISSN 2229-5518 IJSER © 2015 http://www.ijser.org sensor read temperature values, the gas sensor detects smoke and cooking gas to avoid fire outbreak. The automatic switching on and off of the light is controlled by the Light Dependent Resistor (LDR) which determines the day light intensity. Also to incorporate security in our design, a motion detector is integrated using Passive Infrared Sensor (PIR) to detect movement in the home when the security system is turned on. A relay switch is used to send control signals from the micro-controller to the electronic device used to achieve the switching on and off action. A web portal is designed with a one-factor authentication system (username and password) to check authenticity of the home user. It acts as an input device to control the home appliances and also acts as an output device to read the values of the physical conditions.

WEB APPLICATION

The internet is great source of information and communication in this information age. Communication with things via the internet also known as Internet of Things (IoT). Bland by name and superficially viewed as gee-whiz technology never to be realized, the IoT has significant potential to transform business. IoT is a developing technology which allows different things and devices to be controlled via the internet. At its heart, IoT is a wide-ranging ecosystem of everyday physical objects connected to the Internet, capable of identifying themselves and communicating data to other objects on the net work.

PROPOSED SYSTEM

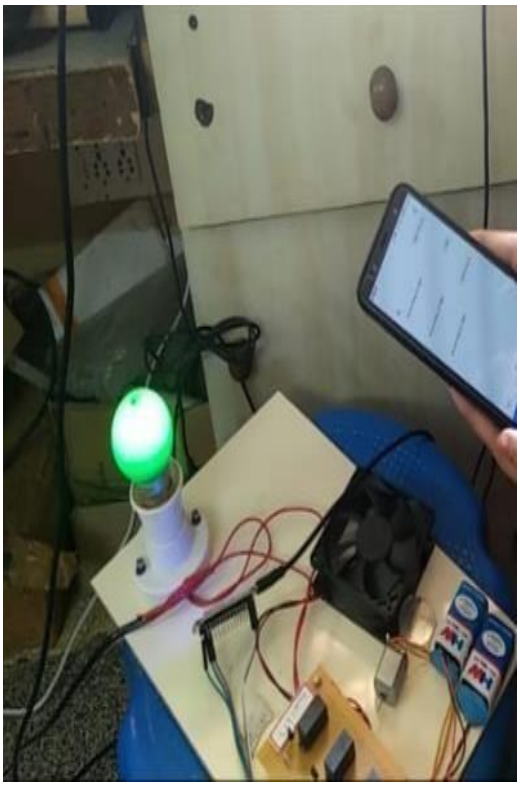
The home automation through android mobile is designed for PHYSICALLY CHALLENGED and DISABLED PEOPLE. In GSM based architecture only text messages can be send. Voice recognition cannot be done in GSM.In ARM based home automation system, we cannot connect large number of peripherals. But it can be overcome in this Wi-Fi based Home automation system.The electrical appliances are controlled through one common device which replaces television, air conditioner etc., remotes for sleep mode through Wi-Fi Home automation using clicks and voice commands.

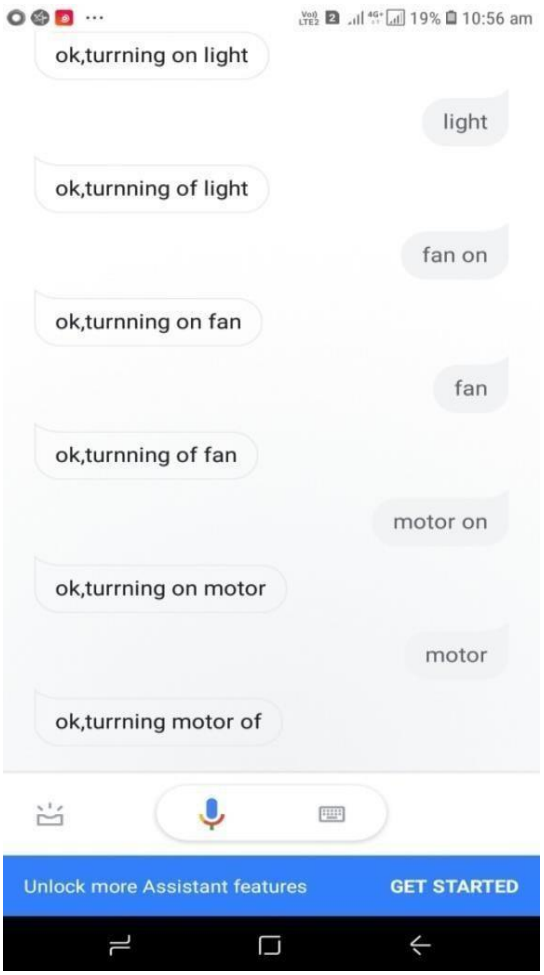
ADVANTAGES OF THE PROPOSED SYSTEM

System is requires less cost and is very flexible. It also provides security to the system. Finally it makes home as “SMART HOME”

RESULT

In this system, voice commands are given as input. The commands format which are feeded while creating IFTTT applets should be pronounced correctly to get the output. We will give the commands through google assistant and it sends the signal to controller. And this controller will control the devices to perform ON and OFF operation.





CONCLUSION

Voice Controlled Home Automation is a very different concept than what is presently available in the market. This would make automation easier. The people will be able to interact with the system. It also is an important aspect in the present world where people are so busy, this would help them in easing the basic functionality of their life. The world around us is going digital in every aspect we can imagine and it is happening fast, we also need to move forward with it. Our system is a great initiative step in automation, it would also provide with security. As it is based on voice recognition we can assign particular password to each user and the automation will respond to the correct passwords only. In future, the system could use more concepts of Artificial Intelligence so as make it more user friendly and increase the automation. Another function that may be added is developing the system for different languages other than English

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