Wi-Fi E Switch using Internet of Things

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Abstract - *The paper is mainly concerned with the automatic control of light or any other home appliances using internet. It is meant to save the electric power and human energy . In modern times, people prefer more of automatic systems rather than manual systems. One of the latest, emerging and trending technologies is the 'Internet of Things'. Here electric appliances are operated by the website. The main objective of home automation and security is to help handicapped and aged people that will enable them to control home appliances and alert them in critical situations. Home Automation System uses the technology of Internet of Things for monitoring and controlling of the electrical and electronic appliances at home from any remote location by simply using a Smartphone. Cloud based platforms help to connect to the things around us so that we can access anything at any time and any place in a user friendly manner using customized portals and in built applications. Hence, cloud acts as a front end to access IOT.*

***Key Words*: Cloud Computing, Internet of Things (IOT), Home Automation, Raspberry Pi, Wi-Fi.**

INTRODUCTION

Wi-Fi E Switch is a web based system using Raspberry pi. As it has lot of GPIO ports which can be programmed and they provides user control over various things from smartphone like energy saving, security, smart system, surveillance, access control and entertainment [1]. The main aim to design a system is to save time and manpower along with maintaining convenience and security. This system is simply design to provide comfort, security and it is easily accessible. Internet based Home Automation System is very convenient, easy flexible and cheap [2]. Many devices now have Wi-Fi and can connect to Smartphones or home computers. But these devices cannot communicate with each other or else need additional devices to do so. Thus, these devices need to be unified, such that they can be monitored and controlled using one single program or device, e.g. controlling lights, fans, air-conditioners, oven, refrigerator, TV etc. by using an application on the Smartphone [3].

Fig. 1 Internet of Things

Wireless systems can be of great help for automation systems . With the advancement of wireless technologies such as Wi-Fi, cloud networks in the recent past, wireless systems are used every day and everywhere. IOT coverage is very wide and includes variety of objects like smart phones, tablets, digital cameras and sensors [3]. Once all these devices are connected to each other, they enable more and more smart processes and services that support our basic needs, economies, environment, health etc. Such enormous number of devices connected to internet provides many kinds of services and produce huge amount of data and information. This is very easy to install and require very less energy *i.e.* 0.6mV.

PROBLEM DEFINITION

The system offers switching functionalities to control the appliances connected to the system, which includes Lights, Fans, Air-conditioners and various other appliances connected to the system. In India, the alternating current supplied to our homes is of 230V. Arduino Board is not capable of withstanding such high Voltages. Thus, Relays are used to convert this high voltage to low voltage i.e. less than 5V. The relay switches have capability to carry a maximum load of 10A at 240V. To enable connectivity with the microcontroller Wi-Fi module is used. It provides Internet connectivity, which allows Internet access and control from the Android Application effectively and efficiently.

WORKING OF WI-FI E-SWITCH

Power unit receives a input signal from a android device which is a request for ON or OFF the devices. Power unit consists of all the circuitory which will process on the signal.

Central unit contain a Raspberry pi module which is a central processing unit of the overall circuit. It receives the input from the android mobile phone and as per the request, it will ON and OFF the output devices.

LAN/Wi-Fi is inbuilt in a Raspberry pi module. So to open the URL\Website on google then it will display a HTML page that consists of various switches for controlling various appliances like light, fan, TV, cooler and many more. Switches can be one, two, three and so on.
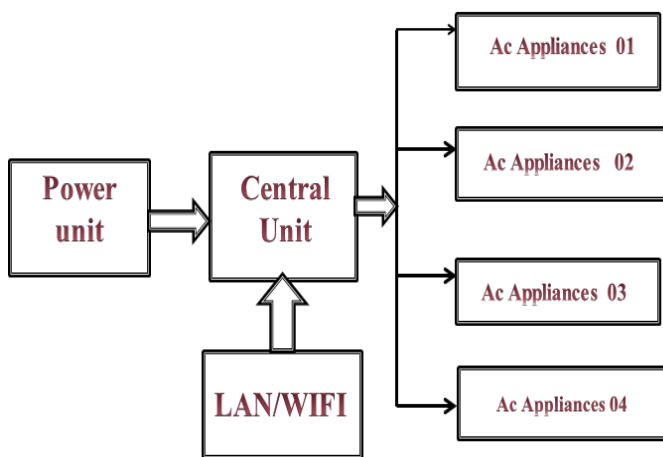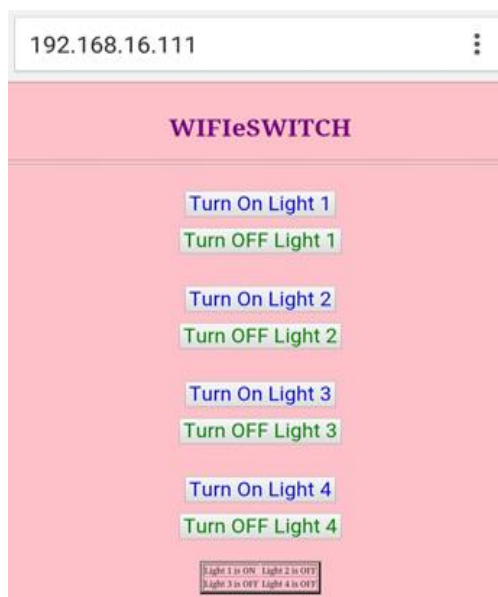

Fig. 2 Block diagram of wi-fi E-switch

Wi-Fi E Switch Web Page

ADVANTAGES

1. Simplicity and affordability.

2. It help to handicapped people.

3. Ease of installation.

4. Reduced installation cost.

CONCLUSION

This system is basically design for controlling various electrical appliances like TV, Fan, Cooler, Refrigerator, Air conditioner and many more. Wi-Fi technology capable solution has proved to be controlled remotely, provide home security and it is low cost as compared to the previous system. The system design and architecture were discussed, and prototype presents the basic level of home appliance control and remote monitoring has been implemented. The system is very easy to install and consume less energy.

ACKNOWLEDGEMENT

REFERENCES

[1] Prof. Kapil Misal, Arpita Yekhande, "Home automation system using raspberry pi" International Research Journal of Engineering Technology (IRJET). Volume 04 Issue 10, Oct. 2017.

[2] Shubham More, Tanish Sehgal,"Home automation using IOT and mobile app", International Research Journal of Engineering Technology (IRJET). Volume 04 Issue 02, Feb. 2017.

[3] Abhishek Bhat, Satvik Sharma," Home automation using internet of things" International Research Journal of Engineering Technology (IRJET). Volume 04 Issue 07, July 2017.

[4]Pooja N Pawar, Nisha P. Singh , " A Home automation using internet of things" International Journal of Innovative Research In Computer and Communication Engineering"(IJIRCCE). Volume 04 Issue 04, April 2016.

[5]Aishwarya D, Dr. J Arokia, Renjith,"Enhanced Home Security using IOT and Raspberry Pi" International Research

Journal of Engineering Technology (IRJET). Volume 04 Issue 4, April 2017.

[6] Vinay Sagar K N, Kusuma S M, " Home automation using internet of things" International Research Journal of Engineering Technology (IRJET). Volume 02 Issue 03, Jan. 2015.

[7] V. Jyothi, M. Gopi Krishna ," Home automation using internet of things" International Journal of Engineering Research and Developement (IJERD). Volume 13 Issue 02, Feb. 2017.

[8]R V Prasad Bhookya , Nitesh Gaikwad,"IOT Based Secured Smart Home Automation Using Raspberry Pi" International Journal Of Ethics in Engineering and Management Education(IJEEE). Volume 4, Issue 3, March 2017