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Enhanced home automation system using IOT

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Abstract—Internet of Things is the new revolution that is going to impact every facet of our lives.It provides a platform that allows devices to connect, sensed and controlled remotely across a network infrastructure. IoT is the new technology which includes the collection of Sensors, Actuators, processors and other development boards (eg. Raspberry pi, Arduinoetc) to collect the data from different sources depending upon domain of application, process the acquired data before sending to distant cloud or mobile application depending upon the requirement.The ESP-8266 acts as the brain of this system, processing the requests, responding to the requests made by the Android application, communicating with the Arduino and also acts as a server to store the data given by the sensors. Our main objective of developing this model is to create a home automation system which interacts with the user through various push notifications based on concerned parameters which is also eco-friendly.This paper describes how to control and monitor home appliances using android application over internet. There are number of commercial home automation systems available in market. However, these are designed for limited use. Therefore, home appliances can individually be controlled both from within the home and remotely. This is very helpful to physically challenged people.

Key word:Arduino, IoT, Android, Wi-Fi, Home Automation.

I. INTRODUCTION

Automation is the most frequently spelled term in the field of electronics. The hunger for automation brought many revolutions in the technologies. These had greater importance than any other technologies due to its user-friendly nature. These can be used as a replacement of the existing switches in home which may produce sparks and also results in fire accidents in fewsituations. Due to the advancement of wireless technology, there are several different technologies were introduced such as RFID, ZIGBEE, Bluetooth, GSM and Wi-Fi. Each technology has their own unique specifications and applications. Considering the advantages of Wi-Fi an advanced automation system was developed to control the appliances in the house. In this paper we described about controlling all the home appliances using android application. All the appliances were controlled by Arduino Mega and Wi-Fi. Module. In this project using Wi-Fi Module to receive the commands from smart phone and processed by Arduino. This system has two parts such as monitoring and control of the appliances and smart permission system. The appliances of the house can be monitored and controlled by different methods such as Graphical user interface (GUI) and World Wide Web (WWW). This automation system can send and receive data from the remote user via the internet. The user can monitor the

status concerning ON/OFF and control the appliances of the home by online or offline. He can watch his family members, security guard etc from anywhere and anytime by using smartphone or Desktop/laptop. The door permission system gives the flexible choice to both the visitor and the homeowner for easy and secure interaction.

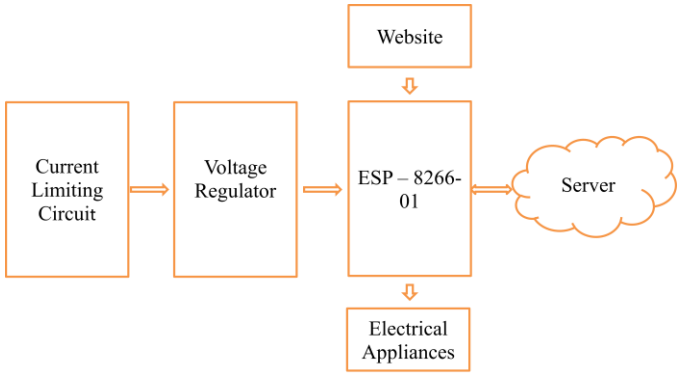
II.OBJECTIVE

The Internet of Things (IoT) is a concept in which surrounding objects are connected through wired and wireless networks without user intervention.The main objective is to remotely controlled the home appliances using internet. All the appliances were controlled by Arduino and Wi-Fi module.Wi-Fi module to receive the commands from smart phone and processed by Arduino. This proposed system can monitor and control all the home appliances.

III.PROPOSED SYSTEM

This project was to make low cost computer beagle bone black. It will act as the access point (router). This router will act as a N number of android devices. Communication by the Wi- Fi communication. This concept of Involving low cost but with high speed processor with secure data transfer. Involving low cost but with high speed processor with secure data transfer.

A. BLOCK DIAGRAM



B.DESCRIPTION

The Module that has been proposed is connected to the internet through the WiFi router and the data about the status of the appliances are sent to the server. The server receives the data periodically from the devices. If any changes in the status the device physically or through the website, the server data is changed and the status of the device is changed with the help of the controller. The current limiting circuit is used to protect device from any surge and the voltage regulator is used in the circuit because the ESP-82XX module does not have any inbuilt voltage regulators. The Module has some delay to change the status of the device because the data has to be sent to the server and the server has to give acknowledgementbased on the data sent. The module continuously send request to the server and looks for any changes in the data. The relay is used to control the binary controlled appliances and the appliances that needs voltage regulation can be controlled using MOSFET.

C.HARDWARE DESCRIPTION

1.BC547

BC 547 is an NPN bi-polar junction transistor. A transistor, stands for transfer of resistance, is commonly used to amplify current. A small current at its base controls a larger current at collector & emitter terminals.BC547 is mainly used for amplification and switching purposes. It has a maximum current gain of 800. Its equivalent transistors are BC548 and BC549.

2.AMS1117

AMS1117 3.3V Power Module is a great choice for small robotics and electronics projects with its very suitable price. The module is based on AMS1117 3,3V regulator IC. The input volts of the module is between 4,5V and 7V and the output voltage is 3,3V regulated. The board supplies output current up to 800mA.

3. ESP 8266

ESP8266 is a highly integrated chip designed for the needs of a new connected world. It offers a complete and self-contained Wi-Fi networking solution, allowing it to either host the application or to offload all Wi-Fi networking functions from another application processor.ESP8266 has powerful on-board processing and storage capabilities that allow it to be integrated with the sensors and other application specific devices.

4. RELAY

A **relay** isan electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal.

5. PUSHBUTTON

A push-button or simply button is a simple switch mechanism for controlling some aspect of a machine or a process. Buttons are typically made out of hard material, usually plastic or metal. The surface is usually flat or shaped to accommodate the human finger or hand, so as to be easily depressed or pushed. Buttons are most often biased switches, although many un-biased buttons (due to their physical nature) still require a spring to return to their un-pushed state.

6. INTERNET OF THINGS (IoT)

The internet of things (IoT) is the network of physical devices, vehicles, buildings and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.It allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit.

IV.EXPERIMENTAL RESULTS

This paper demonstrated smart home automation concept using low cost Arduino board for controlling various electrical appliances using an Android smart phone. Since loT is one of the upcoming technologies that can be used for horne automation, there are many challenges that are associated with it. One of the major challenges in the lack of standards for integrating various sensors, applications and other existing intelligent embedded devices. Providing unique IP addresses for connected devices and privacy & security in a smart home environment is another big challenge. As loT deals with huge amount of data collected from various sensors deployed in a smart environment, proper care should be taken in handling, storing and securing the data. In future, data analytics and visualization can be used for effective monitoring and management of loT devices in a smart horne environment.

V.CONCLUSION

Hence proposed system overcome the difficulties in the existing system. It is developed in a user-friendly manner. The system is very fast and any transaction can be viewed or retaken at any level. Error messages are given at each level of input of individual stages. This research work is very particular in reducing the work and achieving the accuracy. It will reduce time be avoids redundancy of data. The user can easily understand the details available from the report. This work will support for the future development.The research work is menudriven. Image can be uploaded and processed very easily.Speed and accuracy is maintained in image processing; Data is entered in formatted manner; the related images can be searched with additional input; Modification and maintenance can be made to web site very easily.

VI.JOURNAL REFERENCE

1. http://www1.cnnic.cn/ScientificResearch/LeadingEdge/wlw1
2. Gubbi, Jayavardhana, et al. "Internet of Things (IoT): A vision, architectural elements, and future directions." FutureGeneration Computer Systems 29.7 (2013): 1645-1660.
3. K. Ashton, That ‘‘Internet of Things’’ thing, RFiD Journal (2009)
4. H. Sundmaeker, P. Guillemin, P. Friess, S. Woelfflé, Vision and challenges for realising the Internet of Things, Cluster of European Research Projects on the Internet of Things— CERP IoT, 2010
5. https://www.openhomeautomation.net/choose-esp8266-module
6. http://christinefarion.com/2014/12/esp8266-serial-wifimodule/
7. .Botta, Alessio, et al. "On the Integration of Cloud Computing and Internet of Things." Future Internet of Thingsand Cloud (FiCloud), 2014 International Conference on.IEEE, 2014.
8. https://thingspeak.com/

9. Srivastava, Riktesh. "Implementation of InformationRetrieval (IR) Algorithm for Cloud Computing: AComparative Study Between With and Without MapreduceMechanism." Journal of Contemporary Issues in BusinessResearch, Issn(2012): 2305-8277.
10. Gazis, Vangelis, et al. "A Survey of Technologies for theInternet of Things."
11. A. Foster, “Messaging Technologies - A ComparisonBetween DDS, AMQP, MQTT, JMS and REST ,” 2013.
12. http://www.cloudmqtt.com/