

IoT Based Home Automation

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Abstract—Home automation means nothing but a system which is based on wireless technology for controlling or managing all our electrical appliances like lamps, doors, fans, washing machines etc. In which all the devices are connected to the cloud via internet, which means it is a part of the internet of things. These will help people to control or monitor their all home appliances from anywhere around the world. With the help of these we can save precious time as well as electricity. We can manage our home from any location or any country too. It is basically Arduino Iot cloud connected to the NodeMCU ESP8266 which is a Wifi module. These will make human life peaceful and comfy.

Index Terms—NodeMCU, Internet of Things(IOT), ESP8266, Arduino Iot Cloud.

I. INTRODUCTION

Home automation is often called smart home. It includes the command and manage the device like light, fan, door, irrigation etc. These all are connected to the cloud and all of them can be examined at any location and any time around the world. Most popular protocols used for communication include X10, Ethernet, ZigBee, and Z-Wave, and many more protocols that are all conflicting with each other.

The reputation of the appliances is controlled with the aid of the switch it both ON or OFF the use of the pc era. It also gives the safety, strength green and simplicity of use; therefore its miles followed greater. It additionally enables through presenting to control and monitoring on internet browser. The essential objective of the task is to help handicapped humans and elderly humans by alerting them inside the essential situations. All the gadgets can be utilized in our own sitting area itself. The hassle overcome by way of this paper is about that home automation is generally applied with the aid of using internet through our PC or mobile phone.

The tool ESP8266, that's the embedded device used to get admission to the cloud. IOT gadgets

make use of exceptional kinds of protocols. MQTT (Message Queuing Telemetry Transport) is one of the useful and developed. Because it is straightforward to put into effect, open, lightweight, low bandwidth protocol.

LITERATURE REVIEW

A. IoT Based Smart Home Automation gadget over Cloud.

In this paper the author describes home automation gadget the use of various sensors and actuators had been connected to the node controller which updated the statistics to IoT server[1].

B. Home Automation System Using ESP8266 Microcontroller and The Blynk Application.

In this Paper author developed a system which offers excellent convenience to the user, as it makes it possible to control the devices connected to the relay module and monitor the temperature, humidity from a remote location via a WiFi [2].

C. Home Automation System

In this paper the effort targeted on home automation concept where the controlling and monitoring operations are expediting through smart devices[10].

D. Smart Home Automation System Using on IoT

In this paper author developed such a system which update the data within 3 second that helps user to take quick decision[8].

E. A Novel Home Automation System using Bluetooth and Arduino

In this paper the author developed the system which used to control and operate the appliances through a mobile. The limitation of this system is of it's range[5].

III. PROPOSED METHADODOLOGY

We designed a system for controlling home appliances using IoT Cloud and Node MCU(ESP8266). The objective of this project to control the all electrical home appliances from anywhere around the world using Arduino IoT Cloud.

A. Hardware Used:

1. Relay:

Relay has functionality for acting as transfer for turning ON and OFF electric loads. The work simply by providing small electrical power in form of electrical signal. This permit excessive energy masses controlled by means of using small quantity of power. This permit excessive energy masses controlled by means of using small quantity of power.

2. Node MCU :

The Node MCU, it is a microcontroller unit. It is an open source hardware and software development board. Node-MCU-ESP8266 is a one type of controller. It is a board which takes the input from the connected devices to it. The Node MCU ESP8266 development board comes from the ESP-12E module containing it is having 32bit microprocessor.

This Node MCU act as wi-fi module. Arduino IOT Cloud is the software used for the programming Node MCU is comptiable with the PC and it can be easily connected to PC using USB cable.

B. Software Used:

1.Arduino IOT Cloud:

The Arduino community launched an IOT platform you can interface multiple devices to each other and permit them to exchange real-time data. Besides this, you will be able to monitor and control data from anywhere using a simple interface.

C. Block Diagram:

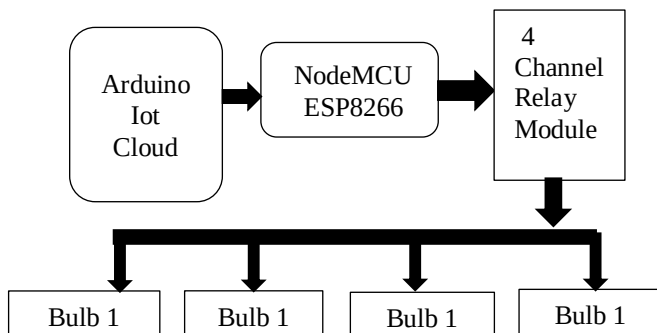


Fig.1. IoT Based Home Automation

D. Working:

The above block diagram shows the workings of an IOT Based Home Automation system. The system is designed by using three main components; the first is the Arduino IOT Cloud; the second is the Wi-fi module ESP8266, and the third is the relay module. We can control multiple electrical appliances from the Arduino IOT Cloud dashboard as well as Arduino IOT Remote App through mobile from anywhere and at any time. The working of this system is very easy, as shown in the block diagram. Firstly, we have to give commands from the cloud to ESP8266 then Node will control the relay module. We control the home appliances with the help of the relay module. Across the relay, we used a bulb to display the output.

IV. RESULTS

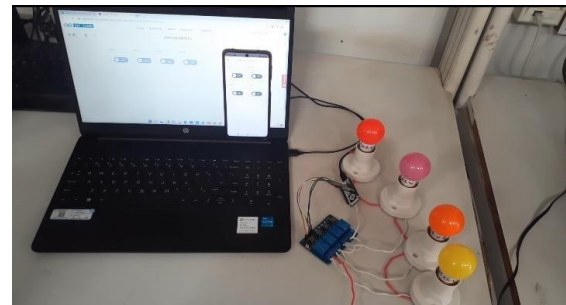


Fig.1.When all switches are OFF

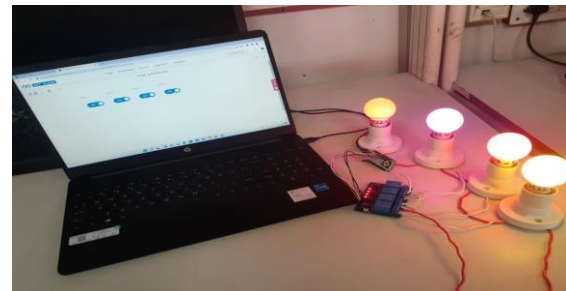


Fig.2.When all Switches are ON

V. APPLICATIONS

- It is used in our day-to-day life to control all electrical appliances from one place.
- It is helpful for handicapped and aged humans.
- Useful for public places like gardens, Hospitals, Hotels, Colleges, etc. to control lights and other appliances.
- Security Purpose.

CONCLUSION

This paper offers a simple understanding of IoT, where all of the appliances are managed, and can also replace the popularity of the tool. ESP8266 is very useful in IoT enterprises wherein it is free, green, safe; electricity is saved, compact in design and its performance is reliable. Mainly used for aged people, handicapped in which all of the gadgets are easily managed while the users are out of town. The convenience is elevated via getting access to any place and saves our precious time, and price. ESP8266 would no longer be burned via the customer's heating invoice and additionally, it is cheap in value for our home automation.

ACKNOWLEDGEMENT

The researcher would really like to express the profound feel of appreciation to Electronics and telecommunication Engineering Department at SVERI college of engineering Deemed to be an Ahilyadevi Holakar Solapur University, Solapur, Maharashtra, India: for their treasured Support and positive instructions.

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