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Home Automation Using NodeMCU

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Abstract - The walls have analogue switch mountings. They require manual pressing each time an appliance needs to be powered on or off, making using them a laborious process. Using a Web browser on a mobile device or a computer to control the switches eliminates this hassle. The current smart switches on the market are quite pricey and also require other components, like hubs, in order to function. The manually actuated switches in this paper are managed by a web browser and the cloud. The environment where the switches are mounted has a cloud server built for them. NodeMCU, which has built-in Wi-Fi, is interfaced with the switches. This is how it can turn the switches on or off.
Through the Web Browser, the user can communicate with the CPU. The processor then executes the user's commands to control the switches, and after the control operation is completed to the cloud, notifies the user of the switches' status. The Web Browser can be used to control various devices, like the fan's speed and light intensity.

***Key Words*:** NodeMCU, ArduinoIDE, light, Relay, journals

1.INTRODUCTION

The main objective of this project is to develop a home automation system using NodeMCU with Wi-Fi being remotely controlled by android App. In this short tutorial I'm going to show you how you can control your electronic appliances like T.V, fans, light set cover the internet with your voice and that to under a low budget. You can follow this tutorial even if you have no prior knowledge about Programming or NodeMCU. So lets begin learning Home Automation Using NodeMCU and Google Assistant.

Home automation is anything that enables you to use your home's lighting, heating and appliances more conveniently and efficiently. It can be as simple as remote or automatic control of a few lights, or it can be a complete system that controls all major parts of your home. Custom set to your own personal preference. It focuses on wireless home automation technologies - these are easy to retrofit into existing homes now need for new wiring and no ripping up the carpets or drilling holes in the walls. Each technology has its own unique features and benefits that makes some more suited to particular applications, whilst others can be seen for all general home automation installations.

2. LITERATURE SURVEY

There are several researches related to home Automation Platform using IOT device. Along with this in the past, the research on the IOT has been made along with the study on various applications of internet of things. The growth of Internet of Things (IOT) in future is totally depending upon us.

[1].Ahmed ElShafee (2012)

This paper has presented a design and prototype implementation of new home automation system that uses WiFi technology as a network infrastructure connecting its parts. Hence they concluded that the required goals and objectives of home automation system have been achieved. The system design and architecture were discussed, and prototype presents the basic level of home appliance control. and remote monitoring has been implemented. Finally, their system is better from the scalability and flexibility point of view than the commercially available home automation system.

[2].Vinay sagar K (2015)

This system is designed to be low cost and expandable allowing a variety of devices to be controlled. The home automation using Internet of Things has been experimentally proven to work satisfactorily by connecting simple appliances to it and the appliances were successfully controlled remotely through internet.

[3]Shaikh Amreen(2017)

They have discussed about architecture of home automation system. Also explained how internet of things are used for monitoring regular domestic conditions by sensing systems.

[4]Preeti Melikatti(2021)

The authors reviewed the Challenges and Ongoing Researches for IOT. The IOT systems are very common and are widespread. Therefore chances of security and privacy problems have become regular. Due to this all the things which are associated with internet may face safety issues. Due to the issue which is related to security and privacy IOT could not set himself as a reliable technology.

[5]Deepa N(2022)

The author discusses the various intelligent home automation system and technologies. The effort targeted on home automation concept where the controlling and monitoring operations are expediting through smart devices.

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3. BLOCK DIAGRAM AND WORKING

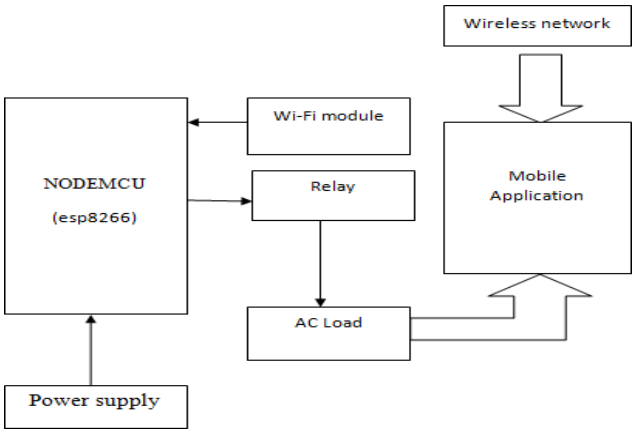

Fig 1. Block Diagram

4. PROJECT IMPLEMENTATION

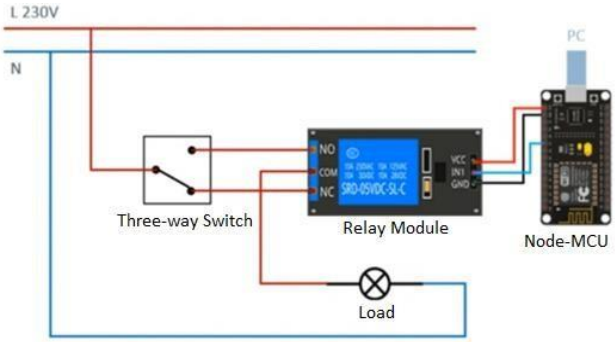

Fig 2. Circuit diagram Of Sytem

The circuit diagram of home automation using Node-mcu while figure display the hardware architecture of the system. The hardware design entails of two main components which are the connections between node-mcu and with the relay module. When we give command or press thebutton from Blynk application the node-mcu digital pin will send zero to relay module. Then relay will turn on and whatever load is connected to that relay it turn's ON. Similarly we press the three-way switch simultaneously the load turn OFF. From both ways we can control the home appliances.

In other side we can also control your home appliances or load through Google assistant.when we say "turn on light 1" then this command is send to IFTTT server this server send signal further to blynk server that is connected to node-mcu and at last the digital pin of node-mcu triggers relay and finally load or light turns ON.

A Printed circuit is an electronic circuit mounted on a base material. The circuit made of copper foil is so thin that it needs a base to support it. The base is also mounting device, Used to fasten the complete package to its case. The type and shape of the actual electronic circuit arelimited on by the imagination of the person desiring the board. The name printed circuit arose because the electronic circuit appears to be printed on the base material. In ordinary printing. inkis deposited on the paper.

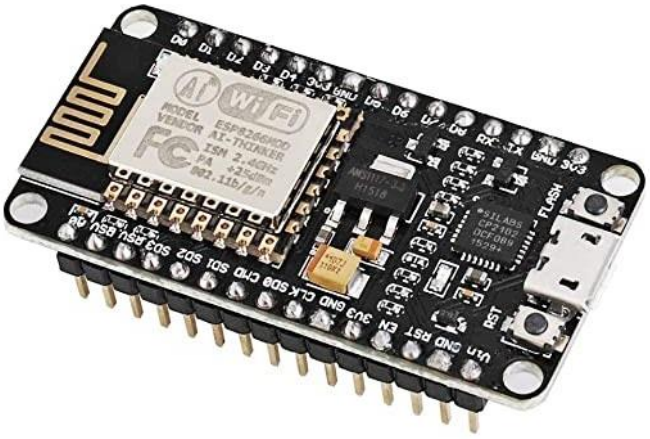

Fig 3. NodeMCU

The electronic printed circuit gives this same appearance although the circuit is actually a thin layer of copper. The shape of copper is determined by the layout or art work, required for actual circuit. The final shape is developed by etching that is, chemically removing some copper from the surface of a blank board. The remaining copper and the base material form the complete printed circuit board. It is abbreviated as PCB.

Fig 4. Arduino Software

The Arduino IDE is an open-source software, which is used to write and upload code to the Arduino boards. The IDE application is suitable for different operating systems such as Windows, Mac OS X, and Linux. It supports the programming languages C and C++. Here, IDE stands for Integrated Development Environment.

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5. CONCLUSIONS

The Home automation using Internet of Things has been experimentally proven to work satisfactorily by connecting simple appliances to it and the appliances were successfully controlled remotely through internet. The designed system not only monitors the sensor data like temperature, gas, light, motion sensor but also actuates a process according to the requirement. For example, the switch gets dark. It also stores the sensor parameters in the cloud (Gmail) in a timely manner. This will help the user to analyses the condition of various parameters in the home anytime anywhere. The home automation using Internet of Things has been experimentally proven to work satisfactorily by connecting simple appliances to it and the appliances were successfully controlled remotely through Internet. Home automation is undeniably a resource which can make a home environment automated. People can control their electrical devices via these home automation devices and set up controlling actions through mobile. In future this product may have high potential for marketing. Further it can be demonstrated from computer instead of mobile phones for controlling appliances of any large places like industries, hospitals, institutions etc., centrally.

REFERENCES

[1].Ahmed ElShafee Engineering And Technology Design and Implementation of a WiFi Based Home Automation System.(2012)

[2].Vinay sagar K.(IRJET) Engineering And Technology Home Automation Using Internet of Things, ISSN:2395-0072,(2015)

[3].Shaikh Amreen Computer Science Architecture for Internet of Things (IOT) for Home Automation, ISSN:2319-7242,(2017)

[4].Preeti Melikatti Computer Science and Technology, Home Automation System Using Google Assistant, ISSN:2394-3696(2021)

[5].Prof.N. Deepa Computer Science and Technology, Home Automation System Using Google Assistant, ISSN:2320-2882(2022)

