IOT BASED HOME AUTOMATION USING NODE MCU

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ABSTRACT

The design and proto type implementation of new home automation system, that uses Wi-Fi technology as a network infrastructure connecting its parts. The proposed system consists of two main components first part is the server (web server), which presents system core that manages, controls, and monitors users' home. Users and system administrator can locally (LAN) or remotely (internet) manages and control system code. Second part is hardware interface module, which provides appropriate interface to sensors and actuator of home automation system. Unlike most of available home needed automation system in the market the anticipated system is scalable that one server can manage lots of hardware interface modules as long as it exists on(Wi-Fi) network coverage's.

INTRODUCTION

IoT is the internetworking of physical devices, vehicles (also referred to as "connected devices" and "smart devices"), buildings, and other items-embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. In 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as "the infrastructure of the information society". The home automation is nothing but interconnection of physical devices embedded with sensors and software. The network connectivity is used to collect and exchange the data. Home automation refers to the automatic and electronic control of household features, activity and appliances. Modern system generally consists of switches and sensors connected to a central "gateway" from which the system is controlled with a user interface that is interacted either with a wall mounted terminal, mobile phone software, tablet computer or web interface, often via internet. A variety of home devices can be controlled with the help of a home automation system. All kinds of home appliances like doors, lights, fan, electric heater, surveillance systems, and consumer electronics belong to the home automation system devices. Home automation system is adopted by using the technology available for the purpose of controlling the devices as well as the systems used in the home automatically.

LITERATURE SURVEY

Wi-Fi based home automation system mainly consist three modules, the server, the hardware interface module, and the software package. The figure shows the system model layout. Wi-Fi technology is used by server, and hardware Interface module to communicate with each other. The same technology uses to login to the server web based application. The server is connected to the internet, so remote users can access server web based application through the internet using compatible web browser. Software of the latest home automation system is split to server application software, and Microcontroller (Arduino)

firmware. The Arduino software, built using C language, using IDE comes with the microcontroller itself. Arduino software is culpable for gathering events from connected sensors, then applies action to actuators and preprogramed in the server. Another job is to report the and record the history in the server DB. The server application software package.

SYSTEM ARCHITECTURE

This project works on the concept of IoT. All the devices are connected centrally to the Node MCU 32-s.A relay permits you to turn ON or turn OFF a circuit using voltage and/or current much higher than what Node MCU 32-s could handle. The proposed system consists of controller, sensors, relay drivers and various devices connected to the relay drivers. Wi-Fi is to be enabled in the mobile phone to handle the system. The Node MCU 32-s Controller is used to control the system. The System can be handled using the Node MCU 32-s device over the Internet. Various sensors are used to change the system state. The proposed system can be used to handle the household devices such as lights, fans and others to turn them on or off via remote distances.
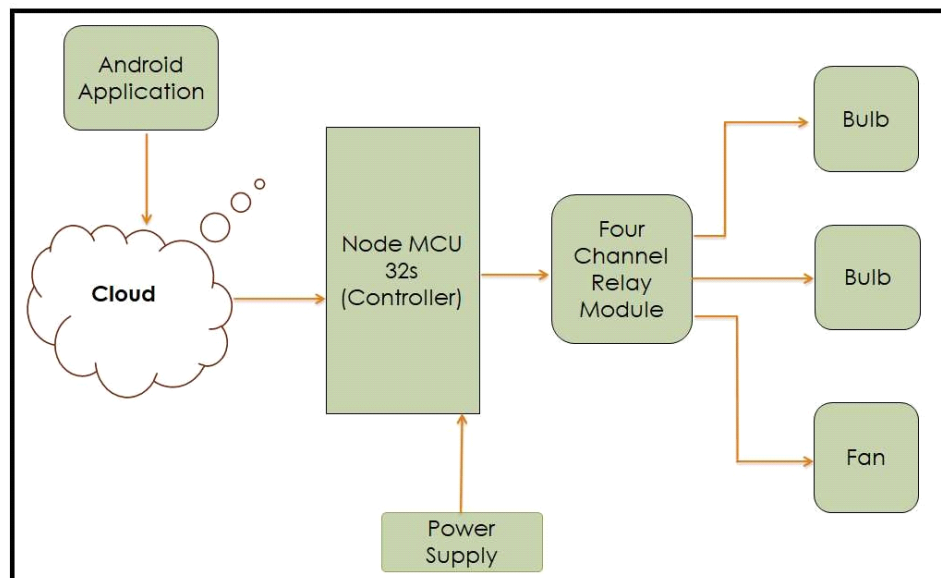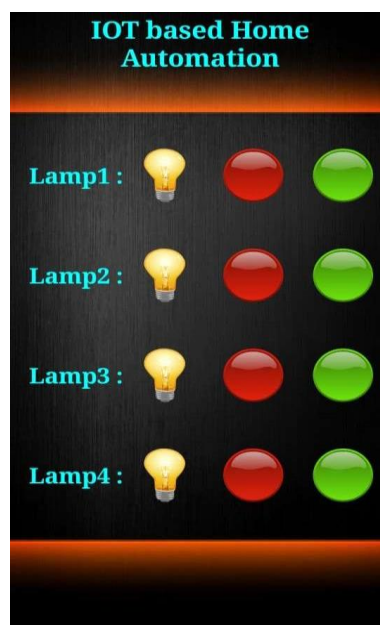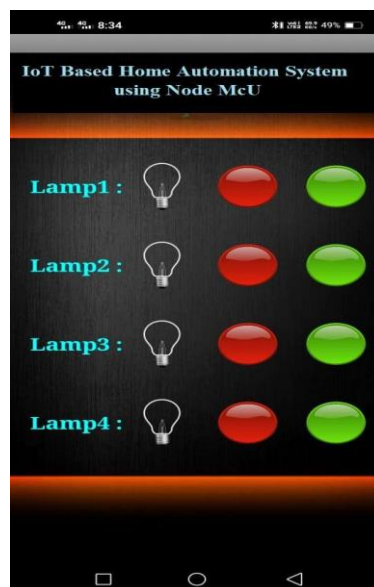
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Figure 1.1. Block Diagram

Figure 1.1 represent of all hardware in the system thatis interfaced togetheto form this project. This block diagram gives an overview of the Home Automation System. As the block diagram suggests the sensors read the data from environment and then the data is fed to Node MCU.

WORKING

This project works on the concept of IoT. All the devices are connected centrally to the Node MCU 32-s.A relay permits you to turn ON or turn OFF a circuit using voltage and/or current much higher than what Node MCU 32-s could handle. The proposed system consists of controller, sensors, relay drivers and various devices connected to the relay drivers. Wi-Fi is to be enabled in the mobile phone to handle the system. The Node MCU 32-s Controller is used to control the system. The System can be handled using the Node MCU 32-s device over the Internet. Various sensors are used to change the system state. The proposed system can be used to handle the household devices such as lights, fans and others to turn them on or off via remote distances.

EVALAUTION AND RESULT :

CONCLUSION

Thus, from this we conclude that the project is very useful for demonstration of energy conservation, security through the automation of house using Node MCU 32-s and the system. It is also useful for elderly and handicapped people. The system can provide a great impact in the smart-home technology. The devices produced enable the user to control the appliances using pre-existing devices such as their Smartphone or home computer. The interfaces are intuitive and easy to use and provide the user with a more accessible interface then those found in the home. The devices are also very easy to integrate into existing applications and require only a small amount of expertise to install. Our research shows the many types of applications for implementing home automation and the applications are not limited to those discussed in this paper.

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