Home Automation using IOT

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***Abstract*— while the cost of living is going up, where is a growing focus to involve technology to lower those prices. With this in the mind the Smart Home automation project that allowed the user to build and monitor a house that is the smart enough to save energy levels for down while providing more automatic applications. A smart home automation will take advantages of its atmosphere and allow seamless control whether the user is present or away. With the home that has this advantages, you can monitor your home is perform at its best in energy performance. By using this system, it is possible to access a variety of different engineering challenges, including software programming tools, PCB design layout, Wi-Fi module, TCP/IP protocols, Web Server design, and other aspects. This automation system provides great experience insights to the challenges of software and hardware design.**

***Index Term:- NodeMCU* and ESP8266 development board, relay , ROUTER**

I. INTRODUCTION

As the cost of living increases, the technology is increasingly continued usses to lower these prices. The automation of the house guarantees the safety of the residents' houses. It automatically switches on the lights in cabinets, stairs and other dark places. Thus, tripping or inadvertently falling. Everywhere environmental problems arise before the introductions of many technology. In this regard, home automation serve a better solution. Appliances included in home automation consume less energy. It also saves energy. Thus The smart home automation technology has until now been adapted to the environment. In addition, technology keeps the mind at peace. In most cases, guardians face problems and are always on the side-lines for the safety of their stay-at-home

children. . With the implement of OF, it is impossible to access different Verity engineering challenges, including software programs languages and PCB design structure, Wi-Fi module and TCP / IP protocols and logical design. Web server, etc. This smart home automation system provides important information about the challenges of software and hardware design.

II. GENERAL DESCRIPTION

A very cheap and highly efficient intelligent domestic system is present in a document. This system consists of two main modules: the hardware interface module and the software communication module. NodeMCU is at the heart of this system. It can also work as a microcontroller web server and log in for all modules. All communications and commands in this system are serve to the microcontroller. Residential automation provides ease, such as monitoring the environment through a temperature sensor and other parameters, gas and smoke sensors. It allows to easily change the domestic appliances connect to the relay device. Another function of this system is to provide when using the shadow sensor and all this can be monitored by the application in the smartphone application or a voice command such as the Google Assistant.

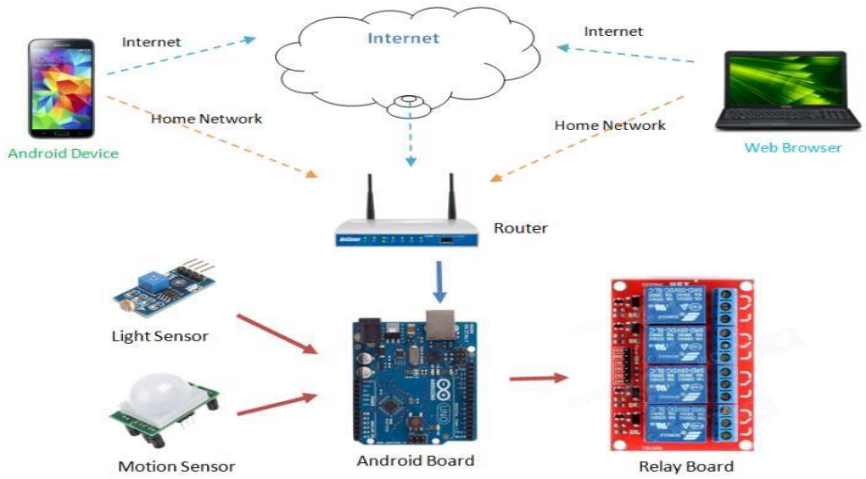

Fig (i) Overview of the System

Now a days, home automation is becoming important for the **aim of improving our lifestyle. Convenience of using home** appliances is offered by home automation. Home automation provife a future path of life in which an one by one get to control his entire houses using a smart phones, from turn on a TV to lock/unlock door; it also serve an advance use of energy. But to get or acquire such system installed will cost a lot of money and that is the major reason of why smart home automation has not received much demand and attention, adding to that also the complexity of installing it and configuring it.

Thus it is essential to made it costly effective and easy to configured, if this is grant to people then they will be wanted to acquire it in their home, office and school. In different words, a system modification for the smart home automation is necessary in order to lower the price of applying it to houses. Also home automation offers ease of mind and body to handicapped and/or elders in their houses by just one click to do what they want as stated above. Overview of the system is shown in Fig(i)

The Existing system based on with the GSM Module & Bluetooth Module only. The recent developments in technology which permit the Use of Bluetooth and Wi-Fi have enabled different devices to have capabilities of connecting with each other. Using a WIFI act as a Micro web for the NodeMCU eliminates the need for wireless between the NodeMCU board and mobile application which reduces cost and enables it to work as a standalone device. The Wi-Fi

NodeMCU Development board needs connection to the internet from a wireless router or wireless hotspot and this would act as the gateway for the NodeMCU to communicate with the internet. With this in mind, an internet based home automation system for AUTOMATIC control of home appliances is designed.

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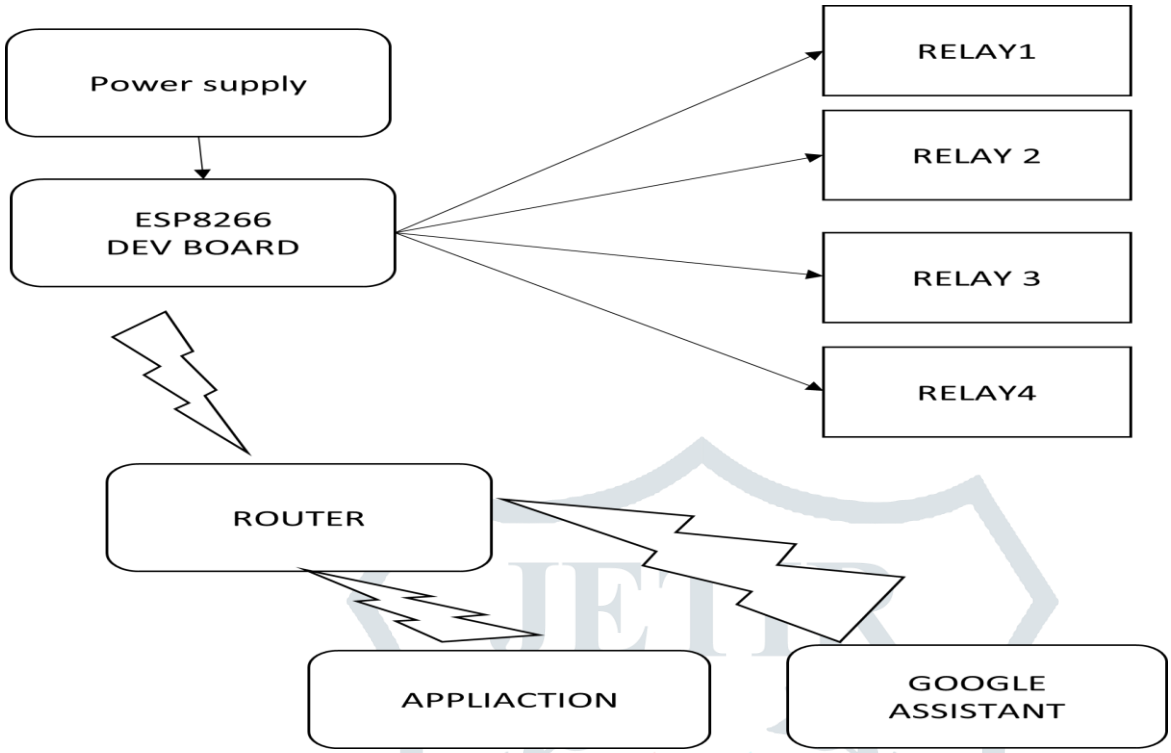


Fig.BLOCK DIAGRAM OF HOME AUTOMATION USING IOT

III. PROPOSED SYSTEM

Our proposed system is an home automation using IOT done with nodeMCU connected to a Wi-Fi and controlled via android app or voice command . This system deals with the safety in home and smart home technologies which will be cost efficient. Block Diagram of the proposed system is shown in Fig(ii)

NodeMCU can sense the surroundings by receiving input signal from a variety of sensors and can affect its environment via actuators . An analog temperature sensor is a chip that tells you what the ambient temperature is. THE ultra low-cost digital temperature and humidity sensor . It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed). It is fairly simple to use, but requires careful timing to grab data. The only real downside of this sensor is you can only get new data from it once every 2 seconds, so when using our library, sensor readings can be up to 2 seconds old.

NodeMCU

The ESP8266 is the name of a micro controller designed by Espressif Systems. The ESP8266 itself is a self-contained WiFi networking solution offering as a bridge from existing micro controller to WiFi and is also capable of running self-contained applications. This module comes with a built in USB connector and a rich assortment of pin-outs. With a micro USB cable, you can connect NodeMCU devkit to your laptop and flash it without any trouble, just like Arduino. It is also immediately breadboard friendly

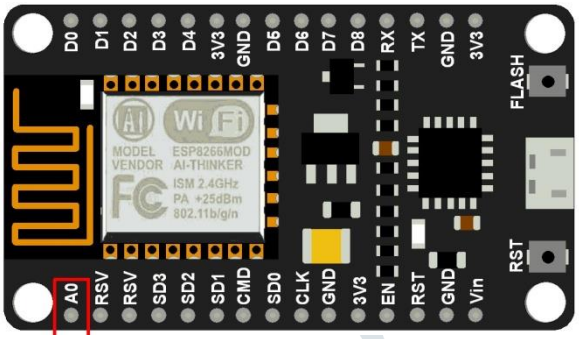


FIG.SHOWS NodeMCU

RELAY

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles, such as solid-state relays, are also used. Relays are used when it is necessary to control a circuit with a distinct low power signal or when multiple signals need to be controlled by a signal. The first relays were used as amplifiers in long-distance telegraphic circuits: they repeated the signal coming from a circuit and relayed it to another circuit. Relays have been widely used in telephone exchanges and in old computers to perform logical operations. A type of relay capable of handling the high power required to directly drive an electric motor or other loads is called a contractor. Solid state relays control electrical circuits without moving parts. They use a semiconductor device to perform switching. Relays with calibrated operating characteristics and sometimes more coils are used to protect electrical circuits from overloads or failures; in modern electrical systems, these functions are provided by digital instruments, also known as "protection relays". Magnetic blocking relays require a coil power pulse to move the contacts in one direction and another redirected pulse to move them backward. Impulses repeated by the same input have no effect. Magnetic block relays are useful in applications where a broken power supply cannot transition between contacts. Magnetic lock relays can have single or double coils. In a single coil device, the relay operates in one direction when the power is applied with polarity and will be reset when the polarity is reversed. In a dual coil device, when the bias voltage is applied to the reset coil, the contacts are transformed. The CA magnetic closure relays have individual coils that use directional diodes to differentiate the operating and reset commands. It was used in long-distance telegraphic circuits, repeating the signal from one circuit and retransmitting it to another [9].

ROUTER

A router is a network device that transfers data packets between computer networks. Routers perform Internet traffic management functions. Data sent over the Internet, such as a web page or email, is in the form of data packets. Typically, a data is transmitted from one router to another by networks that form a network interconnection till it transmit its position node.

A router is connected to two or more rows of data from different networks. When a packet of data arrives on one of the lines, the router reads the network address information contained in the packet to determine the final position. Then, using information from your rotating table or rotating policy, it implies the packet to the another layer of your route.

The most popular types of routers are house and small agencies routers that EASY send IP packets between home computers and the Internet. An example of a router would be the owner's DSL cable or router, which connects to the Internet through an ISP (Internet Service Provider). More efficient routers, such as many company routers, connect enterprise networks or ISPs to powerful central routers that transmit high-speed data along the fiber-optic coding of the IOT backbone. Although routers are usually decided hardware devices, there are also software routers. [10]

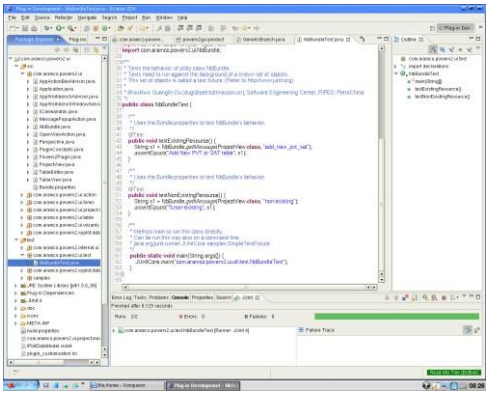
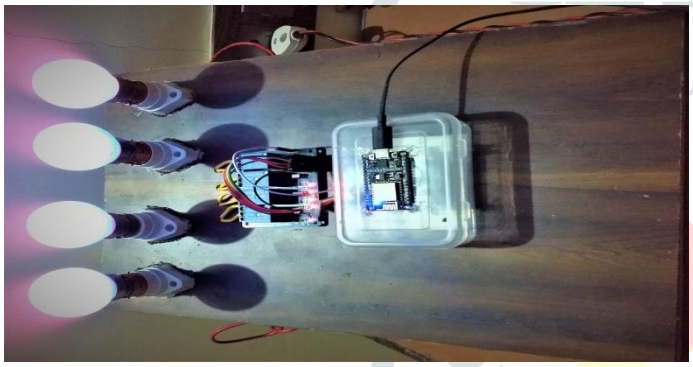


Fig (vii)Eclipse Software

V. HARDWARE IMPLEMENTATION

In case your model would be built for an automatic residence system. Click on the button to display the shadow sensor of your laptop for downloading your movie. If you choose an automatic option when you detect an error, click here. Cooler / fans available when an absolute temperature is above the set limit, for the moment, an absolute temperature. The MQ-6 monitor is the only way to check the quality of the processing, it is important to control the control of the sending of the voice. We used alternatives such as computers, fans, and so on. O Intel Galileo is in a nightclub. With Intel Galileo, you are connected to a Wi-Fi network with antennas for an Internet connection.



The Application can be control by anywhere in the world with the help of wireless device. This can be useful to aware for house devices in working hours. You can monitored the home appliances using this app and also tense free in any moment. The techniques used in this app will make much sense when compare with humans.

VI. CONCLUSION

In given project, a book structure for cheap price and efficient smart home control system using java based Smart cellular system is given and impleaded. The given structure uses a microcontroller website server and Bluetooth devices as an internal application layer for communicate between the user and the smart home devices. many java based Smart cellular system with internal mount in support for Wireless connection and many devices can be used and control the devices at home and anywhere in the world . When a Wi-Fi establish is not available, mobile cell phone networks such as 3G or 4G can engine thus eliminate the need for an outside voice synchronize devices.

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