

# NOVEL APPROACH FOR HOME AUTOMATION USING NODE MCU (ESP 8226)

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## *Abstract:*

The current world is rapidly including technology due to which supervising can greatly enhance the performance, monitoring and maintenance of the system or equipment, where IOT (internet of things) plays a major role in advancement of technology, and more dependency of people is found on technology like smart phones. Also increasing demands of easy and quick way of solving and monitoring Daily life task. Using IOT both the domestic and industrial applications can be controlled. This paper represents home automation, monitoring, and single key control access, using node MCU (esp8266). In that all the equipment's like sensors, relays are attached to the node MCU which is basically a memory provided Wi-Fi module. The status of home appliances gets uploaded to a cloud platform through wireless module. The system proposed here requires mobile to be connected over same wireless network. Sensors enables or disables as per the control of the user. All these changes or statistics can be seen by user on the cloud platform like "Blynk". Switching of equipment's can be made using voice command through Google assistant.

***Keywords:*** *Blynk, IoT, NodeMcu, home automation*

## I. INTRODUCTION

The IOT based home automation is the concept, which includes switching and monitoring household appliances like fan, TV, bulb and sensor based indications like gas leakage detection etc. for this the household appliances which are to be controlled are connected via relays, the relays are connected to respective pins of node mcu assigned through blynk server. The blynk server gets user defined commands through blynk application. For that the authentication between blynk sever and node mcu is to be completed by uploading blynk app authentication code to blynk server. This is done through burning code in node mcu via arduino ide software. Before burning library files of node mcu are to be added in arduino ide. Once authentication between node mcu and blynk server is confirmed, afterword's it will connect automatically to server through assigned Wi-Fi network. In this project we can access or monitor the data related to various application provided in the blynk library. for that you have to purchase energy level to select required application once afterword's it becomes free platform for the use. By using mobile application like blynk it becomes easier to control household appliances since everyone is carrying smartphone.

## II. SOFTWARE REQUIRED:

### A. ARDUINO IDE:

This requires for burning the program into node mcu. Arduino consists of both a physical programmable circuit board and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

### B. BLYNK:

**Blynk Server** is an Open-Source Netty based Java **server**, responsible for forwarding messages between **Blynk** mobile application and various microcontroller boards (i.e. Arduino, Raspberry Pi.)

## III. HARDWARE REQUIRED:

### A. NODE MCU (ESP 8266):

NODEMCU (esp8266) has compact size, compatibility, easy interfacing. ESP8266 is an open source firmware that is built on top of the chip manufacturer's proprietary SDK. The firmware provides a simple programming environment, which is a very simple and fast scripting language. The ESP8266 chip incorporates on a standard circuit board. The board has a built-in USB port that is already wired up with the chip, a hardware reset button, Wi-Fi antenna, LED lights, and standard-sized GPIO (General Purpose Input Output) pins that can plug into a bread board..Figure-3 shows the diagram of NODEMCU (ESP8266).It has Processor called L106 32bit RISC microprocessor core based on the Tensilica Xtensa Diamond Standard 106Micro running at 80 MHz and has a memory of 32 Kbit instruction RAM ,32 Kbit instruction cache RAM, 80 Kbit user data RAM&16 KbitETS system data RAM. It has inbuilt Wi-Fi module of IEEE 802.11 b/g/n Wi-Fi.

### Diagram of NodeMCU (esp8266)



### B. RELAY:

Relay is nothing but it is the electromagnetic switch. Relay allows one circuit to switch another circuit while they are separated. Relay is used when we want to use a low voltage circuit to turn ON and OFF the device which required high voltage for its operation. For example, 5V supply connected to the relay is sufficient to drive the bulb operated on 230V AC mains. Relays are available in various configurations of operating voltages like 6V, 9V, 12V, 24Vetc.



### C. DC MOTOR AS A FAN:

A direct current, or DC, motor is the most common type of motor. DC motors normally have just two leads, one positive and one negative. If you connect these two leads directly to a battery, the motor will rotate. If you switch the leads, the motor will rotate in the opposite direction.To control the direction of the spin of DC motor, without changing the way that the leads are connected, you can use a circuit called an H-Bridge. An H bridge is an electronic circuit that can drive the motor in both directions.

D. BULB:

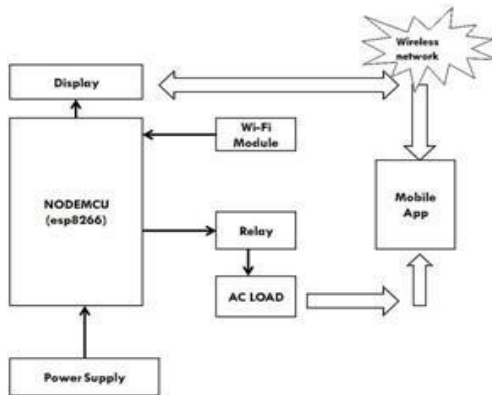
The incandescent light **bulb** turns electricity into light by sending the electric current through a thin wire called a filament. Electrical filaments are made up mostly of tungsten metal. The resistance of the filament heats the **bulb** up. Eventually the filament gets so hot that it glows.

The DHT11 humidity and temperature sensor makes it really easy to add humidity and temperature data.



E. SENSOR:

IV. BLOCK DIAGRAM:



VI. ADVANTAGE:

1. Easy to handle.
2. Equipments can be controlled anywhere from world.
3. Real time updates.
4. Multiple gadgets available in blynk app.

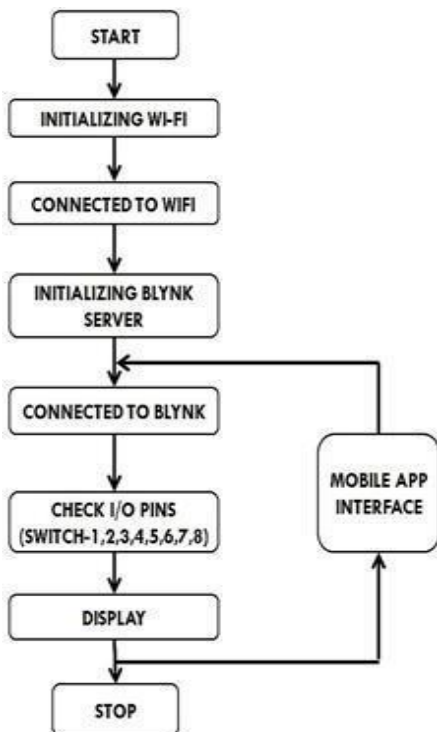
VII. DIS-ADVANTAGE:

1. Requires Wi-Fi connection established to internet.

VIII. APPLICATION:

1. Iot (internet of things) for home automation.
2. For domestic monitoring like temperature.

V. FLOW CHART:



X. CONCLUSION:

Through this project work an individual control home automation system can be cheaply made from low-cost locally available components and can be used to control multifarious home appliances ranging from the security lamps, the television to the air conditioning system and even the entire house lighting system. And better still, the components required are so small and few that they can be packaged into a small inconspicuous container.

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