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A Novel Approach for Home Automation

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ABSTRACT

Automation is the most frequently spelled term in the field of emerging technology. The hunger for automation brought many revolutions in the existing technologies. These had greater importance than any other technologies due to its user friendly nature. These can be used as a replacement for existing switches in home which produces sparks and also results in fire accidents in few situations. The intension behind the implementation of automation systems is to make the place intelligent so that energy is conserved and security is maintained. It also makes the life of people flexible, healthy and comfortable

Keywords: Node MCU, ESP8266, Blynk app, IoT

I. INTRODUCTION

Home automation (also known as domestics) refers to the automatic and electronic control of household features, activity, and appliances. Various control systems are utilized in this residential extension of building automation. Some components of an automated home may include the centralized control of security locks on doors and gates, appliances, windows, lighting, surveillance cameras and HVAC systems (heating, ventilation and air conditioning. These systems are composed of hardware, communication and electronic interfaces that work to integrate electrical devices with one another. Domestic activities can then be regulated with the touch of a button. From any remote location, users can adjust the controls on home entertainment systems, limit the amount of sunlight given to houseplants, or change the temperatures in certain rooms. Home automation software is often connected through computer networks so that users can adjust settings on their personal devices.

II. DESCRIPTION

The following diagram represents the block diagram of the IOT based technology of the smart home. By using this echnology one can easily avoid power wastage and can provide security to home appliances. By using node MCU, ESP8266 and the blynk software we can operate easily.

The block diagram represents the door locking system, load domestic appliances and temperature, gas and humidity detection by using the NODEMCU and by using the first blynk app is installed in phone creates an email id account and password to it

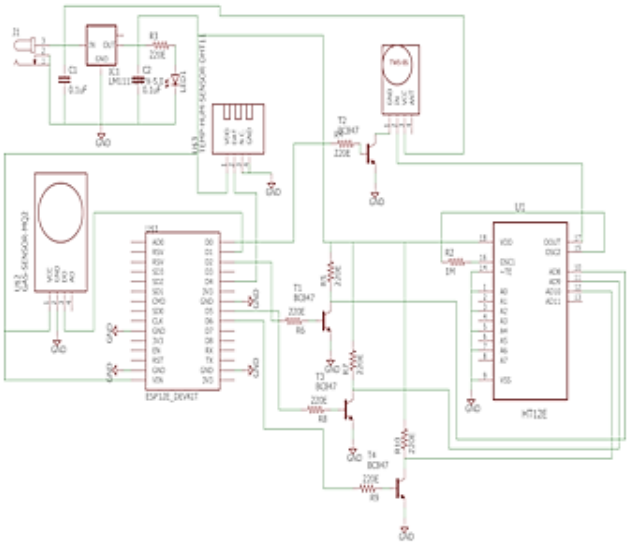


Fig. 1 Block diagram

To create a project in blynk app. creates a widget for every load and assigns pins to it. Authentication code will be generated by the project. Insert code in to the hardware which is Wi-Fi password and SSID. Then supply is given to it and the devices which are door locking, humidity, temperature and gas detection and the domestic loads gets activated by the mobile according to the user requirement.

A.NODEMCU:

NodeMCU which is an open source IOT platform.It runs on the ESP8266 WIFI.The pins of nodemcu is shown below with all pins.

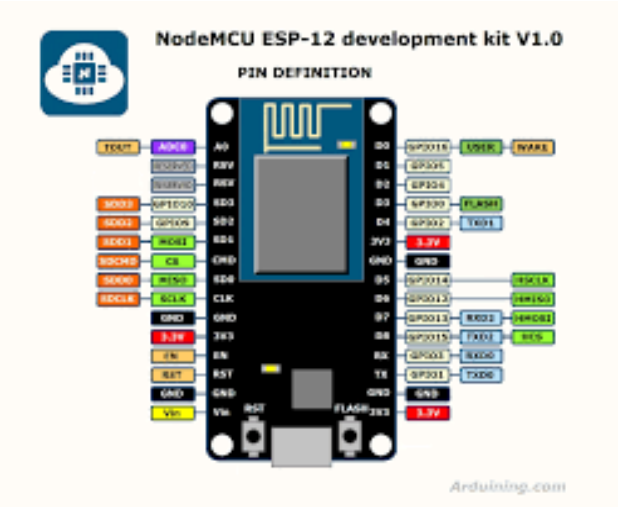


Fig.2 Node MCU

B.BLYNK APP:

Blynk was designed for the Internet of Things. It can control hardware remotely, it can display sensor data, it can store data, vizualize it and do many other cool things. It's a digital dashboard where you can build a graphic interface for your project by simply dragging and dropping widgets. It's really simple to set everything up and you'll start tinkering in less than 5 mins. Blynk is not tied to some specific board or shield. Instead, it's supporting hardware of your choice. Whether your Arduino or Raspberry is linked to the Internet online and ready for the Internet Of Your Things

III. HARDWARE IMPLEMENTATION

A.DOOR LOCKING SYSTEM:

The main components of this system are NodeMCU, Read switches, Arduino IDE, Blynk software, 0.1UF capacitor, IN4004 diode, BC847 transistor, IC1 AMS1117 voltage regulator, ESP12e encoder, L293D

The door notification is for security purpose, here we are using two, one is door notification and the other is for door locking. We are creating two buttons in the blynk app then create a notification widget and insert a code to the hardware then supply is given to the circuit, door activation device activates by mobile app. When lock opens then the notification will off and when lock closes notification will on and notification will be sent to the phone.

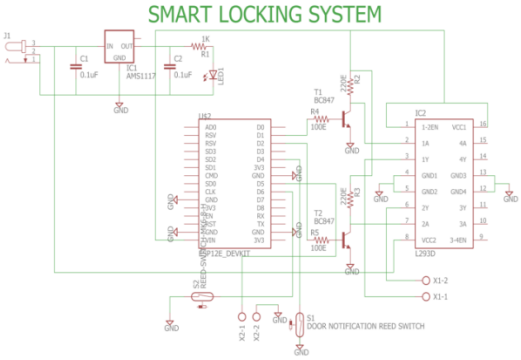


Fig.3 Door locking system

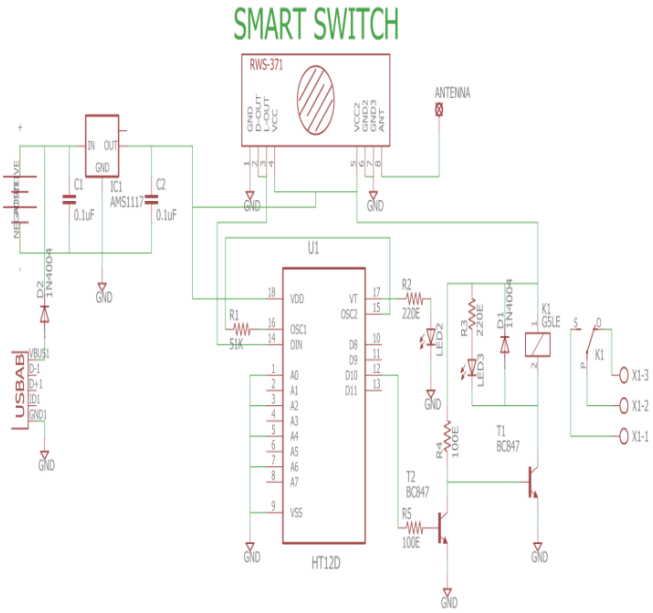


Fig.4 Smart Switch

B. DETECTION OF TEMPERATURE HUMIDITY AND GAS:

The main components of this system are Arduino IDE, Blynk software, 0.1UF capacitor, IN4004 diode, LM35CZ voltage regulator, ESP12e encoder, HT12d decoder, LED, 100E, 220E, 51K resistors, temperature and humidity sensor DHT11, gas sensor

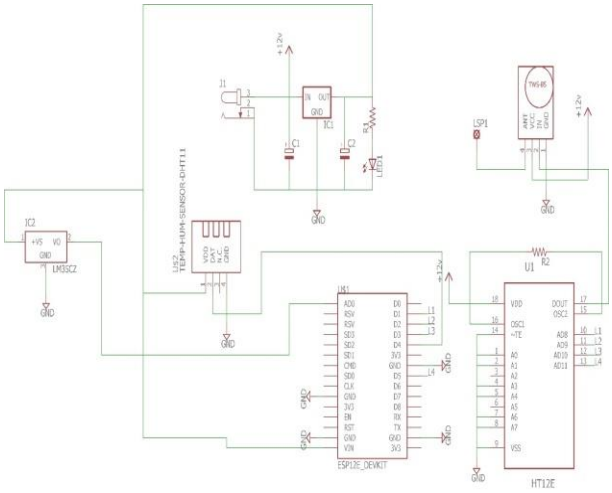
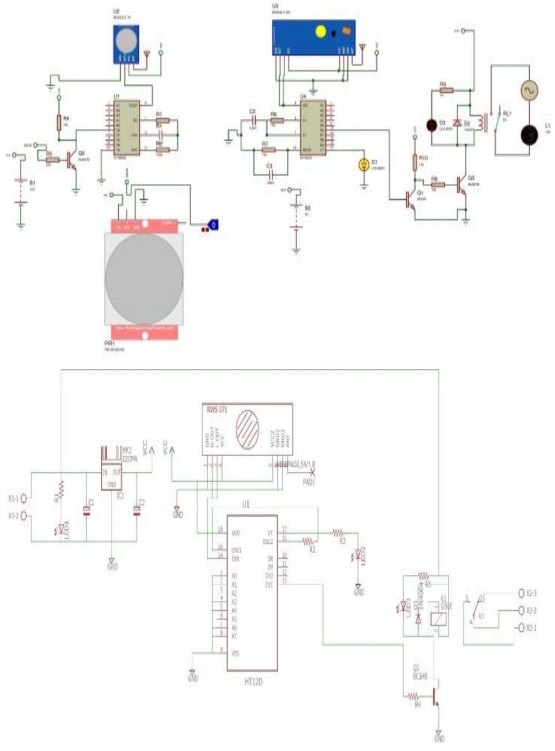


Fig.5 detection of temperature humidity and gas

The temperature and humidity in a room can be detected by placing DHT11 sensor. When a sensor detects then the transmitter transmits the signals to the receiver by pairing wirelessly then by using the ESP8266 Wi-Fi gets connected to the android phone by using the blynk app then the user will get the notification

C. LOADS:

The main components of this system are Arduino IDE, Blynk software, 0.1UF capacitor, IN4004 diode, LM35CZvoltage regulator, ESP12e encoder, HT12d decoder, LED, 100E, 220E, 51K resistors, PIR sensors



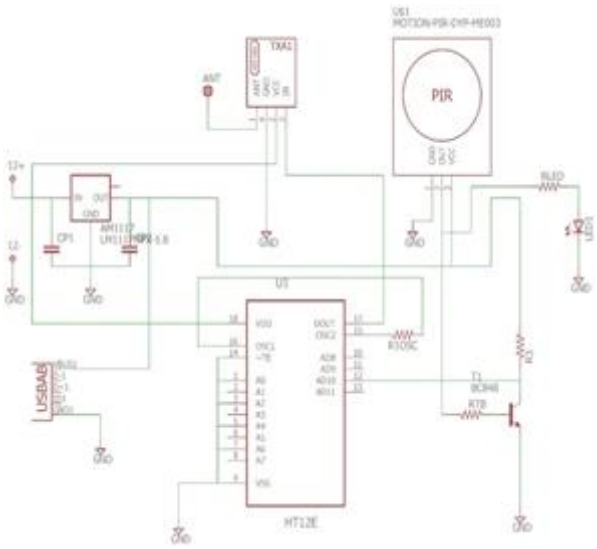


Fig.6 Loads

By using three relays three loads can be controlled here. Three PIR sensors are placed here and three relays and transmitter and receiver. Whenever the person enters the room PIR sensor detects and sends the signal to the transmitter and receiver gets paired to the transmitter through wirelessly, it can be indicated by the led and the light automatically ON.

IV. ESULTS

In this project, we are proposing a home automation model which can be used to automatically control the home appliances using an IOT application. By using IOT, we can control the home appliances over a long range as we are using the Wi-Fi technology a medium of communication. The switching of home appliances connected to the proposed system can be virtually done and also the domestic loads like light can be on and off according to the customers use. The temperature and humidity can be known and according to that we can on or off the fan or ac. In the same way door locking can be detected by using the magnet switch and the user will get notification for security purpose.

V. CONCLUSION

In our project the prime objective is to implement a low cost, compact, reliable and scalable home automation system which can control the switching of the home appliances connected to it using an android smart phone. It gives the basic idea of how to control various appliances using android smart phone. This project is based on NodeMCU platform for hardware implementation and Arduino ide,

blynk app for software program development. So the overall implementation cost is less and is easily affordable by a common person. Observing the present popularity and usage of android platform we have opted for it so that most of the people can get benefited.

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