International Journal of Research in Advent Technology, Special Issue, March 2019
E-ISSN: 2321-9637
International Conference on Technological Emerging Challenges (ICTEC-2019)
Available online at www.ijrat.org

Design And Implementation Of Smart Home Automation System Through Iot

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Abstract: In this era of digitization and automation the life of the human being is getting simpler as almost everything is automatic,replacing the old manual systems. Nowadays humans have made internet as an integral part of their everyday life without which they are helpless.Internet of things (IOT) provides a platform that allows devices to connect,sensed and controlled remotely across a network infrastructure.In this project we focus on home automation using smart phone and computer.The IOT devices controls and monitors the electronic,electrical and mechanical systems used in various types of buildings.

The devices are connected to the cloud server are controlled by a single admin which facilitate a number of users to which a number of sensor and control nodes are connected.The admin can access and control only the nodes to which the user itself is connected.This whole system using iot will allow mobile devices to remotely control all the functions and features of home appliances from anywhere around the world using the internet connection.The system designed is economical and can be expanded as it allows connection and controlling of a number of different devices

Keywords: Iot, Nodemcu Esp8266 ,Blynk,Internet

1. INTRODUCTION:

With nationals getting to be netizens, IoT has turned into a real main thrust in embellishment living basic and innovatively prevalent. In the ongoing years, there has been a developing enthusiasm among shoppers in the keen home idea [1]. IoT represents the shortened form of Internet of Things alluding to the particularly recognizable items and their virtual portrayal in a the internet. IoT is a perfect data handling and gradual addition strategy including RFID, sensor hardware, shrewd innovation, nano-innovation and other mechanical progressions. IoT is definitely not a solitary respectable innovation rather, goes around extensive corresponding specialized advancement give capacities which appropriated together guide to overcome any issues between the virtual and physical world [2]. a few home computerization framework plans has brought about Smart Homes [1]. The turn component in acknowledgment of Smart Home framework is the Home entryway in charge of exchanging diverse conventions and interfacing inward system to web [3]. With the continuous research, different keen home framework plans have been proposed where controlling activities have been executed by means of Bluetooth [4], GSM-based [5], Android Application [6], Internet [7-8], SMS [9] while a few specialists Are centering over usage by means of Speech Acknowledgment [10] and Microcontroller based Voice Acknowledgment [11]. Numerous systems managing decrease of the blackout of remote impedance on a Smart Home control network[12], minimization of vitality utilization of Smart Home [13], mapping gadgets with RFID labels [14, enhancing information trade productivity utilizing JSON information group [15] and advancing the quantity of sensors utilized for gathering information from the physical gadgets which is utilized in checking and control of a Smart Home. A key component in IoT, an amalgamation of calculation, correspondence, insightful calculation , web-administrations and cloud computing, consequently bringing about headways in remote home administration. In the light of above advancements, this paper presents an Controlling of Home appliances through IOT.

2. SOFTWARE IMPLEMENTATION

Introduction Of Blynk

Blynk is a Platform with iOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet. 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 Pi is linked to the Internet over Wi-Fi, Ethernet or this new ESP8266 chip, Blynk will get you online and ready for the Internet of Your Things.

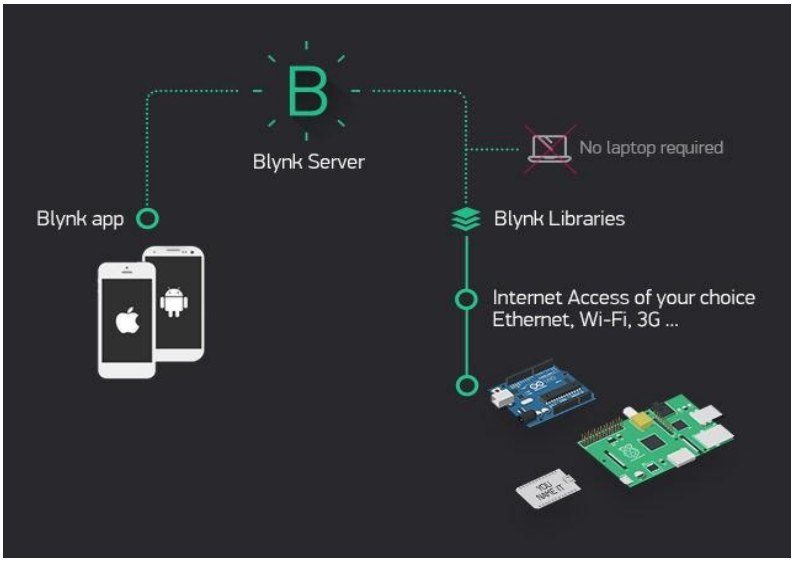


Fig.1: Blynk Architecture

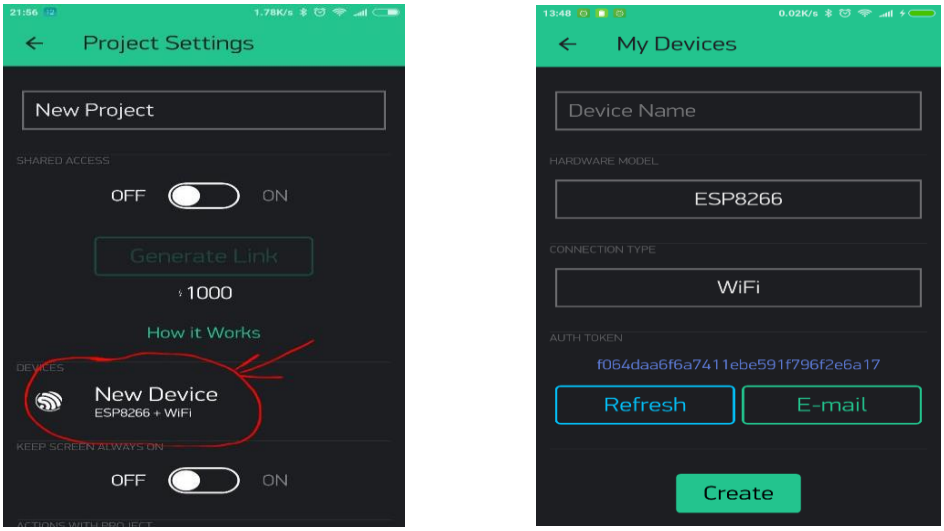


Fig.2: Auth token for project

It's very convenient to send it over e-mail. Press the e-mail button and the token will be sent to the e-mail address you used for registration. You can also tap on the Token line and it will be copied to the clipboard.
Now press the **"Create"** button.

3. HARDWARE IMPLEMENTATION

3.1.Introduction Of Nodemcu Esp8266

NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The term "NodeMCU" by default refers to the firmware rather than the dev kits. The firmware uses the Lua scripting language. It is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266. It uses many open source projects, such as lua-cjson andspiffs.

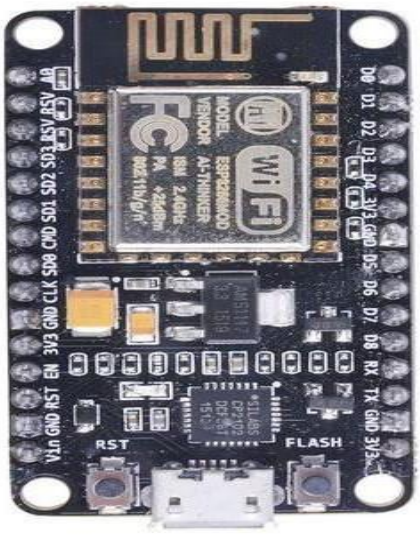
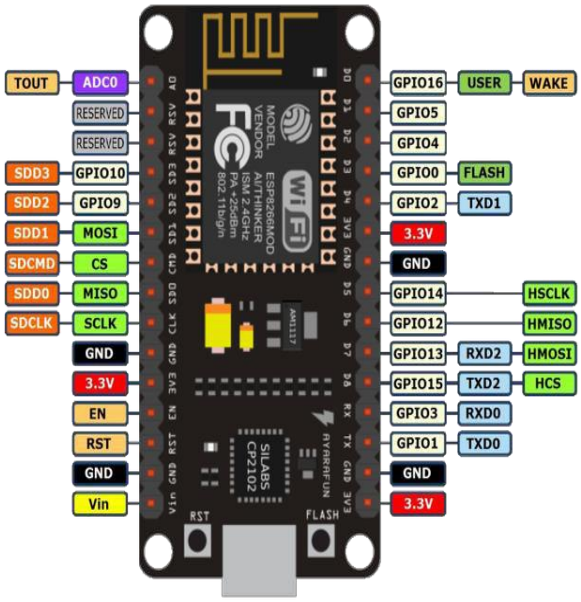


Fig.3: NodeMCU

3.2. *MCU*

ESP8266EX is embedded with Tensilica L106 32-bit micro controller (MCU), which features extra low power consumption and 16-bit RSIC. The CPU clock speed is 80MHz. It can also reach a maximum value of 160MHz. Real Time Operation System (RTOS) is enabled. Currently, only 20% of MIPS has been occupied by the WiFi stack, the rest can all be used for user application programming and development. The following interfaces can be used to connect to the MCU embedded inESP8266EX:

• Programmable RAM/ROM interfaces (iBus), which can be connected with memory
controller, and can also be used to visit external flash;



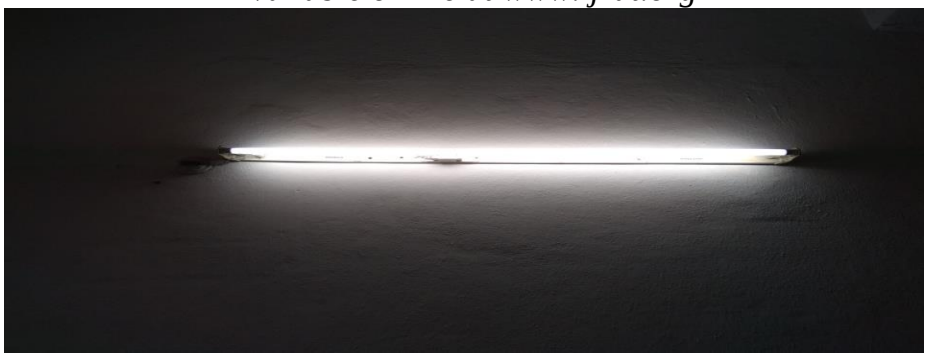
• Data RAM interface (dBus), which can connected with memory controller;
• AHB interface, can be used to visit the register.

3.3.Specifications

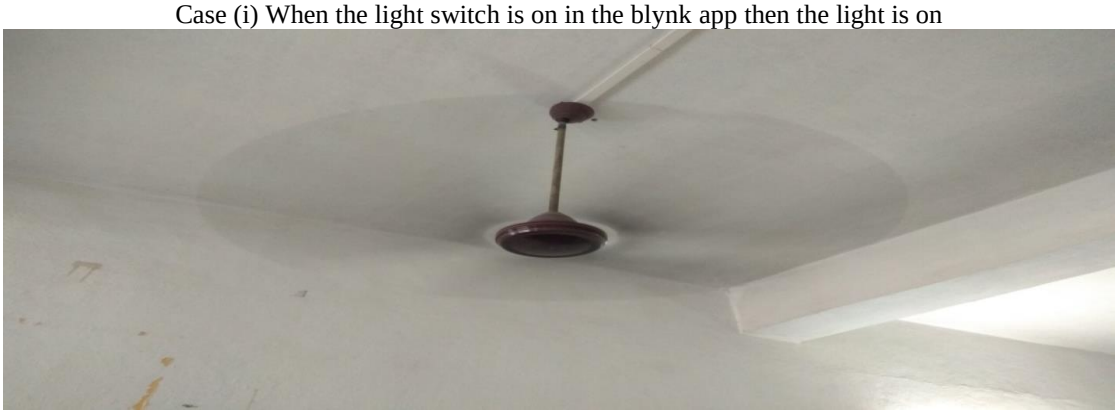
- Developer : ESP 5266 open sourcecommunity
- Type : Single board Microcontroller
- Operating system :XTOS
  CPU :
  ESP8266(LX106)
- Memory : 125k bytes
- Storage : 4Mbytes
- Power :USB

4. RESULTS

Fig .4: Proposed system for automation



Case (i) When the light switch is on in the blynk app then the light is on



Case(ii) When fan switch is on in the blynk app then the fan rotates

Case(iii) When all switches are on in the blynk app then all loads are on

5. CONCLUSION

In this project we focus on the process of operating or controlling various equipment,machinery,and other electrical and electronic appliances using various control systems remotely. This method of operating or controlling such applications is referred to as automation which has become an integral part of everyday life for human beings.

The working model we designed has its focal point on home automation providing 100% efficiency.The model has its roots on an IOT platform that allows devices to synchronize with the IOT platform so that it can be controlled remotely.The plotform uses the IOT technology to creat a network between the main server and the other electrical and electronic appliances making home a smarter place to live in.

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