# IoT Switch using BLYNK

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**Abstract -** *There is increase in the simplicity of switching devices. Best solutions for these problems of switching the devices is IoT switch. One of these versions involves the use of advanced IOT technology based on this technology ON/OFF the devices without contact to switch and human touch. According with this project you are easily controlling the devices anywhere in world. Also I have observed the live status of the devices in our smart phone like a devices are start/stop. Most important advantage is minimize the efforts to avoid switch the device every time to go switching point and turn on/off the devices.*

*Key Words***:** IoT, IoT Switch, Node McU

## 1.  INTRODUCTION

IOT or internet of Things is a technology that deals with bringing control of physical devices over the internet. Here we propose efficient industry automation system that allows user to efficiently control home or industry appliances / machines over the internet. For demonstration of this system we use 4 loads as industrial appliances or machines and a motor to demonstrate as an industrial motor.

Our system uses node MCU for processing all user commands. Node mcu has on-board Wi-Fi modem. A WIFI modem is used to connect to the internet and receive user commands. On sending commands through the internet they are first received by our WIFI modem. The modem decodes information and passes it to the node mcu for further processing. The node mcu then switches loads and operates the motors as per Receivers commands. Thus we automate entire industry or home appliances using online GUI for easy industry automation.

## 2.  LITERATURE REVIEW

There are different technologies to control the electrical devices. The different technologies are as follow:

1. IoT Switch using RF module

2. Bluetooth based IoT Switch system using cell phones

3. Zigbee based IoT Switch system

4. GSM based IoT Switch system using cell phones

5. Wi-Fi based IoT Switch system using cell phones

6. Wireless IoT Switch system using IoT

RF Technology has 20 meter range, Bluetooth technology has 50 meter range, XBee technology has 100 meter range, GSM technology has infinite range but is is not real time and requires mobile network.

Wi-Fi based system with active internet has infinite range and it is real time system.

## 3. Problem Definition

In industrial machinery and home appliances are start/stop every time goes to switching point and switched the devices this problem are avoided through IoT technology to start/stop the devices through the smart phone.

## 4. OBJECTIVE:

- Turn on/off device by the wireless communication.

- Do not matter the distance and location to operate the devices.

- Here we propose efficient industry automation system that allows user to  efficiently control home or industry appliances / machines over the internet.

- For demonstration of this system we use 4 loads as industrial appliances   or machines and a motor to demonstrate as an industrial motor.

- Thus we automate entire industry or home appliances using online GUI for easy industry automation.

## 5. METHODOLOGY

In order to control the ON-OFF action for electric devices follow the following steps.
- Turn on your Wi-Fi router first.

- Turn on your hardware i.e. node mcu.

- Wait till your node mcu connects to internet.

- Open blink app in your android mobile.

- Check that hardware is connected to internet in blink app.

- If hardware is connected use your blink app to turn ON and OFF the devices.

- Generate QR code so that anyone can use that blink app.

## 6. Block Diagram
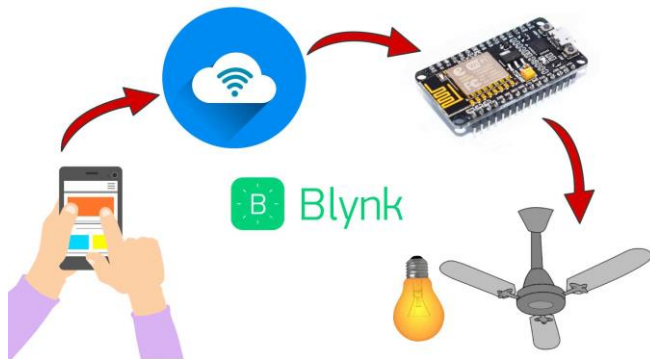


## BLOCK DIAGRAM DESCRIPTION

The block diagram of the IoT Switch has following important components as follow

1.Node Mcu,
2.Relay driver.
3.Power supply

## Node mcu Module

Node MCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which was based on the ESP-12 module. Later, support for the ESP32 32-bit MCU was added.

- •Memory: 128kBytes
- •Developer: ESP8266 Opensource Community
- •Operating system: XTOS
- •CPU: ESP8266(LX106)
- •Storage: 4Mbytes
- •Power: USB.

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## Relay Driver:

In our project we have to turn ON or OFF the electric devices. The electric supply is operating on higher voltages therefore we have to use relay. And for driving relay we have to use transistor as switch to energize or de energize the relay.

## SPDT relay

The relay takes advantage of the fact that when electricity flows through a coil, it becomes an electromagnet. The electromagnetic coil attracts a steel plate, which is attached to a switch. So the switch's motion (ON and OFF) is controlled by the current flowing to the coil, or not, respectively. A very useful feature of a relay is that it can be used to electrically isolate different parts of a circuit. It will allow a low voltage circuit (e.g. 5VDC) to switch the power in a high voltage circuit (e.g. 100 VAC or more). The relay operates mechanically, so it cannot operate at high speed.
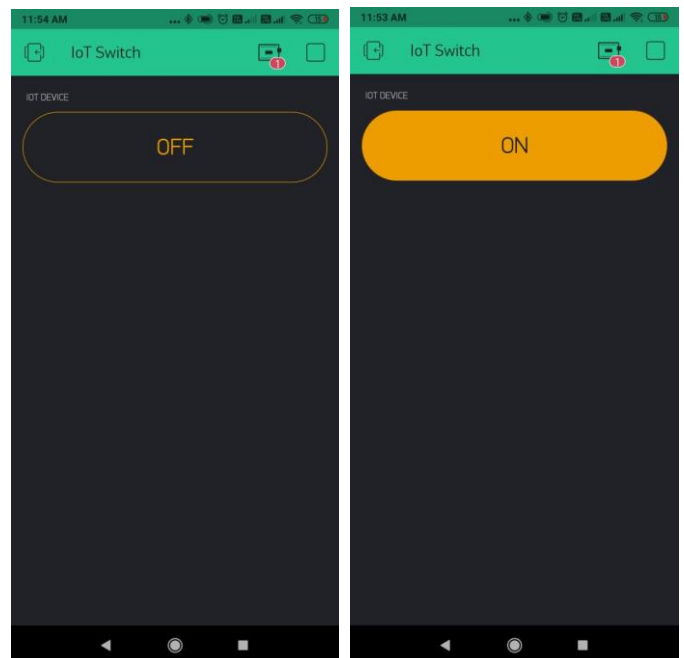
## Power Supply:

The power supply consists of a step down transformer 230/12V, which steps down the voltage to 12V AC. This is converted to DC using a Bridge rectifier. The ripples are removed using a capacitive filter and it is then regulated to +5V using a voltage regulator 7805 which is required for the operation of the microcontroller and other components

## 7. Circuit Diagram
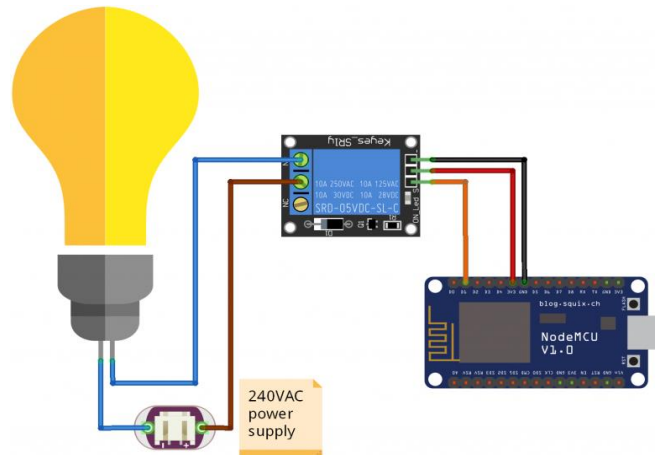


## 8. BLYNK Mobile APP:



Button on BLYNK App to turn ON and OFF the IoT Switch

BLYNK app is open source app. We can reconfigure this app as per our requirements.

## 8. Final Product:

In final product we had enclosed power supply, node mcu with relay board in single plastic box. We had kept the USB connector separate to change the Wi-Fi password and Wi-Fi name.

Also we had used manual switch to operate the switch manually. So our system has IoT as automatic system and Switch as Manual control

In this product there are 3 indicators, one is for power supply, second is for WiFi Connectivity and third is for LOAD indicator.

The final product photo is as shown in figure.



## 9. Hard ware and software used:

**Hardware used –**
Node MCU, power supply, Relay board, Plastic box, electric switch and Indicators

**Software used –**
- Arduino,
- BLYNK,
- Express PCB

## 10. CONCLUSIONS

IoT Switch is best solution for remote application control. IoT Switch can be operated from ANY PLACE and ANY TIME. Here we can control one device. But devices can be increased.

The range of control is infinite. Only limitation is active Wi-Fi connection.

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