



**Designers in Residence Program  
Cycle 1**

**Final Project Report**

**Project Name**

**Home Automation  
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### **Introduction:**

Internet of Things is an emerging technology which is an internetworking of physical devices, vehicles, buildings and other items such as electronics, software, sensors, actuators and network connectivity that enable these objects to collect and exchange data. Our project is based on the same technology where we achieve basic hardware communication through networking. We have designed a device which allows you to switch your sockets ON and OFF through WiFi using a mobile application.

### **Motivation:**

Our motivation for this project was to understand IoT technology and other concepts which are essential to develop IoT systems.

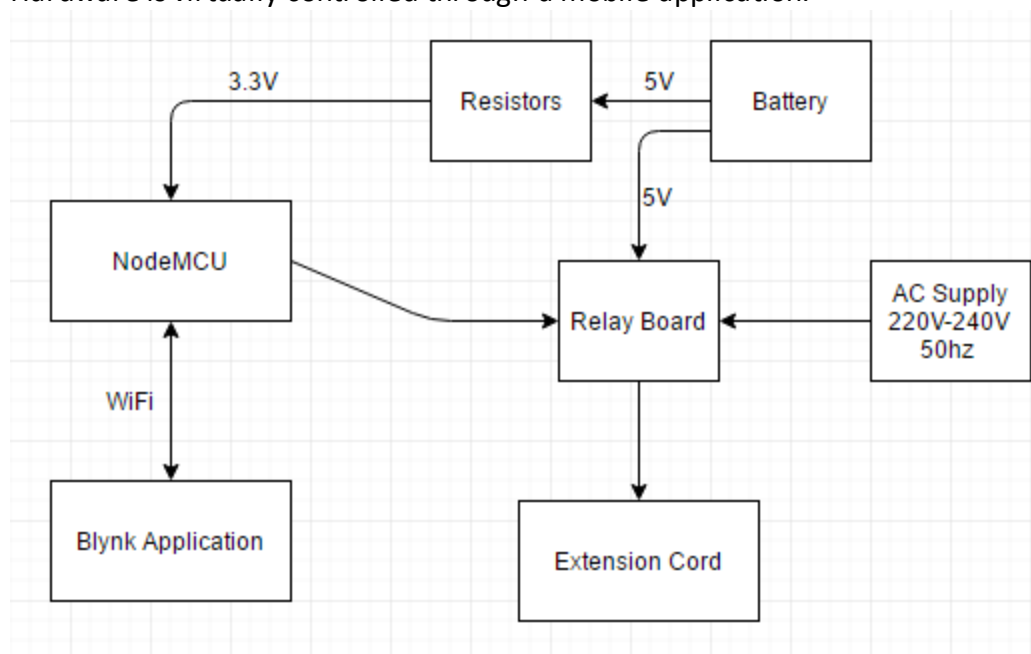
### **Components:**

We have used different components which are listed below

- NodeMCU ESP8266 12E
- Relays
- Extension Cord
- Vero Board
- Resistors
- LiPo Battery
- Wires
- Breadboard

### **Operating Principle:**

NodeMCU is used to send and receive data from and to hardware and cloud interface. Hardware is virtually controlled through a mobile application.



### **Power:**

NodeMCU operates on 3.3V (2.5mA) and the relay board takes in 5V from the battery and operates the switches on 220V-240V.

### **NodeMCU ESP8266:**

NodeMCU is the dev kit for ESP8266 12E which is a SOC (System of Chip). It is programmed through Lua which is a scripting language. It can also be programmed through Arduino IDE by downloading packages for ESP8266 12E.

### **Code:**

The following code is used to program NodeMCU ESP8266.

```
#define BLYNK_PRINT Serial // Comment this out to disable prints and save space
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>

// You should get Auth Token in the Blynk App.
// Go to the Project Settings (nut icon).
char auth[] = "YourAuthToken";

// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "YourNetworkName";
char pass[] = "YourPassword";

void setup()
{
  Serial.begin(9600);
  Blynk.begin(auth, ssid, pass);
}

void loop()
{
  Blynk.run();
}
```

### **Conclusion:**

At the start of the project we faced several difficulties regarding our project direction. After days of working with several technologies in different ways, we achieved to design and develop a basic IoT system.

In the future, this project can be extended through the right knowledge and skills. IoT is an emerging field in cross disciplinary studies therefore this project can be considered as a stepping stone to develop more advance systems.

### **Open Issues**

We faced the issue regarding our third team member.

We faced communication issues.

We felt restricted in terms of hardware knowledge due to less prior experience.

**Website:**

The following link is for the mobile application used.

<http://www.blynk.cc/>

**References:**

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8. <https://github.com/blynkkk/blynk-library>
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