THE HOME AUTOMATION PROJECT

(By Shubham Tiwari)

INTRODUCTION

We all know how amazing the internet can be. It provides you access to all sorts of information with a click of a button. But did you know it can help you control your home and save you money? That's right! The future is no longer just science fiction – it's here and it's now! Your home is becoming smart! Imagine that every single piece of equipment you own is connected to the internet. Your TV set, your lights, your stove, your water heater, your washing machine, your vacuum cleaner — the list goes on and on. All of them connected to your wi-fi, and all of them controlled from your phone or computer. You don't have to imagine anymore. It's all real. And it's all at your fingertips! My Project can Manage Home Appliances from anywhere of the globe on a single click by a single common App developed.

OBJECTIVES

1. The Project have various objectives like: -
2. Energy Efficient
3. Portable
4. Save Money on Utilities
5. Easy Accessibility
6. Very Convenience & Save Human Efforts
7. Increase Home Safety
8. Peace of Mind & Comfort Felling

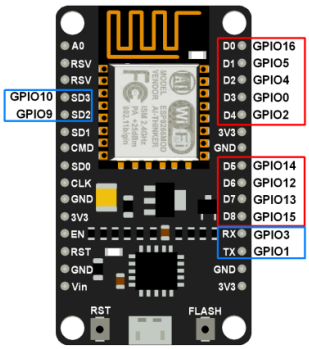
SYSTEM ANALYSIS

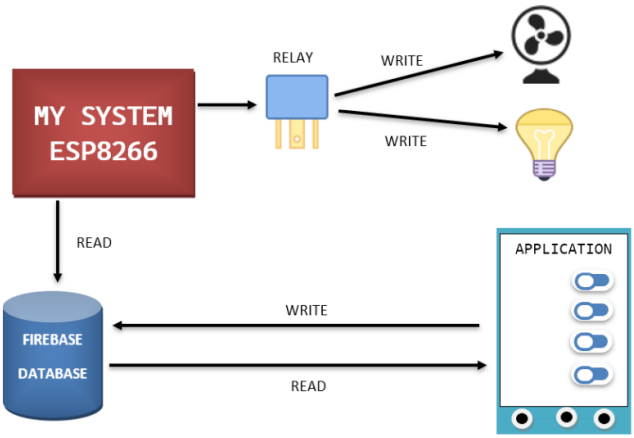
1. Managing all your home devices from one place. The convenience factor here is enormous. Being able to keep all the technology in your home connected through one interface is a massive step forward for technology and home management
2. With smart home devices, you can reduce your household tasks significantly. Not having to rush to the door every time someone rings the front doorbell. See who is at the front door on your Smartphone and unlock the door remotely or issue instructions via your Smartphone. This is just an example of the several time-saving features of smart home devices. Simply put, a smart home system can help you increase productivity and reduce the average time you spend on household tasks.
3. Feeling lazy to get up and switch off the lights in all rooms? No worries, with just a few taps on your mobile, you can switch on/off lights and other appliances around the place.
4. With smart home devices, you can remotely monitor your home appliances and ensure that all devices are safely switched off. One of the biggest advantages of home automation is that it keeps your abode safe, and prevents accidental fires, water leaks, gas leaks, and other disasters.

SYSTEM REQUIREMENT

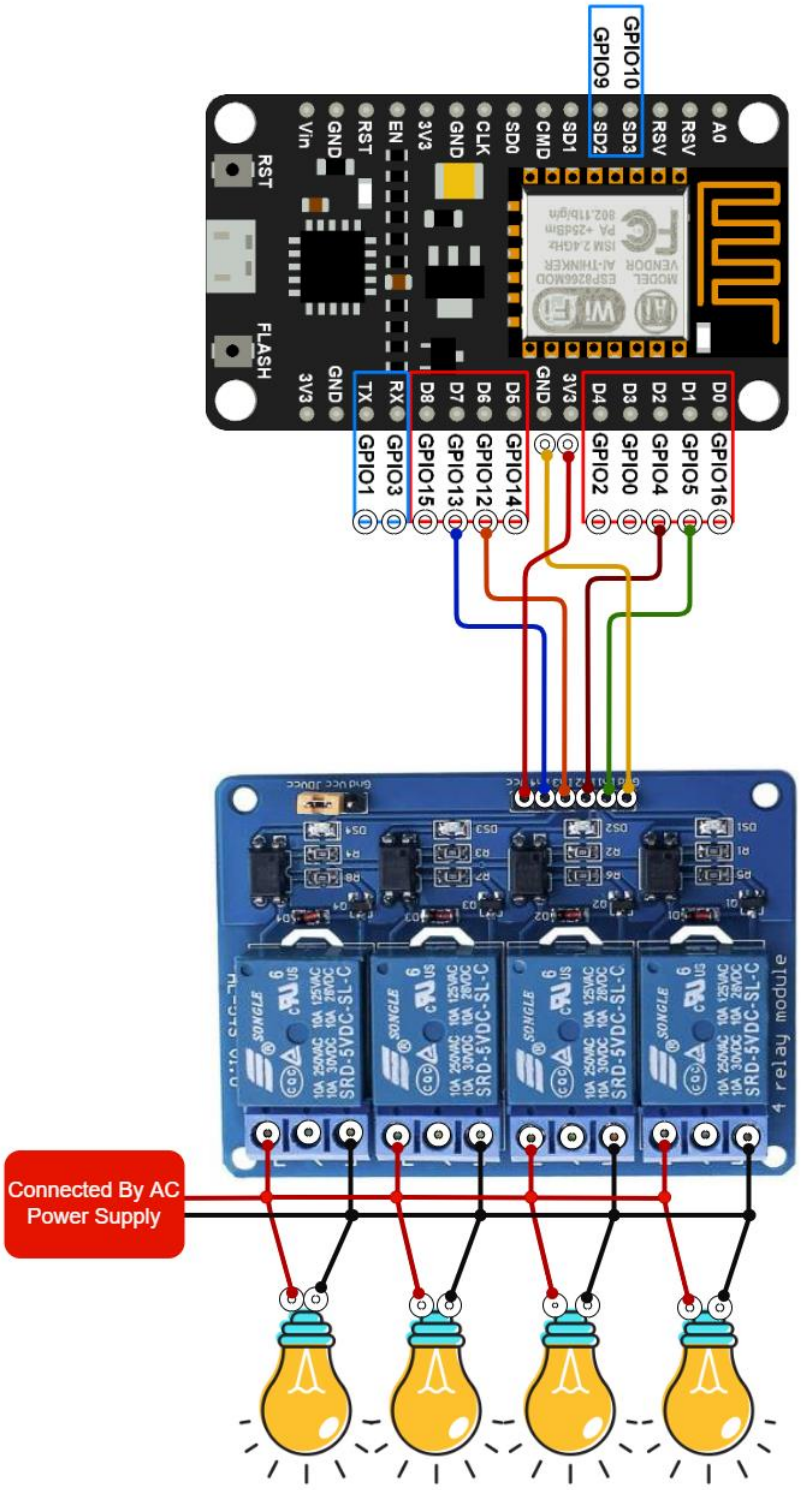
1. Hardware Used
    a. ESP8266 Module
    b. Relays
    c. Wires
    d. Home Appliance like LED's
2. Software Used
    a. Arduino IDE for Programming ESP8266 Module
    b. Android Studio for App Development
    c. Firebase Real Time Database

SYSTEM DESIGN





CIRCUIT DIAGRAM



Appendix

Source Code

1. Arduino Source Code

```
#include "FirebaseESP8266.h"
#include <ESP8266WiFi.h>

const char* ssid = "POCO";
const char* password = "12345678";

int dev1=4;
int dev2=5;
int dev3=12;
int dev4=13;
int dev5=14;

FirebaseData firebaseData;

void setup() {
  Serial.begin(9600);
  WiFi.begin(ssid, password);

  pinMode(dev1,OUTPUT);
  pinMode(dev2,OUTPUT);
  pinMode(dev3,OUTPUT);
  pinMode(dev4,OUTPUT);
  pinMode(dev5,OUTPUT);

//  Device 1 self Test
  digitalWrite(dev1,HIGH);
  delay(200);
  digitalWrite(dev1,LOW);
////Device 2 Self test
  digitalWrite(dev2,HIGH);
  delay(200);
  digitalWrite(dev2,LOW);
////Device 3 Self Test
  digitalWrite(dev3,HIGH);
  delay(200);
  digitalWrite(dev3,LOW);
//// Device 4 Self Test
  digitalWrite(dev4,HIGH);
  delay(200);
  digitalWrite(dev4,LOW);
//// Device 5 Self Test
  digitalWrite(dev5,HIGH);
  delay(200);
  digitalWrite(dev5,LOW);

  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
```

```
    Serial.print(".");
  }

  Serial.println(".......");
  Serial.println("WiFi Connected....IP Address:");
  Serial.println(WiFi.localIP());

  Firebase.begin("https://iotblink.firebaseio.com/",
"XCcw7LURaMjV6r2mmGYupwHQQ9VhCiljl2m3xzMR");
}

void loop() {

  if (Firebase.getInt(firebaseData, "/a1")) {
    if  (firebaseData.dataType() == "int") {
      int val = firebaseData.intData();
      Serial.print(val);
        if(val==1){
          digitalWrite(dev1,HIGH);
        }else{
          digitalWrite(dev1,LOW);
        }
    }
  }
  if (Firebase.getInt(firebaseData, "/a2")) {
    if  (firebaseData.dataType() == "int") {
      int val = firebaseData.intData();
      Serial.print(val);
      if(val==1){
          digitalWrite(dev2,HIGH);
        }else{
          digitalWrite(dev2,LOW);
        }
    }
  }
  if (Firebase.getInt(firebaseData, "/a3")) {
    if  (firebaseData.dataType() == "int") {
      int val = firebaseData.intData();
      Serial.print(val);
      if(val==1){
          digitalWrite(dev3,HIGH);
        }else{
          digitalWrite(dev3,LOW);
        }
    }
  }
  if (Firebase.getInt(firebaseData, "/a4")) {
    if  (firebaseData.dataType() == "int") {
      int val = firebaseData.intData();
      Serial.print(val);
      if(val==1){
          digitalWrite(dev4,HIGH);
        }else{
          digitalWrite(dev4,LOW);
```

```
        }
    }
  }
  if (Firebase.getInt(firebaseData, "/a5")) {
    if  (firebaseData.dataType() == "int") {
      int val = firebaseData.intData();
      Serial.print(val);
      if(val==1){
          digitalWrite(dev5,HIGH);
        }else{
          digitalWrite(dev5,LOW);
        }
    }
  }
  Serial.println();
}
```

SNAPSHOTS

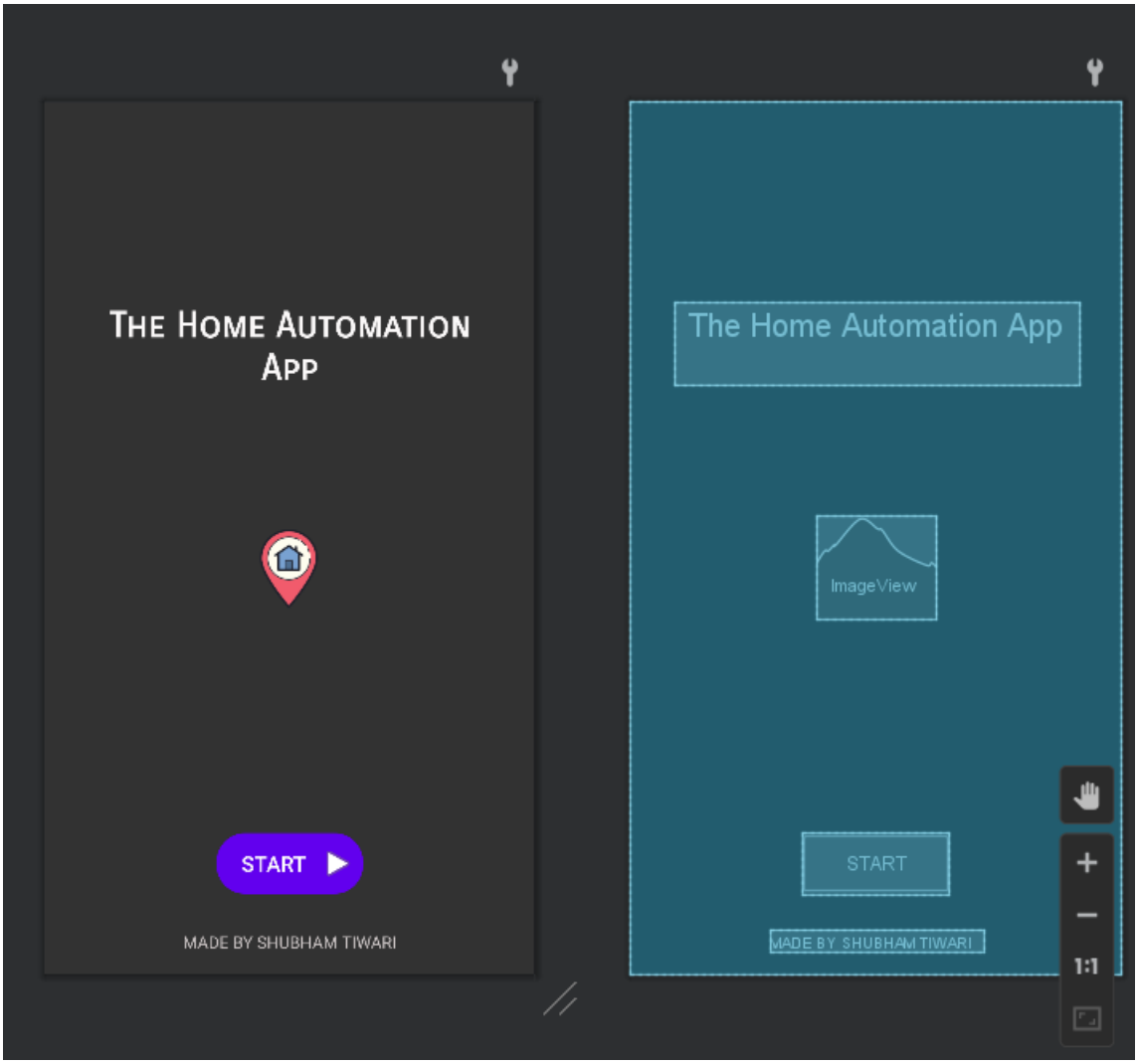


Figure 1: Application Intro

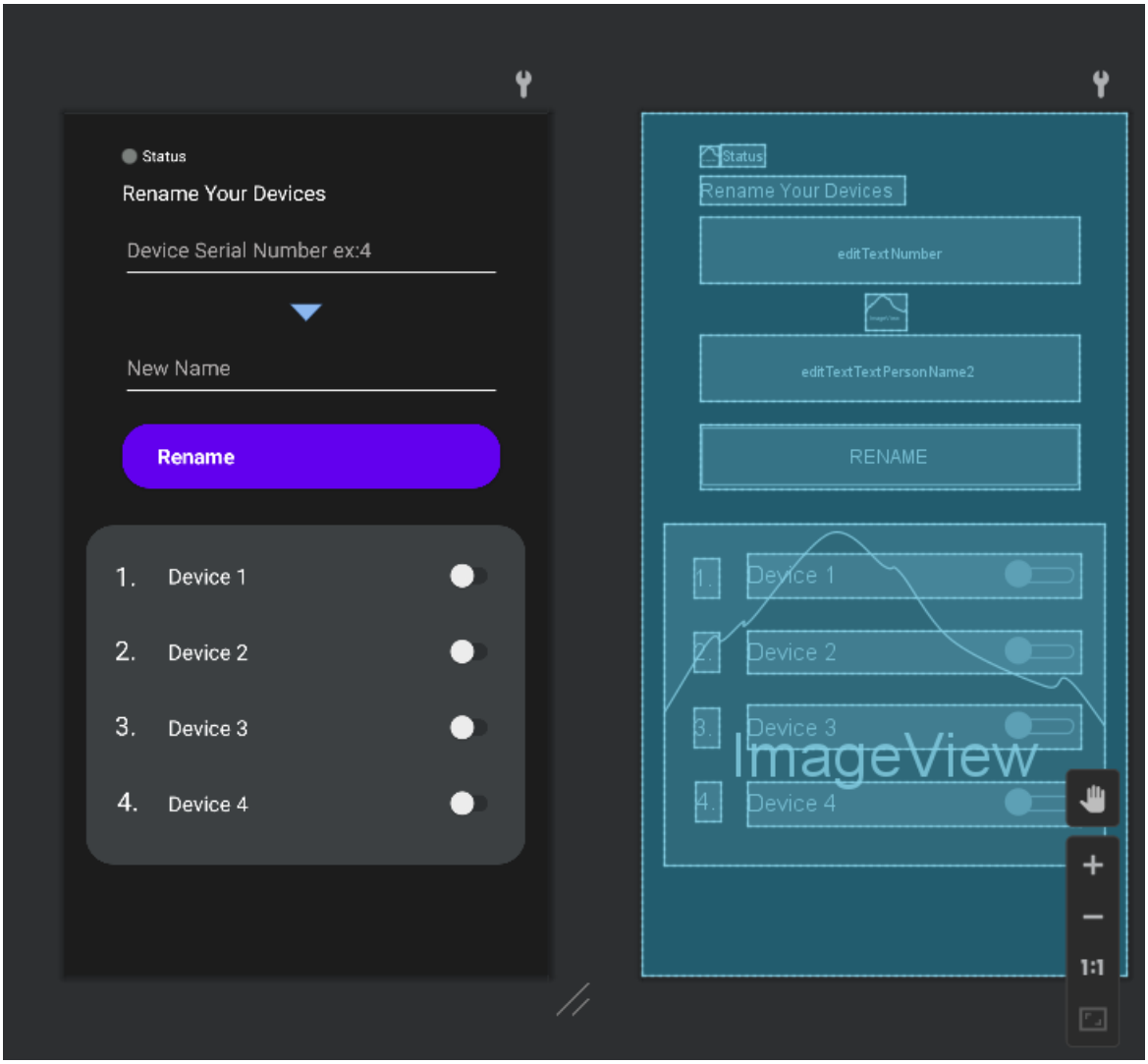


Figure 2: Application Dashboard- Homepage

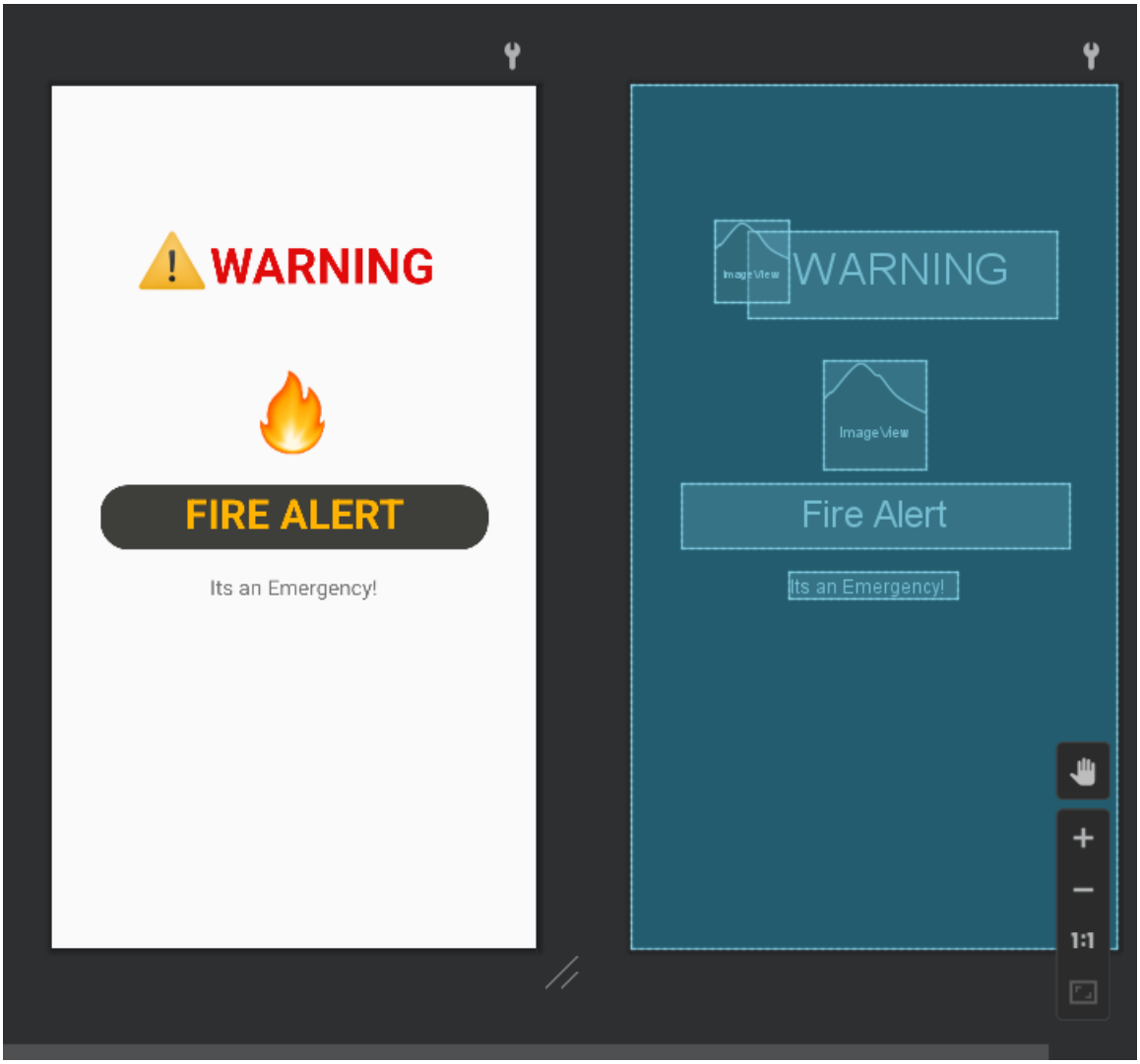


Figure 3: App can generate a fire alert if fire Sensor Detects any sign of fire

Figure 4: App can generate a water alert if water Sensor Detects any sign of water overflow