Home Automation Project Using Voice and App

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Aim of The Project:

The Aim of the project is to build a complete and secure home automation system Using micro controller that being controlled by Android app and Voice assistant. It uses Wi-Fi as a communication medium in a secure way. Here the ESP32 is used as a micro controller to automate the home appliance.

The Solar energy is used to power up the home because solar power is 100% clean, renewable energy source. It reduces reliance on oil, coal and natural gas for electricity production. The fossil fuels produce harmful emission that affects air, water, and leads to global warming. To get more energy from Solar, the Solar tracking mechanism is used and it is controlled by a micro controller (Arduino uno).

As the internet of things and automation increased the dark side of them also increased. The dark side is called as hacking. To prevent and secure from hackers some modules are implemented like finger print authentication, Encrypted communication and CSRF is used to protect. Some hacking techniques are also performed like DDOS, rolling code attack, Blue borne attack, jamming attack, back door, man in the middle and sniffing. For the physical security we use surveillance camera, motion detector and laser light protection to prevent from any instruction

The person's healthcare is also monitored by voice assistant and reminds them for the checkup. while entering the home the temperature of the person is checked and the person will be sanitized completely.

OBJECTIVES

The main objectives of this project is to rectify all the drawbacks in the existing system by implementing the home security, including voice control over appliances and effective usage of renewable energy

The objectives of the project are to design a smart home system which is:

1) Automation

2) Efficient

3) User-friendly

4) Energy saving

5) Cost effective

6) Secured

7) Respond to external environment

8) Intelligent

9) Respond as per user's input

HARDWARE REQUIREMENT

- PC preferably running windows
- ESP32 micro-controller
- ARDUINO UNO micro-controller
- 4 channel relay
- Servo motor
- Power adapter
- Passive Infrared Sensor

- Light Dependent Resistor
- Infrared sensor
- Gas sensor
- Fire sensor
- Buzzer
- Solar Panel
- LED Light
- Laser Light
- Jumper Wires
- Ribbon Cable
- ON/OFF Switch

SOFTWARE REQUIREMENT

- Arduino IDE for windows
- C programming
- C++ programming
- Firebase Database
- Kodular App Creation(WEB)

Project Circuit Diagrams:

CIRCUIT DIAGRAM OF ARDUINO UNO
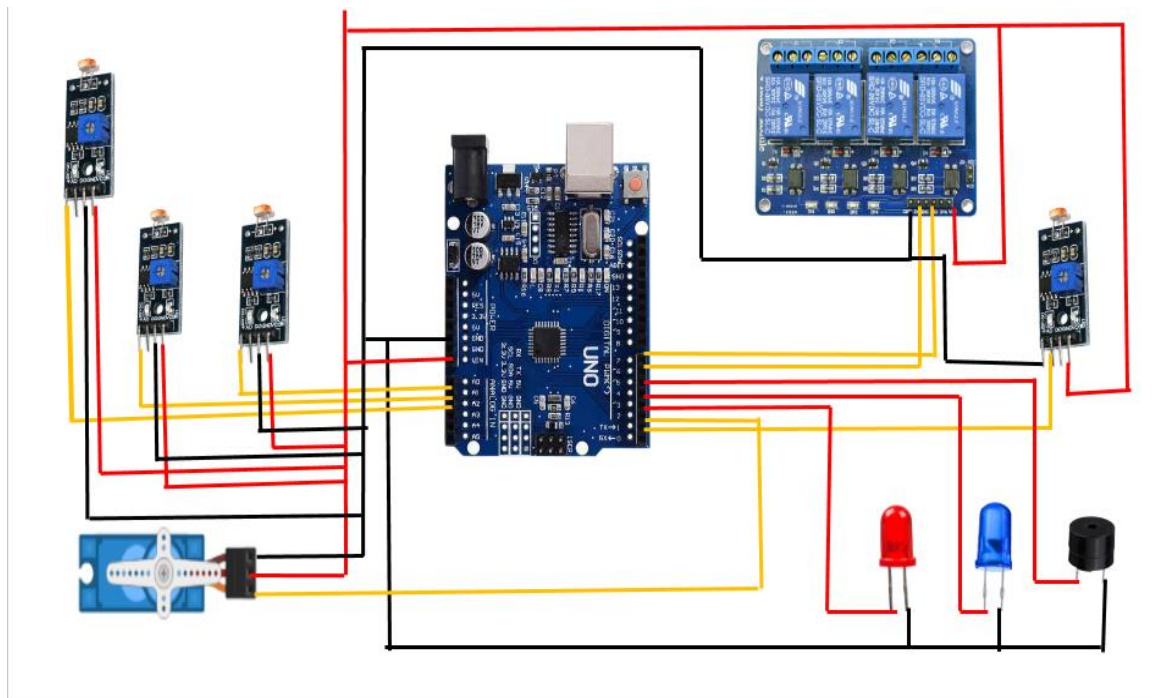
CIRCUIT DIAGRAM OF ESP32
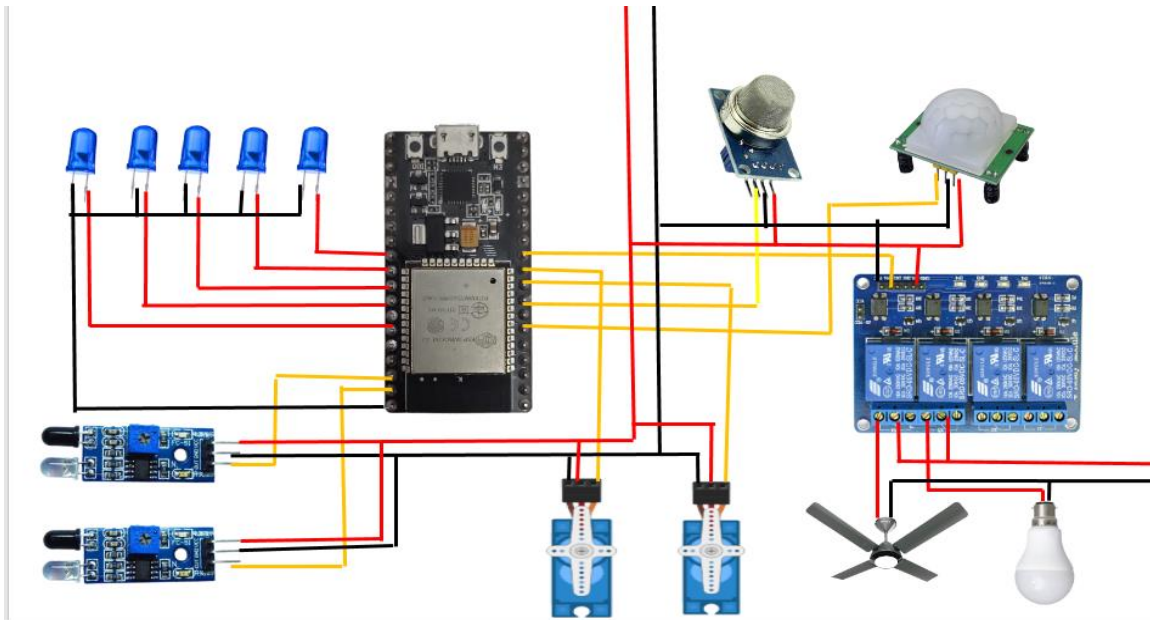
Solar Tracking Mechanism
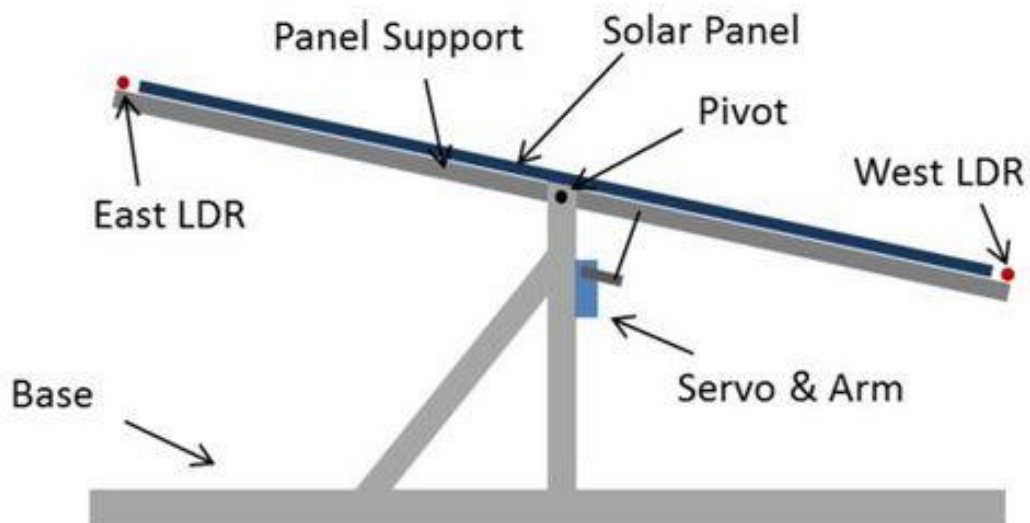
Screen shot –Home Automation Application
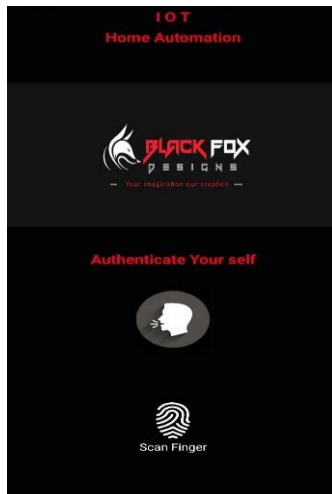
Authentication for Application Login
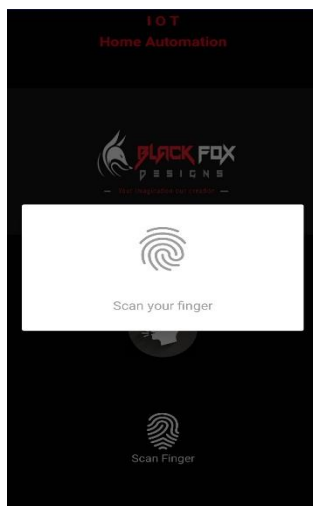
Authentication Using Fingerprint
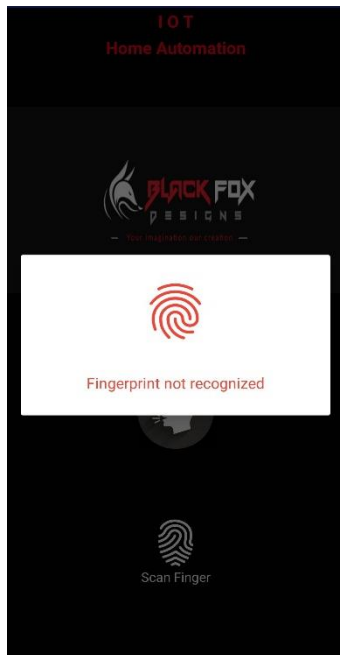
Fingerprint Authentication Failed
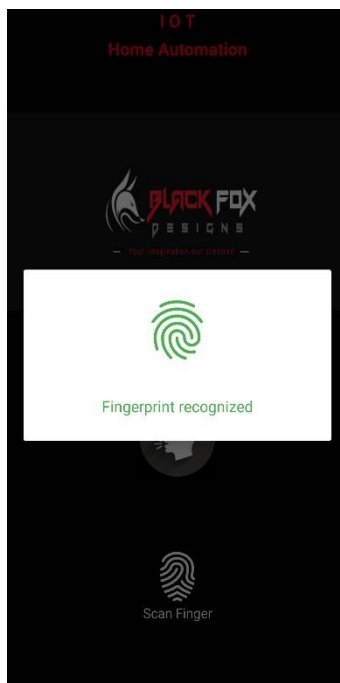
Fingerprint Authentication Successful
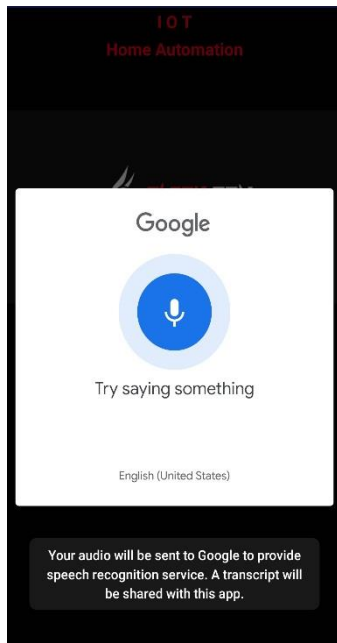
Authentication Using Voice
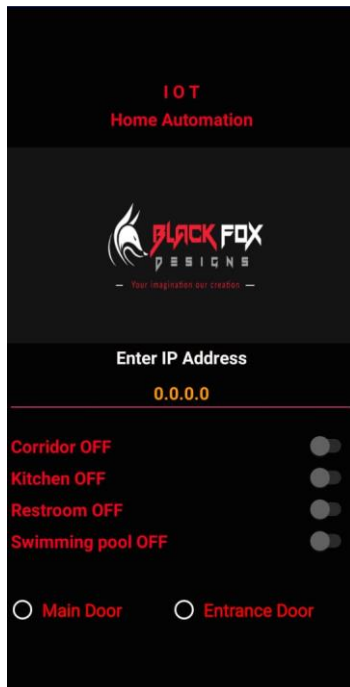
Main User Interface
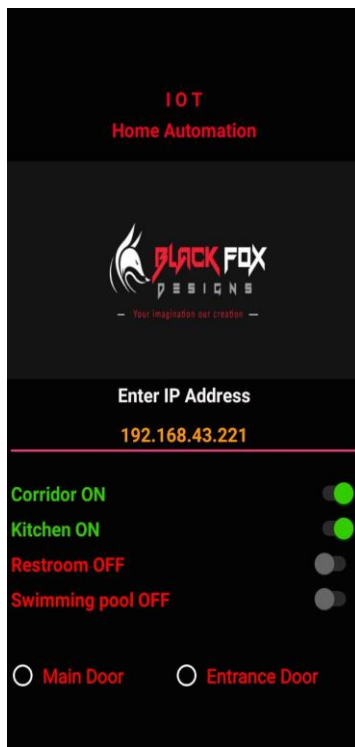
Switch On and Off to Control Appliances
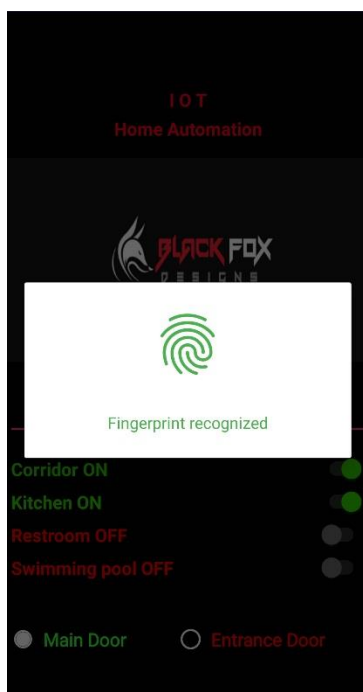
Door opening using fingerprint
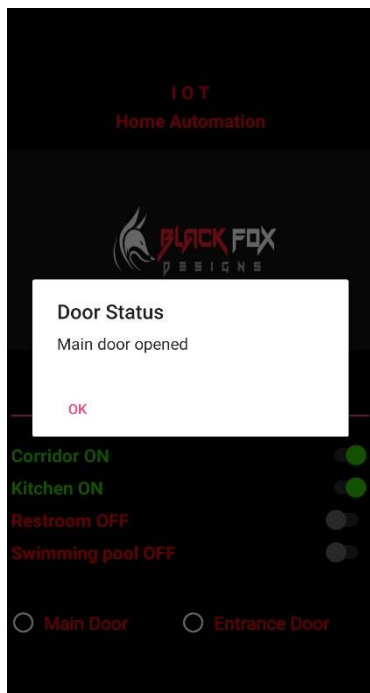
Notification for Door Opened
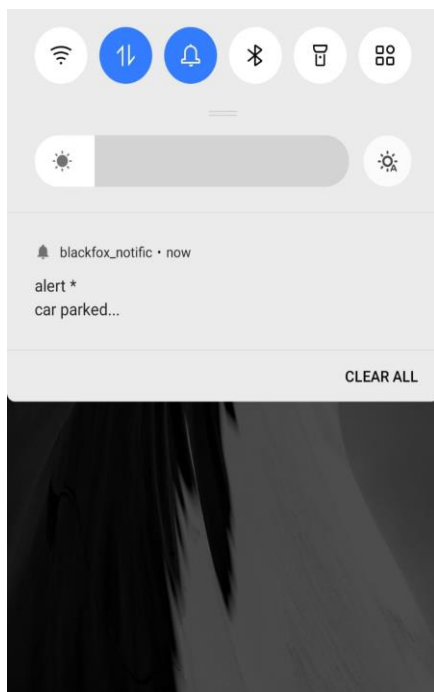
Notification for Car Parked
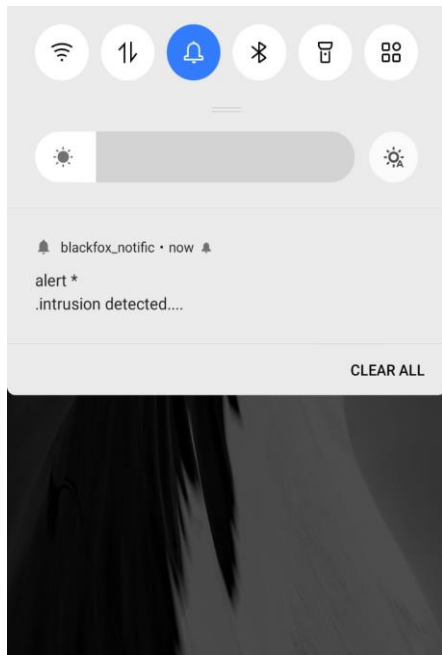
Notification for Intrusion Detected
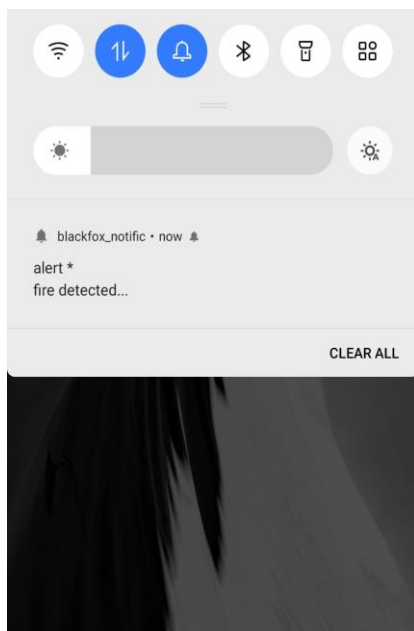
Notification for Fire Detected
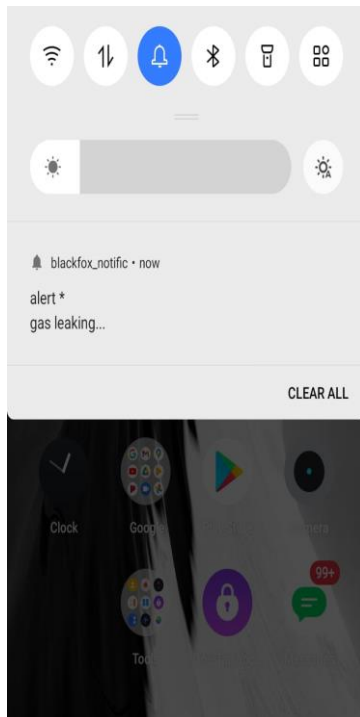
**Notification for Gas Leaking**

## 8.4 Screen shot-Setting up Google Firebase
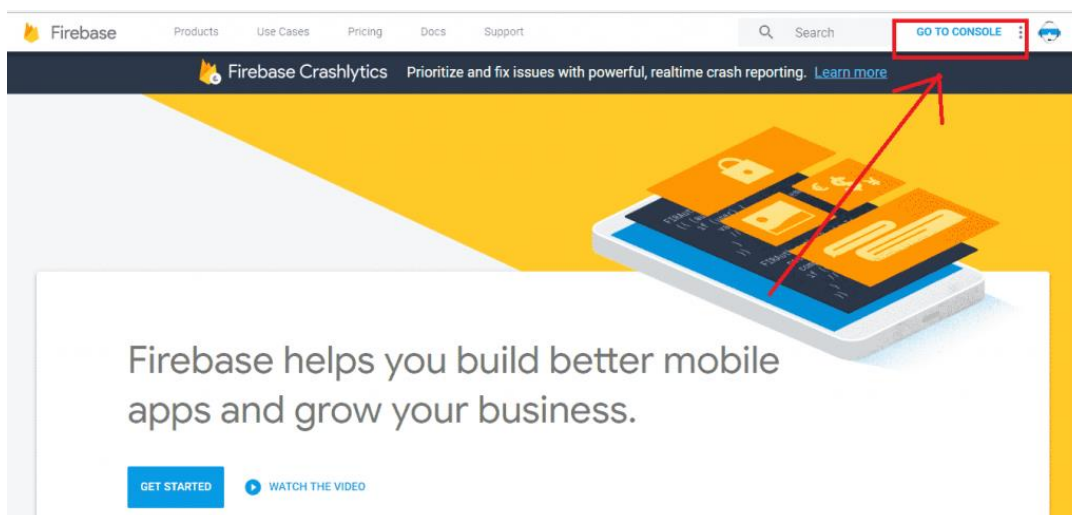
Going to Console
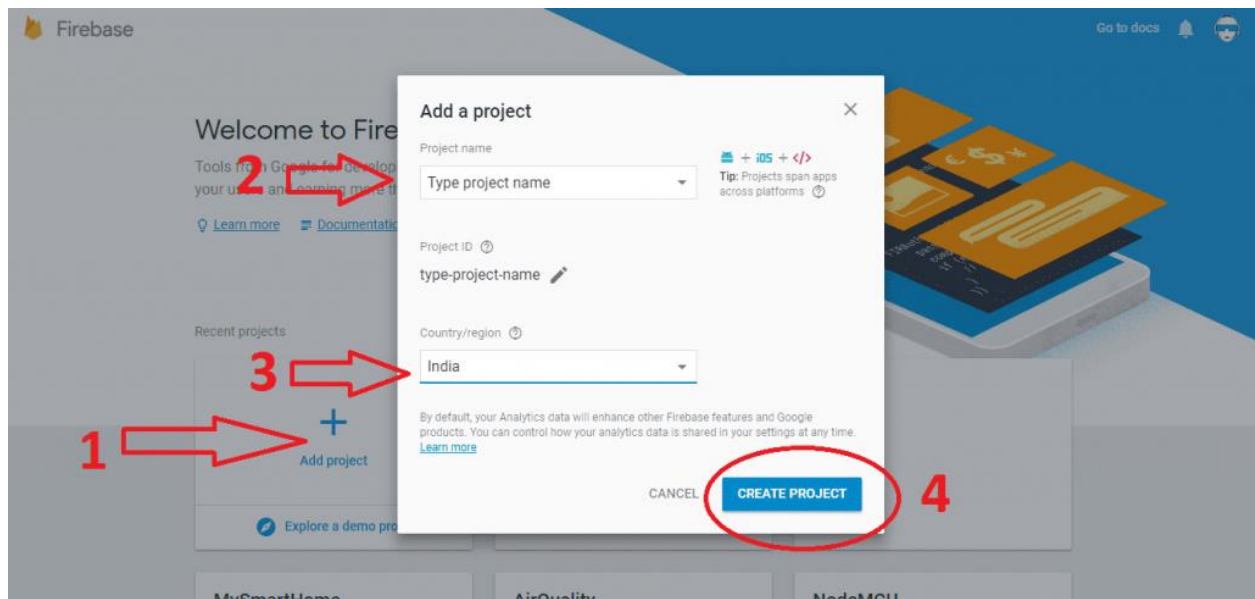
Creating New Project
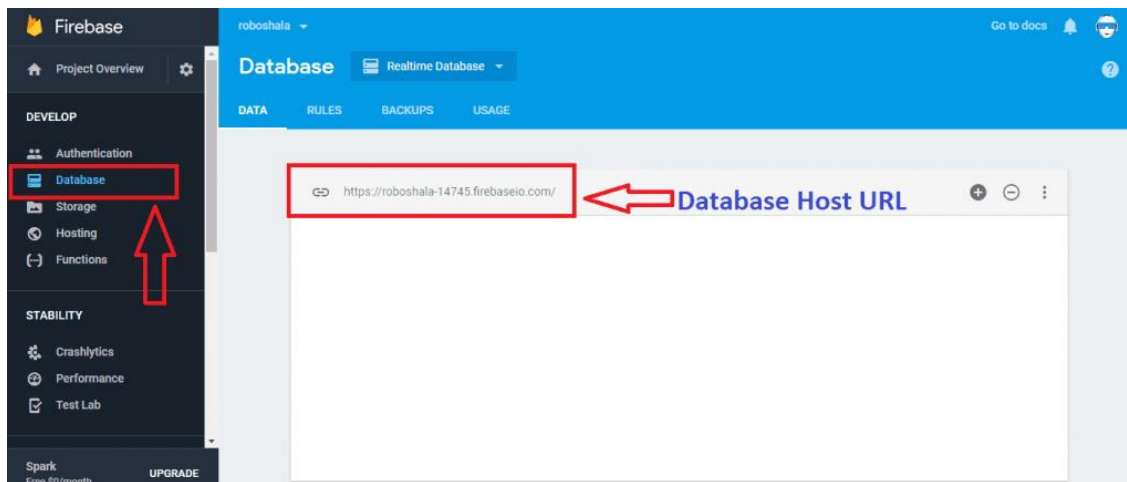

Creating Database
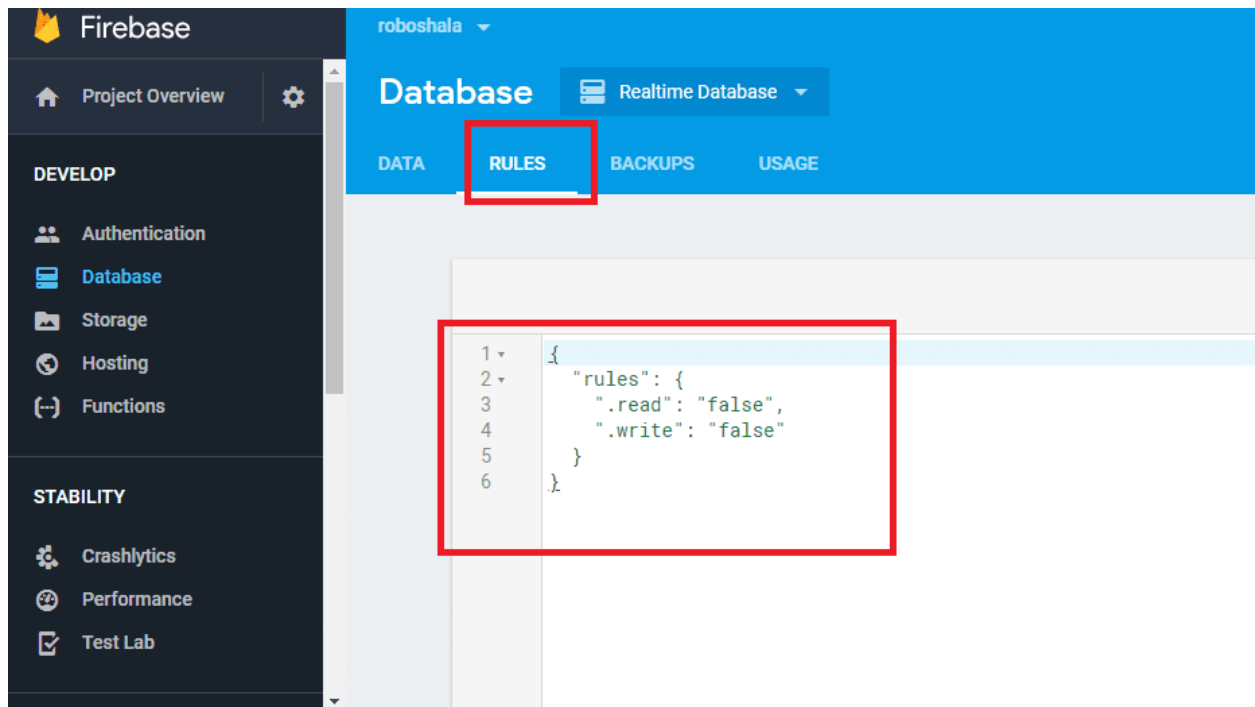
Setting up Rules
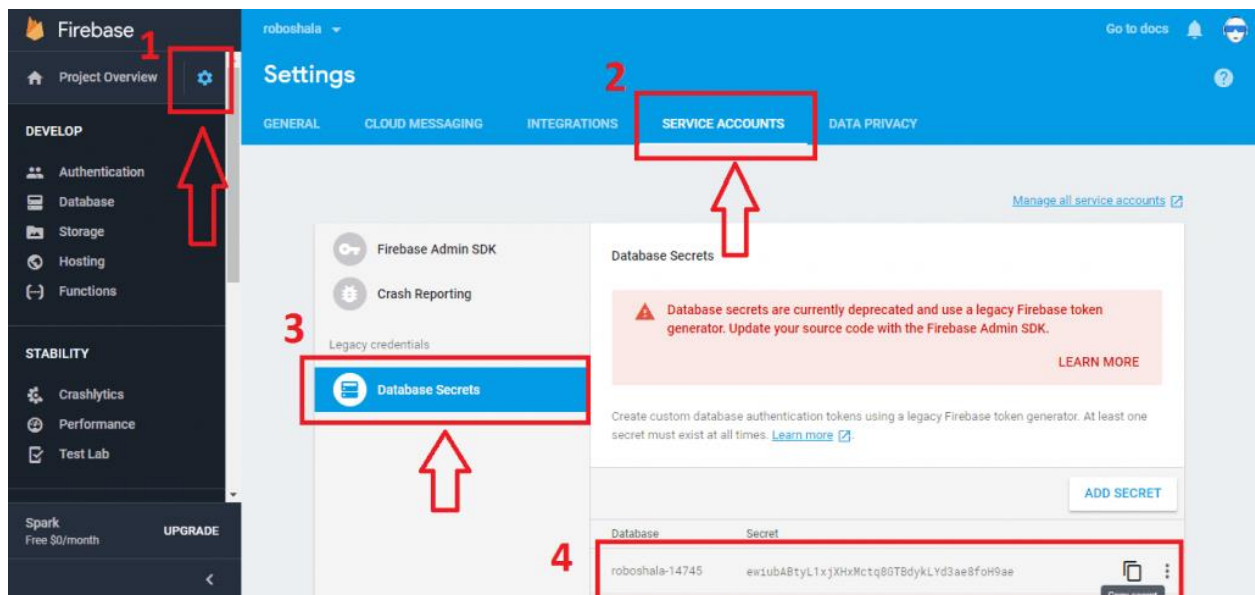

Getting Project's Secret Key

**Screen shot- Setting up Adafruit and Connecting to Google Assistant**
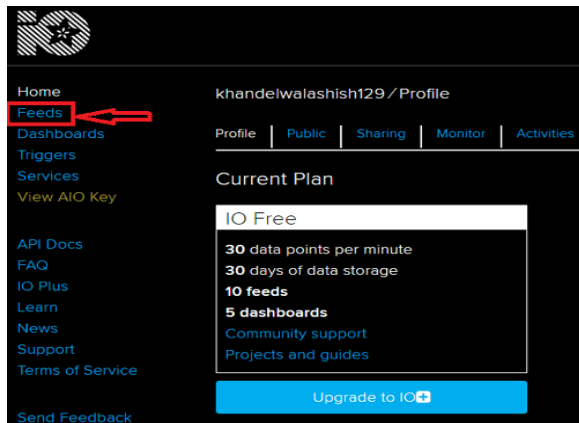

Clicking on Feeds
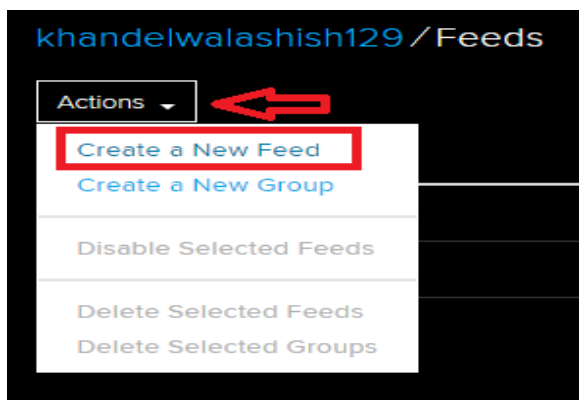
Creating New Feeds

Creating New Dashboards
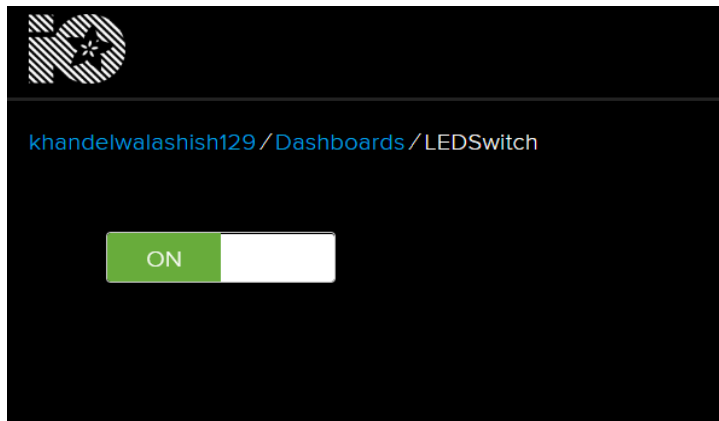
Creating New Blocks


Getting AIO Key
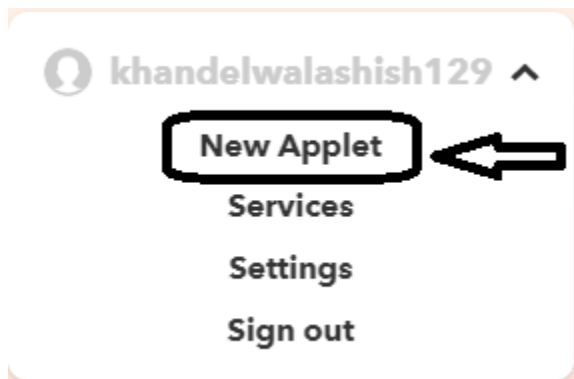
Creating New Applet in IFTT

Creating Trigger

Sending Data to Adafruit

My Applets