

Home Automation Project Using Voice and App

Name: Aswath RA

Contact: aswath.raviji@gmail.com

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

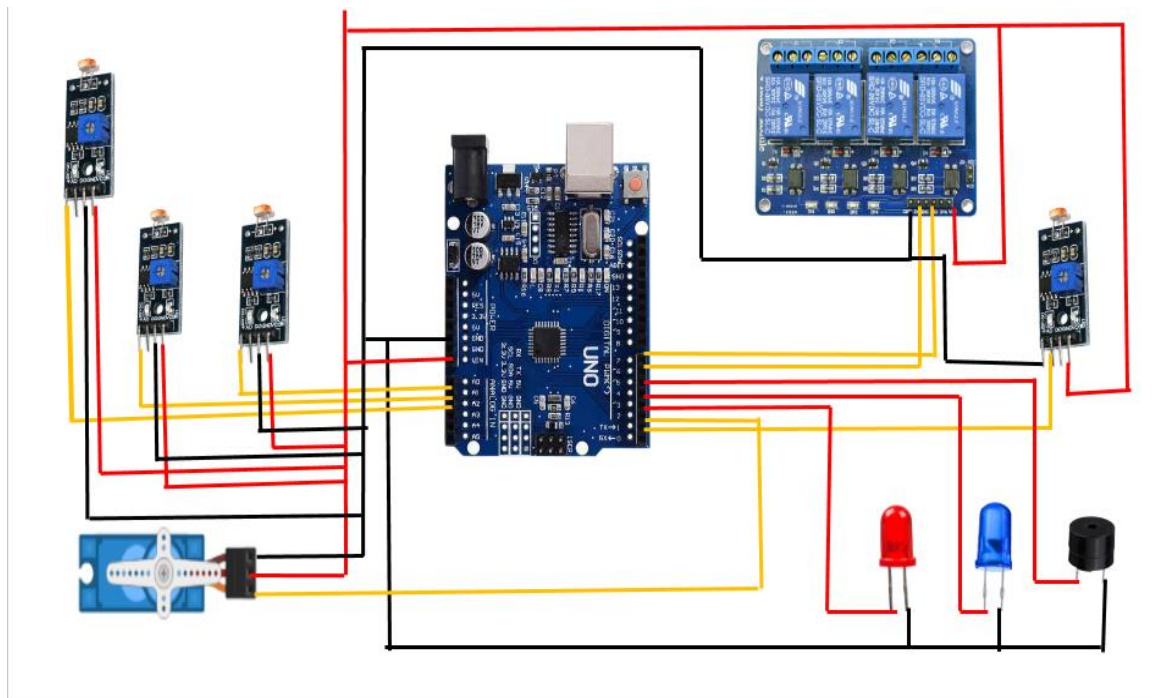
- Light Dependent Resistor
- Infrared sensor
- Gas sensor
- Fire sensor
- Buzzer
- Solar Panel
- LED Light
- Laser Light
- Jumper Wires
- Ribbon Cable
- ON/OFF Switch

SOFTWARE REQUIREMENT

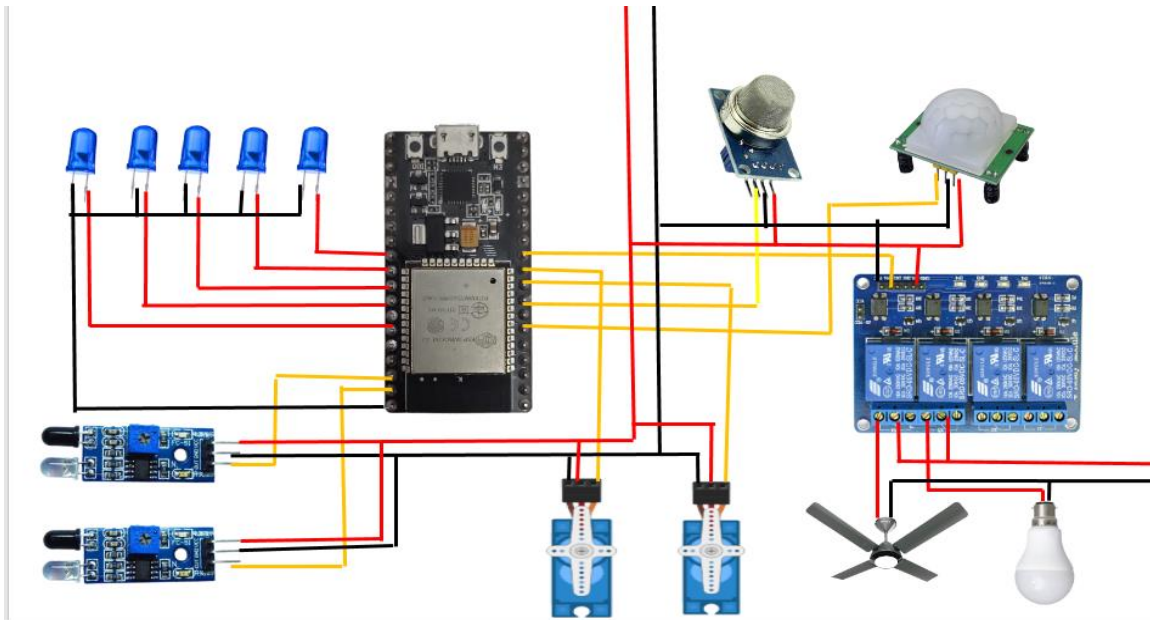
- Arduino IDE for windows
- C programming
- C++ programming
- Firebase Database
- Kodular App Creation(WEB)

Project Circuit Diagrams:

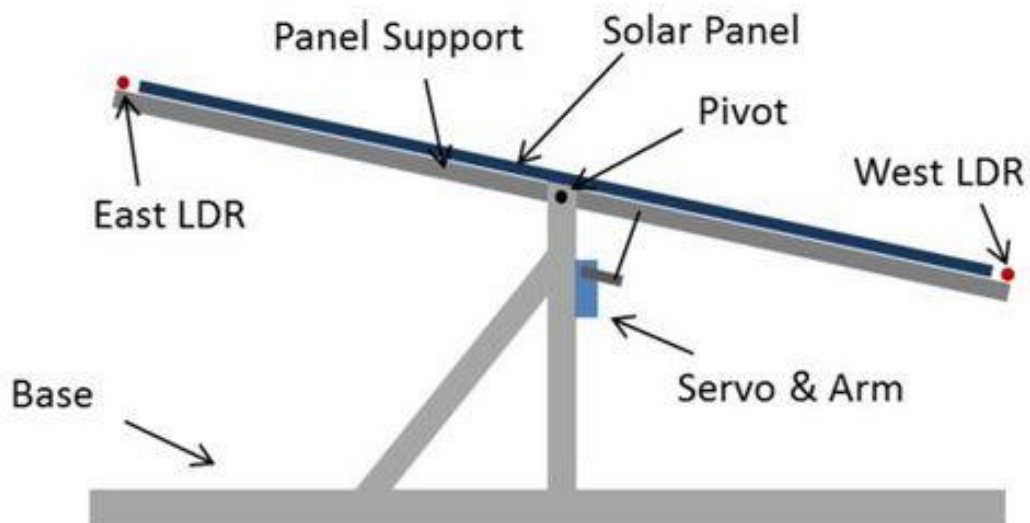
CIRCUIT DIAGRAM OF ARDUINO UNO



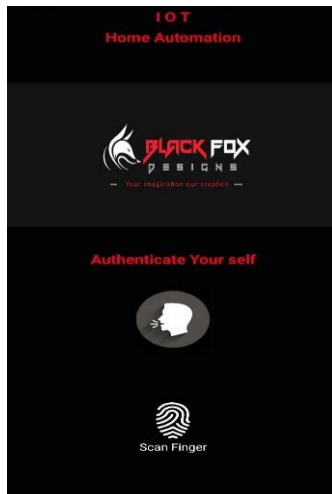
CIRCUIT DIAGRAM OF ESP32



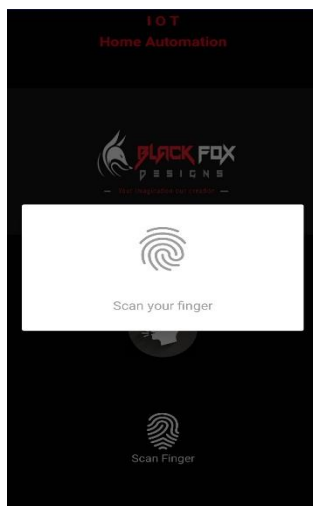
Solar Tracking Mechanism



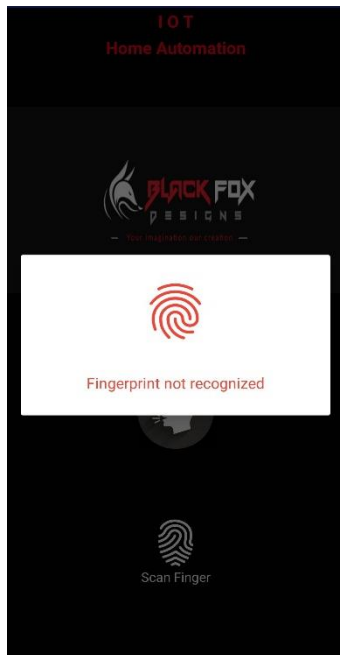
Screen shot –Home Automation Application



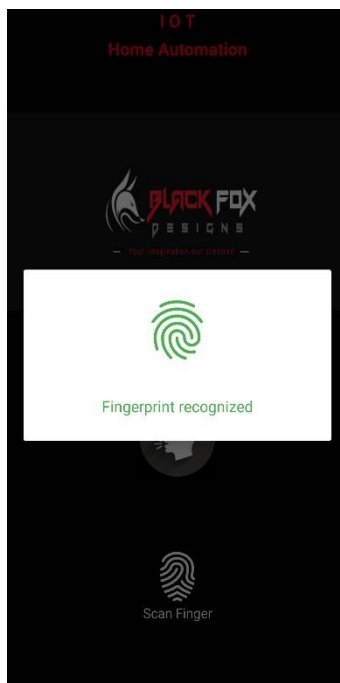
Authentication for Application Login



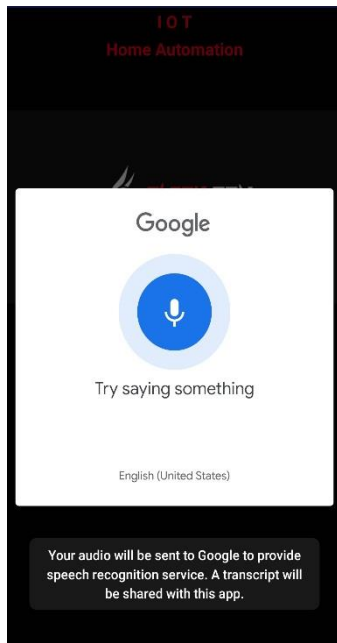
Authentication Using Fingerprint



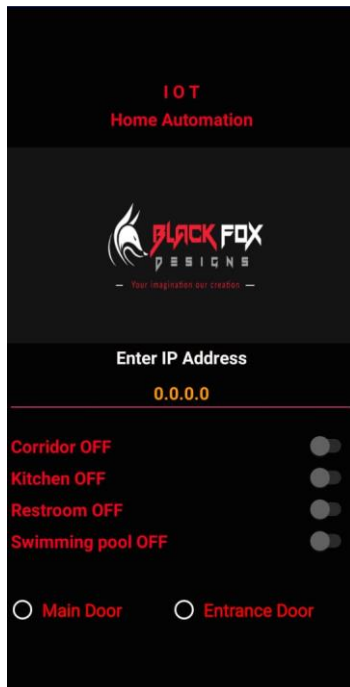
Fingerprint Authentication Failed



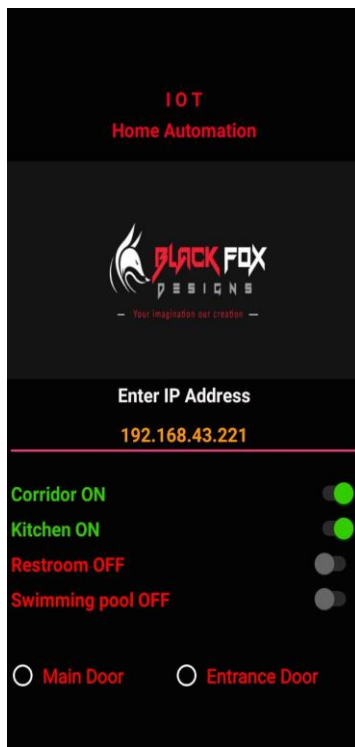
Fingerprint Authentication Successful



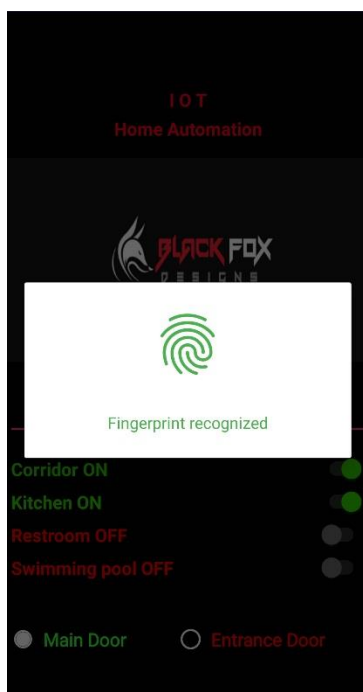
Authentication Using Voice



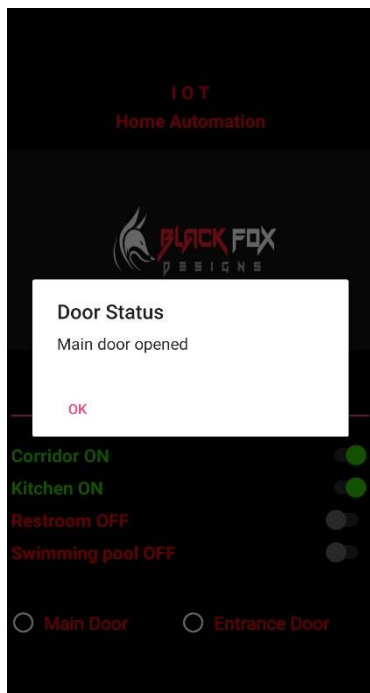
Main User Interface



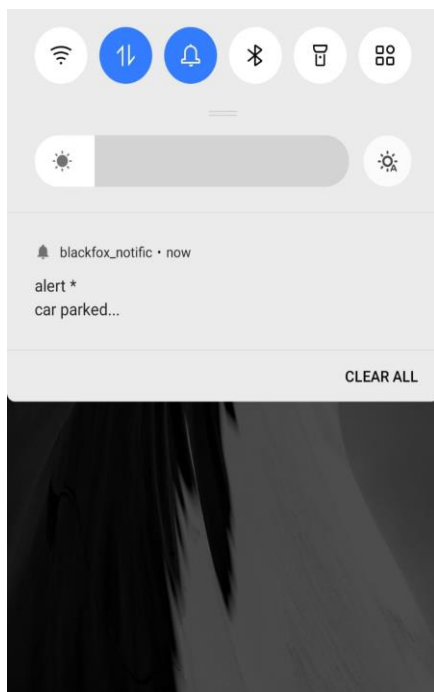
Switch On and Off to Control Appliances



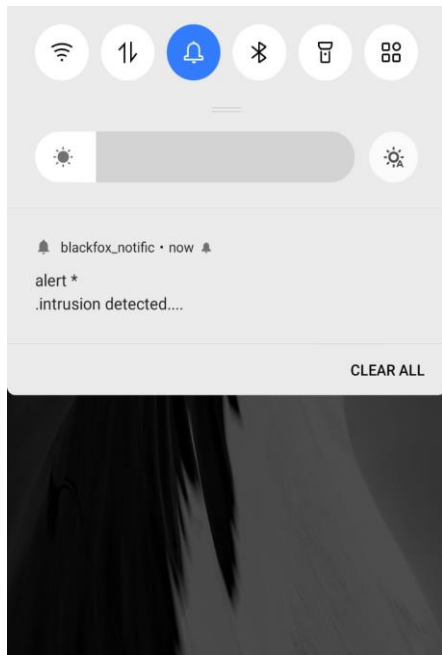
Door opening using fingerprint



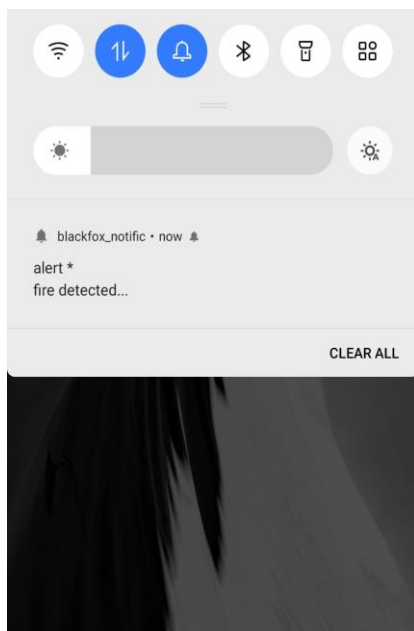
Notification for Door Opened



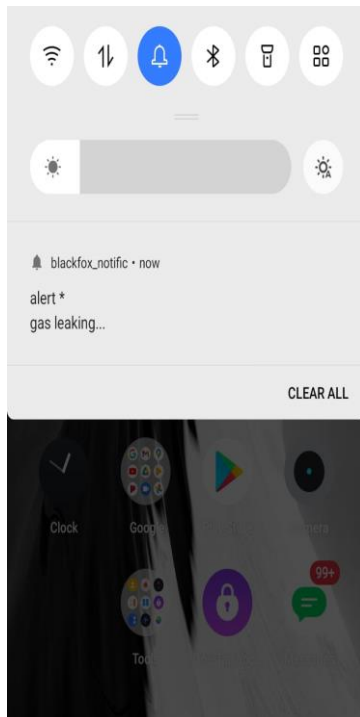
Notification for Car Parked



Notification for Intrusion Detected

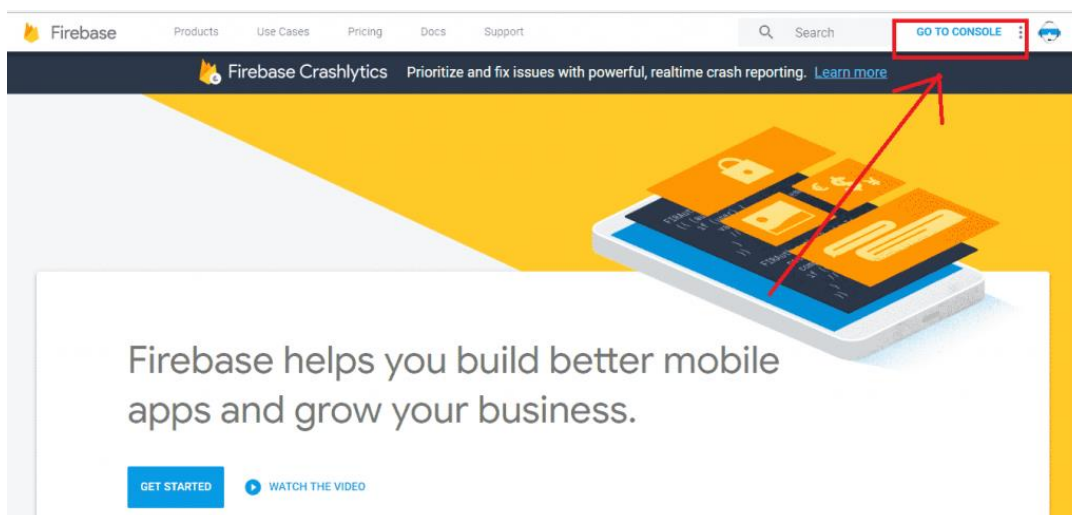


Notification for Fire Detected

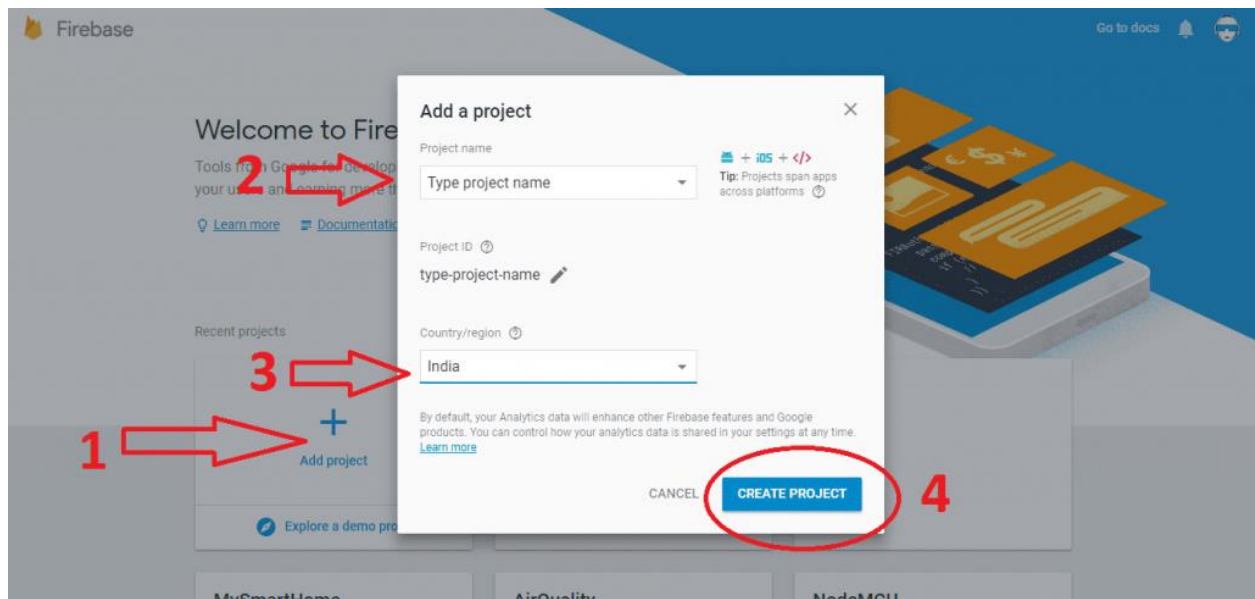


Notification for Gas Leaking

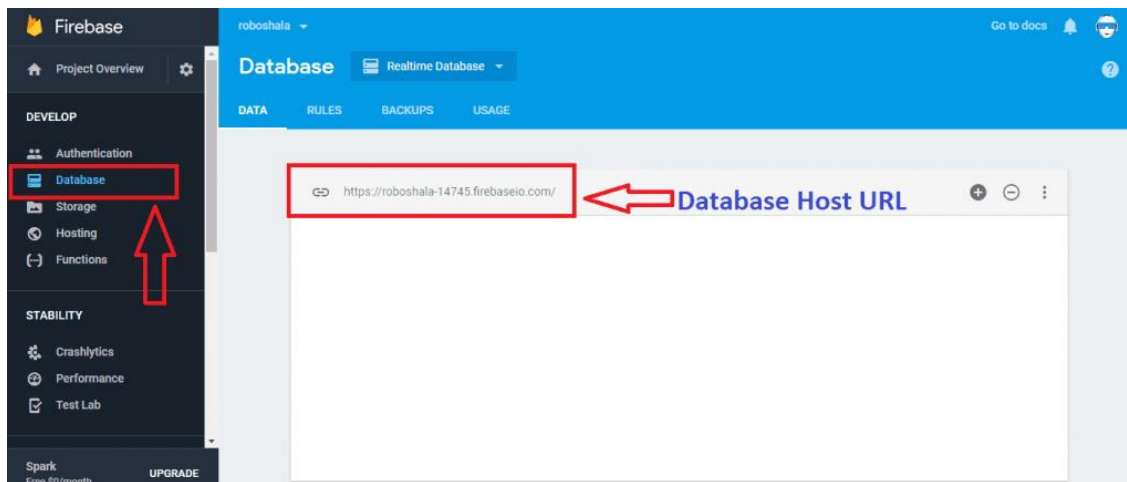
8.4 Screen shot-Setting up Google Firebase



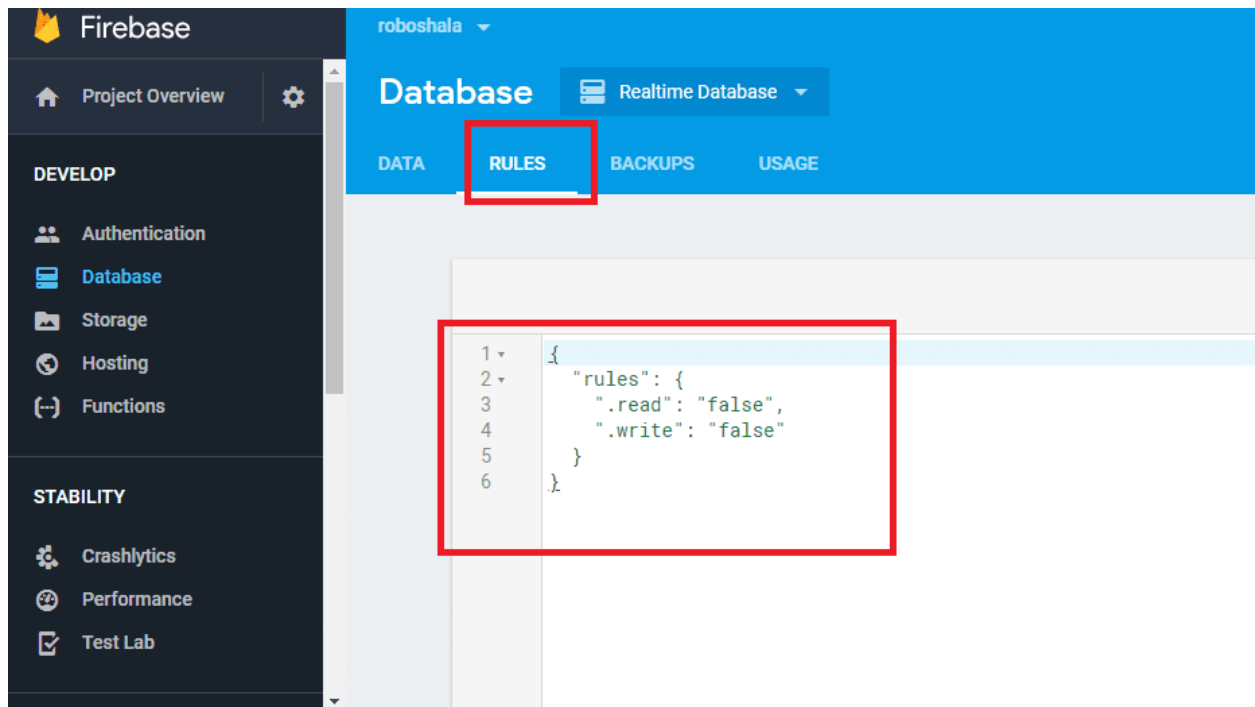
Going to Console



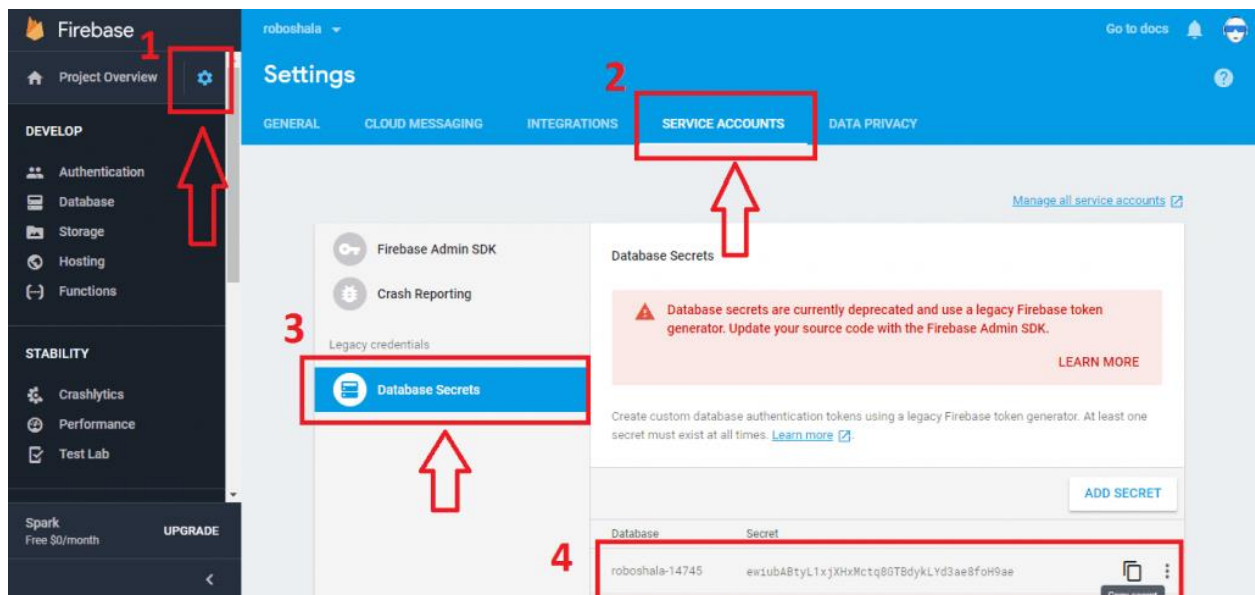
Creating New Project



Creating Database

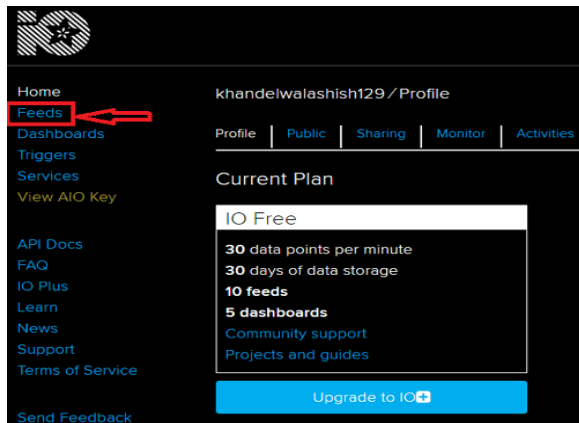


Setting up Rules

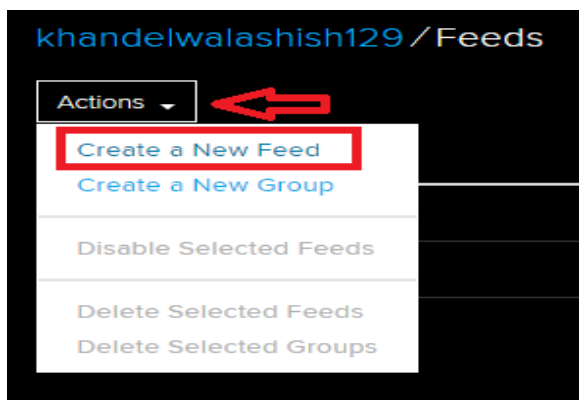


Getting Project's Secret Key

Screen shot- Setting up Adafruit and Connecting to Google Assistant



Clicking on Feeds



Creating New Feeds

Create a new Dashboard ✕

Name

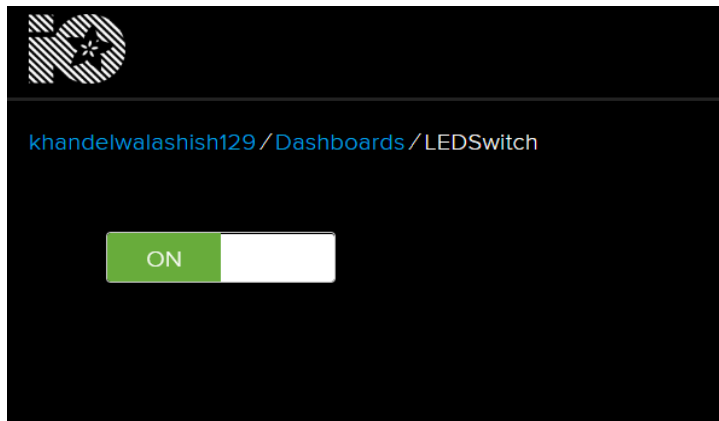
LEDSwitch

Description

Cancel

Create

Creating New Dashboards



Creating New Blocks

YOUR AIO KEY

Your Adafruit IO key should be kept in a safe place and treated with the same care as your Adafruit username and password. People who have access to your AIO key can view all of your data, create new feeds for your account, and manipulate your active feeds.

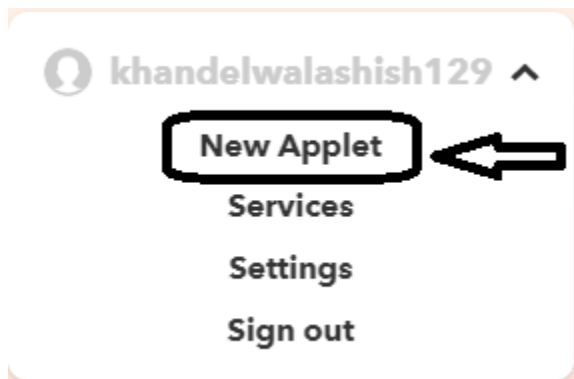
If you need to regenerate a new AIO key, all of your existing programs and scripts will need to be manually changed to the new key.



Username

Active Key [REGENERATE AIO KEY](#)

Getting AIO Key



Creating New Applet in IFTT

Say a simple phrase

This trigger fires when you say "Ok Google" to the Google Assistant followed by a phrase you choose. For example, say "Ok Google, I'm running late" to text a family member that you're on your way home.

What do you want to say?

Turn on LED

What's another way to say it? (optional)

LED turn on

And another way? (optional)

Turn the LED on

What do you want the Assistant to say in response?

OK! LED turned on

Language

English

Create trigger

Creating Trigger

Send data to Adafruit IO

This Action will send data to a feed in your Adafruit IO account.

Feed name

LED_Control

The name of the feed to save data to.

Data to save

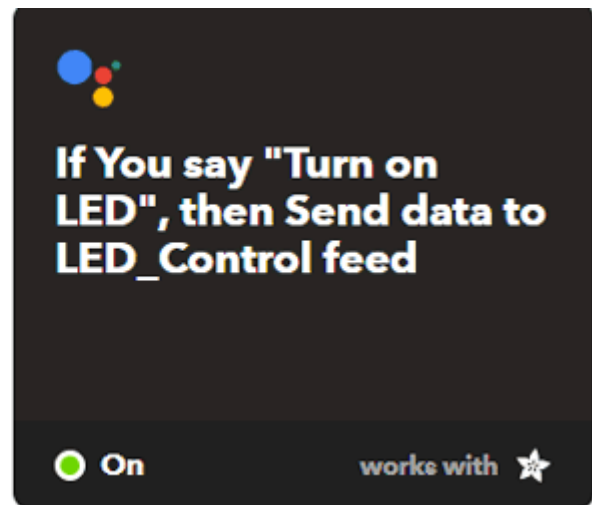
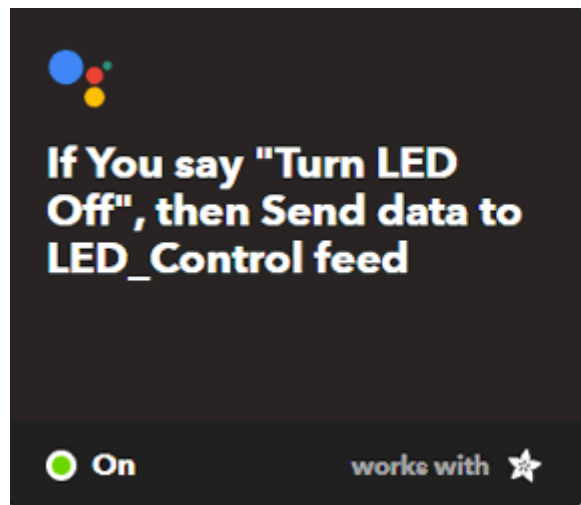
ON

The data to be saved to your feed.

Add ingredient

Create action

Sending Data to Adafruit



My Applets