SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECT213-IoT SYSTEM ARCHITECTURE

II B.E. ECE / IV SEMESTER

UNIT 4 – CLOUD PLATFORMS FOR IoT

TOPIC 1 –IOT CLOUD PLATFORMS

IoT

UNIT-I	BASICS OF IoT	9
Introduction to Internet of things, Various sensors and sensing techniques. Technological trends in IoT. Impact of IoT on society. Review of various IoT application domain including agriculture, healthcare, manufacturing, device management, and vehicle to vehicle communication and wearable computing devices.		

UNIT-II	MICROCONTROLLER AND INTERFACING TECHNIQUES FOR IoT DEVICES	9
Introduction to Arduino,NodeMCU-Basics of Embedded C Programming for Arduino-Arduino Libraries: Library Adding and Removing- Embedded devices: Sensors and actuators -Analog Sensor Interfacing-Digital Sensor Interfacing-PWM Technique-Serial Communication- Application that uses sensor data for decision making process		

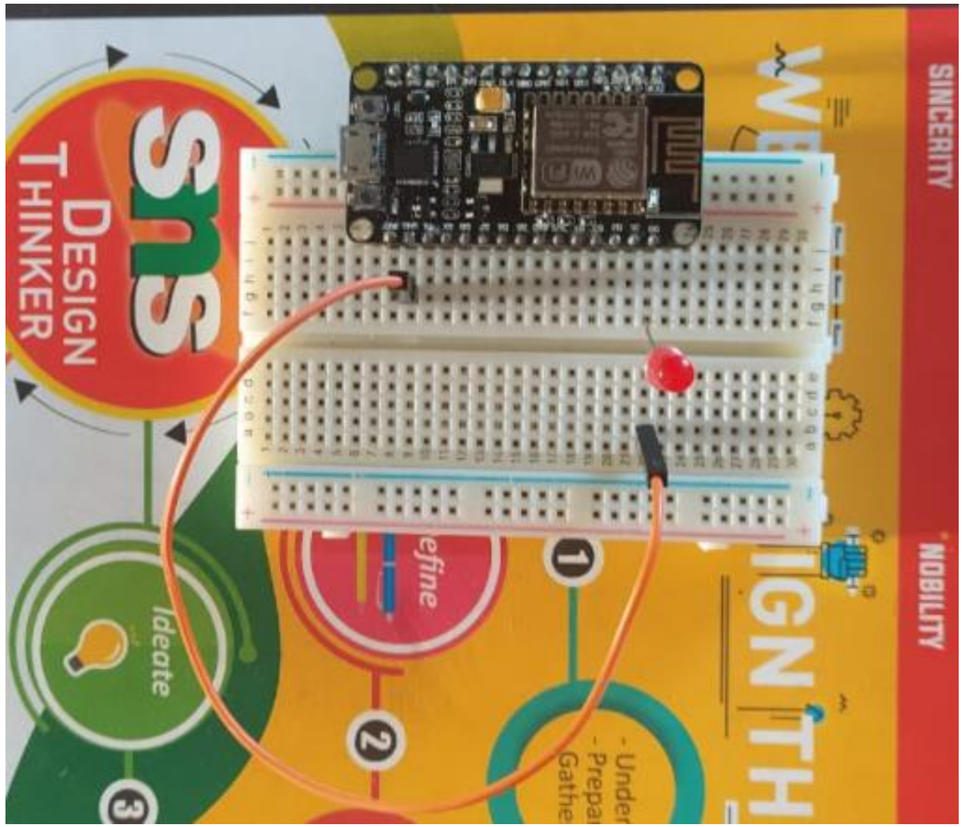
UNIT-III	ACTUATORS AND IoT NETWORKING DEVICES	9
Programming and Interfacing of Actuators: Liquid Crystal Display- Relay -DC Motor with L298N Motor Driver Controller-Servos. IoT Networking devices Programming and Interfacing: GSM Modem-HC05 Bluetooth Tranceiver-ESP8266 Wi-Fi Module.		

IoT

UNIT-IV	CLOUD PLATFORMS FOR IoT	9
Virtualization Concepts and Cloud Architecture-Cloud Computing Benefits-Cloud Services:IFTTT-Study of IoT Cloud Platforms-Things speak API & MQTT-Data Visualization with Things Speak-Interfacing ESP8266 with Web Services		

UNIT-V	IoT APPLICATIONS	9
Home Automation With Android application and Google Assistance; Internet of Robotic Things (IoRT): Introduction to stationary and mobile robots; Applications of IoT in robotics; Architectures for IoRT; Examples and case studies; Open issues and challenges.		

IOT CLOUD PLATFORMS



CONNECTIONS

LED +------	D0 NODEMCU
LED - -----	GND

NODEMCU

Firebase

OVERVIEW:

- Using the **IoT hardware** & **cloud platform**, we can control the **IoT devices** including LEDs from any part of the world. This mini IoT Based Projects deals with **LED Control using Google Firebase Console & NodeMCU ESP8266** WIFI Module.

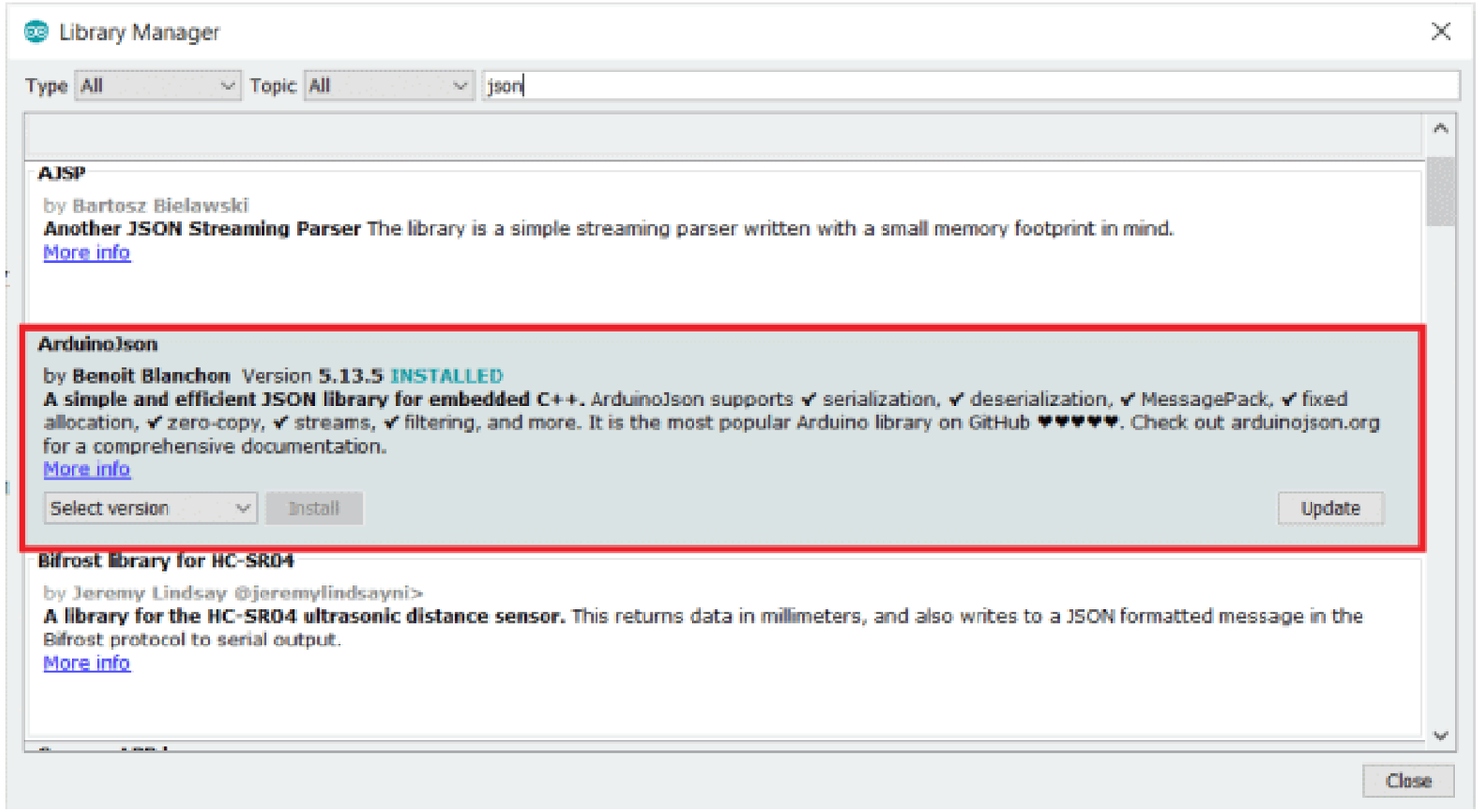
- There are various methods of controlling of the LED such as using **Web Server** or **Webpage**, **Blynk Application** and using other **API based services**. But here we will only focus on Google Firebase

IOT CLOUD PLATFORMS

- **Google Firebase** is a Google-backed application development software used for **creating, managing**, and **modifying data** generated from any **android/IOS application**, web services, IoT sensors & Hardware. To learn more about the **Google Firebase Console**,

INSTALLING FIREBASE & JSON LIBRARY

1. ArduinoJSON Library



INSTALLING FIREBASE & JSON LIBRARY

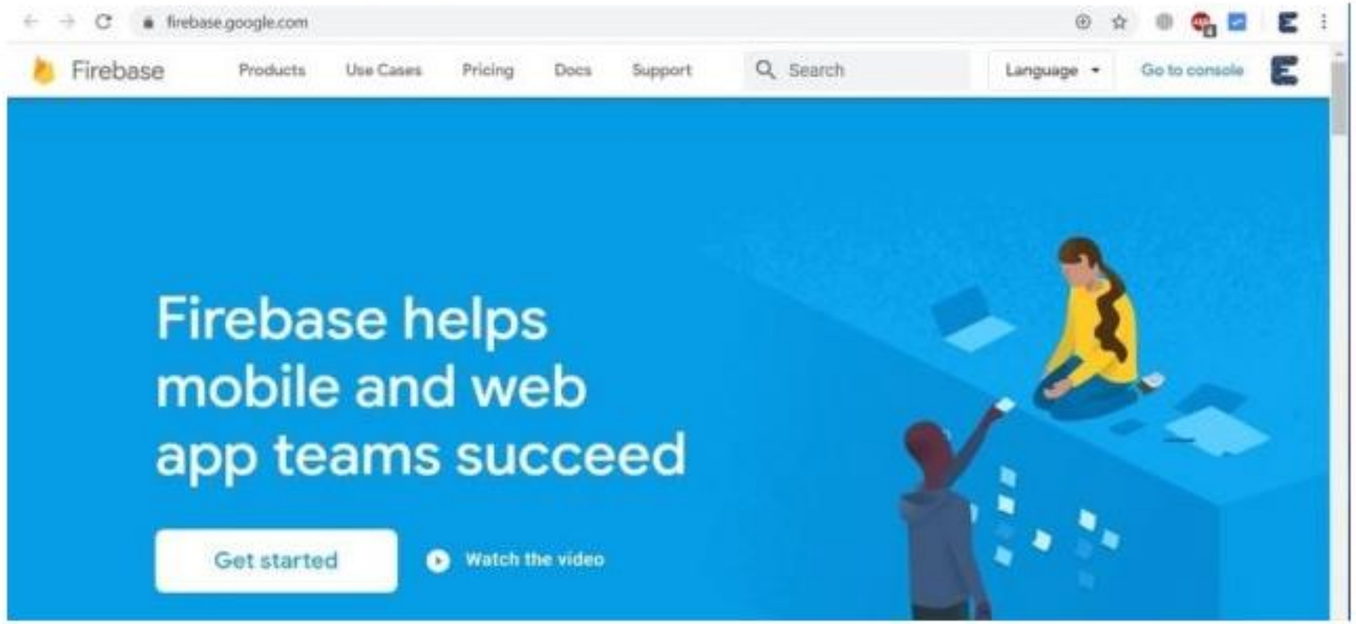
2. Download Google FirebaseExtended Library

GitHub - FirebaseExtended/firebase-arduino: Arduino samples for Firebase.

SETTING UP GOOGLE FIREBASE

Step 1: If you have Gmail id then you are already Sign Up for firebase. But if you don't have Gmail id then first Sign Up for Gmail: https://gmail.com/

Step 2: Now visit https://firebase.google.com/ and click on **Go to Console** on the Top Right.

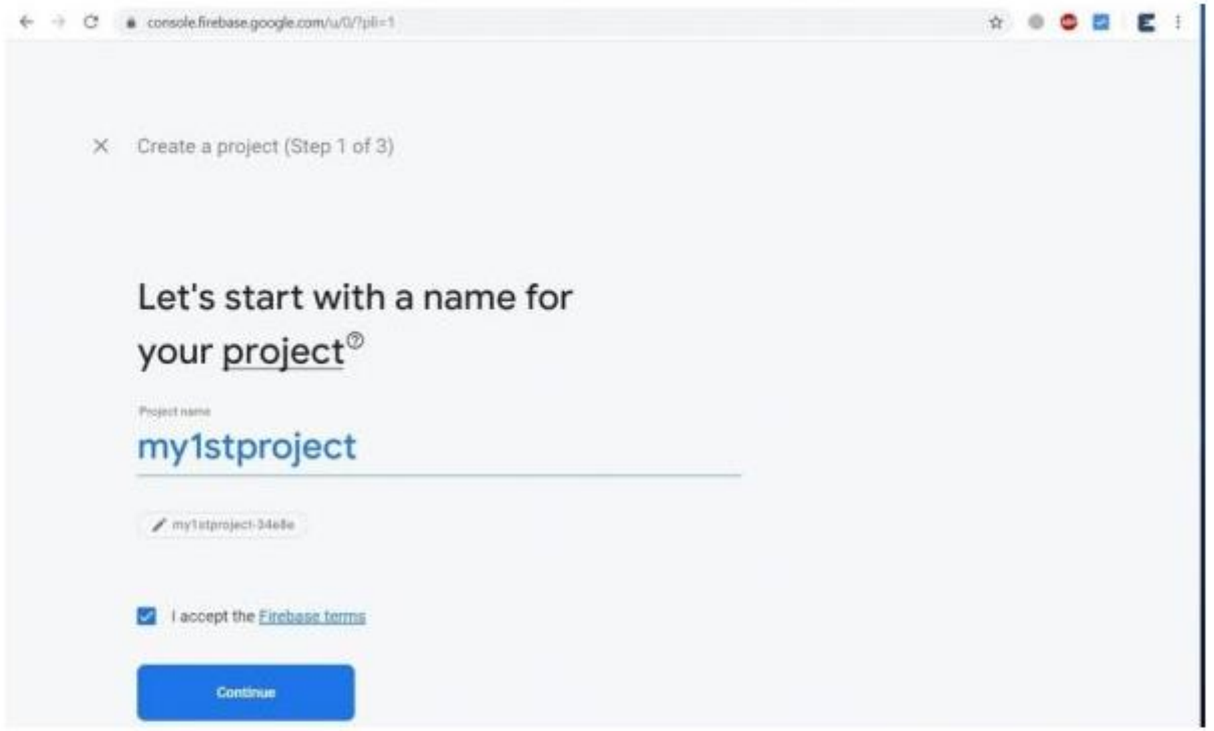


IOT CLOUD PLATFORMS

Step 3: Click on "Create a Project".

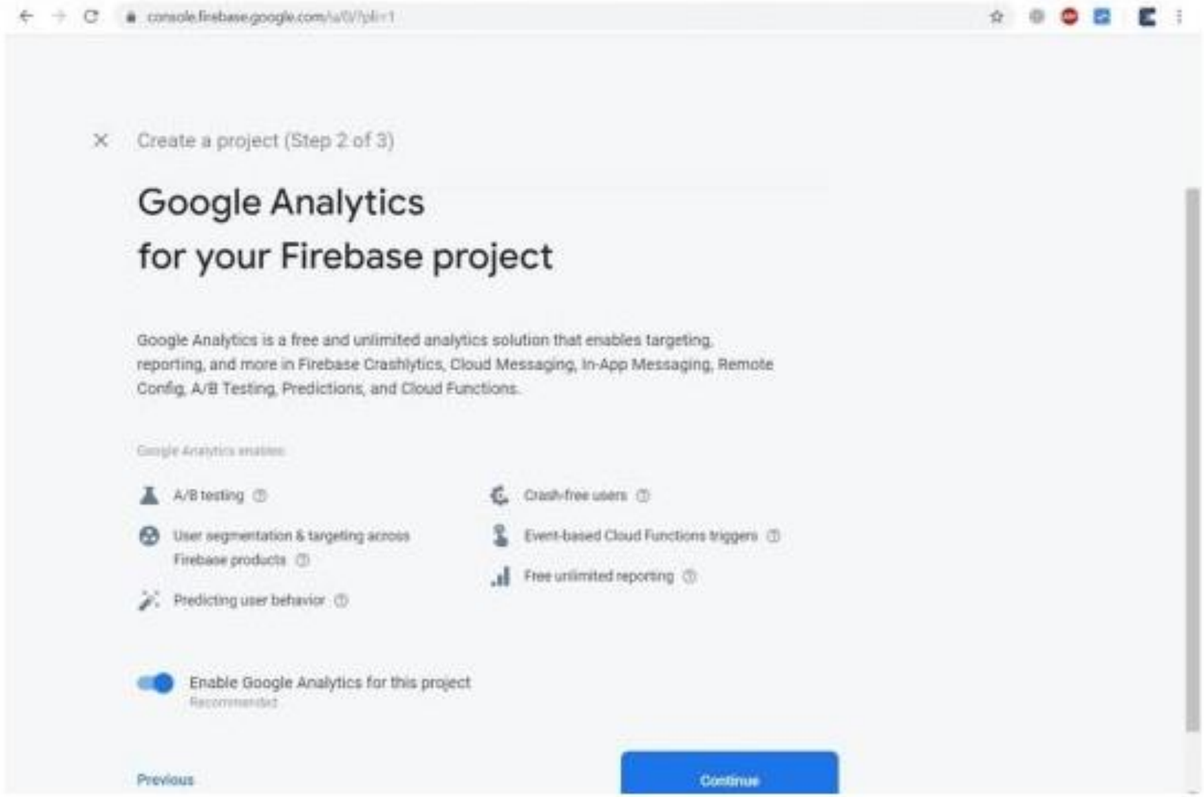
SETTING UP GOOGLE FIREBASE

Step 4: Give your "Project name", then tick the "I Accept the Firebase Terms" & finally Click on "Continue".



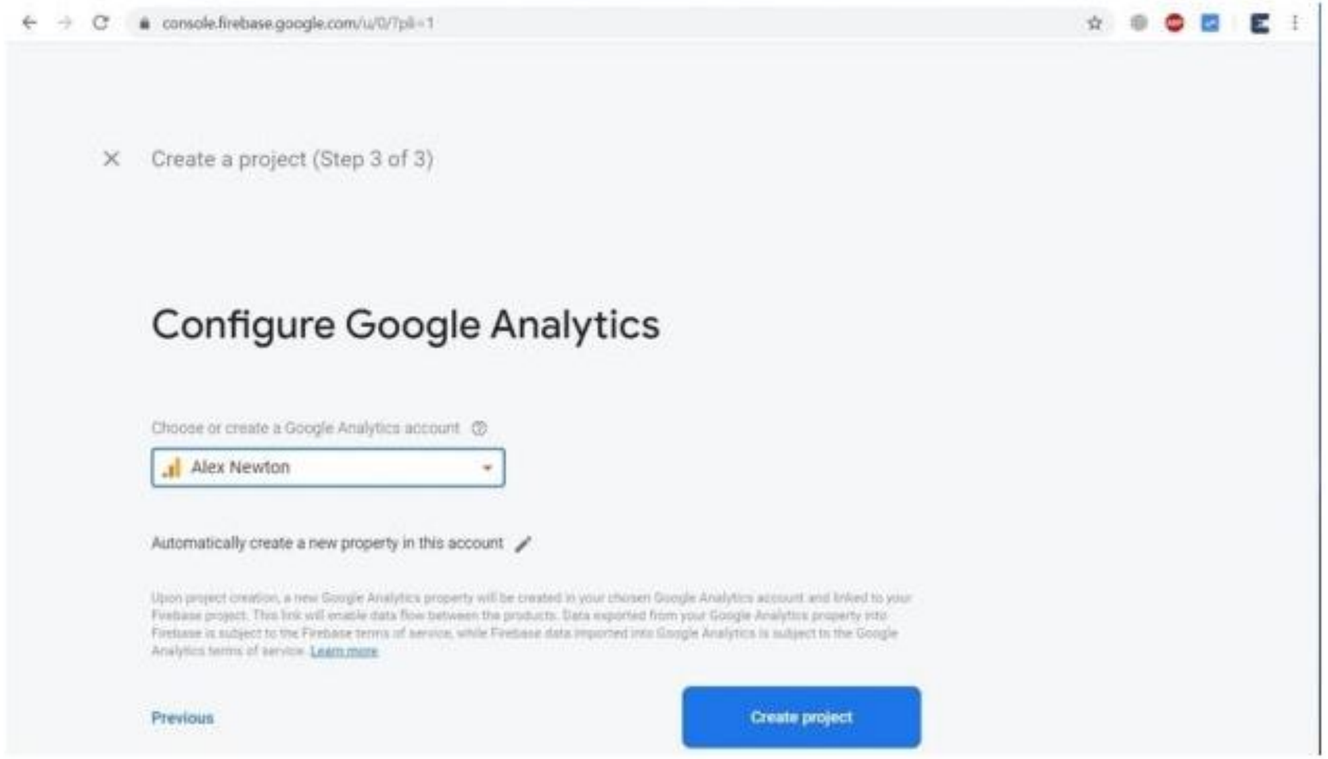
SETTING UP GOOGLE FIREBASE

Step 5: Now, another window will appear. So click on "Continue".



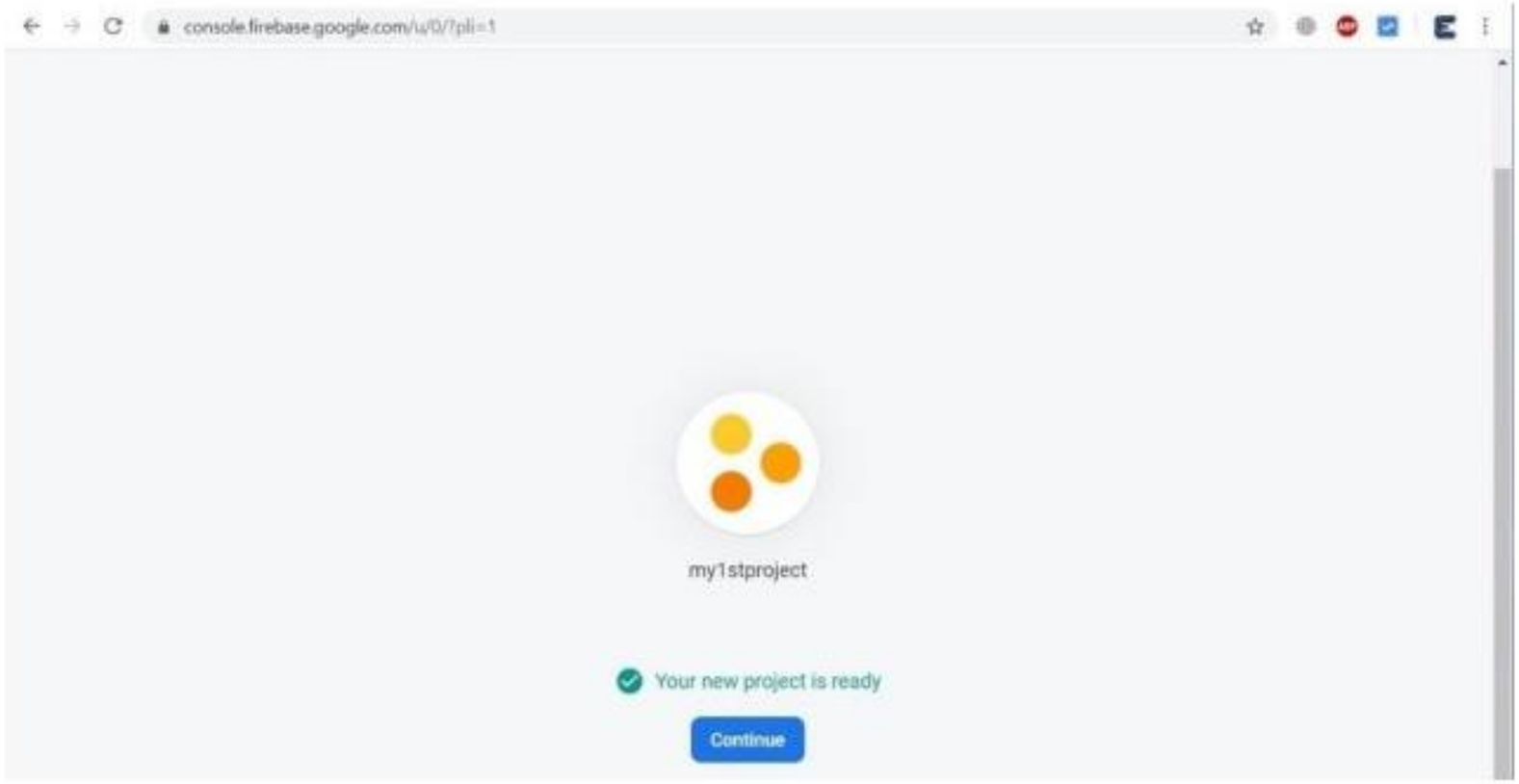
SETTING UP GOOGLE FIREBASE

Step 6: Select the "google Analytics Account" that is made using the Gmail ID. And then click on "Create Project".



SETTING UP GOOGLE FIREBASE

Step 7: Your project is ready now. So you will get the following window. Click on "Continue".

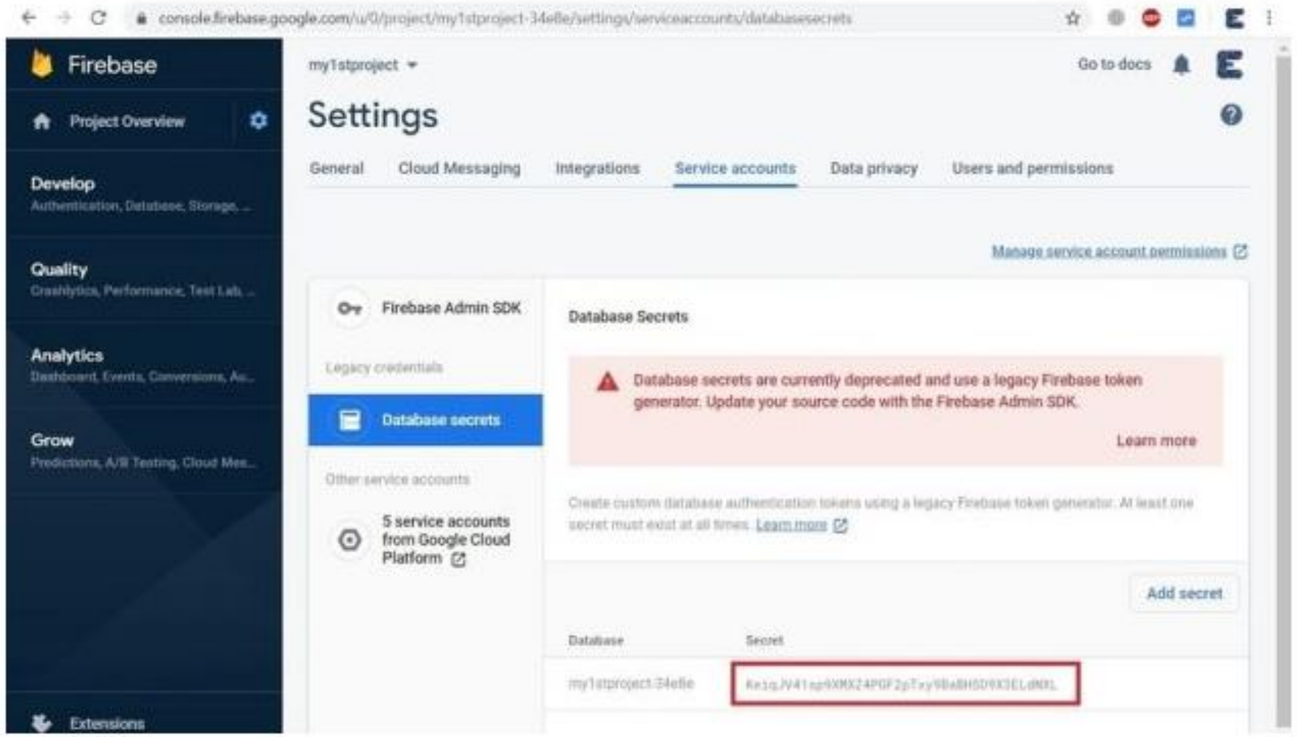


SETTING UP GOOGLE FIREBASE

Step 8: Now click on "Project Setting".

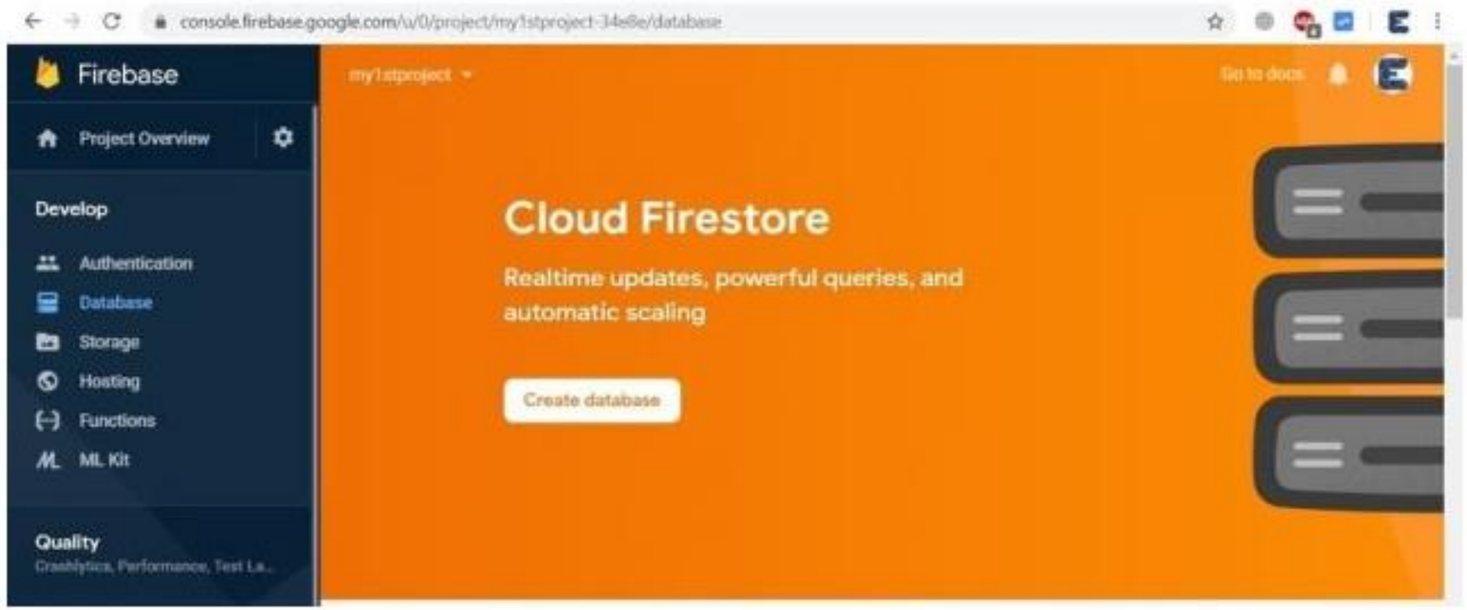
SETTING UP GOOGLE FIREBASE

Step 9: Under Project Setting, Click on "Service Accounts". Copy the secret key from below. The code is required in the Arduino Code.



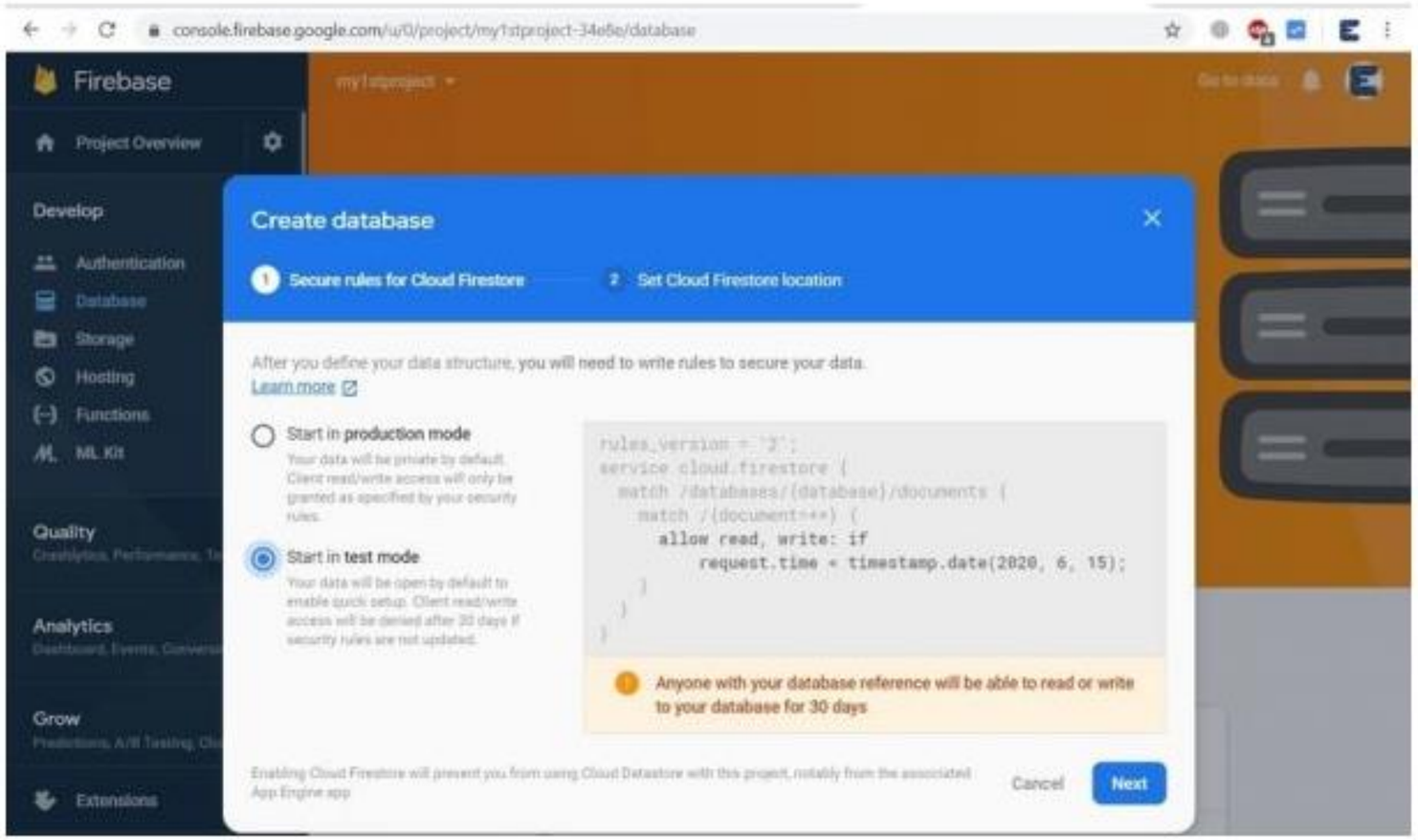
SETTING UP GOOGLE FIREBASE

Step 10: Click on "Create Database".



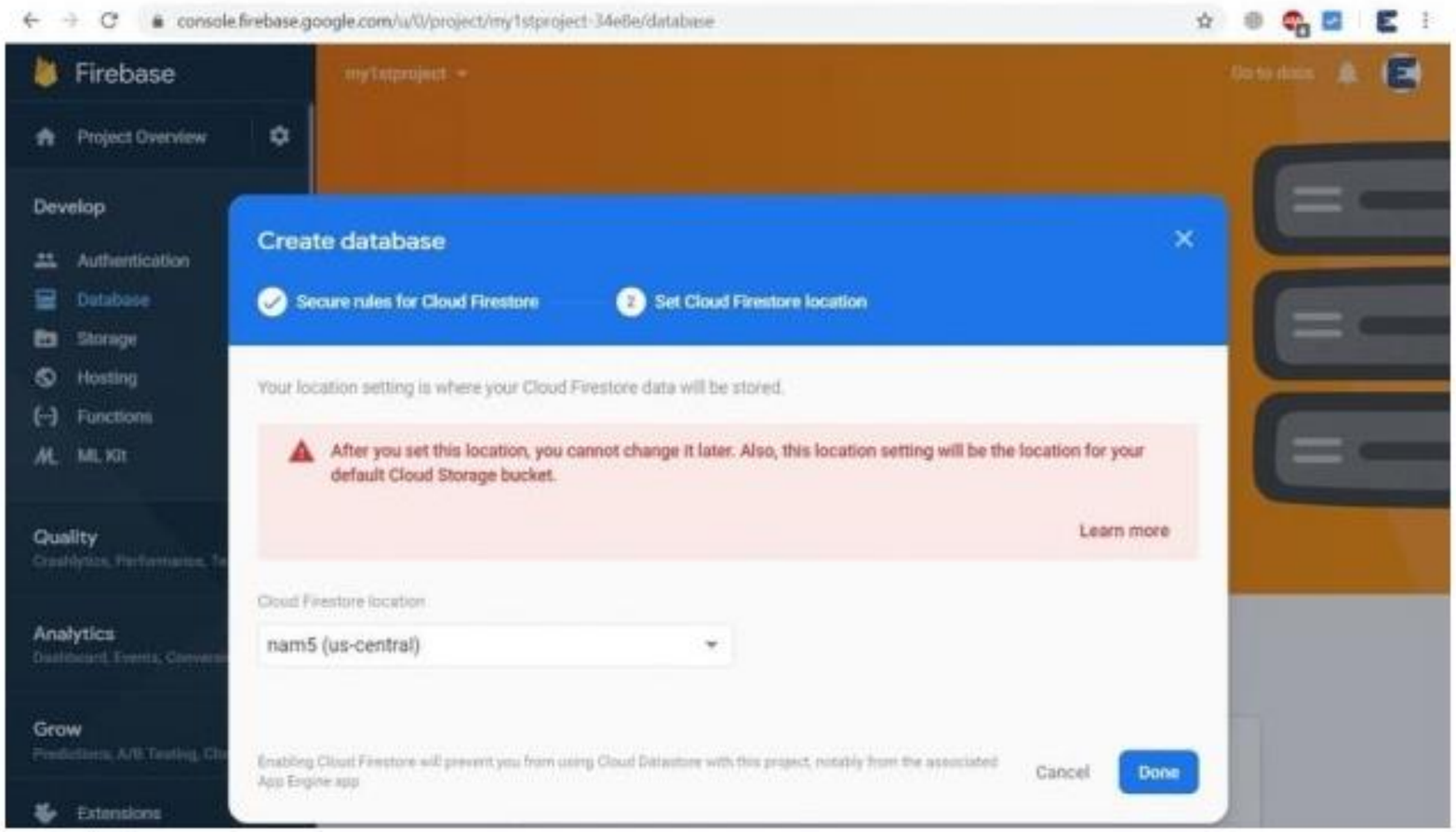
SETTING UP GOOGLE FIREBASE

Step 11: Choose "Start in Test Mode" and then click on "Next".



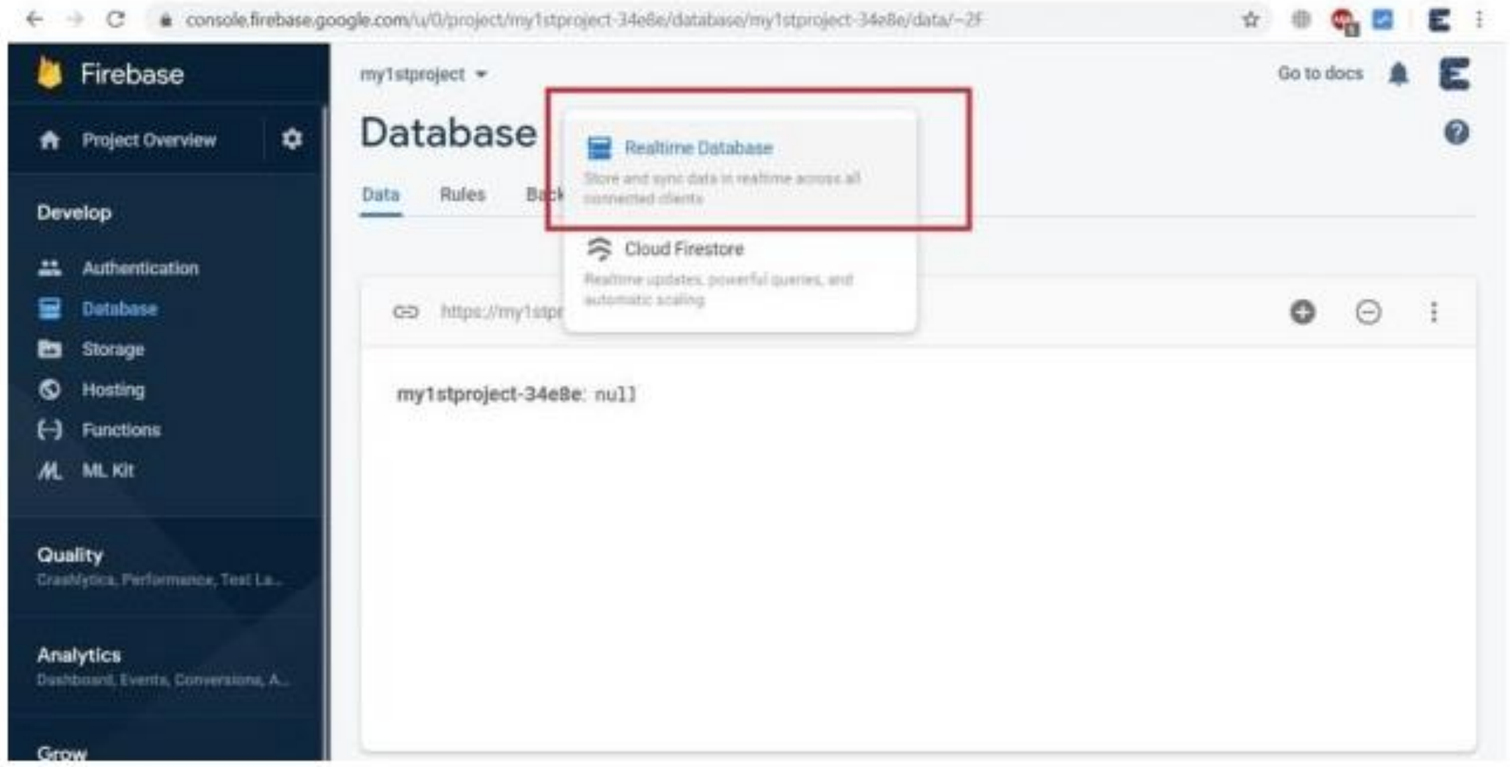
SETTING UP GOOGLE FIREBASE

Step 12: Now click on "Done" & from left side click on "Database".



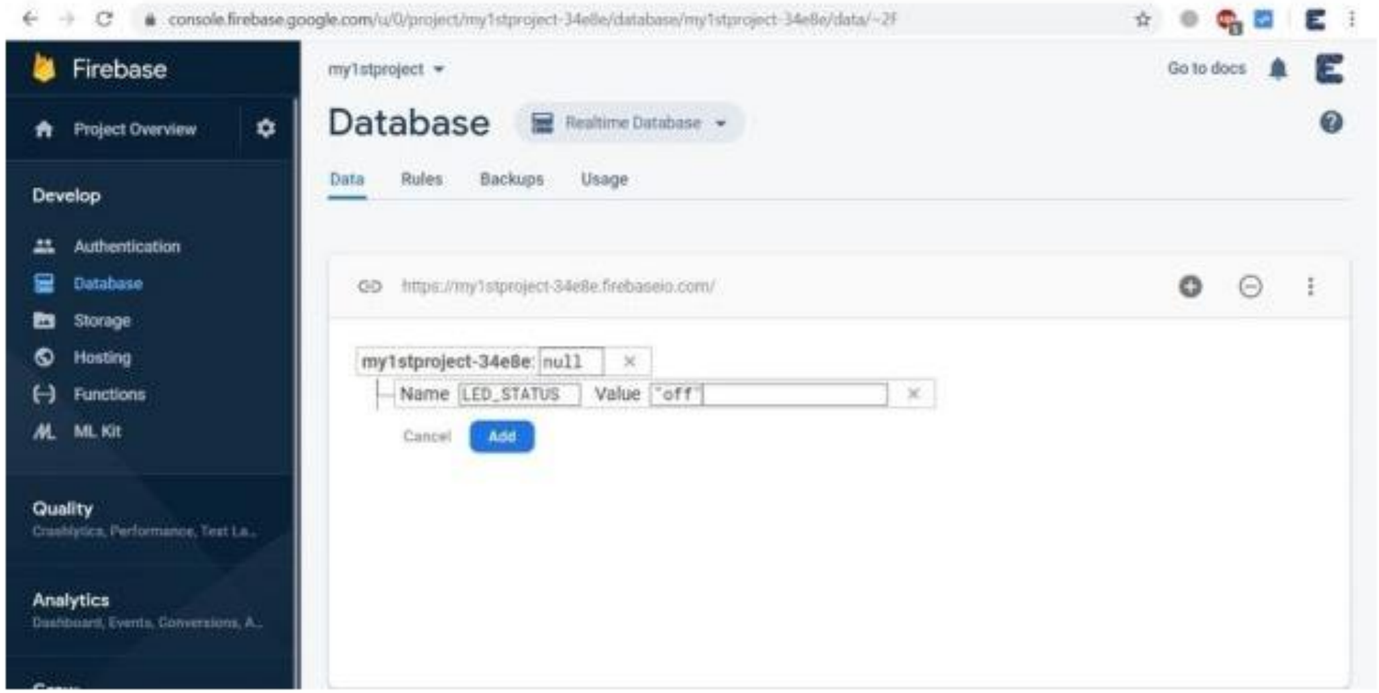
SETTING UP GOOGLE FIREBASE

Step 13: Select the "Realtime Database" option from the Database List.



SETTING UP GOOGLE FIREBASE

Step 14: Now your final project is ready. You can modify the "ON/OFF" line from the list.



Step 15: Copy the "**secret key**" & "**Project name**". This are required in the Arduino code. The Project name looks something like this "*https://your_project_name.firebaseio.com/*"

PROGRAM

https://drive.google.com/drive/folders/1BxqKd7XVoGQA0uyVGowr5I6vQ7Egp0Xp?usp=sharing

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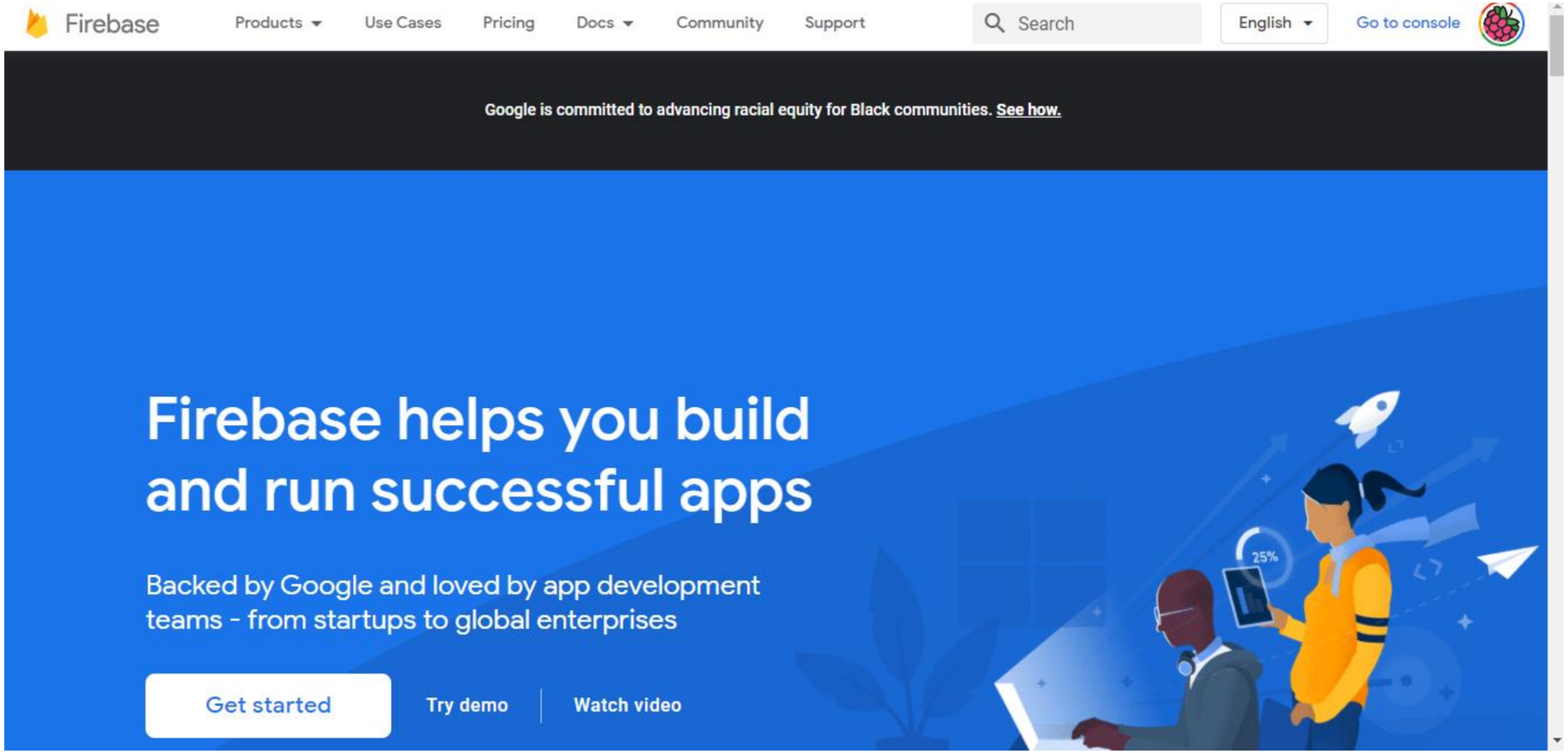
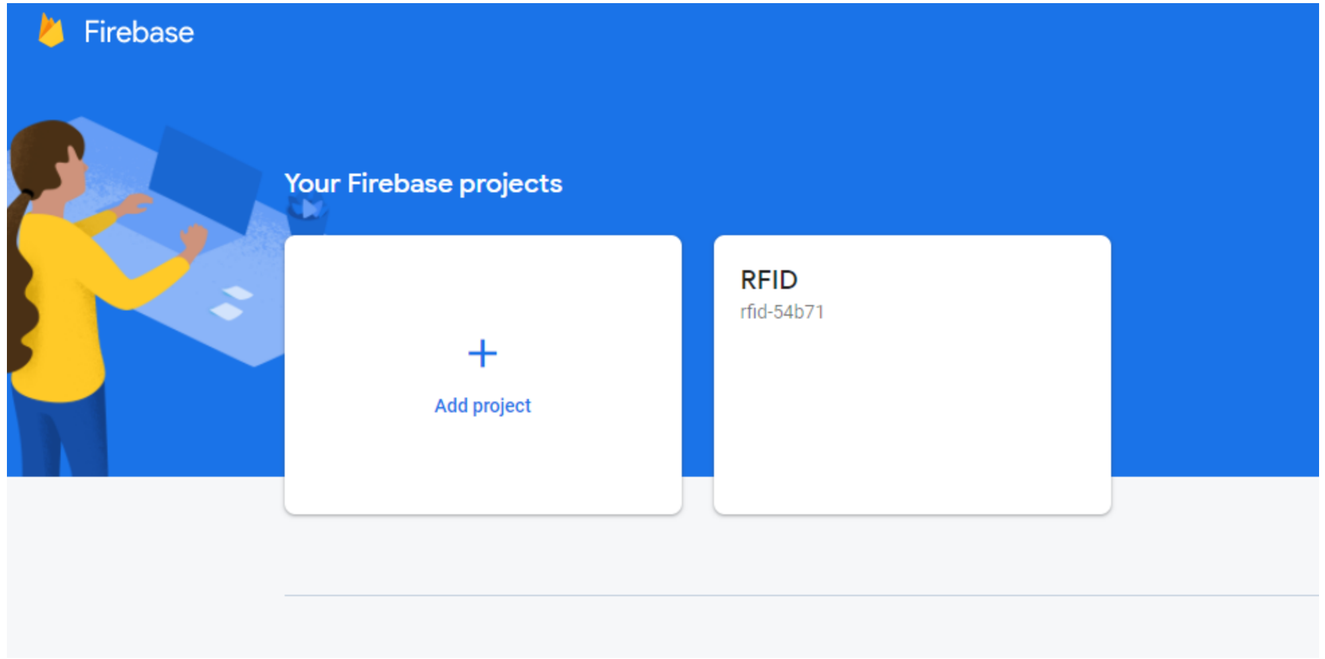
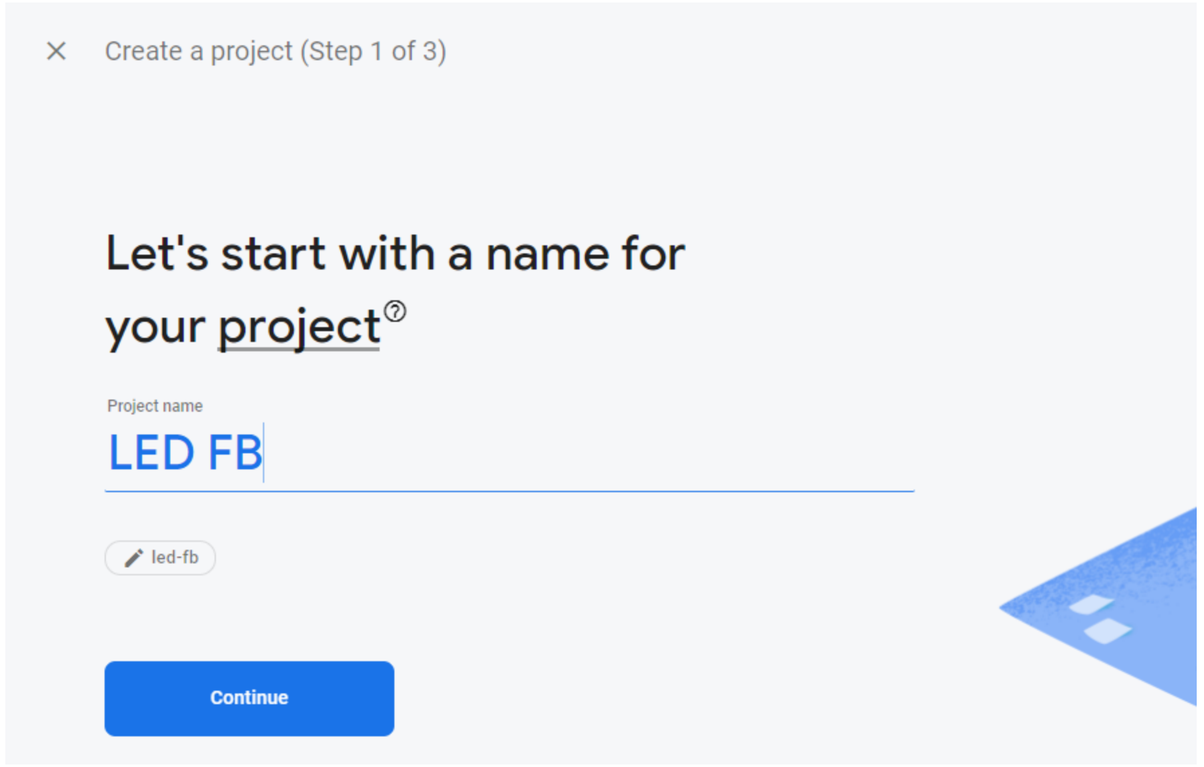


SETTING UP GOOGLE FIREBASE



SETTING UP GOOGLE FIREBASE



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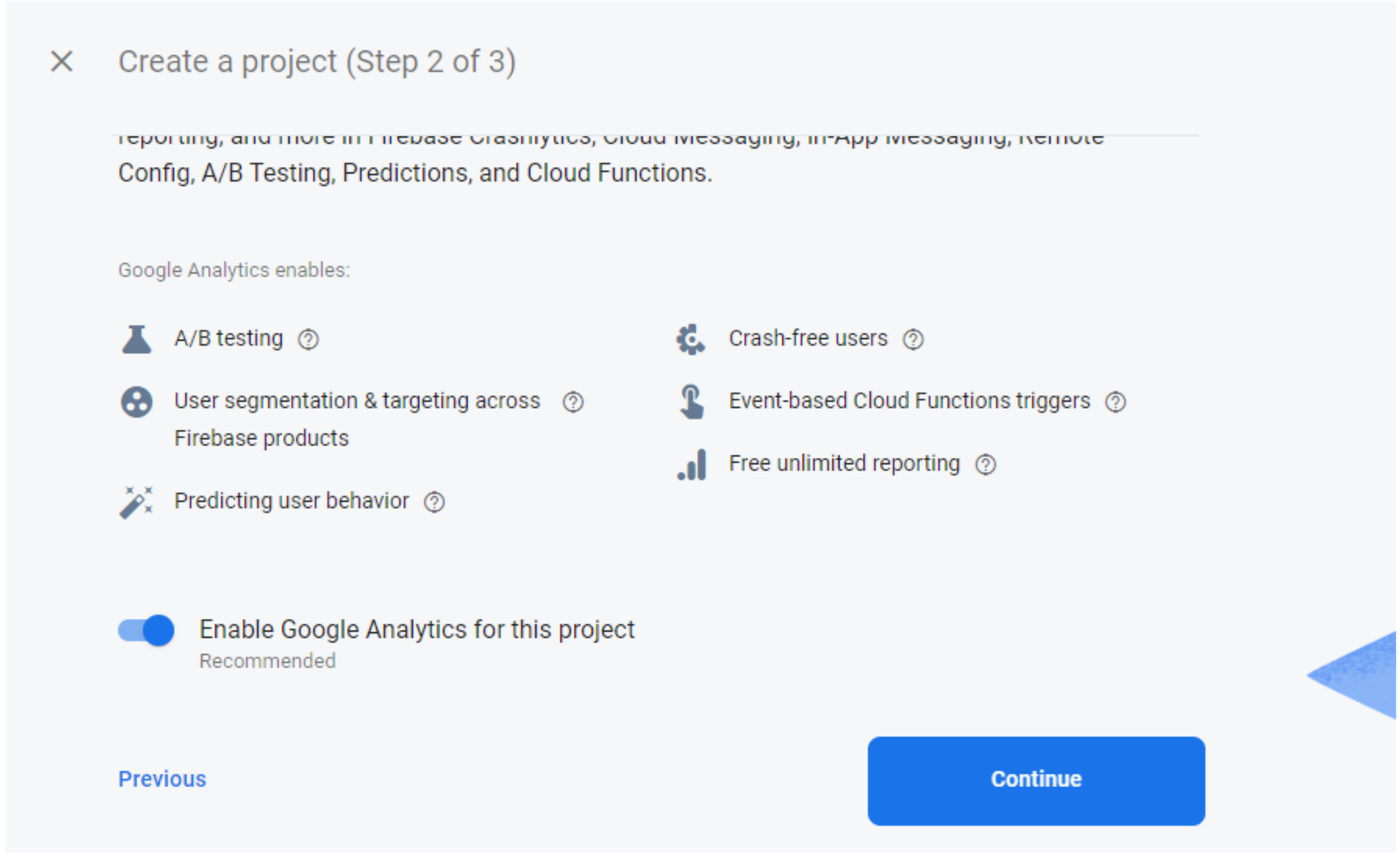

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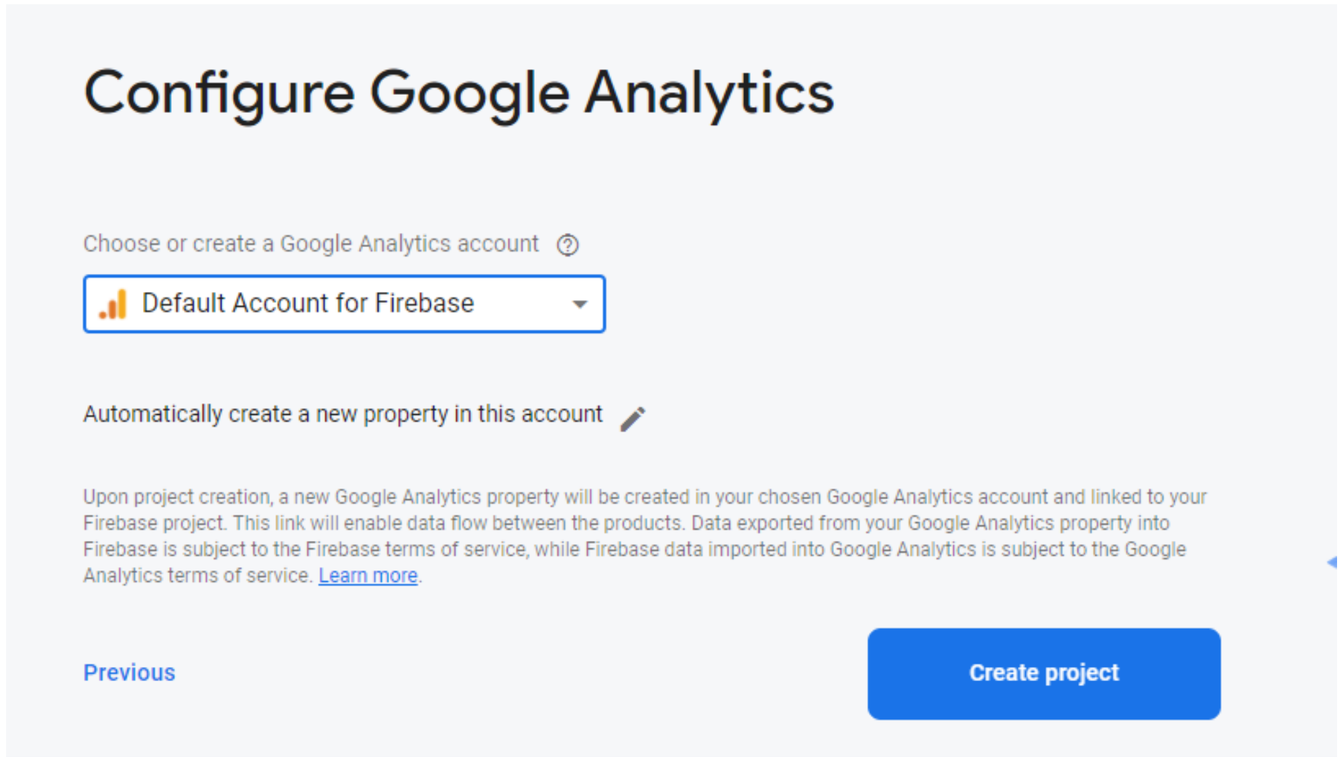

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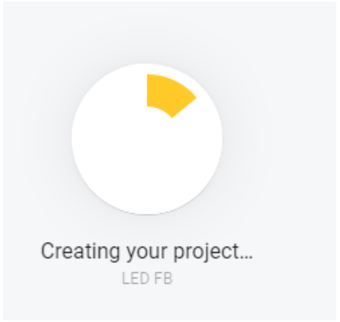

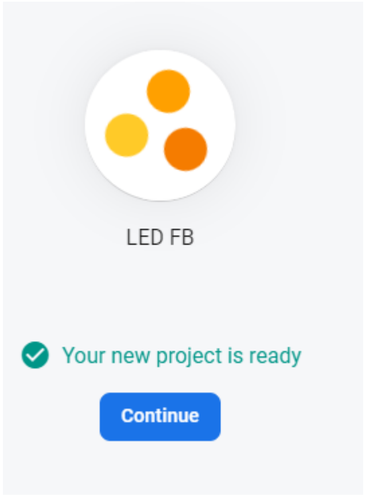

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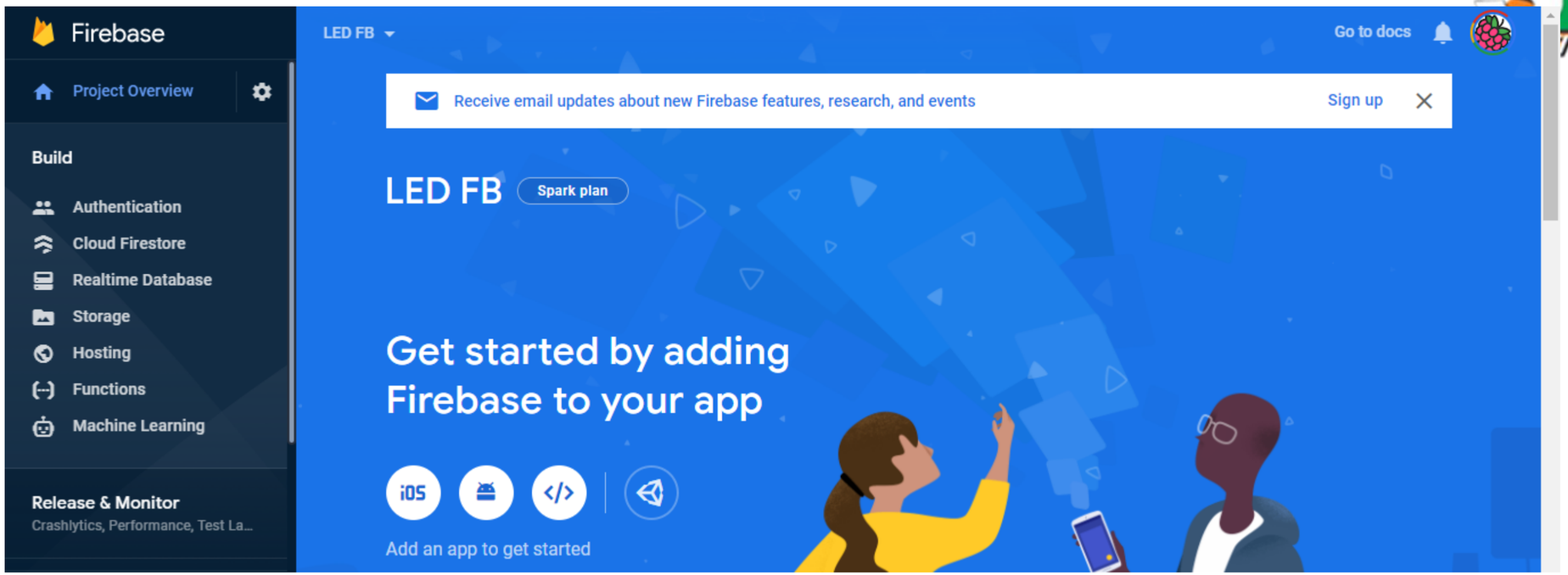

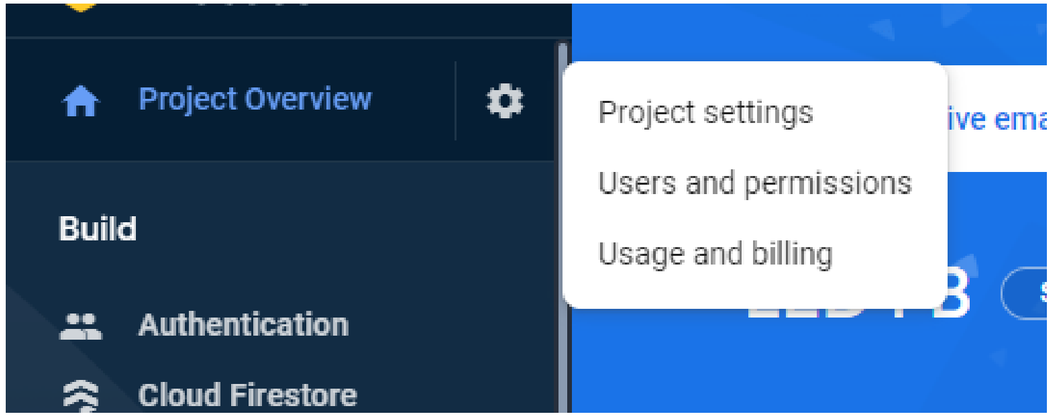

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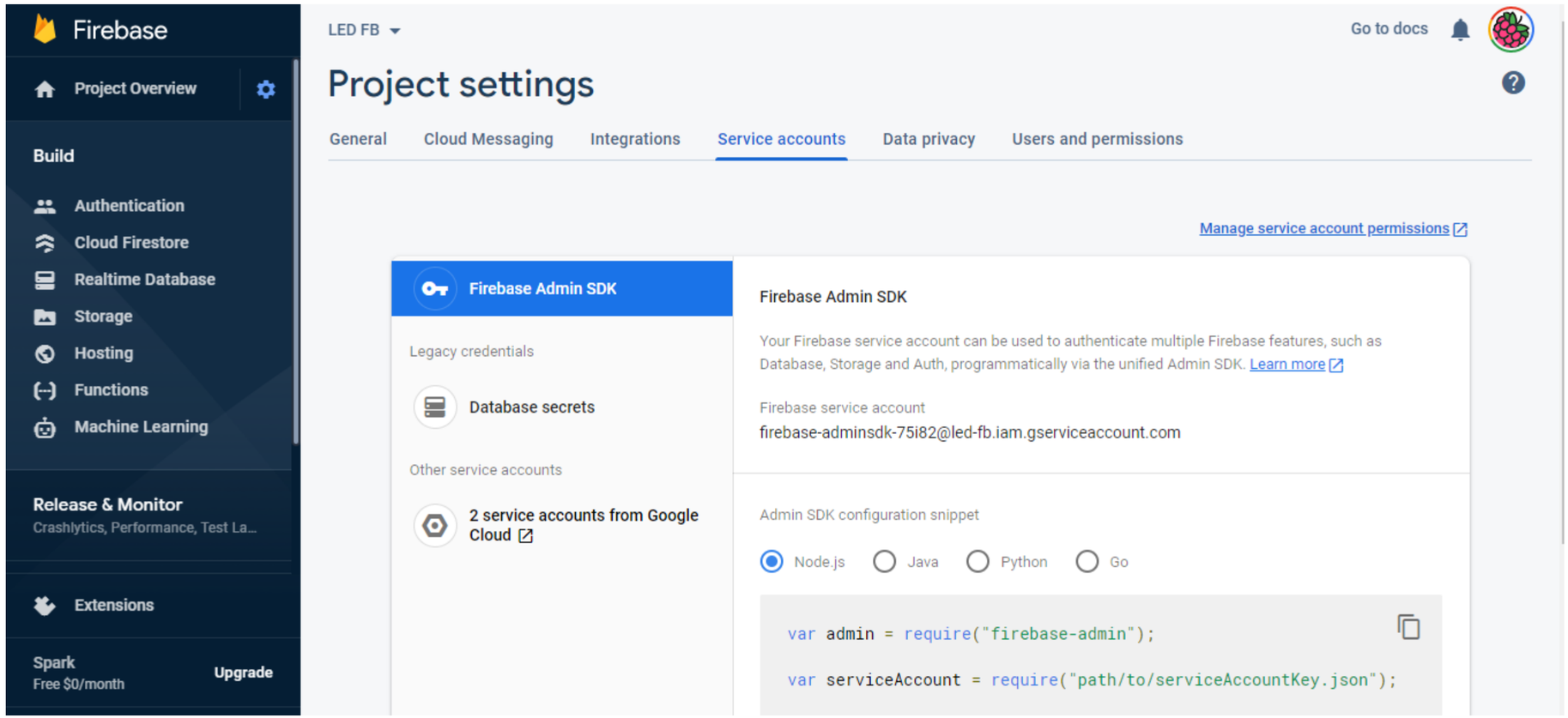

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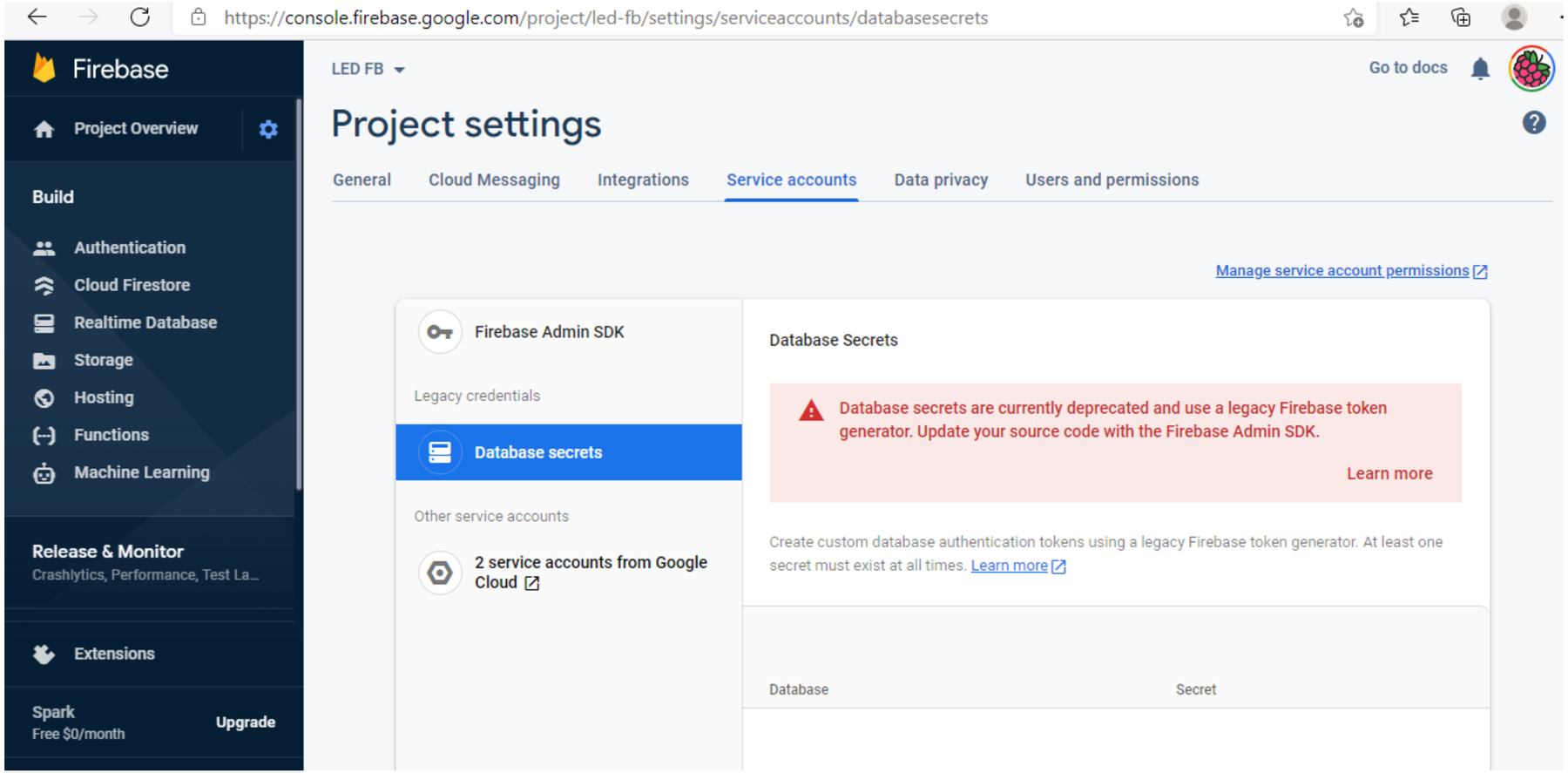

SETTING UP GOOGLE FIREBASE

THANK YOU