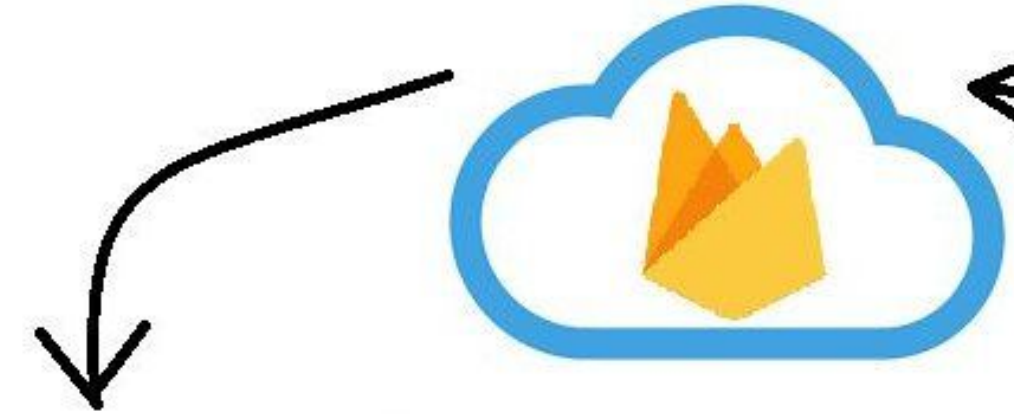
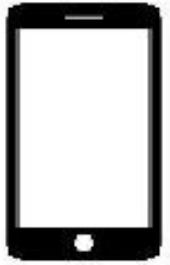


Firebase



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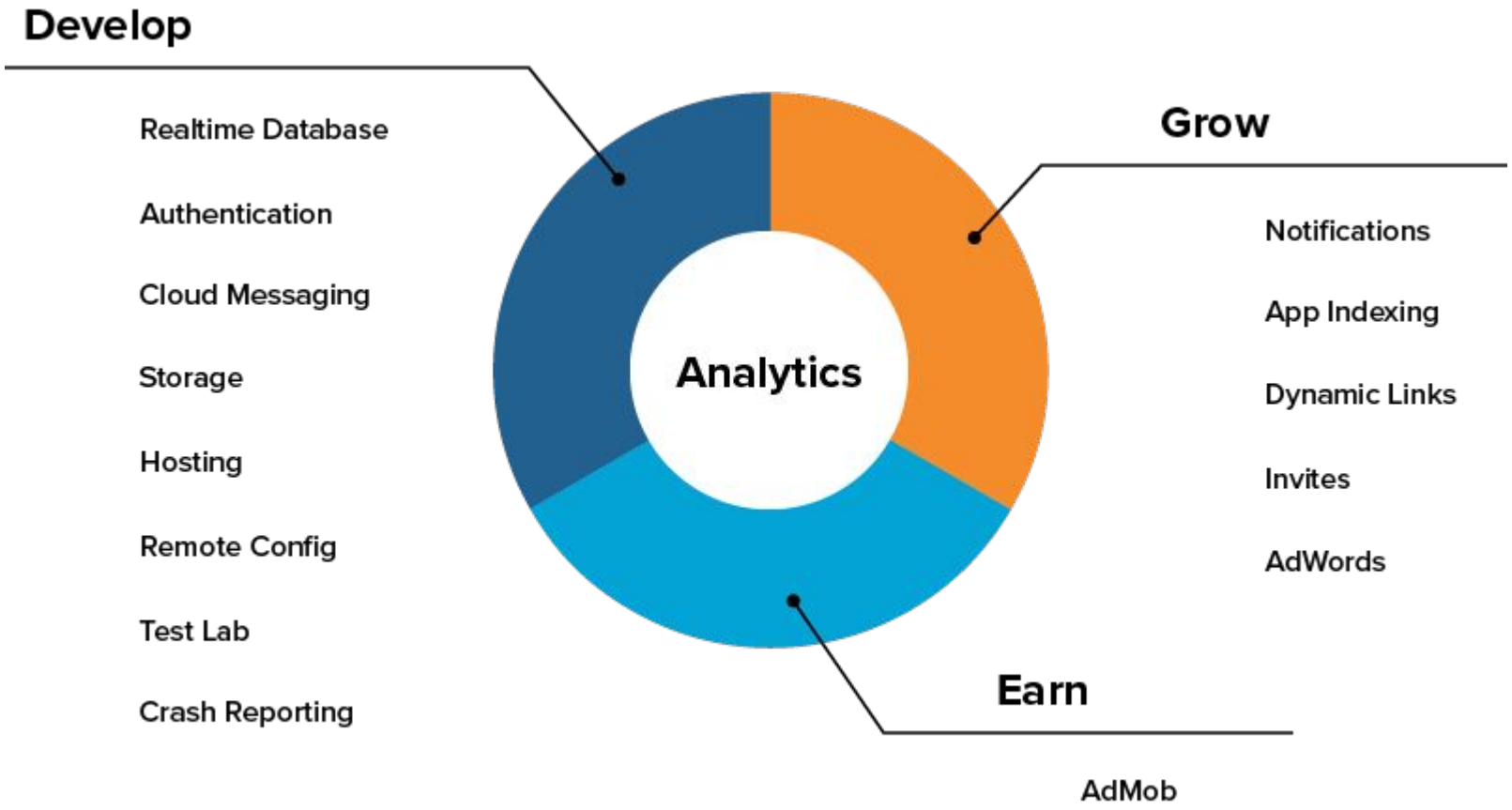
School of Electronics, DAVV, Indore

What is Firebase ?

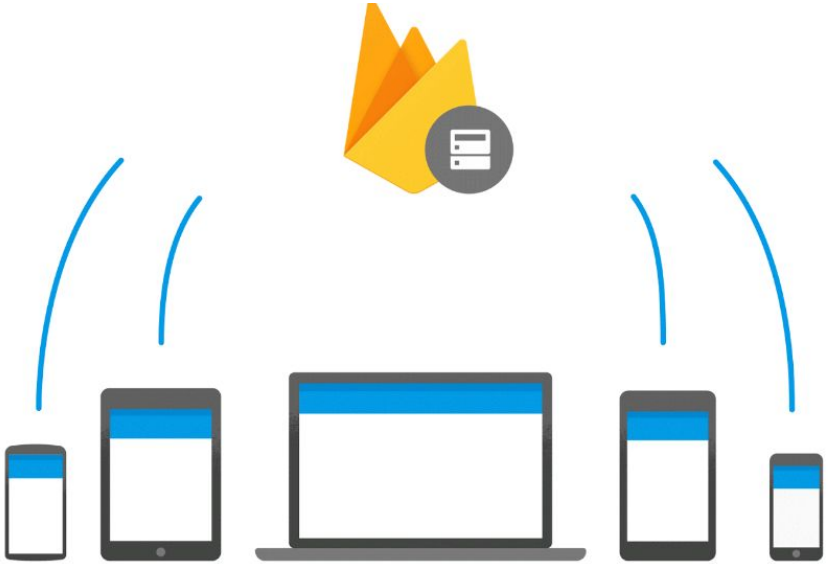
Firebase is a mobile and web application development platform developed by firebase, Inc. in 2011, then acquired by Google in 2014.

Firebase is a platform that will allow you to develop cross-platform apps quickly. It offers a number of different services built-in, including some basic analytics.


Develop
Realtime Database
Authentication
Cloud Messaging
Storage
Hosting
Remote Config
Test Lab
Crash Reporting
Grow
Notifications
App Indexing
Dynamic Links
Invites
AdWords
Analytics
Earn
AdMob

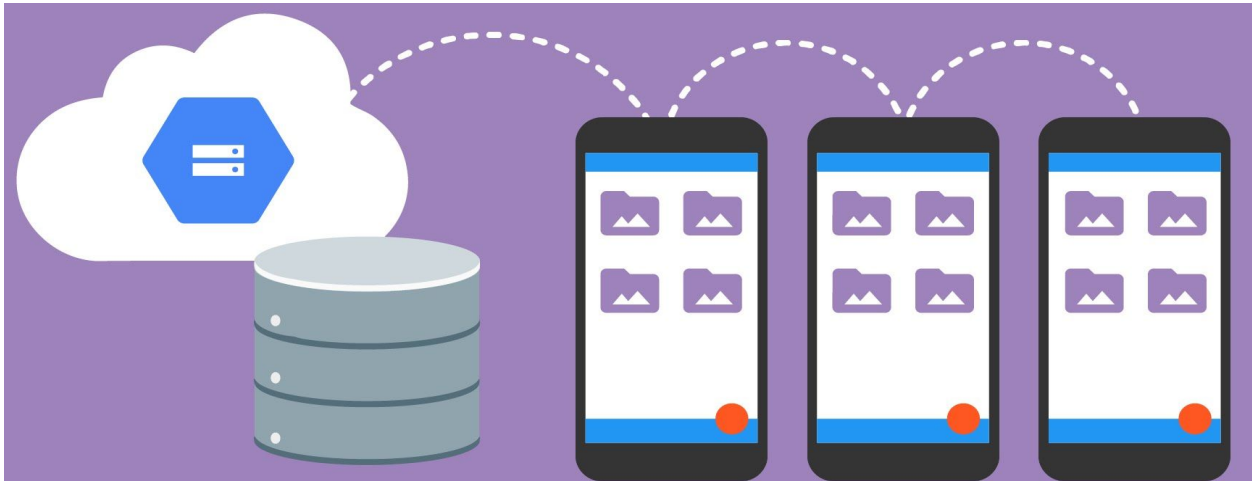
Realtime Database

Firebase provides a realtime database and backend as a service. The service provides application developers an API that allows application data to be synchronized across clients and stored on Firebase's cloud.(Ref)



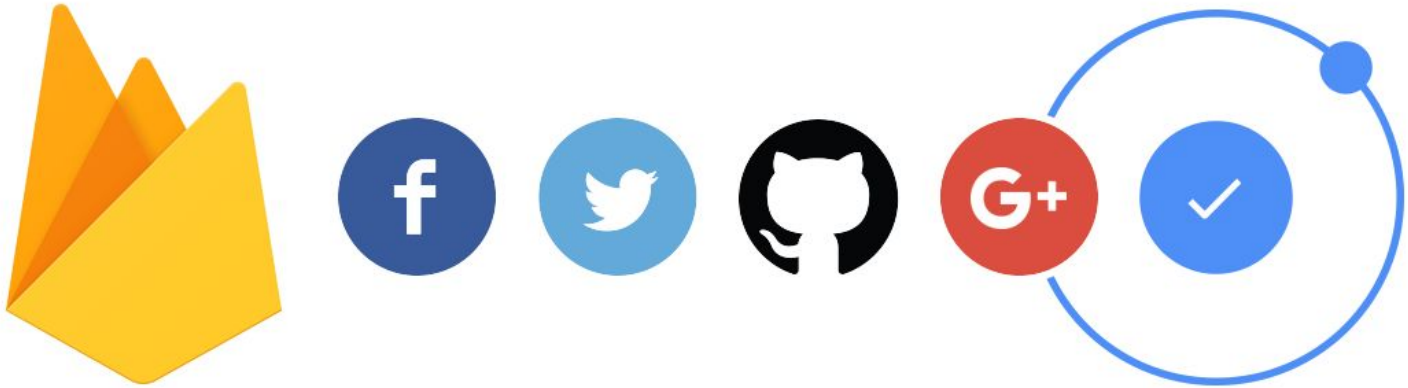
Firebase Storage

Firebase Storage provides secure file uploads and downloads for Firebase apps, regardless of network quality. The developer can use it to store images, audio, video, or other user-generated content. Firebase Storage is backed by Google Cloud Storage.(Ref)



Firebase Auth

Firebase Auth is a service that can authenticate users using only client-side code. It supports social login providers Facebook, GitHub, Twitter and Google (and Google Play Games). Additionally, it includes a user management system whereby developers can enable user authentication with email and password login stored with Firebase.(Ref)

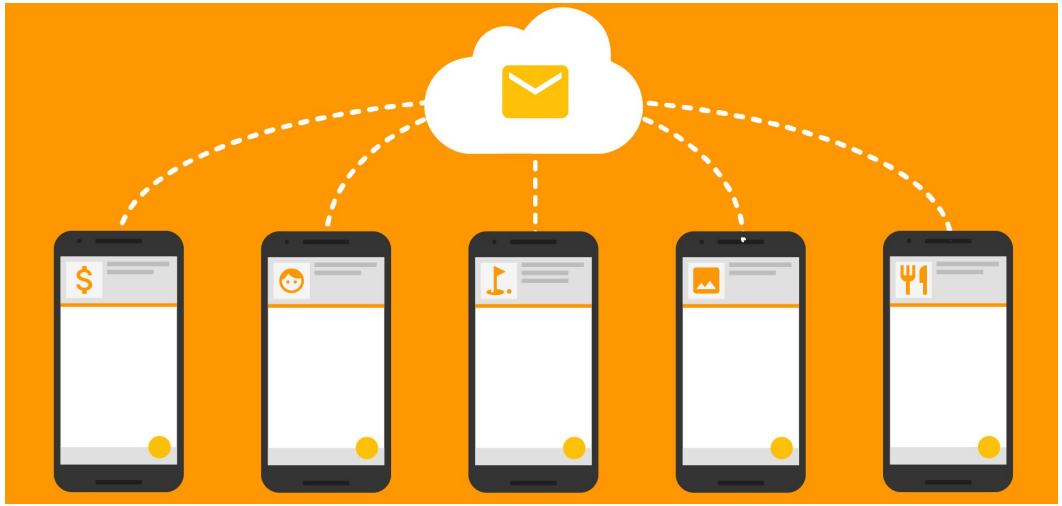


Hosting

Firebase Hosting is a static and dynamic web hosting service that launched on May 13, 2014. It supports hosting static files such as CSS, HTML, JavaScript and other files, as well as dynamic Node.js support through Cloud Functions.

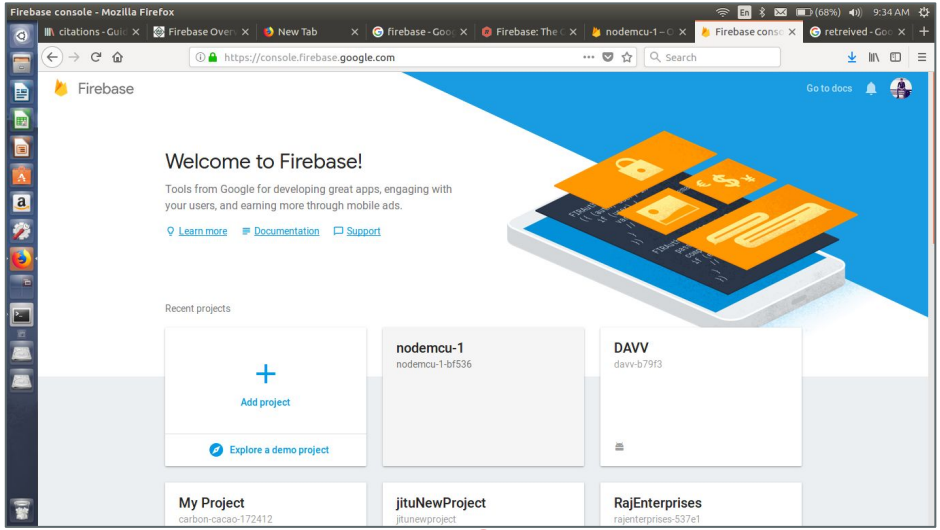
Cloud Messaging

Formerly known as Google Cloud Messaging (GCM), Firebase Cloud Messaging (FCM) is a cross-platform solution for messages and notifications for Android, iOS, and web applications, which currently can be used at no cost.

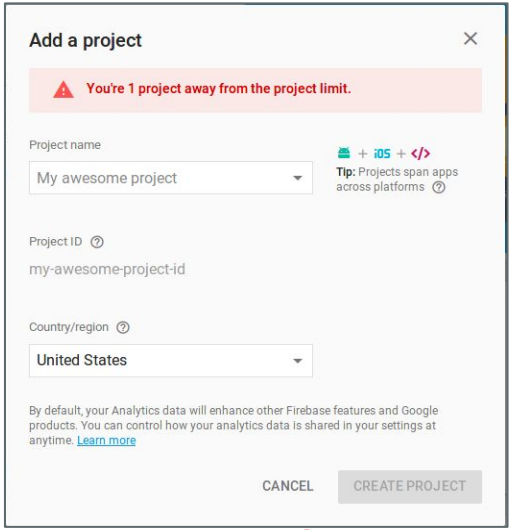


Project Creation on Firebase

1. Goto website: https://console.firebase.google.com/
2. Create project by clicking on ‘Add Project’ button, provide the project name and country name in popup window, and click on create project.

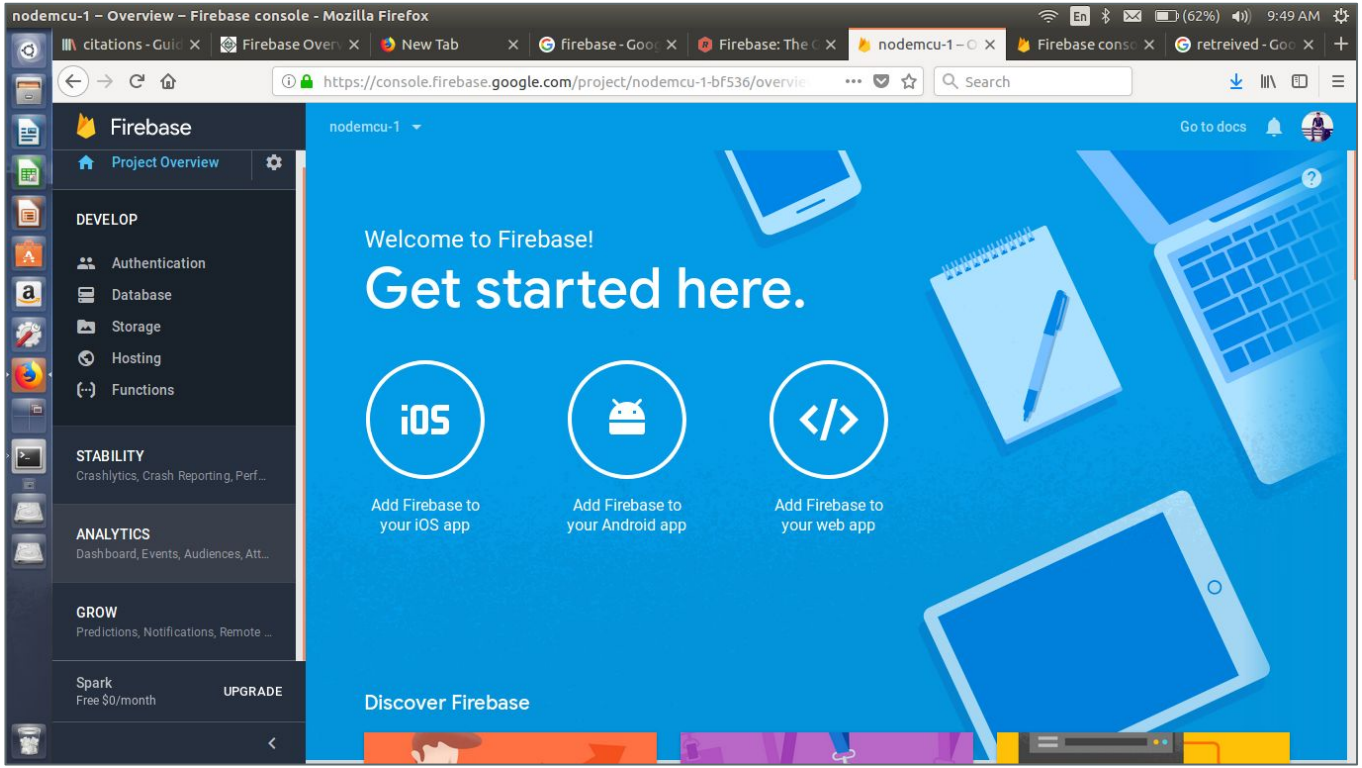


Firebase Console



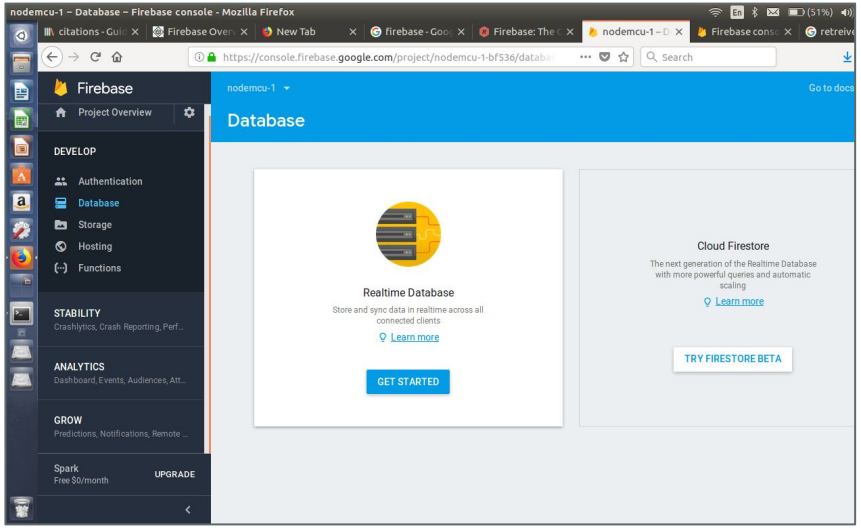
New Project Creation

Project Console Description

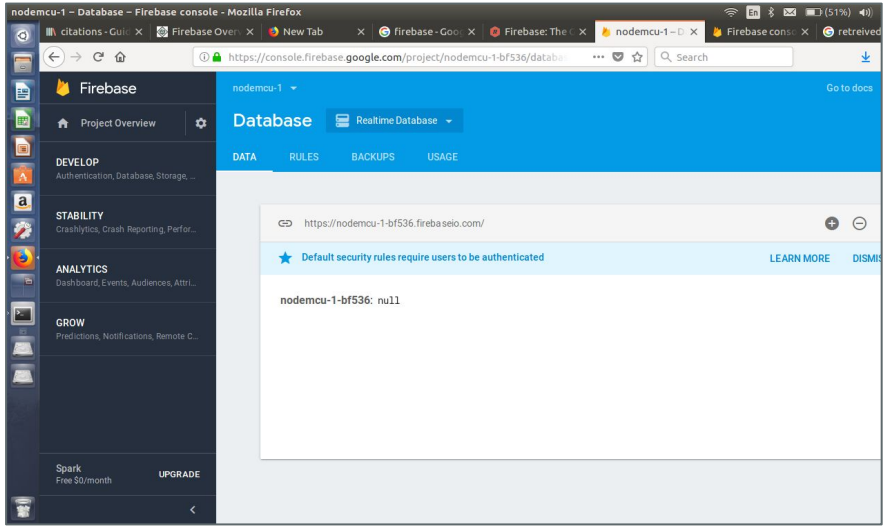


Project Console

Realtime Database Panel

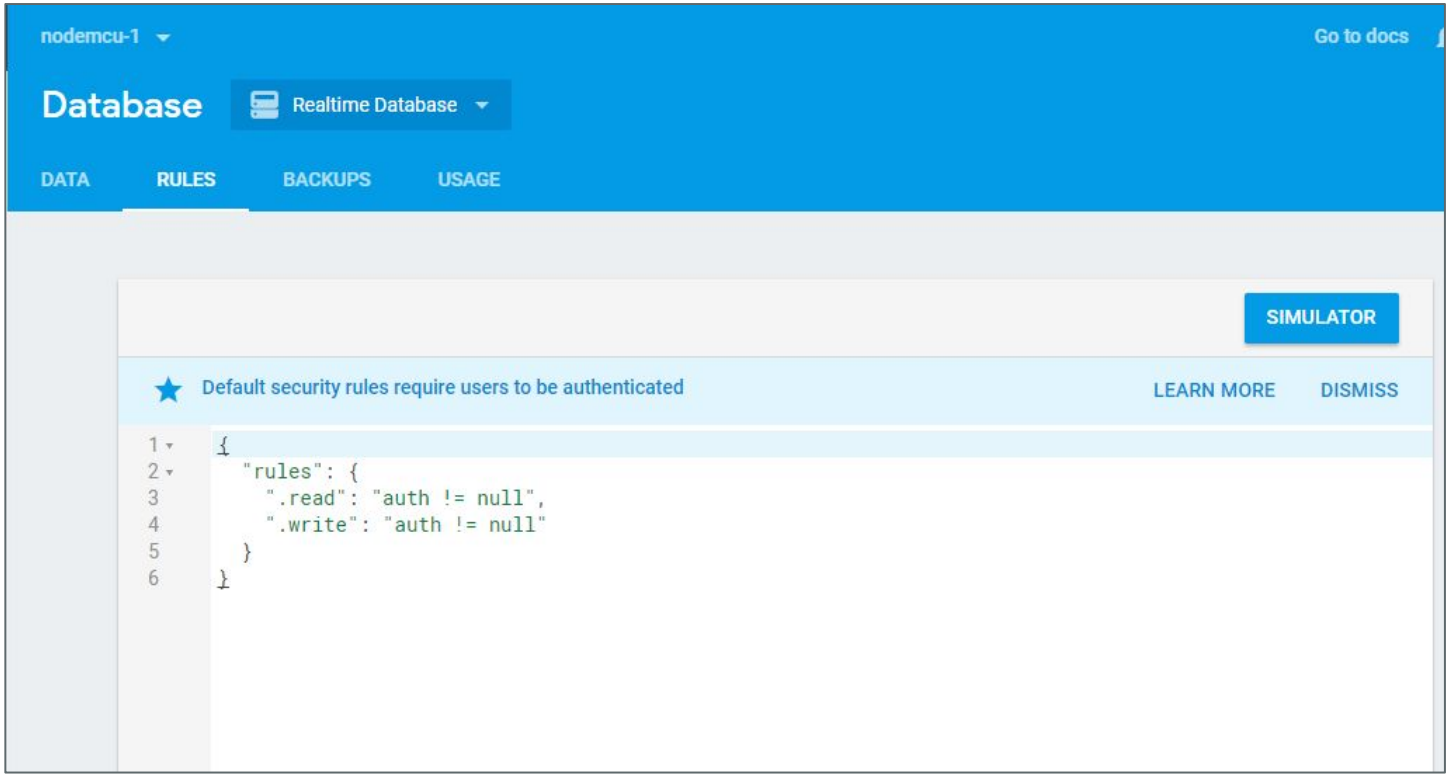


Realtime Database and Firestore



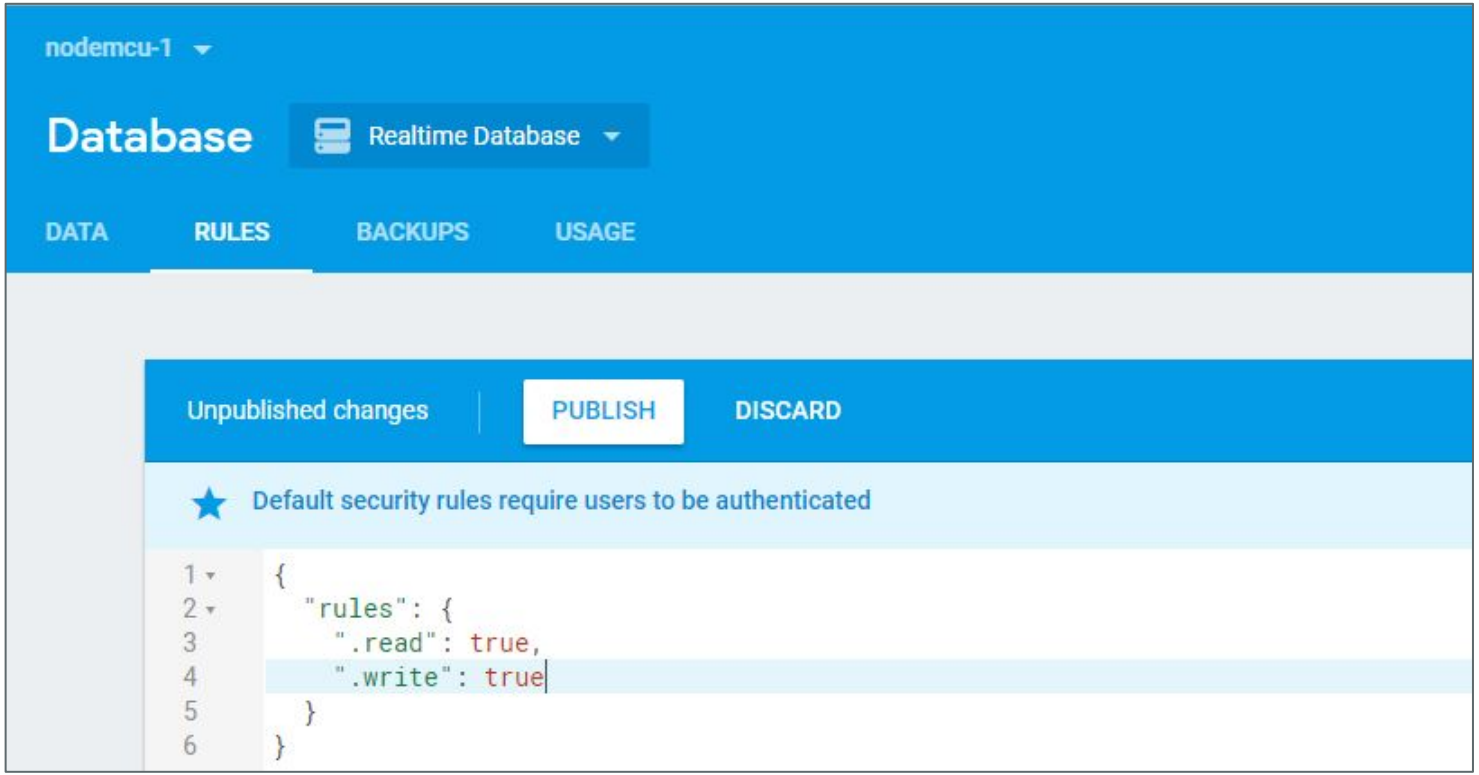
Realtime Database

Rules



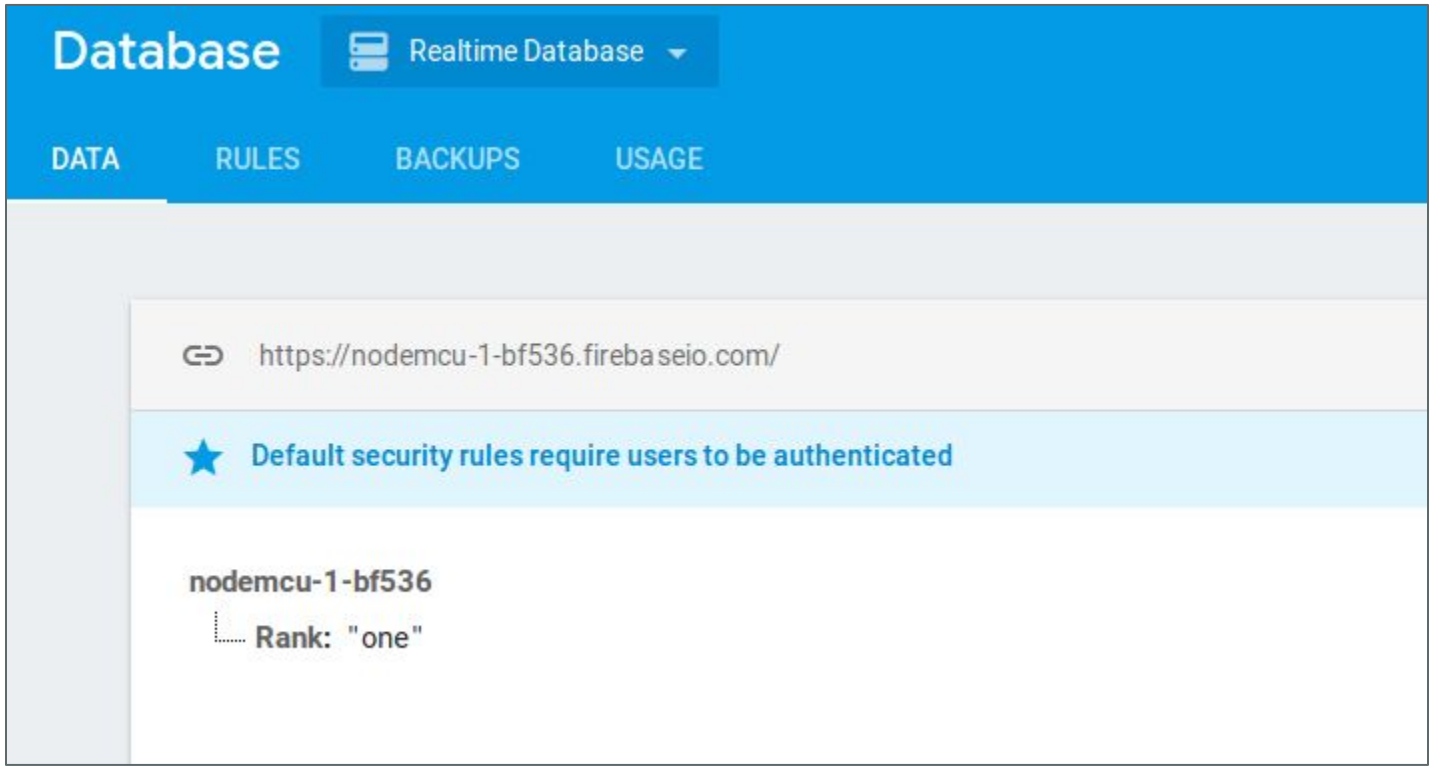
Realtime Database Rules

Rules



Realtime Database Rules

Key and Value



Key value in Realtime Database

Add ESP8266 core Library

Step-1: Open the Arduino IDE and press ctrl + comma.

Step-2: Enter http://arduino.esp8266.com/stable/package_esp8266com_index.json into *Additional Board Manager URLs* field.

Step-3: Goto Tools → Boards → Boards Manager…

Step-4: Type ‘esp’ in search field and select ‘esp8266 by ESP8266 community’ and install it.

Step-5: Now check in Tools → Boards, there is a list of esp based boards, select NodeMCU 1.0 (ESP-12E module)

Add Firebase/arduino Library

Step-1: Goto https://github.com/firebase/firebase-arduino , and download the ZIP file by clicking on ‘Clone or download’.

Step-2: Open Arduino IDE, goto Sketch → Add Library → .ZIP library, then provide the path of .zip file of library and click on okay.

NodeMCU as a Event Listener

```
#include <FirebaseArduino.h>
#include <ESP8266WiFi.h>

// Set these to run example.
#define WIFI_SSID "RobuByte"
#define WIFI_PASSWORD "esp@8265"


void setup() {
  Serial.begin(9600);

  // connect to wifi.
  WiFi.begin(WIFI_SSID, WIFI_PASSWORD);
  Serial.print("connecting");
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");
    delay(500);
  }
  Serial.println();
  Serial.print("connected: ");
  Serial.println(WiFi.localIP());

  Firebase.begin("davv-b79f3.firebaseio.com");
  Firebase.stream("/");
}
```

```
void loop() {
  if (Firebase.failed()) {
    Serial.println("streaming error");
    Serial.println(Firebase.error());
  }

  if (Firebase.available()) {
     FirebaseObject event = Firebase.readEvent();
     String eventType = event.getString("type");
     eventType.toLowerCase();

     Serial.print("event: ");
     Serial.println(eventType);
     if (eventType == "put") {
       Serial.print("data: ");
      /// Serial.println(event.getString("data"));
       String path = event.getString("path");
       String data = event.getString("data");
 Serial.println(path +":"+data);

     }
  }
}
```

Conclusion

- Firebase is a google’s API for development of mobile applications.
- It reduces the complexity of server design and security.
- Provides NoSQL realtime database server for real time applications.
- Firebase supports REST API, which helps to use firebase in any language with help of HTTP request response.

References

- Getting to know NodeMCU and its DEVKIT board
- NodeMCU
- Firebase Realtime Database REST API
- ESP8266 core for Arduino IDE
- Firebase samples for Arduino
- Arduino Examples