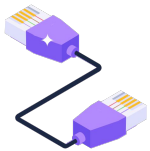
Temperature And Humidity Monitor

Syrine Abouda 2GT2



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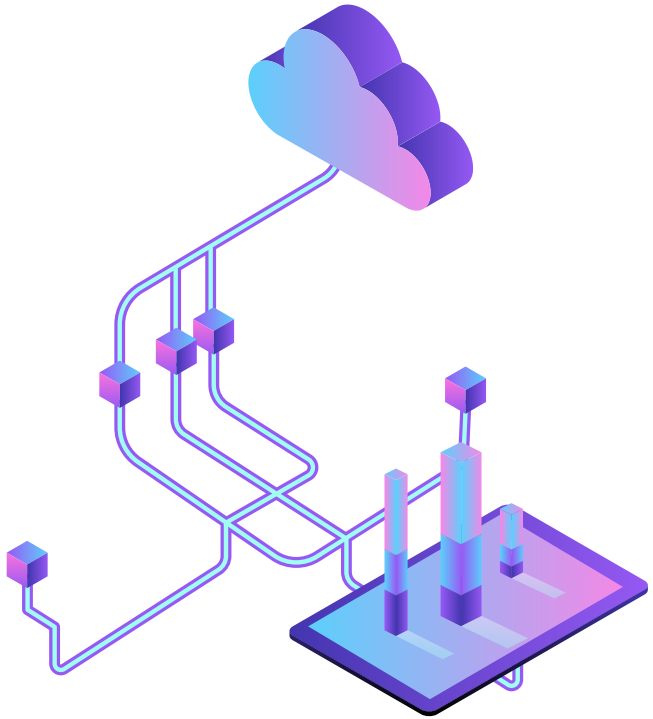
I. Project Presentation

An IoT device
that measures temperature and humidity and shows the results in an Android application.

Google firebase console:as an online platform to showcase and store the data.

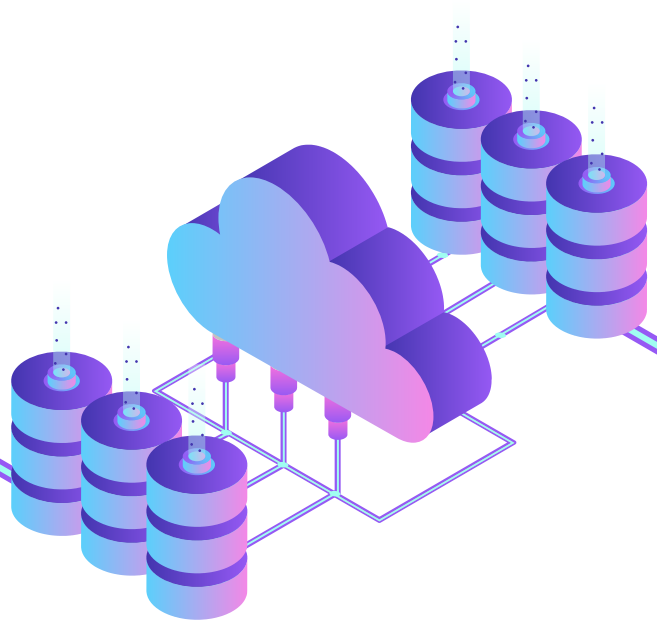
To develop the Android application I used MIT App inventor .



Why Firebase console ?

Quick way to keep sensory data collected at the device level.

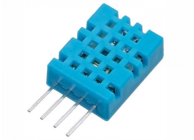
works great with the Android APIs.



Multiple features:

- Realtime Database.
- Authentication
- Cloud
- Messaging
- Storage.
- Hosting.
- Test Lab.
- Analytics

II. Required Components And Platforms



Temperature and Humidity Sensor DHT11

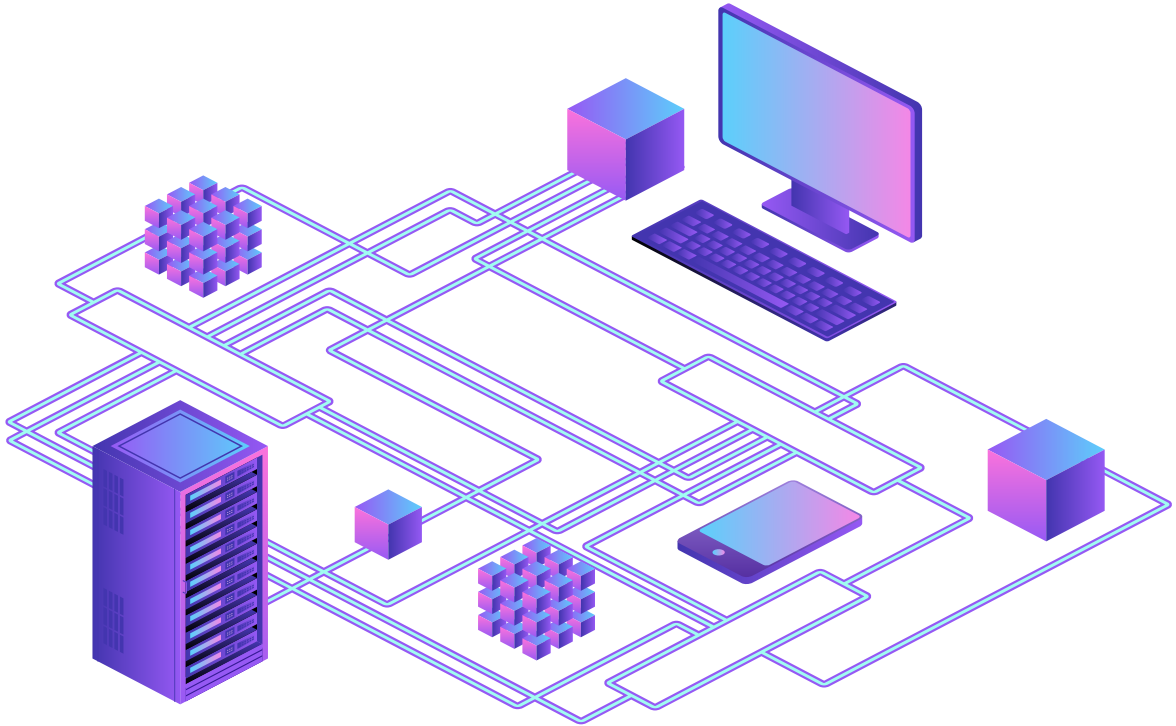
Connecting Cables

NodeMCU: ESP8266

MIT App Inventor

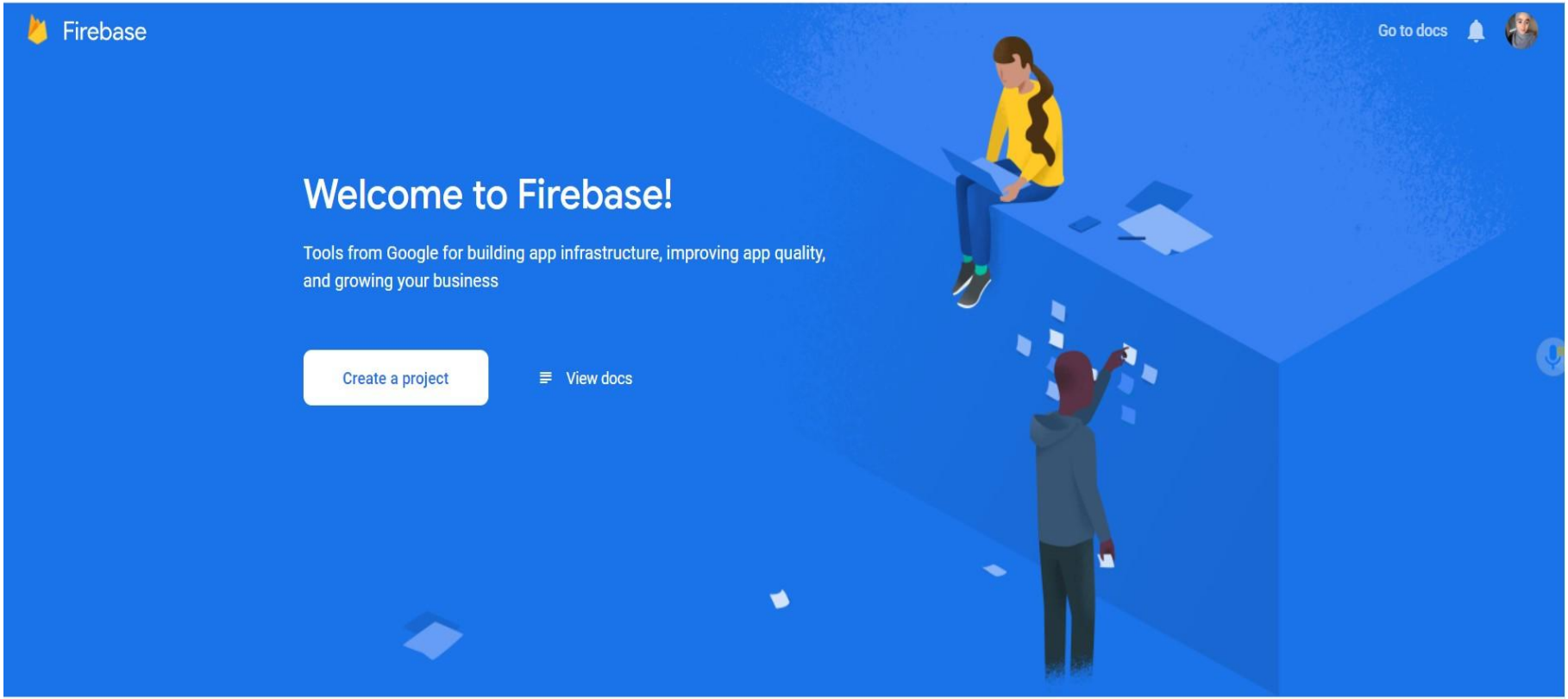
Google Firebase Console

III. Steps of Creating the Project



01

Creating a Firebase Project



Explore a demo project

Firebase projects are

× Créer un projet(Étape 1 sur 3)

Commençons par donner un nom à votre projet

Nom du projet

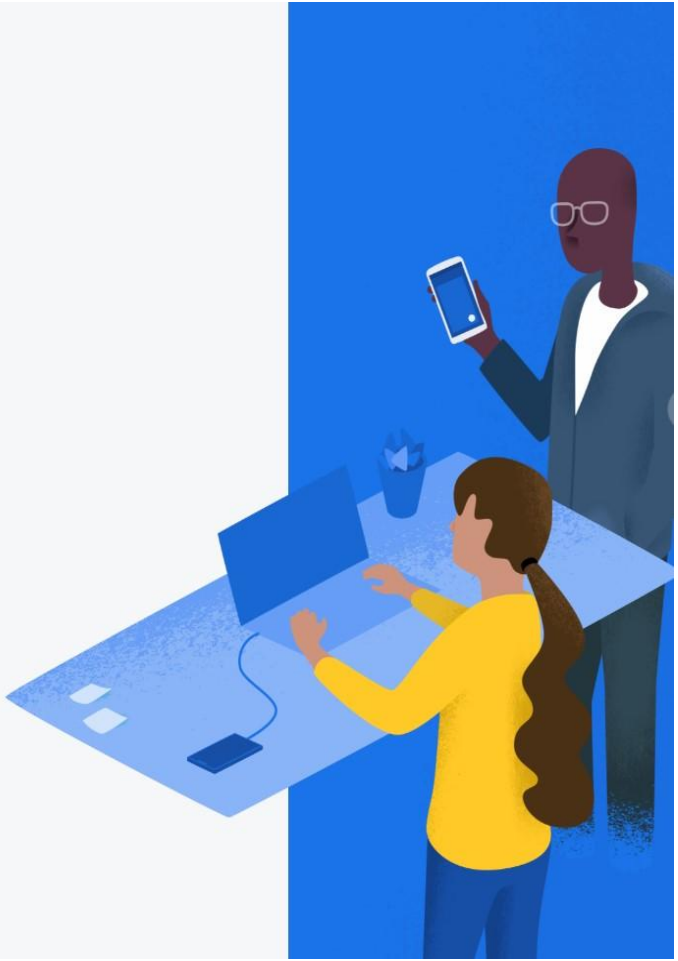
TemperatureHumidityMonitor

temperaturehumiditymonitor

J'accepte les Conditions d'utilisation de Firebase

Je confirme que je n'utiliserai Firebase que pour mes activités commerciales, mon entreprise, mes créations ou ma profession.

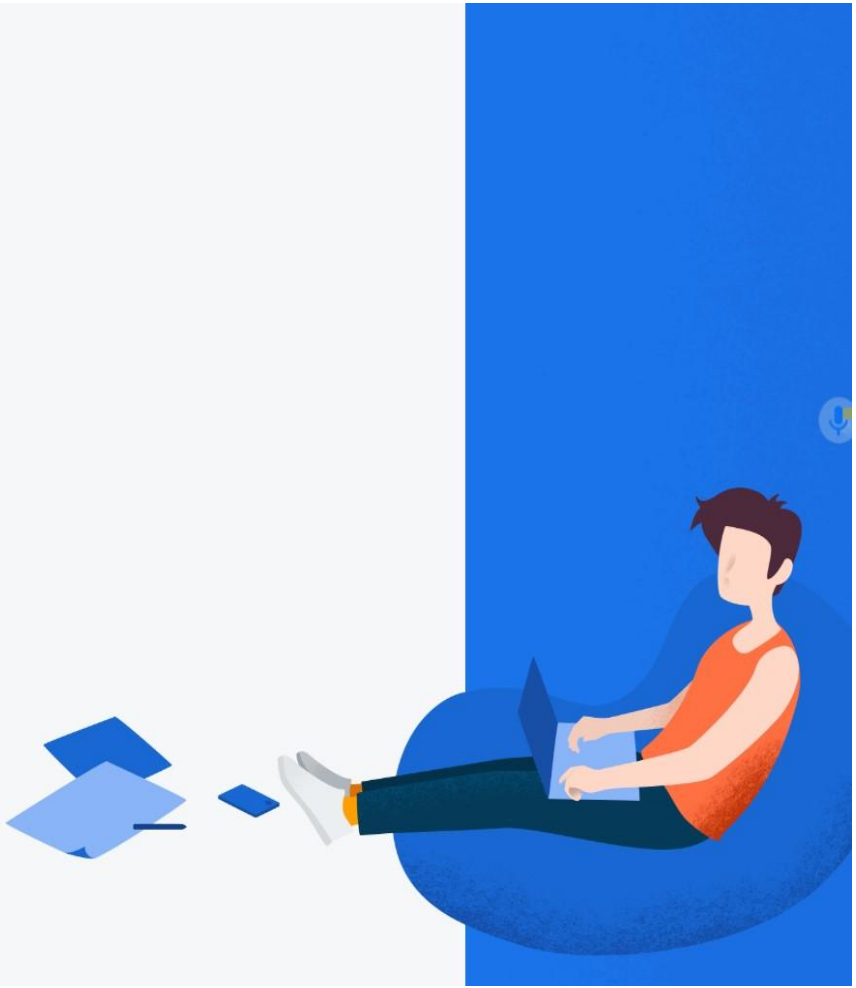
Continuer



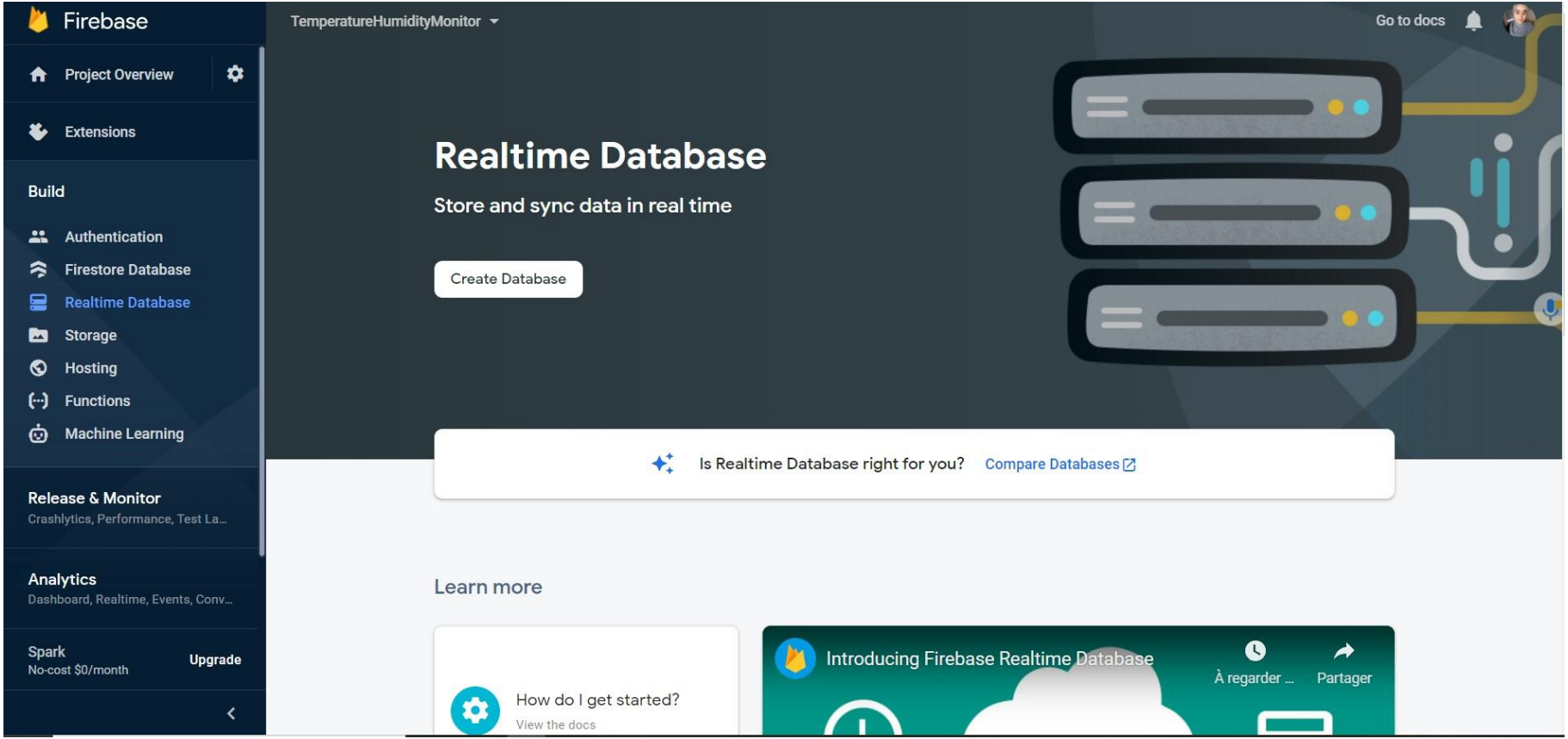
TemperatureHumidityMonitor

Votre nouveau projet est prêt

Continuer



02 Creating Real Time DataBase


Firebase
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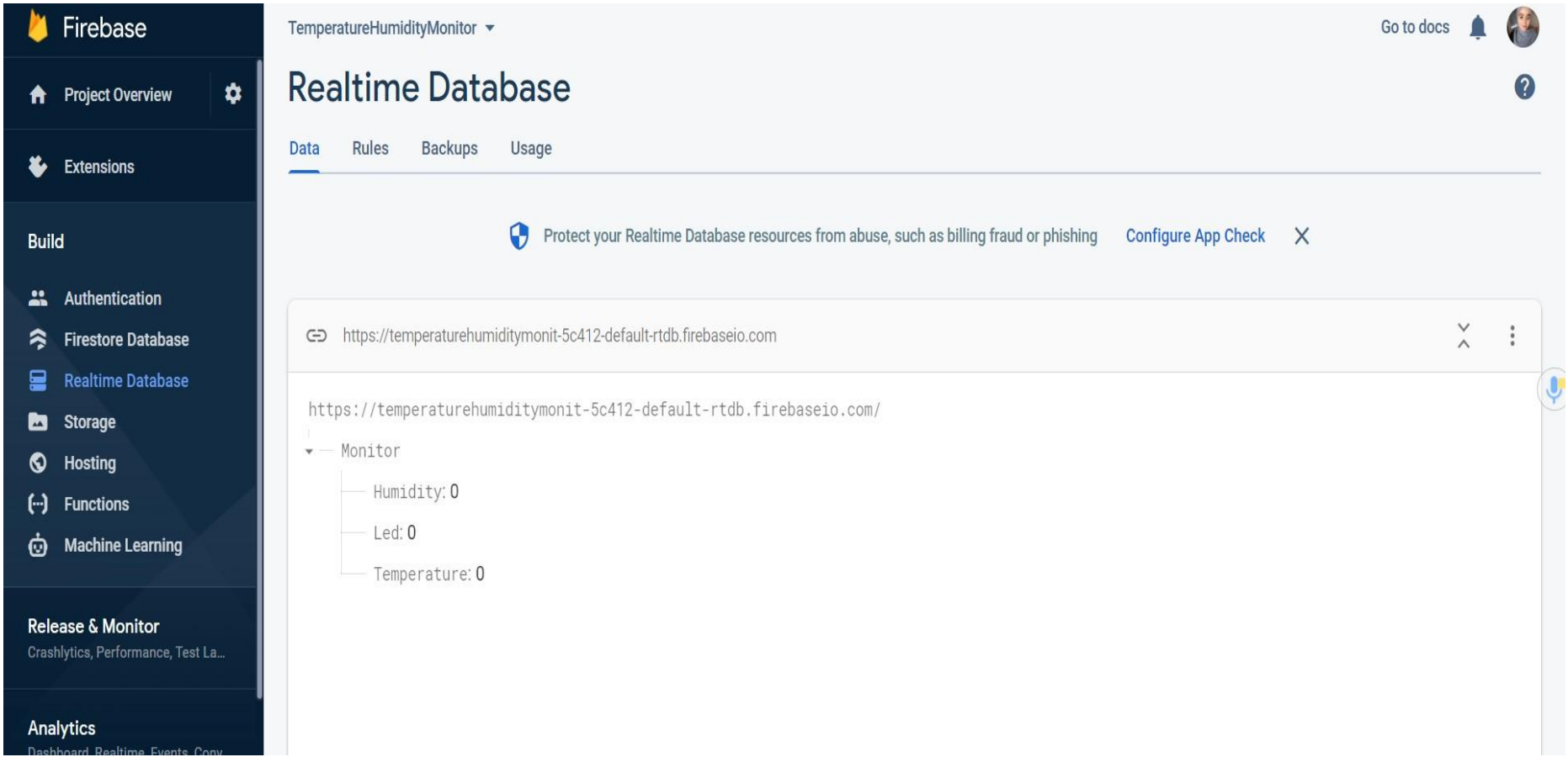
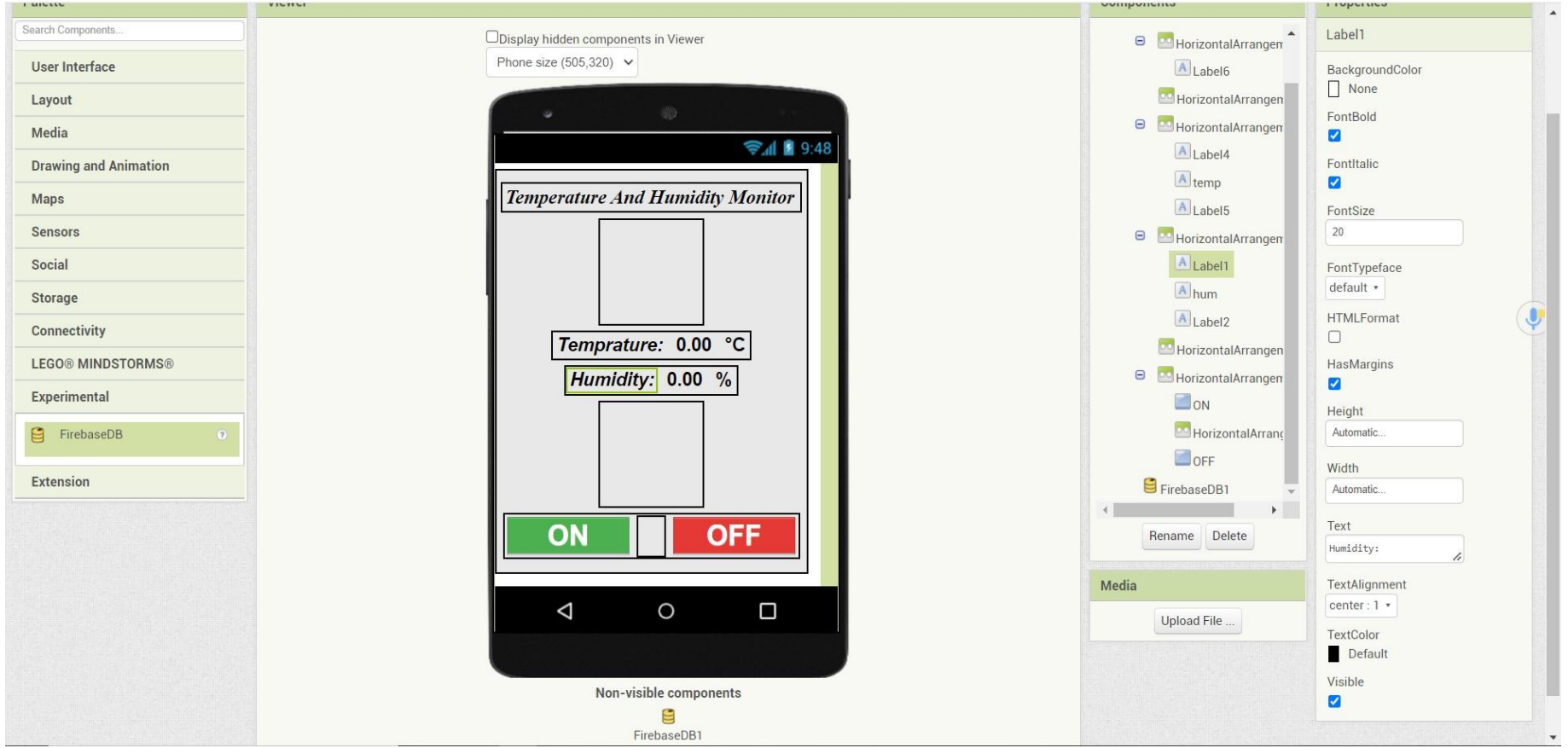
Firestore Database
Realtime Database
Storage
Hosting
Functions
Machine Learning
Release & Monitor
Crashlytics, Performance, Test La...
Analytics
Dashboard, Realtime, Events, Conv...
Spark
No-cost $0/month
Upgrade
Realtime Database
Store and sync data in real time
Create Database
Is Realtime Database right for you?
Compare Databases
Learn more
How do I get started?
View the docs
Introducing Firebase Realtime Database
À regarder ...
Partager

➔ **We add three tags for storing the temperature, humidity, and LED data.**



03 Making the APP With MIT Inventor


Search Components...
User Interface
Layout
Media
Drawing and Animation
Maps
Sensors
Social
Storage
Connectivity
LEGO® MINDSTORMS®
Experimental
FirebaseDB
Extension
Display hidden components in Viewer
Phone size (505,320)
9:48
Temperature And Humidity Monitor
Temprature: 0.00 °C
Humidity: 0.00 %
ON
OFF
Non-visible components
FirebaseDB1
HorizontalArrangen
Label6
HorizontalArrangen
HorizontalArrangen
Label4
temp
Label5
HorizontalArrangen
Label1
hum
Label2
HorizontalArrangen
HorizontalArrangen
ON
HorizontalArrang
OFF
FirebaseDB1
Rename
Delete
Media
Upload File ...
Label1
BackgroundColor
None
FontBold
FontItalic
FontSize
20
FontTypeface
default
HTMLFormat
HasMargins
Height
Automatic...
Width
Automatic...
Text
Humidity:
TextAlignment
center : 1
TextColor
Default
Visible

Temperature_Humidity_Monitor | Screen1 | Add Screen ... | Remove Screen | Publish to Gallery | Designer | Blocks

Palette

Search Components...

User Interface

- Button
- CheckBox
- DatePicker
- Image
- Label
- ListPicker
- ListView
- Notifier
- PasswordTextBox
- Slider
- Spinner
- Switch
- TextBox
- TimePicker
- WebViewer

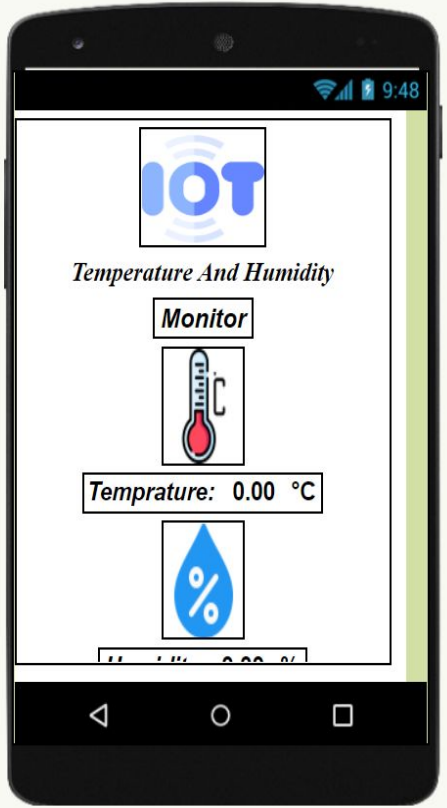
Layout

Media

Viewer

Display hidden components in Viewer

Phone size (505,320)



Non-visible components

Components

- Screen1
  - VerticalArrangement1
    - HorizontalArrangen
    - Label6
    - HorizontalArrangen
      - Label8
    - VerticalArrangemer
    - HorizontalArrangen
      - Label7
      - temp
      - Label5
    - HorizontalArrangen
    - HorizontalArrangen
      - Label1
      - hum
      - Label2
    - HorizontalArrangen

Rename | Delete

Media

- 2944675.png
- 728093.png
- iot.png

Properties

FirebaseDB1

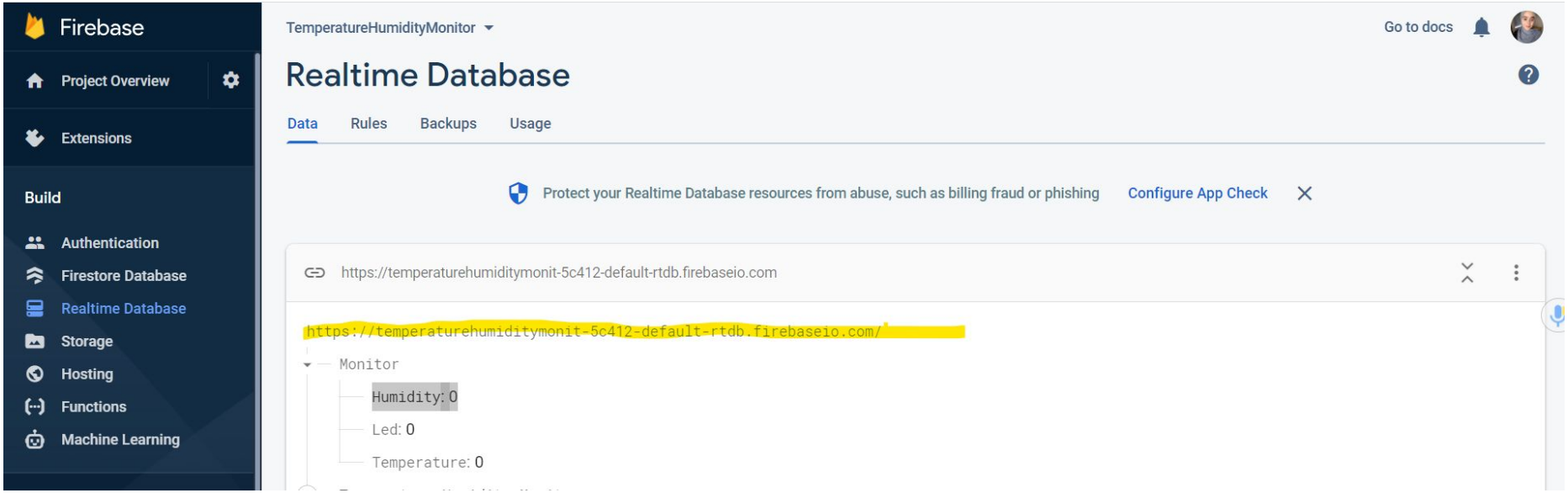
FirebaseToken: eyJ0eXAiOiJKV1QiLCJhbG

FirebaseURL: https://temperaturehumidity

Use Default

Persist

ProjectBucket: Monitor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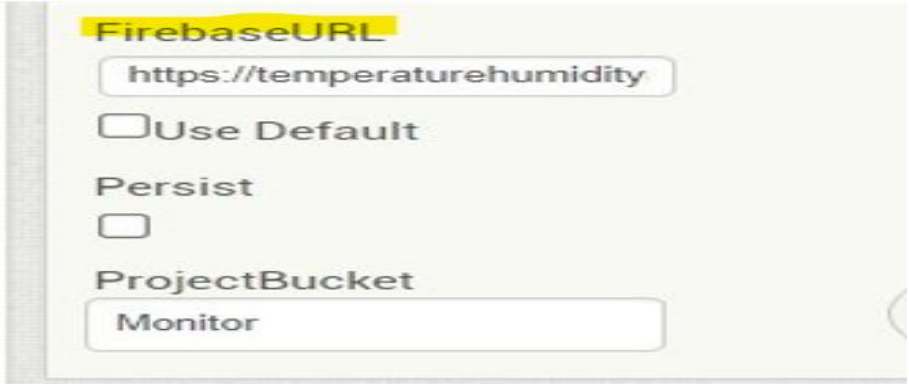
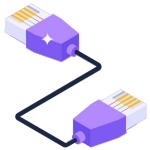
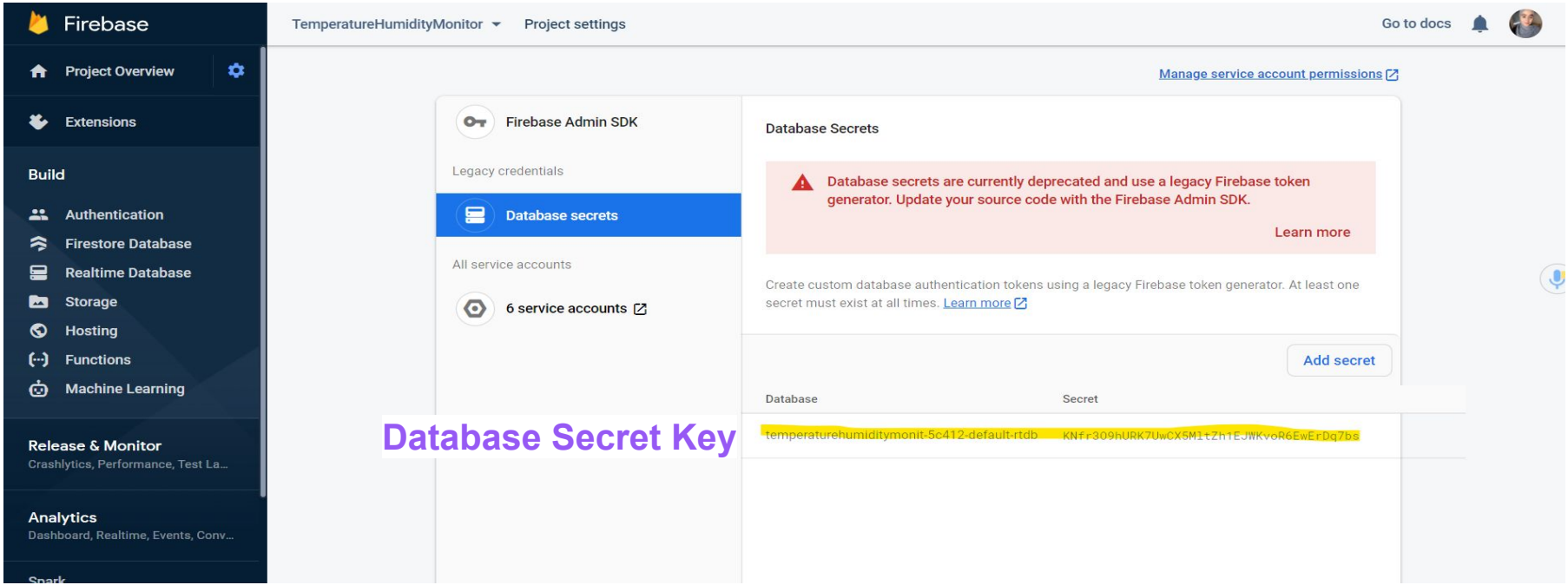
Realtime Database
Data
Rules
Backups
Usage
Protect your Realtime Database resources from abuse, such as billing fraud or phishing
Configure App Check
https://temperaturehumiditymonit-5c412-default-rtdb.firebaseio.com
https://temperaturehumiditymonit-5c412-default-rtdb.firebaseio.com/
Monitor
Humidity: 0
Led: 0
Temperature: 0


FirebaseURL
https://temperaturehumidity
Use Default
Persist
ProjectBucket
Monitor

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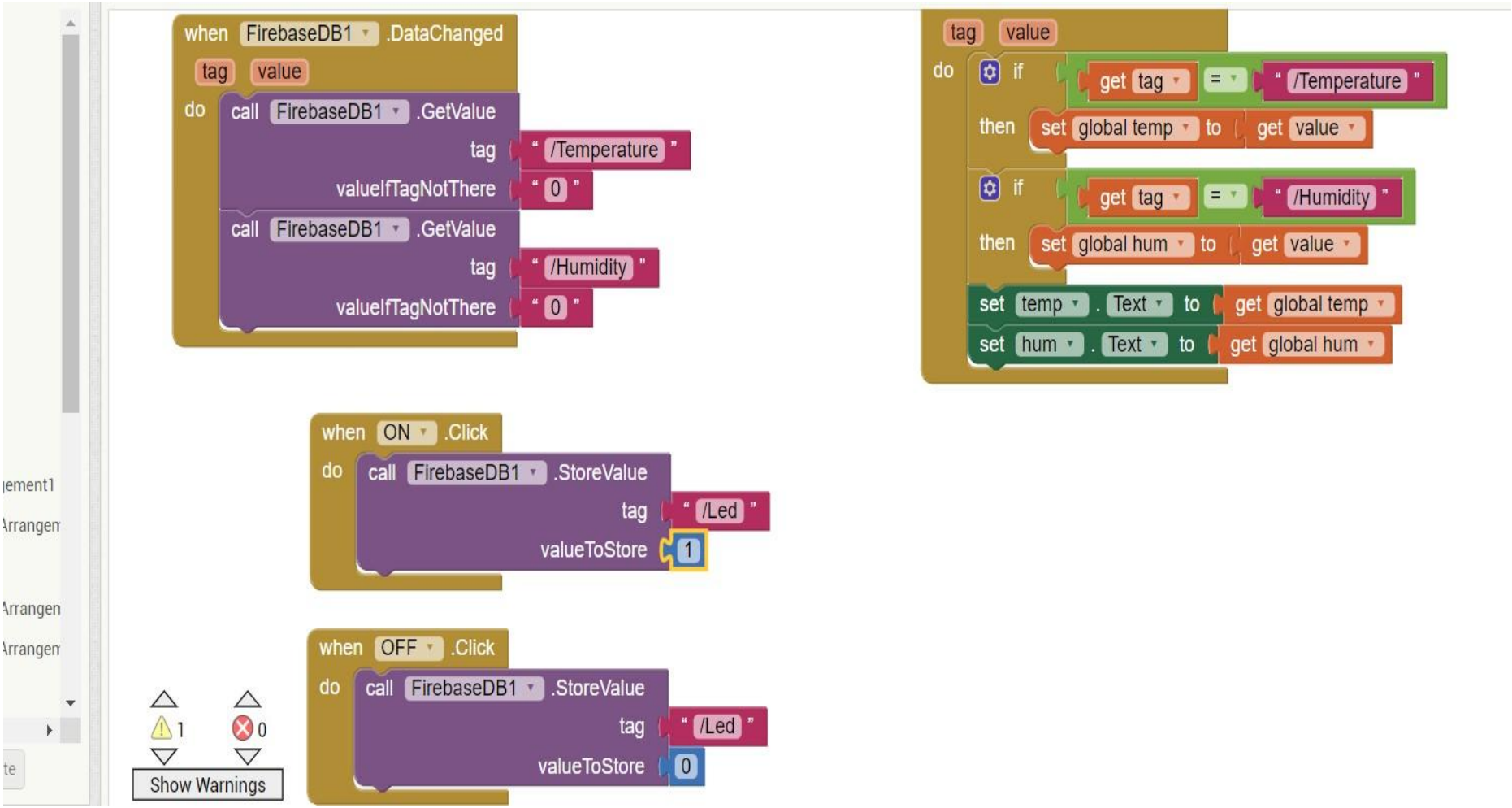
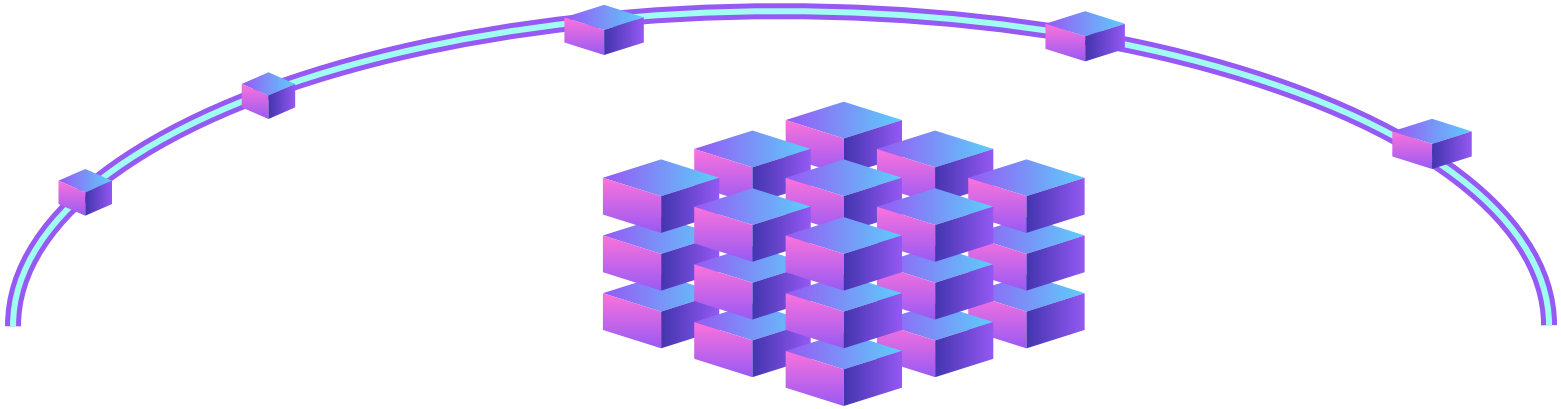
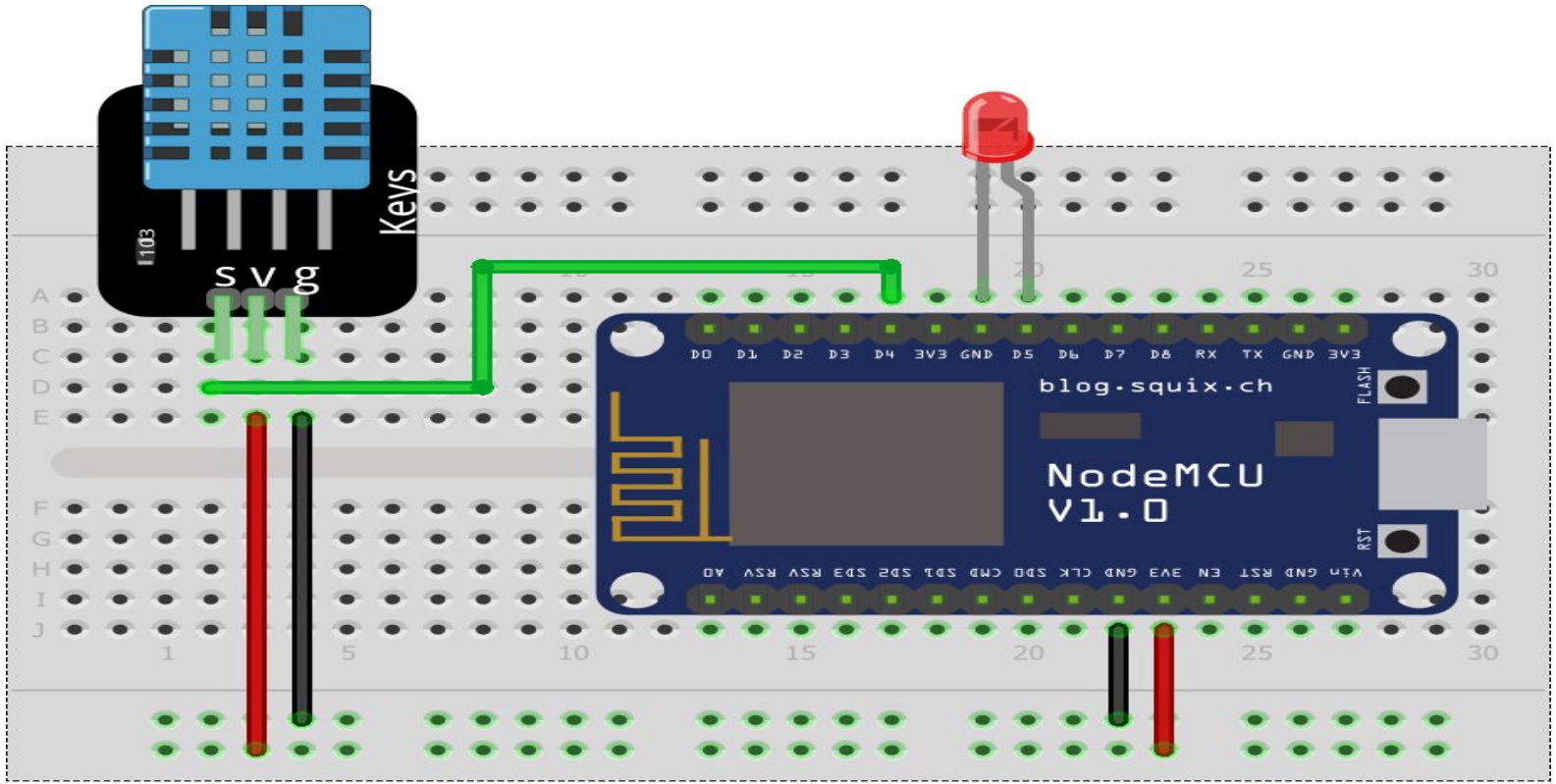
Release & Monitor
Crashlytics, Performance, Test La...
Analytics
Dashboard, Realtime, Events, Conv...
Manage service account permissions
Firebase Admin SDK
Legacy credentials
Database secrets
All service accounts
6 service accounts
Database Secrets
Database secrets are currently deprecated and use a legacy Firebase token generator. Update your source code with the Firebase Admin SDK.
Learn more
Create custom database authentication tokens using a legacy Firebase token generator. At least one secret must exist at all times. Learn more
Add secret
Database
Secret
temperaturehumiditymonit-5c412-default-rtdb
KNfr309hURK7UwCX5M1tZh1EJWKvoR6EwErDq7bs
Database Secret Key

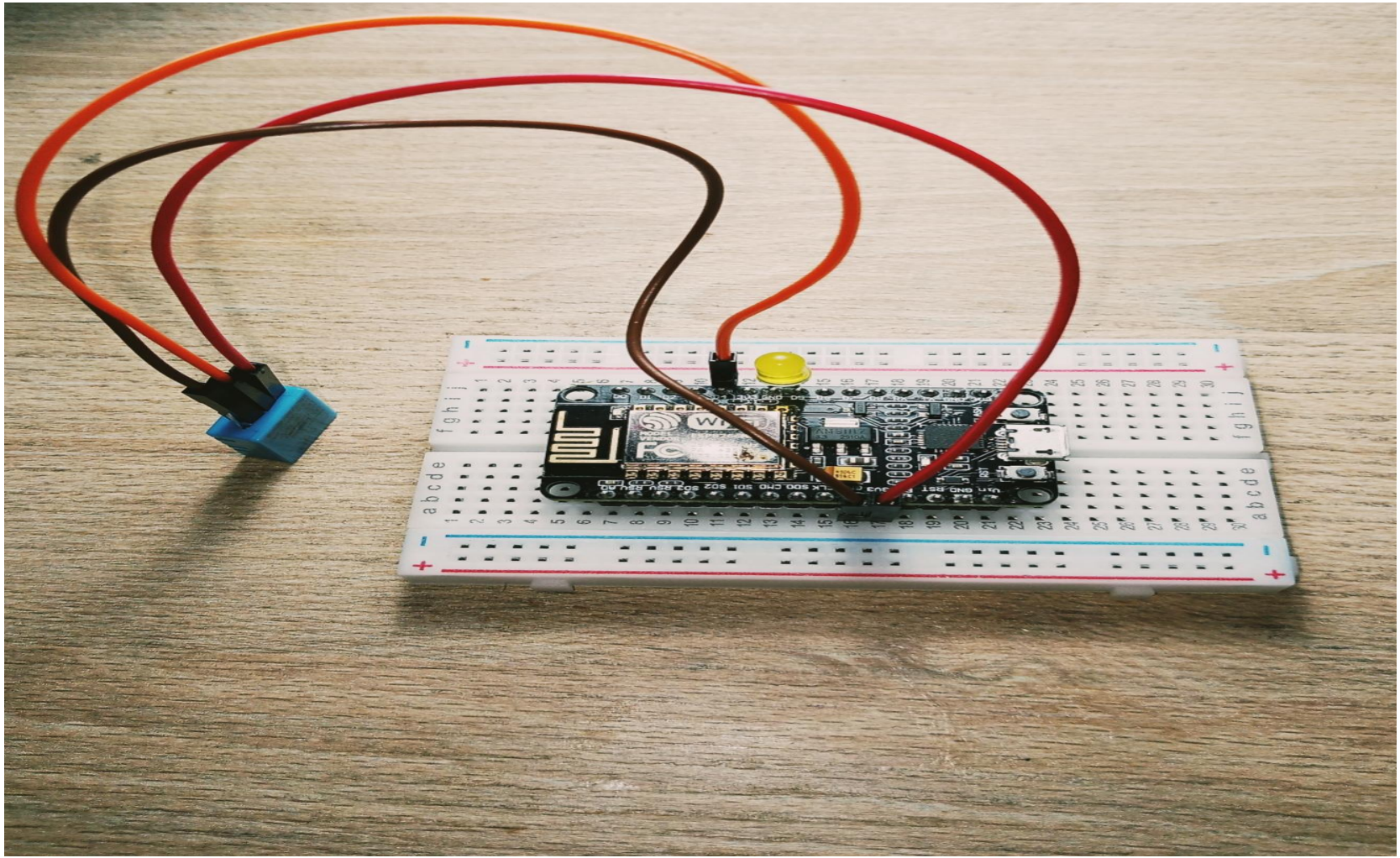

Properties
FirebaseDB1
FirebaseToken
eyJ0eXAiOiJKV1QiLCJhbG


when FirebaseDB1 .DataChanged
tag value
do call FirebaseDB1 .GetValue
tag " /Temperature "
valueIfTagNotThere " 0 "
call FirebaseDB1 .GetValue
tag " /Humidity "
valueIfTagNotThere " 0 "
tag value
do if get tag = " /Temperature "
then set global temp to get value
if get tag = " /Humidity "
then set global hum to get value
set temp . Text to get global temp
set hum . Text to get global hum
when ON .Click
do call FirebaseDB1 .StoreValue
tag " /Led "
valueToStore 1
when OFF .Click
do call FirebaseDB1 .StoreValue
tag " /Led "
valueToStore 0
1
0
Show Warnings



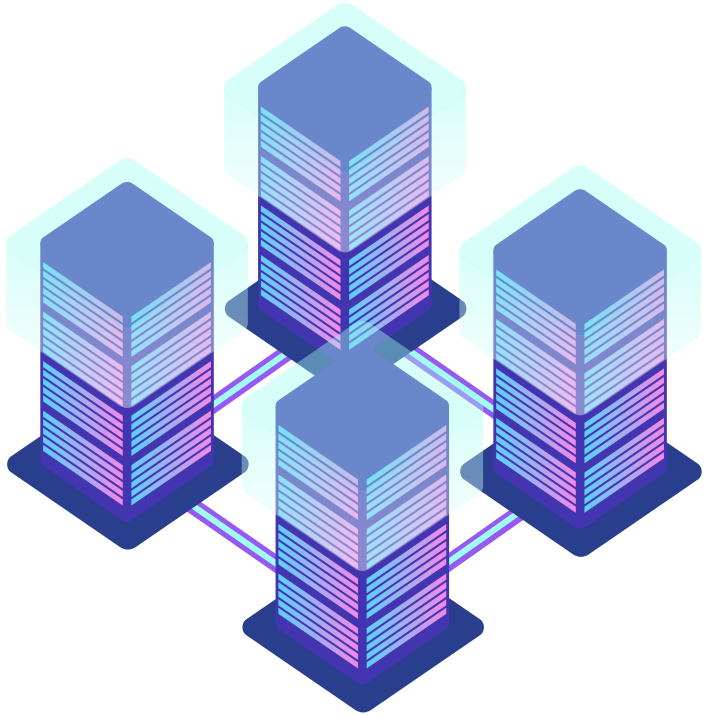
04 Schematics


Kevs
S V g
D0 D1 D2 D3 D4 3V3 GND D5 D6 D7 D8 RX TX GND 3V3
blog.squix.ch
FLASH
NodeMCU
V1.0
RST
A B C D E F G H I J
1 5 10 15 20 25 30
fritzing



05

Programming NodeMCU

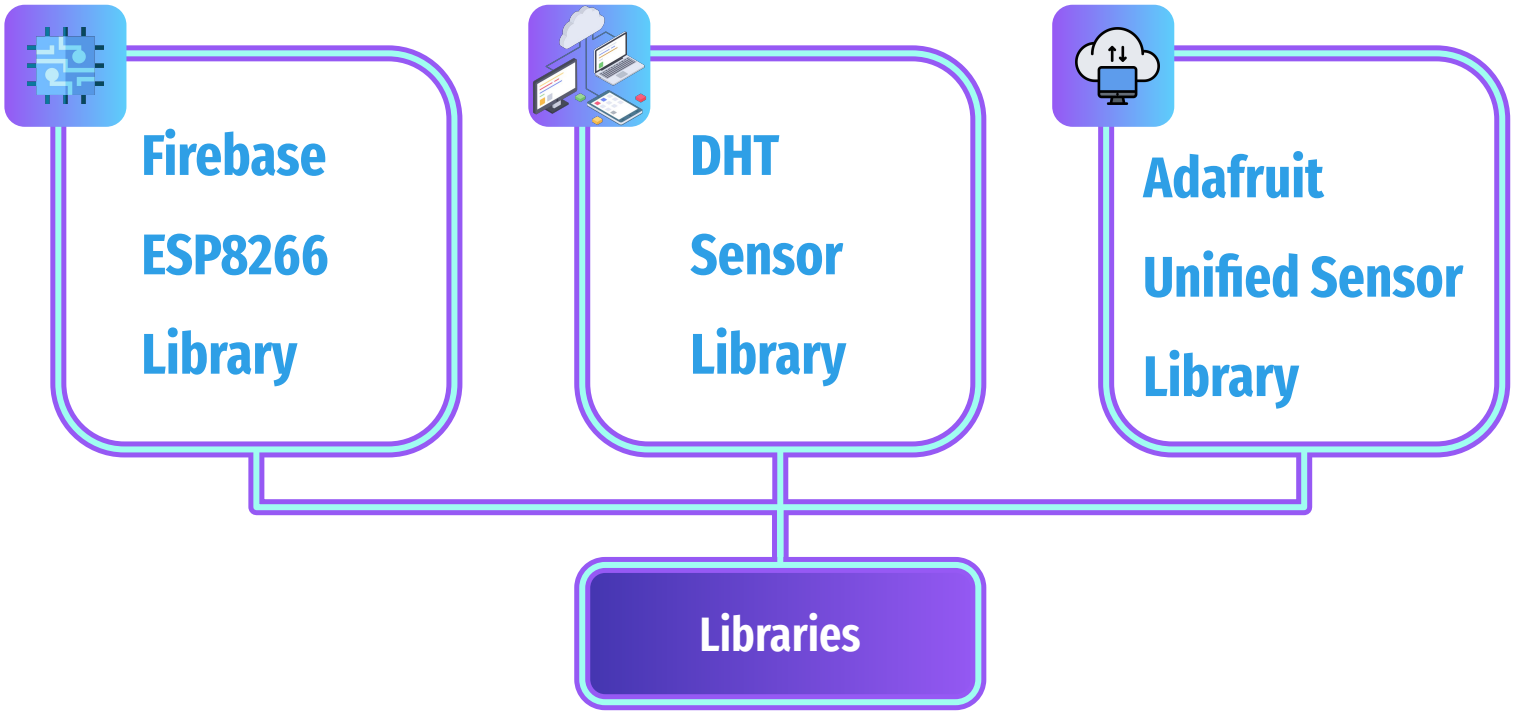


ARDUINO

Installing Arduino IDE

Installing IESP8266 Board files

Install three Arduino libraries



Call the required Libraries


```
//FirebaseESP8266.h must be included before ESP8266WiFi.h
#include "FirebaseESP8266.h"  // Install Firebase ESP8266 library
#include <ESP8266WiFi.h>
#include <DHT.h>    // Install DHT11 Library and Adafruit Unified Sensor Library
```

Adding your Firebase and WiFi credentials in the code

```
#define FIREBASE_HOST "temperaturehumiditymonit-5c412-default-rtdb.firebaseio.com" //Without http:// or https:// schemes
#define FIREBASE_AUTH "YKNfr3O9hURK7UwCX5MltZh1EJWKvoR6EwErDq7bs"
#define WIFI_SSID "TOPNET_C5B8"
#define WIFI_PASSWORD "efjnmyk1lp"
```

Define the pin Number in which the DHT sensor and the LED are connected

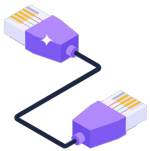
```
#define DHTPIN 2    // Connect Data pin of DHT to D2
int led = D5;      // Connect LED to D5
```

Define And Initialize the Firebase connection

```
//Define FirebaseESP8266 data object
FirebaseData firebaseData;
FirebaseData ledData;

FirebaseJson json;


void setup()
{

  Serial.begin(9600);

  dht.begin();
  pinMode(led,OUTPUT);

  WiFi.begin(TOPNET_C5B8, efjnmyk1lp);
  Serial.print("Connecting to Wi-Fi");
  while (WiFi.status() != WL_CONNECTED)
  {
    Serial.print(".");
    delay(300);
  }
  Serial.println();
  Serial.print("Connected with IP: ");
  Serial.println(WiFi.localIP());
  Serial.println();

  Firebase.begin(temperaturehumiditymonit-5c412-default-rtdb.firebaseio.com, YKNfr3O9hURK7UwCX5MltZh1EJWKvoR6EwErDq7bs);
  Firebase.reconnectWiFi(true);

}
```

Read Data

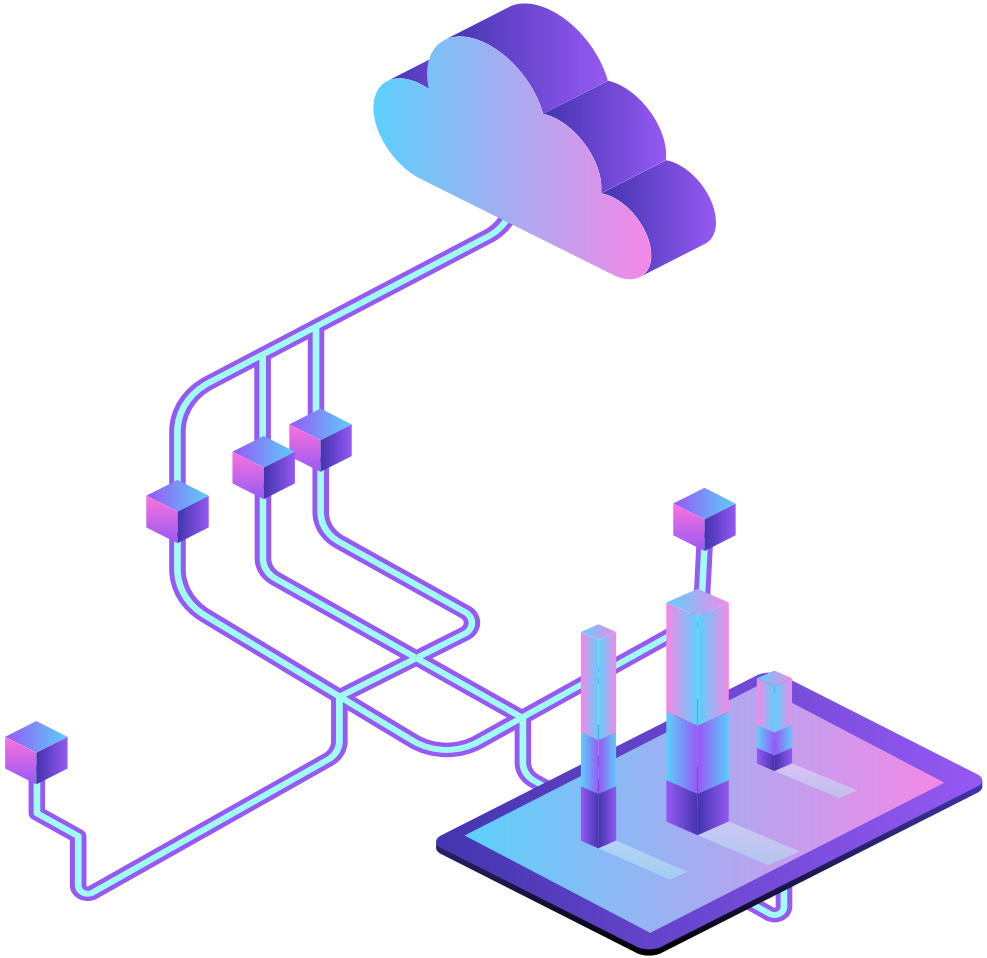
```
void loop() {
  sensorUpdate();

  if (Firebase.getString(ledData, "/Monitor/Led")){
    Serial.println(ledData.stringData());
    if (ledData.stringData() == "1") {
    digitalWrite(Led, HIGH);
    }
  else if (ledData.stringData() == "0"){
    digitalWrite(Led, LOW);
    }
  }
  delay(100);
}
```

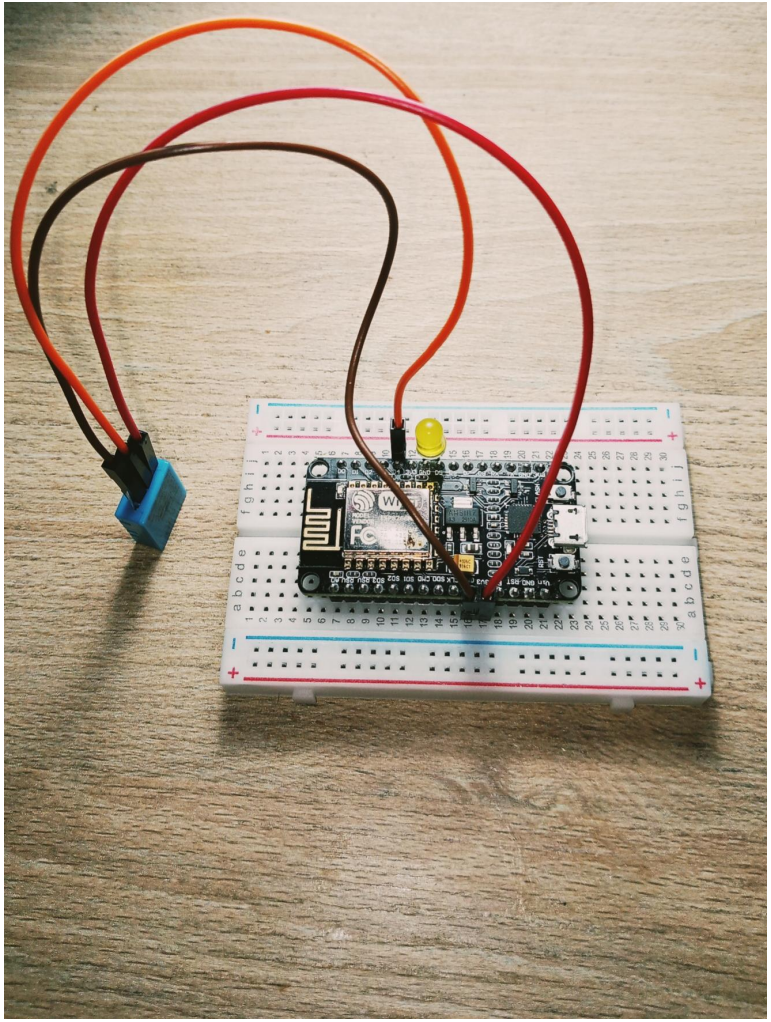


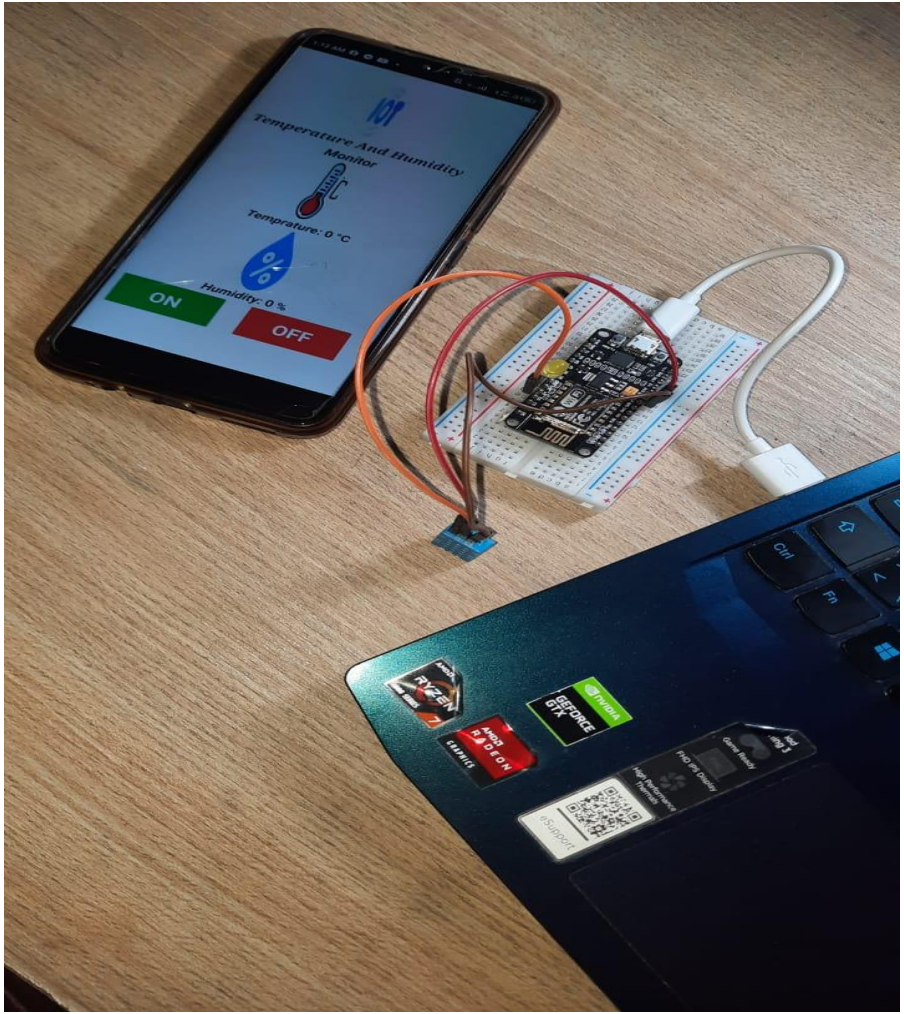
Store Data

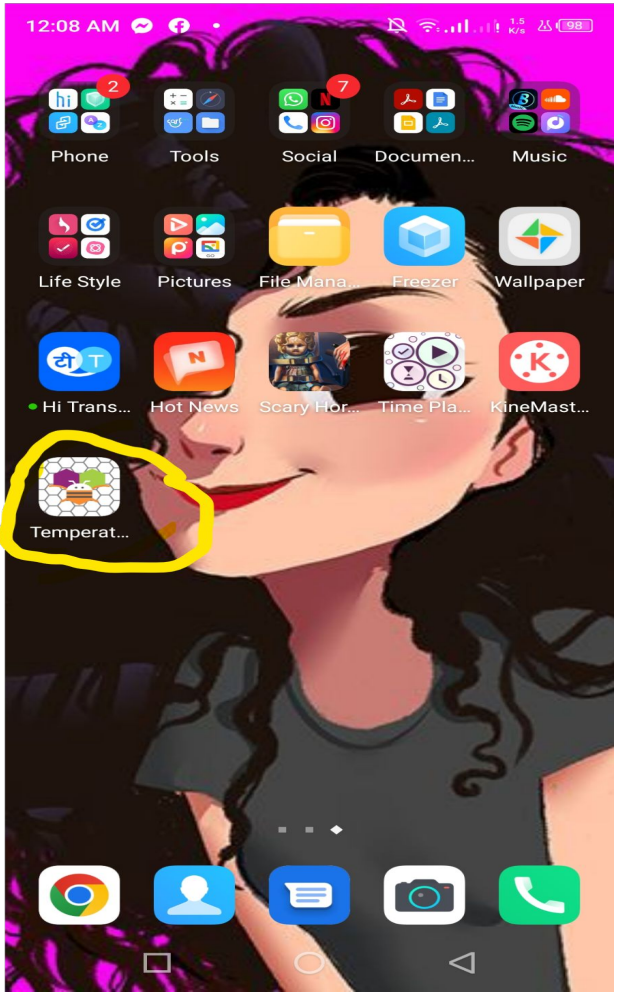
```
  if (Firebase.setFloat(firebaseData, "/Monitor/Temperature", t))
  {
    Serial.println("PASSED");
    Serial.println("PATH: " + firebaseData.dataPath());
    Serial.println("TYPE: " + firebaseData.dataType());
    Serial.println("ETag: " + firebaseData.ETag());
    Serial.println("------------------------------------");
    Serial.println();
  }
  else
  {
    Serial.println("FAILED");
    Serial.println("REASON: " + firebaseData.errorReason());
    Serial.println("------------------------------------");
    Serial.println();
  }

  if (Firebase.setFloat(firebaseData, "/Monitor/Humidity", h))
  {
    Serial.println("PASSED");
    Serial.println("PATH: " + firebaseData.dataPath());
    Serial.println("TYPE: " + firebaseData.dataType());
    Serial.println("ETag: " + firebaseData.ETag());
    Serial.println("------------------------------------");
    Serial.println();
  }
  else
  {
    Serial.println("FAILED");
    Serial.println("REASON: " + firebaseData.errorReason());
    Serial.println("------------------------------------");
    Serial.println();
  }
}
```

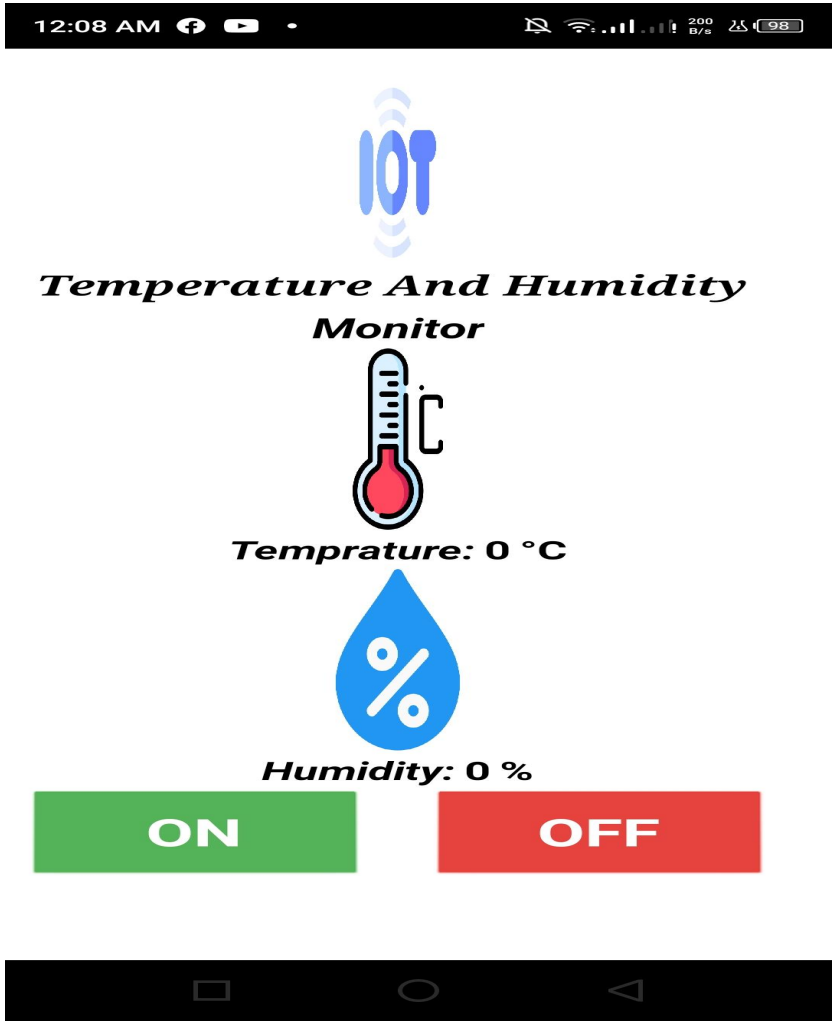
IV. Final Results






IOT
Temperature And Humidity
Monitor
Temprature: 0 °C
Humidity: 0 %
ON
OFF


12:08 AM
Phone
Tools
Social
Documen...
Music
Life Style
Pictures
File Mana...
Freezer
Wallpaper
Hi Trans...
Hot News
Scary Hor...
Time Pla...
KineMast...
Temperat...


12:08 AM
Temperature And Humidity
Monitor
Temprature: 0 °C
Humidity: 0 %
ON
OFF

THANK YOU !