LAMPIRAN

Lampiran – 1 Listing program Arduino

```
#include <ESP8266HTTPClient.h>
#include <WiFiClient.h>
#include <ESP8266WiFi.h>
#include <FirebaseArduino.h>
//#include <SimpleTimer.h>
#define FIREBASE_HOST "tempatsampah-8ab56-default-rtdb.firebaseio.com"
#define FIREBASE_AUTH
"neeWMWxC8pQ7o9sJC4Y7WwOm3Q0UftDoIlYGvg7A"
const char* ssid = "09";
const char* password = "muhammad09";
const char* host = "192.168.97.102"; //alamat IP komputer server
int trigPin = D5;
int echoPin = D4;
long durasi;
int jarak;
int hari;
 void intervalWaktu(){
  int hari = 3;
  for (int i=0; i<3; i++){
    Serial.print("waktu angkut : ");
    Serial.println(i);
    Firebase.setInt("hari", i);
```

```
   delay(1000);


   if (i >= 2 ) {


            //Serial.println("Tempat Sampah Penuh");

            kirimnotifikasi ("Smart Waste", "Tempat sampah sudah lebih dari 2
hari, Mohon segera diangkut");


          }


  }
 }
void setup() {
  Serial.begin (9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  //connect WIFi
  WiFi.begin (ssid, password);
  Serial.print ("connecting");
  while (WiFi.status() != WL_CONNECTED) {
    Serial.print(".");
    delay(500);
  }
  Serial.println();
  Serial.print("Connected : ");
```

```
  Serial.println(WiFi.localIP());
  Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);
  //Firebase.push("KetinggianSampah", 0);
  //Firebase.set("data-ts","ketinggian");

}
void loop() {
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  durasi = pulseIn(echoPin, HIGH);
  jarak = durasi*0.034/2;
     Serial.print("KetinggianSampah : ");
     Serial.println(jarak);
  Firebase.setInt("data-ts/ketinggian",jarak);
  delay(2000);
  if (jarak<=5) {
      Serial.println("Tempat Sampah Penuh");
      Firebase.set("data-ts/status", "penuh");
     kirimnotifikasi ("Smart Waste", "Tempat sampah PENUH, Mohon segera
diangkut");
  }
   else {
```

```
    Serial.println("Status Tempat Sampah");
    Firebase.set("data-ts/status", "aman");
  }
  if (Firebase.failed())
  {
   Serial.println("gagal kirim data");
   Serial.println(Firebase.error());
   return;
  }
  intervalWaktu();
}
  void kirimnotifikasi (String judul, String isi){
   //ubah nilai spasi menjadi %20
   judul.replace(" ", "%20");
   isi.replace(" ", "%20");
   //cek koneksi ke server
   WiFiClient client;
   //const int httpPort = 80;
   if(!client.connect(host, 80))
   {
    Serial.println("Connection Failed");
    return; //coba koneksi lagi
   }
   //proses pengiriman data ke server untuk trigger notifikasi
   String Link;
```

```
   Link = "http://192.168.97.102/notifikasi/kirimnotifikasi.php?judul=" + judul +
"&isi=" + isi;
   //eksekusi link
   HTTPClient http;
   http.begin(Link);
   //methods GET
   http.GET();
   http.end();
   delay(1000);
 }
```

Lampiran – 2 Listing program aplikasi *android*

Halaman login

```
package com.example.tempatsampah;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import
com.google.android.material.floatingactionbutton.FloatingActionBut
ton;
import com.google.firebase.auth.AuthResult;
import com.google.firebase.auth.FirebaseAuth;
import com.google.firebase.auth.FirebaseUser;

public class login extends AppCompatActivity {

    private FirebaseAuth mAuth;

    private EditText etEmail, etPassword;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);

        mAuth = FirebaseAuth.getInstance();

        etEmail = findViewById(R.id.email);
        etPassword = findViewById(R.id.password);

        Button btnRegister = findViewById(R.id.daftar);
        btnRegister.setOnClickListener(new View.OnClickListener()
{
            @Override
            public void onClick(View v) {
                Intent goRegister = new Intent(login.this,
daftar.class);
                startActivity(goRegister);
                finish();

            }
        });
```

```
        FloatingActionButton Login = findViewById(R.id.login);
        Login.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                String email = etEmail.getText().toString();
                String password = etPassword.getText().toString();

                if (email.equals("")) {
                    Toast.makeText(login.this, "Silahkan input
email", Toast.LENGTH_SHORT).show();

                } else if (password.equals("")) {
                    Toast.makeText(login.this, "Silahkan input
password", Toast.LENGTH_SHORT).show();

                } else {

                    mAuth.signInWithEmailAndPassword(email,
password)
                            .addOnCompleteListener(login.this, new
OnCompleteListener<AuthResult>() {
                                @Override
                                public void onComplete(@NonNull
Task<AuthResult> task) {
                                    if (task.isSuccessful()) {
                                        // Sign in success, update
UI with the signed-in user's information\
                                        FirebaseUser user =
mAuth.getCurrentUser();

                                        Toast.makeText(login.this,
"Authentication success.",

Toast.LENGTH_SHORT).show();

                                        Intent intent = new
Intent(login.this, MainActivity.class);
                                        intent.putExtra("info",
"Smart Waste  ");
                                        startActivity(intent);

                                    } else {
                                        // If sign in fails,
display a message to the user.
                                        Toast.makeText(login.this,
"Authentication failed.",

Toast.LENGTH_SHORT).show();
                                    }

                                    // ...
                                }
                            });

                }
```

```
            }
        });


    }


    @Override
    public void onStart() {
        super.onStart();
        // Check if user is signed in (non-null) and update UI
accordingly.
        FirebaseUser currentUser = mAuth.getCurrentUser();

    }

}
```

Halaman *dashboard*

```
package com.example.tempatsampah;

import android.app.Activity;
import android.content.Intent;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.GridLayout;
import android.widget.Toast;

import androidx.cardview.widget.CardView;

public class MainActivity extends Activity {

    GridLayout mainGrid;
    private CardView Card1, Card2, Card3, Card4;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mainGrid = (GridLayout) findViewById(R.id.mainGrid);

        //Set Event
        setSingleEvent(mainGrid);
        //setToggleEvent(mainGrid);
    }

    private void setToggleEvent(GridLayout mainGrid) {
        //Loop all child item of Main Grid
        for (int i = 0; i < mainGrid.getChildCount(); i++) {
            //You can see , all child item is CardView , so we
just cast object to CardView
```

```
            final CardView cardView = (CardView)
mainGrid.getChildAt(i);
            cardView.setOnClickListener(new View.OnClickListener()
{
                @Override
                public void onClick(View view) {
                    if
(cardView.getCardBackgroundColor().getDefaultColor() == -1) {
                        //Change background color

cardView.setCardBackgroundColor(Color.parseColor("#F7F7F7"));
                        Toast.makeText(MainActivity.this, "State :
True", Toast.LENGTH_SHORT).show();

                    } else {
                        //Change background color

cardView.setCardBackgroundColor(Color.parseColor("#F7F7F7"));
                        Toast.makeText(MainActivity.this, "State :
False", Toast.LENGTH_SHORT).show();
                    }
                }
            });
        }
    }

    private void setSingleEvent(GridLayout mainGrid) {
        //Loop all child item of Main Grid
        for (int i = 0; i < mainGrid.getChildCount(); i++) {
            //You can see , all child item is CardView , so we
just cast object to CardView
            CardView Card1 = findViewById(R.id.card1);
//            CardView Card2 = findViewById(R.id.card2);
            CardView Card3 = findViewById(R.id.card3);
            CardView Card4 = findViewById(R.id.card4);

            Card1.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View view) {

                    Intent intent = new
Intent(MainActivity.this,ketinggian.class);
                    intent.putExtra("info","Smart Waste  ");
                    startActivity(intent);

                }
            });

//            Card2.setOnClickListener(new View.OnClickListener()
{
//                @Override
//                public void onClick(View view) {
//
//                    Intent intent = new
Intent(MainActivity.this,laporan.class);
//                    intent.putExtra("info","Smart Waste  ");
```

```
//                    startActivity(intent);
//
//                }
//            });

            Card3.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View view) {

                    Intent intent = new
Intent(MainActivity.this,tentang.class);
                    intent.putExtra("info","Smart Waste  ");
                    startActivity(intent);

                }
            });

            Card4.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View view) {

                    Intent intent = new
Intent(MainActivity.this,login.class);
                    intent.putExtra("info","Smart Waste  ");
                    startActivity(intent);

                }
            });
        }
    }
}
```

Halaman monitoring

```
package com.example.tempatsampah;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import com.firebase.client.DataSnapshot;
import com.firebase.client.Firebase;
import com.firebase.client.FirebaseError;
import com.firebase.client.ValueEventListener;
import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
```

```
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import com.google.firebase.messaging.FirebaseMessaging;

import org.jetbrains.annotations.NotNull;


public class tempatSampah1 extends AppCompatActivity implements
OnMapReadyCallback {

    //inisialisasi textview nilai dan status
    private TextView tv, st;

    private Firebase mRef;
    private static final String TAG = "MyToken";
    private GoogleMap mMap;
    private Uri gmmIntentUri;




    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_tempat_sampah1);

        getTokenFirebase();
        getMaps();

        //baca komponen nilai (textview)
        tv = (TextView) findViewById(R.id.nilai);
        st = (TextView) findViewById(R.id.status);
        //buka koneksi ke host firebase
        mRef = new Firebase("https://tempatsampah-8ab56-default-
rtdb.firebaseio.com/data-ts/ketinggian");
        mRef.addValueEventListener(new ValueEventListener() {
            @Override
            public void onDataChange(DataSnapshot dataSnapshot) {
                String KetinggianSampah =
dataSnapshot.getValue(String.class);
                //tampilkan di komponen nilai
                tv.setText(KetinggianSampah);
            }

            @Override
            public void onCancelled(FirebaseError firebaseError) {

            }
        });
        mRef = new Firebase("https://tempatsampah-8ab56-default-
rtdb.firebaseio.com/data-ts/status");
        mRef.addValueEventListener(new ValueEventListener() {
```

```
            @Override
            public void onDataChange(DataSnapshot dataSnapshot) {
                String status =
dataSnapshot.getValue(String.class);
                //tampilkan di komponen nilai
                //tv.setText(KetinggianSampah);
                st.setText(status);
            }

            @Override
            public void onCancelled(FirebaseError firebaseError) {

            }
        });
    }

    private void getTokenFirebase(){
        //ambil device token
        FirebaseMessaging.getInstance().getToken()
                .addOnCompleteListener(new
OnCompleteListener<String>() {
                    @Override
                    public void onComplete(@NonNull Task<String>
task) {
                        if (!task.isSuccessful()) {
                            Log.w(TAG, "Fetching FCM registration
token failed", task.getException());
                            return;
                        }

                        // Get new FCM registration token
                        String token = task.getResult();

                        // Log and toast
                        String msg = "ini tokennya " + token;
                        Log.d(TAG, msg);
                        Toast.makeText(tempatSampah1.this, msg,
Toast.LENGTH_SHORT).show();
                    }
                });
    }

    private void getMaps () {

        SupportMapFragment mapFragment = (SupportMapFragment)
getSupportFragmentManager()
                .findFragmentById(R.id.map);
        mapFragment.getMapAsync(this);
    }


    @Override
    public void onMapReady(@NonNull @NotNull GoogleMap googleMap)
{
        mMap = googleMap;
```

```
        // Add a marker in Pinrang and move the camera
        LatLng parepare = new LatLng(-3.983838, 119.651939);
        mMap.addMarker(new MarkerOptions()
                .position(parepare)
                .title("Tempat Sampah 1"));

mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(parepare,
15.5f));

mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(parepare,
15.5f));


        /*Deklarasi variable*/
        String goolgeMap = "com.google.android.apps.maps"; //
identitas package aplikasi google masps android
        String Parepare = "-3.5903, 119.3903"; // koordinat
Pinrang
        /*Deklarasi variable*/

        // menyamakan variable pada layout activity_main.xml
        Button btnMaps = findViewById(R.id.btn_map);
        btnMaps.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Buat Uri dari intent string. Gunakan hasilnya
untuk membuat Intent.
                gmmIntentUri = Uri.parse("google.navigation:q=" +
Parepare);

                // Buat Uri dari intent gmmIntentUri. Set action
=> ACTION_VIEW
                Intent mapIntent = new Intent(Intent.ACTION_VIEW,
gmmIntentUri);

                // Set package Google Maps untuk tujuan aplikasi
yang di Intent yaitu google maps
                mapIntent.setPackage(goolgeMap);

                if (mapIntent.resolveActivity(getPackageManager())
!= null) {
                    startActivity(mapIntent);
                } else {
                    Toast.makeText(tempatSampah1.this, "Google
Maps Belum Terinstal. Install Terlebih dahulu.",
                            Toast.LENGTH_LONG).show();
                }
            }
        });

    }



    @Override
    public void onPointerCaptureChanged(boolean hasCapture) {
```

```
    }

}
```

Notifikasi

```
package com.example.tempatsampah;

import android.app.Notification;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.app.TaskStackBuilder;
import android.content.Context;
import android.content.Intent;
import android.os.Build;

import androidx.annotation.NonNull;
import androidx.core.app.NotificationCompat;

import com.google.firebase.messaging.FirebaseMessagingService;
import com.google.firebase.messaging.RemoteMessage;

import org.jetbrains.annotations.NotNull;

public class MyService extends FirebaseMessagingService {

    public void tampilnotifikasi (Context context, String judul,
String isi, Intent intent)
        {
            NotificationManager notificationManager =
(NotificationManager)
context.getSystemService(Context.NOTIFICATION_SERVICE);
            Intent resultIntent = new Intent ( this,
tempatSampah1.class );
            PendingIntent pi = PendingIntent.getActivity(this, 1,
resultIntent, PendingIntent.FLAG_UPDATE_CURRENT);
            int idNOtification = 0;
            //mulai android versi oreo
            String channelID = "NotifKuu";
            String channelName = "Tempat Sampah";

            int importance = NotificationManager.IMPORTANCE_HIGH;

            if(Build.VERSION.SDK_INT >= Build.VERSION_CODES.O)
            {
                NotificationChannel mChannel = new
NotificationChannel( channelID, channelName, importance);

notificationManager.createNotificationChannel(mChannel);
            }

            NotificationCompat.Builder mBuilder = new
```

```
NotificationCompat.Builder( context, channelID)
                    .setAutoCancel(true)
                    .setSmallIcon(R.mipmap.ic_launcher)
                    .setContentTitle(judul)
                    .setStyle(new
NotificationCompat.BigTextStyle().bigText(isi))
                    .setPriority(Notification.PRIORITY_MAX)
                    .setContentIntent(pi)
                    .setContentText(isi) ;

            TaskStackBuilder stackBuilder =
TaskStackBuilder.create(context);
            stackBuilder.addNextIntent(intent);
            notificationManager.notify(idNOtification++,
mBuilder.build());
    }


    @Override
    public void onMessageReceived(@NonNull @NotNull RemoteMessage
remoteMessage) {
        super.onMessageReceived(remoteMessage);

        //ambil judul dan isi notifikasi
        String judul = remoteMessage.getNotification().getTitle();
        String isi = remoteMessage.getNotification().getBody();

        tampilnotifikasi(getApplicationContext(), judul, isi, new
Intent());
    }
}
```

```
<?php


  //ambil judul dan isi notifikasi

  $judul = $_GET['judul'];

  $isi   = $_GET['isi'];



  //url untuk firebase cloud messaging

  $url = "https://fcm.googleapis.com/fcm/send";

  //token device

  $token = "fqW5p5UvQcq5wP8yNc3FVV:APA91bG4OV3-
phljxBQzK1LRjom97HPVxxqFBJz91rx0iCE4SuirAOvzcW08hqEFMJPykHpsG
```

```
M0_Lg5mYg0jpRr4Y5KpsgbasRYZEhw90vlUgIZb3R7-
nhYq1DiP3zCYjqEn2quKWtQg";

  //server key fcm

  $serverkey =
"AAAAbHS5_cc:APA91bE23jVYqmpmkGHZoq9IWkS_9dwGjboMps6OalpCtc
qbz2bYcwdW1jekrZ9li_5uLeqBZWZTo6Ey0QYqtjUBLIjNY3_ufZvk1644a7-
Cb0XH02lfdYwxtr6rRf66PjJn03H-sTq7";


  //data JSON notifikasi

  $notification = array('title'=>$judul, 'body'=>$isi,
'sound'=>'default','badge'=>'1');

  //tujuan notifikasi

  $arrayToSend = array('to'=>$token, 'notification'=>$notification,
'priority'=>'high');


  $json = json_encode($arrayToSend);


  $header = array();

  $header[] = 'Content-Type:application/json';

  $header[] = 'Authorization: key='.$serverkey;

  $ch = curl_init();

  curl_setopt($ch, CURLOPT_URL, 'https://fcm.googleapis.com/fcm/send');

  curl_setopt($ch, CURLOPT_POST, true);

  curl_setopt($ch, CURLOPT_HTTPHEADER, $header);

  curl_setopt($ch, CURLOPT_RETURNTRANSFER, true);

  curl_setopt($ch, CURLOPT_SSL_VERIFYPEER, false);

  curl_setopt($ch, CURLOPT_POSTFIELDS, $json);
```

```
    //send request
    $response = curl_exec($ch);


    //close request
    if($response === FALSE)
    {
            die('FCM Send Error : '.curl_error($ch));
    }
    curl_close($ch);
?>
```