

LAMPIRAN

Lampiran 1 Surat Kesiediaan Pembimbing 1

SURAT KESEDIAAN MEMBIMBING TA

Yang bertanda tangan di bawah ini:

Nama : Ida Afriliana, S.T,M.Kom
NIPY : 12.013.168
Jabatan Struktural : KA. Prodi DIII Teknik Komputer
Jabatan Fungsional : Lektor

Dengan ini menyatakan bersedia untuk menjadi pembimbing I pada Tugas Akhir mahasiswa berikut:

Nama : Fauzah Aliyah Ardiawati
NIM : 22040074
Program Studi : Diploma III Teknik Komputer
Judul TA : SISTEM KONTROL SMART FARMING PENYEMPROTAN
PESTISIDA TANAMAN BAWANG MERAH

Dengan ini menyatakan ini dibuat agar dilaksanakan sebagaimana mestinya

Tegal, 6 Februari 2025

Mengetahui

Ka Prodi DIII Teknik Komputer,

Dosen Pembimbing I,


Ida Afriliana, S.T. M.Kom
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NIPY. 12.013.168

Lampiran 2 Surat Kesiediaan Pembimbing 2

SURAT KESEDIAAN MEMBIMBING TA

Yang bertanda tangan di bawah ini:

Nama : Abdul Basit, S.Kom, M.T
NIPY : 01.015.198
Jabatan Struktural : Sekretaris Prodi DIII Teknik Komputer
Jabatan Fungsional : Lektor

Dengan ini menyatakan bersedia untuk menjadi pembimbing II pada Tugas Akhir mahasiswa berikut:

Nama : Fauzah Aliyah Ardiawati
NIM : 22040074
Program Studi : Diploma III Teknik Komputer
Judul TA : SISTEM KONTROL SMART FARMING PENYEMPROTAN
PESTISIDA TANAMAN BAWANG MERAH

Dengan ini menyatakan ini dibuat agar dilaksanakan sebagaimana mestinya

Tegal, 6 Februari 2025

Mengetahui

Ka Prodi DIII Teknik Komputer,


Ka Prodi DIII Teknik Komputer,
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Dosen Pembimbing II,


Abdul Basit, S.Kom, M.T
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Lampiran 3 *Source Code* HomeActivity

```
package package com.example.smartfarmingbawang

import android.app.DatePickerDialog
import android.app.TimePickerDialog
import android.content.Intent
import android.os.Bundle
import android.util.Log
import android.widget.*
import androidx.appcompat.app.AppCompatActivity
import com.google.android.material.bottomnavigation.BottomNavigationView
import com.google.firebase.FirebaseApp
import com.google.firebase.database.*
import java.text.SimpleDateFormat
import java.util.*

class HomeActivity : AppCompatActivity() {

    private lateinit var dbRef: DatabaseReference
    private lateinit var tvKelembaban: TextView
    private lateinit var tvVolumeAir: TextView
    private lateinit var tvJadwal: TextView
    private lateinit var btnAturJadwal: Button
    private lateinit var btnPengaduk: Button

    private var lastKelembaban: Int? = null
    private var lastVolumeAir: Int? = null
    private var lastPengadukan: Boolean? = null

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_home)
```

```

FirebaseApp.initializeApp(this)
dbRef = FirebaseDatabase.getInstance().getReference("SmartFarming")

tvKelembaban = findViewById(R.id.tvKelembaban)
tvVolumeAir = findViewById(R.id.tvVolumeAir)
tvJadwal = findViewById(R.id.tvJadwal)
btnAturJadwal = findViewById(R.id.btnAturJadwal)
btnPengaduk = findViewById(R.id.btnPengaduk)

setupBottomNavigation()
loadSmartFarmingData()

btnAturJadwal.setOnClickListener { showDateTimePicker() }
btnPengaduk.setOnClickListener { startPengadukan() }
}

private fun setupBottomNavigation() {
    val bottomNavigationView =
findViewById<BottomNavigationView>(R.id.menu_bottom)
    bottomNavigationView.selectedItemId = R.id.nav_home
    bottomNavigationView.setOnItemSelectedListener { item ->
        when (item.itemId) {
            R.id.nav_log -> startActivity(Intent(this, LoginActivity::class.java))
            R.id.nav_logout -> {
                startActivity(Intent(this, LoginActivity::class.java).apply {
                    flags = Intent.FLAG_ACTIVITY_NEW_TASK or
Intent.FLAG_ACTIVITY_CLEAR_TASK
                })
            }
        }
    }
}
true

```

```

    }
}

private fun loadSmartFarmingData() {
    dbRef.addValueEventListener(object : ValueEventListener {
        override fun onDataChange(snapshot: DataSnapshot) {
            try {

handleKelembaban(snapshot.child("kelembaban").getValue(Int::class.java))

handleVolumeAir(snapshot.child("ketinggianAir").getValue(Int::class.java))

handlePengadukan(snapshot.child("pengadukan").getValue(Boolean::class.java) ?:
false)

handleJadwal(snapshot.child("jadwalPenyemprotan").getValue(String::class.java))
                } catch (e: Exception) {
                    Log.e("HomeActivity", "Error onDataChange: ${e.message}", e)
                }
            }

            override fun onCancelled(error: DatabaseError) {
                Log.e("HomeActivity", "Database Error: ${error.message}",
error.toException())
            }
        })
    }

private fun handleKelembaban(kelembaban: Int?) {
    if (kelembaban != null && kelembaban != lastKelembaban) {
        tvKelembaban.text = "$kelembaban %"
        simpanLog("Kelembaban Tanah: $kelembaban %")
    }
}

```

```

        lastKelembaban = kelembaban
    }
}

private fun handleVolumeAir(volume: Int?) {
    if (volume != null && volume != lastVolumeAir) {
        tvVolumeAir.text = "$volume ml"
        simpanLog("Volume Air: $volume ml")
        lastVolumeAir = volume
    }
}

private fun handlePengadukan(pengadukan: Boolean) {
    btnPengaduk.text = if (pengadukan) "Sedang Mengaduk..." else "Mulai Mengaduk"
    btnPengaduk.isEnabled = !pengadukan

    if (lastPengadukan != null && lastPengadukan == true && !pengadukan) {
        simpanLog("Pengadukan Selesai")
    }
    lastPengadukan = pengadukan
}

private fun handleJadwal(jadwal: String?) {
    tvJadwal.text = if (!jadwal.isNullOrEmpty()) {
        "Jadwal Penyemprotan: $jadwal"
    } else {
        "Jadwal Penyemprotan: Belum Diatur"
    }
}

private fun showDateTimePicker() {

```

```

val calendar = Calendar.getInstance()
DatePickerDialog(this, { _, year, month, dayOfMonth ->
    TimePickerDialog(this, { _, hourOfDay, minute ->
        val jadwalStr = String.format(
            "%04d-%02d-%02d %02d:%02d",
            year, month + 1, dayOfMonth, hourOfDay, minute
        )
        dbRef.child("jadwalPenyemprotan").setValue(jadwalStr)
            .addOnSuccessListener {
                Toast.makeText(this, "Jadwal disimpan",
                    Toast.LENGTH_SHORT).show()
                simpanLog("Mengatur Jadwal Penyemprotan: $jadwalStr")
            }
            .addOnFailureListener {
                Toast.makeText(this, "Gagal menyimpan jadwal: ${it.message}",
                    Toast.LENGTH_SHORT).show()
            }
        }, calendar.get(Calendar.HOUR_OF_DAY), calendar.get(Calendar.MINUTE),
        true).show()
        }, calendar.get(Calendar.YEAR), calendar.get(Calendar.MONTH),
        calendar.get(Calendar.DAY_OF_MONTH)).show()
    }
}

private fun startPengadukan() {
    dbRef.child("pengadukan").setValue(true)
        .addOnSuccessListener {
            Toast.makeText(this, "Pengadukan Mulai",
                Toast.LENGTH_SHORT).show()
            simpanLog("Pengadukan Mulai")
        }
        .addOnFailureListener {
            Toast.makeText(this, "Gagal memulai pengadukan: ${it.message}",

```



```

Toast.LENGTH_SHORT).show()
    }
}

private fun simpanLog(pesan: String) {
    Log.d("HomeActivity", "Mencoba menyimpan log: $pesan")

    val logRef = FirebaseDatabase.getInstance().getReference("LogAktivitas")
    val waktu = SimpleDateFormat("yyyy-MM-dd HH:mm:ss",
Locale.getDefault()).format(Date())
    val logData = mapOf("waktu" to waktu, "pesan" to pesan)

    logRef.push().setValue(logData)
        .addOnSuccessListener {
            Log.d("HomeActivity", "Log berhasil disimpan: $pesan")
        }
        .addOnFailureListener {
            Log.e("HomeActivity", "Gagal menyimpan log: ${it.message}")
        }
    }
}

```

Lampiran 4 *Source Code* activity_home

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FFFFFF">

    <ScrollView
        android:id="@+id/mainScroll"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_above="@id/menu_bottom"
        android:padding="16dp">

        <LinearLayout
            android:orientation="vertical"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:gravity="center_horizontal">

            <ImageView
                android:id="@+id/logo"
                android:layout_width="60dp"
                android:layout_height="60dp"
                android:src="@drawable/logo"
                android:layout_marginBottom="10dp" />

            <TextView
                android:id="@+id/tvJudul"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Smart Farming Bawang Merah"
                android:textSize="16sp"
                android:textStyle="bold"
                android:textColor="#000000"
                android:layout_marginBottom="24dp" />

            <LinearLayout
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:orientation="horizontal"
                android:gravity="center"
                android:layout_marginBottom="24dp"
```

```
android:weightSum="2">
```

```
<LinearLayout
    android:layout_width="0dp"
    android:layout_height="120dp"
    android:layout_weight="1"
    android:orientation="vertical"
    android:background="@drawable/bg_kelembaban"
    android:padding="12dp"
    android:layout_marginEnd="8dp"
    android:gravity="center">
```

```
<TextView
    android:text="Kelembaban Tanah"
    android:textStyle="bold"
    android:textColor="#5E4013"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
```

```
<TextView
    android:id="@+id/tvKelembaban"
    android:text="-- %"
    android:textSize="18sp"
    android:textColor="#5E4013"
    android:layout_marginTop="4dp"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="0dp"
    android:layout_height="120dp"
    android:layout_weight="1"
    android:orientation="vertical"
    android:background="@drawable/bg_ketinggian"
    android:padding="12dp"
    android:layout_marginStart="8dp"
    android:gravity="center">
```

```
<TextView
    android:text="Volume Air"
    android:textStyle="bold"
    android:textColor="#006BA1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
```

```

<TextView
    android:id="@+id/tvVolumeAir"
    android:text="-- ml"
    android:textSize="18sp"
    android:textColor="#006BA1"
    android:layout_marginTop="4dp"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
</LinearLayout>
</LinearLayout>

```

```

<LinearLayout
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:background="#FFFFFF"
    android:elevation="4dp"
    android:padding="16dp"
    android:layout_marginBottom="24dp">

```

```

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Atur Jadwal Penyemprotan"
    android:textStyle="bold"
    android:textColor="#000000"
    android:layout_marginBottom="8dp" />

```

```

<TextView
    android:id="@+id/tvJadwal"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Jadwal belum diatur"
    android:textColor="#777777"
    android:layout_marginBottom="12dp" />

```

```

<Button
    android:id="@+id/btnAturJadwal"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Atur Jadwal"
    android:textColor="#FFFFFF"
    android:backgroundTint="#73C7FF"
    android:layout_marginBottom="16dp" />

```

```

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Pengadukan Pesticida"
            android:textStyle="bold"
            android:textColor="#000000"
            android:layout_marginBottom="8dp" />

        <Button
            android:id="@+id/btnPengaduk"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Mulai Pengadukan"
            android:textColor="#FFFFFF"
            android:backgroundTint="#73C7FF" />
    </LinearLayout>
</LinearLayout>
</ScrollView>

<com.google.android.material.bottomnavigation.BottomNavigationView
    android:id="@+id/menu_bottom"
    android:layout_width="match_parent"
    android:layout_height="70dp"
    android:layout_alignParentBottom="true"
    android:background="@color/menu_background"
    app:menu="@menu/menu_utama"
    app:itemIconTint="@color/menu_color"
    app:itemTextColor="@color/menu_color" />
</RelativeLayout>

```

Lampiran 5 *Source Code* LogActivity

```
package package com.example.smartfarmingbawang

import android.content.Intent
import android.os.Bundle
import android.widget.Toast
import androidx.appcompat.app.AppCompatActivity
import androidx.recyclerview.widget.LinearLayoutManager
import androidx.recyclerview.widget.RecyclerView
import androidx.swiperefreshlayout.widget.SwipeRefreshLayout
import com.google.android.material.bottomnavigation.BottomNavigationView
import com.google.firebase.database.*

class LogActivity : AppCompatActivity() {

    private lateinit var recyclerView: RecyclerView
    private lateinit var bottomNavigationView: BottomNavigationView
    private lateinit var swipeRefreshLayout: SwipeRefreshLayout
    private lateinit var logAdapter: LogAdapter

    private val displayedMessages = mutableSetOf<String>()
    private val waktuKelembaban = mutableSetOf<String>()
    private val waktuVolume = mutableSetOf<String>()
    private val logList = mutableListOf<LogEntry>()

    private lateinit var dbRef: DatabaseReference
    private lateinit var logListener: ChildEventListener

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_log)

        // Setup RecyclerView
        recyclerView = findViewById(R.id.recyclerLog)
        recyclerView.layoutManager = LinearLayoutManager(this)
        logAdapter = LogAdapter()
        recyclerView.adapter = logAdapter

        // Setup Swipe to Refresh
        swipeRefreshLayout = findViewById(R.id.swipeRefreshLog)
        swipeRefreshLayout.setOnRefreshListener { refreshLogs() }

        // Setup Bottom Navigation
        bottomNavigationView = findViewById(R.id.menu_bottom)
```

```

bottomNavigationView.selectedItemId = R.id.nav_log

bottomNavigationView.setOnItemSelectedListener { item ->
    when (item.itemId) {
        R.id.nav_home -> {
            startActivity(Intent(this, HomeActivity::class.java))
            finish()
        }
        R.id.nav_log -> {
            // Stay here
        }
        R.id.nav_logout -> {
            val intent = Intent(this, LoginActivity::class.java)
            intent.flags = Intent.FLAG_ACTIVITY_NEW_TASK or
Intent.FLAG_ACTIVITY_CLEAR_TASK
            startActivity(intent)
            finish()
        }
    }
    true
}

    setupRealtimeLogListener()
}

override fun onDestroy() {
    super.onDestroy()
    dbRef.removeEventListener(logListener)
}

private fun setupRealtimeLogListener() {
    swipeRefreshLayout.isRefreshing = true
    dbRef = FirebaseDatabase.getInstance().getReference("LogAktivitas")
    displayedMessages.clear()
    waktuKelembaban.clear()
    waktuVolume.clear()
    logList.clear()
    logAdapter.submitList(logList.toList())

    logListener = object : ChildEventListener {
        override fun onChildAdded(snapshot: DataSnapshot, previousChildName:
String?) {
            handleSnapshot(snapshot)
        }
    }
}

```

```

        override fun onChildChanged(snapshot: DataSnapshot, previousChildName:
String?) {
            handleSnapshot(snapshot)
        }

        override fun onChildRemoved(snapshot: DataSnapshot) {}
        override fun onChildMoved(snapshot: DataSnapshot, previousChildName:
String?) {}
        override fun onCancelled(error: DatabaseError) {
            Toast.makeText(this@LogActivity, "Gagal mengambil data log",
Toast.LENGTH_SHORT).show()
        }
    }

    dbRef.addChildEventListener(logListener)
    swipeRefreshLayout.isRefreshing = false
}

private fun handleSnapshot(snapshot: DataSnapshot) {
    val pesan = snapshot.child("pesan").getValue(String::class.java) ?: "-"
    val waktu = snapshot.child("waktu").getValue(String::class.java) ?: "-"
    val uniqueId = snapshot.key ?: return
    val combined = "$uniqueId$pesan$waktu"

    if (displayedMessages.add(combined)) {
        when {
            pesan.contains("jadwal", ignoreCase = true) -> {
                addLogEntry(LogEntry(waktu, pesan))
            }

            pesan.contains("pengadukan mulai", ignoreCase = true) -> {
                addLogEntry(LogEntry(waktu, pesan))
            }

            pesan.contains("pengadukan selesai", ignoreCase = true) -> {
                addLogEntry(LogEntry(waktu, pesan))
            }

            pesan.contains("kelembaban", ignoreCase = true) -> {
                if (waktuKelembaban.add(waktu)) {
                    addLogEntry(LogEntry(waktu, pesan))
                }
            }

            pesan.contains("volume air", ignoreCase = true)

```



```

        if (waktuVolume.add(waktu)) {
            addLogEntry(LogEntry(waktu, pesan))
        }
    }
}

}

}

private fun addLogEntry(entry: LogEntry) {
    logList.add(0, entry) // Tambahkan ke atas
    logAdapter.submitList(logList.toList()) // Trigger perubahan tampilan
}

private fun refreshLogs() {
    swipeRefreshLayout.isRefreshing = true
    dbRef.removeEventListener(logListener)
    displayedMessages.clear()
    waktuKelembaban.clear()
    waktuVolume.clear()
    logList.clear()
    logAdapter.submitList(logList.toList())
    setupRealtimeLogListener()
}
}

```

Lampiran 6 *Source Code* activity_log

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FFFFFF">

    <TextView
        android:id="@+id/textLogTitle"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Riwayat Log"
        android:textSize="20sp"
        android:textStyle="bold"
        android:gravity="center"
        android:padding="16dp"
        android:textColor="#000000" />

    <androidx.swiperefreshlayout.widget.SwipeRefreshLayout
        android:id="@+id/swipeRefreshLog"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_below="@id/textLogTitle"
        android:layout_above="@id/menu_bottom">
        <androidx.recyclerview.widget.RecyclerView
            android:id="@+id/recyclerLog"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:padding="8dp"
            android:clipToPadding="false"
            android:scrollbars="vertical"
            android:textColor="#000000"/>
    </androidx.swiperefreshlayout.widget.SwipeRefreshLayout>

    <com.google.android.material.bottomnavigation.BottomNavigationView
        android:id="@+id/menu_bottom"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:background="@drawable/menu_background"
        app:menu="@menu/menu_utama"
        app:itemIconTint="@color/menu_color"
        app:itemTextColor="@color/menu_color" />
</RelativeLayout>
```