LAMPIRAN

Lampiran - 1 *Listing* program tampilan Web (index.php)

```
<?php
// Koneksi ke database
$koneksi = mysqli_connect("localhost", "iotprojectweb_admin", "@Geofence", "iotprojectweb_sungai_db");
if (!$koneksi) {
   die("Koneksi gagal: " . mysqli_connect_error());
}

// Simpan nomor baru
if ($_SERVER["REQUEST_METHOD"] == "POST" && isset($_POST['save'])) {
   $phone = $_POST['phone'] ?? '';
   if (!empty($phone)) {
      $query = "INSERT INTO daftar_nomor (nomor) VALUES ('$phone')";
      if (mysqli_query($koneksi, $query)) {
         echo "<script>alert('Nomor berhasil disimpan!');</script>";
      } else {
         echo "<script>alert('Gagal menyimpan nomor: " . mysqli_error($koneksi) . "');</script>";
      }
   }
}

// Ubah nomor yang dipilih
if ($_SERVER["REQUEST_METHOD"] == "POST" && isset($_POST['update'])) {
   $selected_id = $_POST['nomor_id'] ?? '';
   $new_phone = $_POST['phone'] ?? '';
   if (!empty($selected_id) && !empty($new_phone)) {
      $query = "UPDATE daftar_nomor SET nomor='$new_phone' WHERE id=$selected_id";
      if (mysqli_query($koneksi, $query)) {
         echo "<script>alert('Nomor berhasil diubah!');</script>";
      } else {
         echo "<script>alert('Gagal mengubah nomor: " . mysqli_error($koneksi) . "');</script>";
      }
   }
}

// Ambil semua nomor
$nomorList = [];
$result = mysqli_query($koneksi, "SELECT * FROM daftar_nomor ORDER BY id DESC");
while ($row = mysqli_fetch_assoc($result)) {
   $nomorList[] = $row;
}
?>
<!DOCTYPE html>
<html lang="id">
<head>
   <meta charset="UTF-8">
   <title>Tambah/Ubah Nomor Telepon</title>
   <style>
      body {
         font-family: Arial, sans-serif;
         margin: 50px;
         text-align: center;
         background-color: #4B5320; /* Hijau army */
      }
      .container {
         background: #e0e0e0; /* Abu-abu terang */
         padding: 20px;
         border-radius: 10px;
         box-shadow: 0px 0px 10px rgba(0, 0, 0, 0.1);
         display: inline-block;
         width: 400px;
```

```
        }
        form { text-align: left; }
        input, select {
            padding: 8px;
            width: 100%;
            border: 1px solid #ccc;
            border-radius: 5px;
            margin-bottom: 10px;
        }
        button {
            padding: 10px 15px;
            cursor: pointer;
            color: white;
            border: none;
            border-radius: 5px;
            margin-right: 5px;
        }
        .save-btn { background: #28a745; }
        .save-btn:hover { background: #218838; }
        .update-btn { background: #007bff; }
        .update-btn:hover { background: #0056b3; }
    </style>
</head>
<body>
    <div class="container">
        <h2>Tambah/Ubah Nomor Telepon</h2>
        <form method="POST">
            <label for="phone">Nomor Telepon Baru:</label>
            <input type="text" id="phone" name="phone" placeholder="Masukkan nomor telepon" required>

            <label for="nomor_id">Pilih Nomor untuk Diubah:</label>
            <select name="nomor_id" id="nomor_id">
                <option value="">-- Pilih nomor --</option>
                <?php foreach ($nomorList as $row): ?>
                    <option value="<?= $row['id'] ?>"><?= $row['nomor'] ?></option>
                <?php endforeach; ?>
            </select>

            <button type="submit" name="save" class="save-btn">Simpan</button>
            <button type="submit" name="update" class="update-btn">Ubah Nomor</button>
        </form>
    </div>
</body>
</html>
```

Lampiran - 2 *Listing* program kirim pesan whatsapp (chat.php)

```
<?php
if
($_SERVER["REQUEST_METHOD"]
== "POST") {
   $pesan = $_POST['pesan'];
   $tinggiAir = $_POST['tinggiAir'];

date_default_timezone_set('Asia/Makass
ar');
   $timestamp = date("Y-m-d H:i:s");

   // Log data ke file
   $log = "$timestamp - Tinggi Air :
$tinggiAir cm - Pesan : $pesan\n";
   file_put_contents("data_log.txt", $log,
FILE_APPEND);

   echo "Data received: $tinggiAir\n";

 // === Ambil semua nomor dari
database ===

$koneksi = mysqli_connect("localhost",
"iotprojectweb_admin", "@Geofence",
"iotprojectweb_sungai_db");

   if (!$koneksi) {
      http_response_code(500);
      echo json_encode(['success' =>
false, 'error' => 'Database connection
failed']);
      exit;
   }

   $result = mysqli_query($koneksi,
"SELECT nomor FROM
daftar_nomor");
   $numbers = [];

   while ($row =
mysqli_fetch_assoc($result)) {
      $nomor = trim($row['nomor']);
      if (!empty($nomor)) {
         $numbers[] = $nomor;
      }
   }

   mysqli_close($koneksi);

// === Kirim WhatsApp ke semua
nomor ===

$apiToken =
"HjCmFAwZaFD9y648f9Zy";

   foreach ($numbers as $target) {
      $curl = curl_init();
      curl_setopt_array($curl, array(
         CURLOPT_URL =>
'https://api.fonnte.com/send',

CURLOPT_RETURNTRANSFER =>
true,
         CURLOPT_ENCODING => '',
         CURLOPT_MAXREDIRS =>
10,
         CURLOPT_TIMEOUT => 0,

CURLOPT_FOLLOWLOCATION =>
true,
         CURLOPT_HTTP_VERSION
=> CURL_HTTP_VERSION_1_1,

CURLOPT_CUSTOMREQUEST =>
'POST',
         CURLOPT_POSTFIELDS =>
array(
            'target' => $target,
            'message' => $log,
         ),
         CURLOPT_HTTPHEADER =>
array(
            "Authorization: $apiToken"
         ),
      ));

      $response = curl_exec($curl);
      curl_close($curl);

      echo "Pesan terkirim ke $target:
$response\n";
   }

} else {
   echo "Invalid request.";
}
?
```

Lampiran - 3 *Listing* program ambil nomor (ambil_nomor.php)

```
<?php
header('Content-Type: application/json');

// Koneksi ke database
$koneksi = mysqli_connect("localhost", "iotprojectweb_admin", "@Geofence", "iotprojectweb_sungai_db");

if (!$koneksi) {
    http_response_code(500);
    echo json_encode(['success' => false, 'error' => 'Database connection failed']);
    exit;
}

// Ambil semua nomor telepon dari database
$query = "SELECT nomor FROM daftar_nomor ORDER BY id ASC";
$result = mysqli_query($koneksi, $query);

if (!$result) {
    http_response_code(500);
    echo json_encode(['success' => false, 'error' => 'Query failed']);
    exit;
}

$numbers = [];
while ($row = mysqli_fetch_assoc($result)) {
    $nomor = trim($row['nomor']);
    if (!empty($nomor)) {
        $numbers[] = $nomor;
    }
}

// Tutup koneksi
mysqli_close($koneksi);

// Return data sebagai JSON
echo json_encode([
    'success' => true,
    'numbers' => $numbers,
    'count' => count($numbers)
]);
?>
```

Lampiran - 4 *Listing* program *Esp32* menggunakan *Arduino IDE*

```
#include <SoftwareSerial.h>
#include <ArduinoJson.h>

// Pin definitions
const int triggerPin = 33;
const int echoPin = 35;
const int buzzerPin = 4;

// Dynamic phone numbers from database
String phoneNumbers[10]; // Maximum 10 numbers
int totalNumbers = 0;
bool numbersLoaded = false;

SoftwareSerial sim800(16, 17); // RX, TX

const String server = "iotproject.web.id";
const String dataPath = "/sungai/chat.php";
const String numbersPath = "/sungai/ambil_nomor.php";
const float maxWaterLevel = 17.3; // Ketinggian air maksimum dalam cm

void setup() {
  Serial.begin(9600);
  sim800.begin(9600);
  pinMode(triggerPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(buzzerPin, OUTPUT);
  digitalWrite(buzzerPin, HIGH);
  Serial.println("Initializing...");
  // Reset SIM800 sebelum digunakan

sendATCommand("AT+CFUN=1,1");
  delay(5000); // Tunggu SIM800 restart
  sendATCommand("AT");
  sendATCommand("AT+CPIN?");
  sendATCommand("AT+CREG?");
  sendATCommand("AT+CSQ");

sendATCommand("AT+SAPBR=3,1,\"CONTYPE\",\"GPRS\"");

sendATCommand("AT+SAPBR=3,1,\"APN\",\"telkomsel\"");

sendATCommand("AT+SAPBR=1,1");

sendATCommand("AT+SAPBR=2,1");
  // Load phone numbers from database
  loadPhoneNumbers();
}
void loop() {
  // Reload phone numbers every 10 minutes (600000 ms)
  static unsigned long lastNumberUpdate = 0;
  if (millis() - lastNumberUpdate > 60000) {
    loadPhoneNumbers();
    lastNumberUpdate = millis();
  }
  float jarak = getWaterLevel();
  float tinggiSensor = 47.33;
  float waterLevel = tinggiSensor - jarak;

  if (waterLevel <= 0) {
    Serial.println("Sensor error: Diluar Jangkauan");
    digitalWrite(buzzerPin, HIGH);
  } else {
    Serial.print("Tinggi Air: ");
    Serial.print(waterLevel);
    Serial.println(" cm");

    if (waterLevel >= maxWaterLevel) {
      Serial.println("Warning: Ketinggian Air Terlalu Tinggi");
      digitalWrite(buzzerPin, LOW);
      callAlert();
    } else if (waterLevel < 17.3 && waterLevel >= 15.4 ) {
      String pesan = "Warning: Ketinggian Air waspada ";
      Serial.println(pesan);
      digitalWrite(buzzerPin, HIGH);
      sendDataToServer(pesan,
```

```
waterLevel);
          activateBuzzer();
        } else if (waterLevel < 15.4 ){
          Serial.println("Warning:
Ketinggian Air Aman");
          digitalWrite(buzzerPin,   HIGH);
// Matikan buzzer jika aman
          Serial.println("");
        }
    }
    delay(1000);
}

void loadPhoneNumbers() {
  Serial.println("Loading phone numbers
from database...");
  sendATCommand("AT+HTTPINIT");

sendATCommand("AT+HTTPPARA=\"
CID\",1");

sendATCommand("AT+HTTPPARA=\"
URL\",\"http://" + server + numbersPath
+ "\"");

sim800.println("AT+HTTPACTION=0"
);
  String actionResponse = "";
  unsigned long timeout = millis();
  while (millis() - timeout < 8000) {
    while (sim800.available()) {
      char c = sim800.read();
      actionResponse += c;
      timeout = millis();
    }
  }
  Serial.println("🌐          HTTPACTION
Response:");
  Serial.println(actionResponse);

  if (actionResponse.indexOf(",200,") ==
-1) {
    Serial.println("❌    HTTP    request
gagal    atau    tidak    menerima    respon
200.");

sendATCommand("AT+HTTPTERM");
    return;
  }
  delay(200);   //   Beri   waktu   sedikit
sebelum baca data
  sim800.println("AT+HTTPREAD");
  String response = "";
  timeout = millis();
  while (millis() - timeout < 10000) {
    while (sim800.available()) {
      char c = sim800.read();
      response += c;
      timeout = millis();
    }
  }
  Serial.println("📩 Full HTTPREAD
Response:");
  Serial.println(response);
  // Ekstrak bagian JSON dari hasil
HTTPREAD
  int jsonStart = response.indexOf('{');
  int jsonEnd = response.lastIndexOf('}');
  if (jsonStart == -1 || jsonEnd == -1 ||
jsonEnd <= jsonStart) {
    Serial.println("❌ Gagal parsing:
tidak menemukan JSON.");

sendATCommand("AT+HTTPTERM");
    return;
  }
  String          jsonString          =
response.substring(jsonStart, jsonEnd +
1);
  Serial.println("✅ JSON ditemukan:");
  Serial.println(jsonString);

sendATCommand("AT+HTTPTERM");
  parsePhoneNumbers(jsonString);
  Serial.print("Total numbers loaded: ");
  Serial.println(totalNumbers);
  for (int i = 0; i < totalNumbers; i++) {
    Serial.print("Number ");
    Serial.print(i + 1);
    Serial.print(": ");
    Serial.println(phoneNumbers[i]);
  }
}

void          parsePhoneNumbers(String
response) {
    int jsonStart = response.indexOf('{');
    int          jsonEnd          =
response.lastIndexOf('}');
```

```
  if (jsonStart == -1 || jsonEnd == -1 || jsonEnd <= jsonStart) {
    Serial.println("❌ Gagal parsing: tidak menemukan JSON.");
    numbersLoaded = false;
    totalNumbers = 0;
    return;
  }

  String jsonString = response.substring(jsonStart, jsonEnd + 1);
  Serial.println("✅ JSON ditemukan:");
  Serial.println(jsonString);

  StaticJsonDocument<512> doc;
  DeserializationError error = deserializeJson(doc, jsonString);

  if (error) {
    Serial.print("❌ Parsing JSON gagal: ");
    Serial.println(error.c_str());
    numbersLoaded = false;
    totalNumbers = 0;
    return;
  }

  JsonArray arr = doc["numbers"];
  totalNumbers = 0;
  for (JsonVariant v : arr) {
    if (v.is<String>() && totalNumbers < 10) {
      phoneNumbers[totalNumbers++] = v.as<String>();
    }
  }

  numbersLoaded = totalNumbers > 0;
  Serial.print("📞 Jumlah nomor ter-load: ");
  Serial.println(totalNumbers);
}

void sendDataToServer(String pesan, float waterLevel) {
  String postData = "pesan=" + pesan + "&tinggiAir=" + waterLevel;
  Serial.println("Ketinggian air level waspada! Mengirim chat WhatsApp...");


  sendATCommand("AT+HTTPINIT");

  sendATCommand("AT+HTTPPARA=\"CID\",1");

  sendATCommand("AT+HTTPPARA=\"URL\",\"http://" + server + dataPath + "\"");

  sendATCommand("AT+HTTPPARA=\"CONTENT\",\"application/x-www-form-urlencoded\"");

  sim800.println("AT+HTTPDATA=" + String(postData.length()) + ",10000");
  delay(100);
  sim800.println(postData);
  delay(1000);


  sendATCommand("AT+HTTPACTION=1");
  delay(3000);

  sendATCommand("AT+HTTPREAD");


  sendATCommand("AT+HTTPTERM");
  Serial.println("Chat WhatsApp berhasil dikirim...");
  Serial.println("");
}

void callAlert() {
  if (!numbersLoaded || totalNumbers == 0) {
    Serial.println("Error: No phone numbers loaded!");
    return;
  }

  for (int i = 0; i < totalNumbers; i++) {
    Serial.print("Menelepon nomor: ");
    Serial.println(phoneNumbers[i]);
    sendATCommand("ATD" + phoneNumbers[i] + ";");
```

```
      if (checkCallStatus()) {
        Serial.println("Panggilan berhasil tersambung.");
        break;
      } else {
        Serial.println("Nomor tidak aktif, mencoba nomor berikutnya...");
      }

      sendATCommand("ATH"); // Putuskan panggilan sebelum mencoba nomor berikutnya
      delay(2000);
    }
}

bool checkCallStatus() {
  String response = "";
  long startTime = millis();
  bool callConnected = false;
  Serial.println("Menunggu status panggilan dari SIM800...");
  while (millis() - startTime < 15000) { // Tunggu maksimal 15 detik
      while (sim800.available()) {
        char c = sim800.read();
        response += c;
        Serial.write(c); // Debugging
      }
      // Debugging: Cetak semua respon dari SIM800
      if (response.length() > 0) {
        Serial.println("\n=== Debugging SIM800 Response ===");
        Serial.println(response);
        Serial.println("==========================================");
      }
      // Cek jika panggilan tersambung
      if (response.indexOf("RINGING") != -1 ||
        response.indexOf("CONNECT") != -1 ||
        response.indexOf("+COLP:") != -1) {  // Tambahkan "+COLP:" untuk mendeteksi tersambung
        Serial.println("\nPanggilan tersambung.");
        callConnected = true;
        break;
      }
      // Cek jika panggilan gagal
      if (response.indexOf("NO CARRIER") != -1 ||
        response.indexOf("NO ANSWER") != -1 ||
        response.indexOf("BUSY") != -1 ||
        response.indexOf("ERROR") != -1) {
        Serial.println("\nPanggilan gagal.");
        return false;
      }
      delay(2000);
  }
  return callConnected; // Return hasil apakah panggilan tersambung atau tidak
}

void sendATCommand(String command) {
  sim800.println(command);
  long startTime = millis();
  while (millis() - startTime < 2000) { // Timeout 2 detik
      while (sim800.available()) {
        Serial.write(sim800.read());
      }
  }
}

void activateBuzzer() {
  digitalWrite(buzzerPin, LOW);
  delay(500);
  digitalWrite(buzzerPin, HIGH);
  delay(500);
  digitalWrite(buzzerPin, LOW);
  delay(500);
  digitalWrite(buzzerPin, HIGH);
  delay(500);
}

float getWaterLevel() {
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);
```

```
  long duration = pulseIn(echoPin, HIGH, 30000); // Timeout 30ms
  if (duration == 0) {
    Serial.println("Sensor error: Tidak ada respon");
    return -1;
  }
  float distance = duration * 0.034 / 2;
  if (distance < 2 || distance > 400) {
    return -1;  // Jarak terlalu jauh atau terlalu dekat
  }

  return distance;
}
```

Lampiran - 5 Dokumentasi *Prototype*







