LAMPIRAN 1

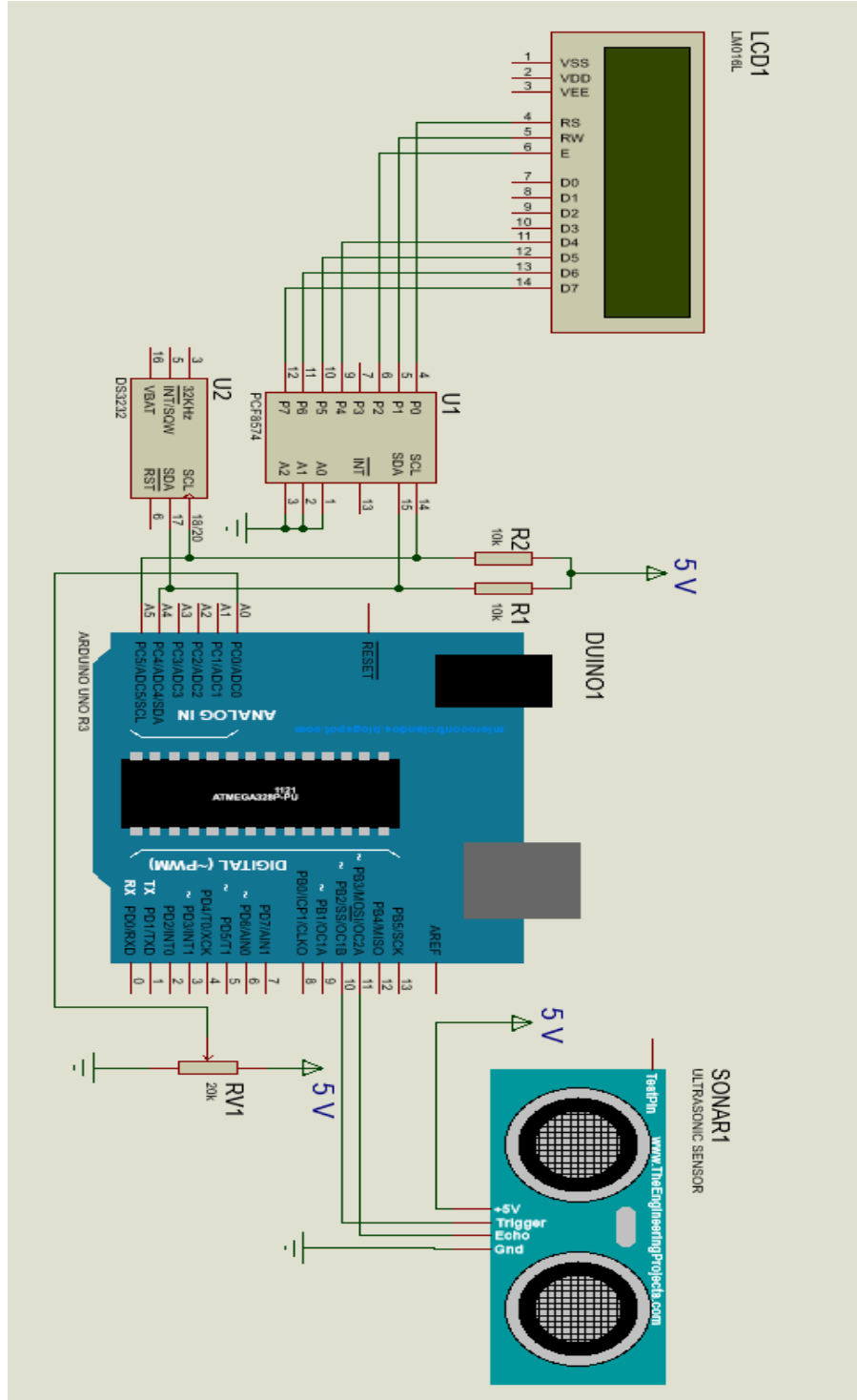**Gambar Rangkaian**

LAMPIRAN 2

Program Pengujian I2C LCD

```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x3F, 16, 2);

void setup() {
 lcd.begin();
}

void loop(){
 lcd.setCursor(0,0);
 lcd.print("PENGUJIAN");
 lcd.setCursor(0,1);
 lcd.print("I2C LCD");
}
```

LAMPIRAN 3

Program Pengujian I2C RTC

```
#include <DS3231.h> //mengincludekan library DS3231

DS3231  rtc(SDA, SCL); // inisialisasi penggunaan i2c

void setup()
{
  Serial.begin(9600); //set komunikasi baut serial monitor pada 115200
  rtc.begin();

  //setting pertama download program
  rtc.setDate(12, 7, 2018);   //mensetting tanggal 12 Juli 2018
  rtc.setTime(22, 00, 00);     //menset jam 22:00:00
  rtc.setDOW(4);     //menset hari "Kamis"

//setelah didownload awal selesai, download kedua dengan memberi tanda komen "//"
}

void loop()
{
  Serial.print(rtc.getDOWStr()); //prosedur pembacaan hari
  Serial.print(" ");

  Serial.print(rtc.getDateStr()); //prosedur pembacaan tanggal
  Serial.print(" -- ");

  Serial.println(rtc.getTimeStr()); //prosedur pembacaan waktu

  delay (1000); //waktu tunda 1 detik per cycle
```

```
}
void setup() {
 lcd.begin();
}

void loop(){
 lcd.setCursor(0,0);
 lcd.print("PENGUJIAN");
 lcd.setCursor(0,1);
 lcd.print("I2C LCD");
}
```

LAMPIRAN 4

Program Pengujian Wifi

```
/**
 * BasicHTTPClient.ino
 *
 *  Created on: 24.05.2015
 *
 */


#include <Arduino.h>

#include <ESP8266WiFi.h>
#include <ESP8266WiFiMulti.h>

#include <ESP8266HTTPClient.h>

#define USE_SERIAL Serial

ESP8266WiFiMulti WiFiMulti;

void setup() {

  USE_SERIAL.begin(115200);
 // USE_SERIAL.setDebugOutput(true);

  USE_SERIAL.println();
  USE_SERIAL.println();
  USE_SERIAL.println();

  for(uint8_t t = 4; t > 0; t--) {
```

```
    USE_SERIAL.printf("[SETUP] WAIT %d...\n", t);

    USE_SERIAL.flush();

    delay(1000);

  }


  WiFi.mode(WIFI_STA);

  WiFiMulti.addAP("Xperia Z Ultra_7114", "zidan2007"); //wifi yang digunakan


}


void loop() {


  // input dari arduino


  // wait for WiFi connection

  if((WiFiMulti.run() == WL_CONNECTED)) {


    HTTPClient http;


    USE_SERIAL.print("[HTTP] begin...\n");

    // configure traged server and url

    //http.begin("https://192.168.1.12/test.html", "7a 9c f4 db 40 d3 62 5a 6e 21 bc 5c cc 66
c8 3e a1 45 59 38"); //HTTPS

http.begin("http://controlinship.000webhostapp.com/add.php?waktu=%04d%02d%02d&jam=
%02d%02d%02d&bandul=%3.2f&ultrasonik=%3.2f"); //HTTP


    USE_SERIAL.print("[HTTP] GET...\n");

    // start connection and send HTTP header

    int httpCode = http.GET();
```

```
    // httpCode will be negative on error

    if(httpCode > 0) {

        // HTTP header has been send and Server response header has been handled

        USE_SERIAL.printf("[HTTP] GET... code: %d\n", httpCode);


        // file found at server

        if(httpCode == HTTP_CODE_OK) {

            String payload = http.getString();

            USE_SERIAL.println(payload);

        }

    } else {

        USE_SERIAL.printf("[HTTP] GET... failed, error: %s\n",
http.errorToString(httpCode).c_str());

    }


    http.end();

  }


  delay(60000);

}
```

LAMPIRAN 5

Program Utama Wemos

```
#include <ESP8266WiFi.h>

#include <ESP8266HTTPClient.h>

#include <SoftwareSerial.h>

String inputString = "";

boolean stringComplete = false;


SoftwareSerial mySerial(14,12,false,256);


const char* ssid     = "Sultan arman"; //isi wifi anda

const char* password = "wmnq1930"; //isi password anda

int httpCode ;

HTTPClient http;

WiFiClient  client;



void setup() {
  Serial.begin(9600);
  mySerial.begin(9600);
  WiFi.mode(WIFI_STA);
  WiFi.begin(ssid,password);
  while (WiFi.status() != WL_CONNECTED) {
   delay(500);
   Serial.print(".");
  }
  Serial.print("WiFi Connected");
}


void loop() {
```

```
//http.begin("http://controlinship.000webhostapp.com/add.php?waktu=2018917&jam=185344
&bandul=6.99&ultrasonik=21.99");
  //httpCode = http.GET();
  //http.end();
  //delay(300);
  while (mySerial.available()) {
    char inChar = (char)mySerial.read();
    if (inChar == '\r') {
      inputString=inputString;
    }


    else if (inChar == '\t') {
      inputString=inputString;
    }


    else if (inChar == '\n') {
      stringComplete = true;
    }
    else{
     inputString += inChar;
    }
  }

  if (stringComplete) {
    Serial.println(inputString);
    http.begin(inputString);
    httpCode = http.GET();
    http.end();
    inputString = "";
```

```
      stringComplete = false;
  }
}
```

LAMPIRAN 6

Program Utama Arduino Uno

```
#include <SoftwareSerial.h>
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x3F, 16, 2);
#define PinPoten A0 //Potensiometer
#include <RTClib.h>

RTC_DS3231 rtc;
SoftwareSerial mySerial (12,13); //RX,TX
// 12 RX == TX 12
// 13 TX == RX 14

// defines pins numbers
const int trigPin1 = 3;
const int echoPin1 = 4;
const int trigPin2 = 5;
const int echoPin2 = 6;
const int trigPin3 = 7;
const int echoPin3 = 8;
const int trigPin4 = 9;
const int echoPin4 = 10;
// defines variables
int Poten=0;
float bandul1, dm, vol_used, vol_current,Vol_mean;
long dur1,dur2,dur3,dur4;
float dis1,dis2,dis3,dis4,rata2;
int tahun,hari,bulan,detik,menit,jam;
String nbulan="";
```

```
String nhari="";
String njam="";
String nmenit="";
String ndetik="";


void setup() {
  Serial.begin(9600);
  mySerial.begin(9600);
  lcd.begin();
  lcd.backlight();
  lcd.setCursor(0,0);
  lcd.print("LCD oke");
  //Serial.println("LCD Oke");
  if (! rtc.begin()) {
    //lcd.setCursor(0,1);
    Serial.println("Couldn't find RTC");
    while (1);
  }
  lcd.setCursor(0,1);
  //Serial.println("find RTC");
  lcd.print("Rtc oke");
  //rtc.adjust(DateTime(F(__DATE__), F(__TIME__)));
  delay(500);
  lcd.clear();
  pinMode(trigPin1, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin1, INPUT); // Sets the echoPin as an Input
  pinMode(trigPin2, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin2, INPUT); // Sets the echoPin as an Input
  pinMode(trigPin3, OUTPUT); // Sets the trigPin as an Output
```

```
pinMode(echoPin3, INPUT); // Sets the echoPin as an Input
pinMode(trigPin4, OUTPUT); // Sets the trigPin as an Output
pinMode(echoPin4, INPUT); // Sets the echoPin as an Input


}

void loop() {
 DateTime now = rtc.now();
 tahun = now.year(),DEC;
 bulan = now.month(),DEC;
 hari = now.day(),DEC;
 jam = now.hour(),DEC;
 menit = now.minute(),DEC;
 detik = now.second(),DEC;


 String waktu1 = String(tahun)+"/"+String(bulan)+"/"+String(hari);
 String waktu2 = String(jam)+":"+String(menit)+":"+String(detik);
 lcd.setCursor(0,0);
 lcd.print(waktu1);
 lcd.setCursor(0,1);
 lcd.print(waktu2);



 // Clears the trigPin
 digitalWrite(trigPin1, LOW);
 delayMicroseconds(2);
 // Sets the trigPin on HIGH state for 10 micro seconds
 digitalWrite(trigPin1, HIGH);
 delayMicroseconds(10);
 digitalWrite(trigPin1, LOW);
```

```
// Reads the echoPin, returns the sound wave travel time in microseconds
dur1 = pulseIn(echoPin1, HIGH);
delay(200);


// Clears the trigPin
digitalWrite(trigPin2, LOW);
delayMicroseconds(2);
// Sets the trigPin on HIGH state for 10 micro seconds
digitalWrite(trigPin2, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin2, LOW);
// Reads the echoPin, returns the sound wave travel time in microseconds
dur2 = pulseIn(echoPin2, HIGH);
delay(200);


// Clears the trigPin
digitalWrite(trigPin3, LOW);
delayMicroseconds(2);
// Sets the trigPin on HIGH state for 10 micro seconds
digitalWrite(trigPin3, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin3, LOW);
// Reads the echoPin, returns the sound wave travel time in microseconds
dur3 = pulseIn(echoPin3, HIGH);
delay(200);


// Clears the trigPin
digitalWrite(trigPin4, LOW);
delayMicroseconds(2);
// Sets the trigPin on HIGH state for 10 micro seconds
```

```
digitalWrite(trigPin4, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin4, LOW);

// Reads the echoPin, returns the sound wave travel time in microseconds

dur4 = pulseIn(echoPin4, HIGH);

delay(200);



// Calculating the distance

dis1= (float) dur1*0.034/2;

dis2= (float) dur2*0.034/2;

dis3= (float) dur3*0.034/2;

dis4= (float) dur4*0.034/2;

rata2= (float) (dis1+dis2+dis3+dis4)/4;

dm = (float) rata2 / 10;

vol_used = (float) dm*4.9*2;

vol_current = (float)21 - vol_used + 0.57; //capacity sensor 22.58

if(vol_current<0)

{

  vol_current = 0;

}


Poten = analogRead(PinPoten);

bandul1 = (Poten * 0.071)+ 6.3571;

String bandul2 = String (bandul1);    //sensor bandul potensiometer



// Prints the distance on the Serial Monitor

Serial.print("Dis1: ");

Serial.println(dis1);
```

```
Serial.print("Dis2: ");
Serial.println(dis2);
Serial.print("Dis3: ");
Serial.println(dis3);
Serial.print("Dis4: ");
Serial.println(dis4);
Serial.println(Poten);
Serial.println(bandul1);



lcd.setCursor(11,0);
lcd.print(vol_current);


lcd.setCursor(11,1);
lcd.print(bandul1);


if(bulan<10) { nbulan=  "0"+String(bulan);}
else if(bulan>9) {nbulan = String(bulan);}


if(hari<10) { nhari=  "0"+String(hari);}
else if(hari>9) {nhari = String(hari);}


if(jam<10) { njam=  "0"+String(jam);}
else if(jam>9) {njam = String(jam);}


if(menit<10) { nmenit=  "0"+String(menit);}
else if(menit>9) {nmenit = String(menit);}


if(detik<10) { ndetik=  "0"+String(detik);}
else if(detik>9) {ndetik = String(detik);}
```

```
String awaktu1 = String(tahun)+String(nbulan)+String(nhari);

String awaktu2 = String(njam)+String(nmenit)+String(ndetik);

Serial.println("http://controlinship.000webhostapp.com/add.php?waktu="+String(awaktu1)+"
&jam="+String(awaktu2)+"&bandul="+String(bandul1)+"&ultrasonik="+String(vol_current))
;

mySerial.println("http://controlinship.000webhostapp.com/add.php?waktu="+String(awaktu1)
+"&jam="+String(awaktu2)+"&bandul="+String(bandul1)+"&ultrasonik="+String(vol_curre
nt));


delay(150);

lcd.setCursor(0,1);

lcd.print("       ");

//lcd.clear();

}
```

LAMPIRAN 7

Program PHP Menghubungkan Dengan Database

```php
<?php


            $server="localhost";

            $username="id6587110_edi";

            $password="1234567890";

            $database="id6587110_database";


    $mysqli = new mysqli("$server", "$username", "$password", "$database");

    if ($mysqli->connect_errno) {

        echo "Failed to connect to MySQL: (" . $mysqli->connect_errno . ") " . $mysqli->connect_error;

        }

    //echo $mysqli->host_info . "\n";


?>
```

LAMPIRAN 8

Program PHP Membuat Tampilan

```php
<?php

        include("connect.php");


        $result=mysqli_query($mysqli,"SELECT * FROM data");


?>


<html>
  <head>
    <title>Control in Ship</title>
  </head>
   <meta http-equiv="refresh" content="2"/>
<body>
  <h1>Sensor Readings</h1>


  <table border="1" cellspacing="1" cellpadding="1">
            <tr>

                    <td> Hari </td>
                    <td> Waktu </td>
                    <td> V bandul potensiometer </td>
                    <td> V ultrasonik </td>
            </tr>


    <?php
                if($result!==FALSE){

                    while($row = mysqli_fetch_object($result)) {
```

```php
            printf("<tr><td>  %s </td><td>  %s </td><td>
 %s  </td><td>  %s  </td></tr>",
                $row->hari,$row->waktu, $row->bandul, $row->ultrasonik);
        }
    }
?>


    </table>
</body>
</html>
```

LAMPIRAN 9

Program PHP Update Data

```php
<?php
        include("connect.php");


$hari = $_GET['hari'];

$waktu = $_GET['waktu'];

$bandul = $_GET['bandul'];

$ultrasonik = $_GET['ultrasonik'];


$dquery = "INSERT INTO data (hari, waktu, bandul, ultrasonik) VALUES ('$hari','$waktu','$bandul','$ultrasonik')";

if ($mysqli->query($dquery) == TRUE) {

echo "Berhasil";

}

echo "$hari,$waktu,$bandul,$ultrasonik";

?>
```

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