**Coding Arduino Uno**

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27,16,2);
#include <SoftwareSerial.h>//Library SoftwareSerial
SoftwareSerial mySerial(2, 3);// RX|TX
#include <Servo.h>
Servo myservo;
#include "HX711.h"
#define DOUT  A1
#define CLK  A2
HX711 scale(DOUT, CLK);
float calibration_factor = 216.60;
float GRAM; float KG;
#define sped1 8
#define sped2 9
#define sped3 10
#define kontak 11
#define t_finish 12
#define alarm 6
int status1=0,status2=0,status3=0,status4=0,status5=0;
char data_mcu;
char data;
void setup() {
  Serial.begin(115920);//baudrare serial
```

```
mySerial.begin(9600);//baudrare serial hardware
lcd.begin();
lcd.backlight();//initialize LCD
scale.set_scale();
scale.tare();
pinMode(sped1,OUTPUT);
pinMode(sped2,OUTPUT);
pinMode(sped3,OUTPUT);
pinMode(kontak,OUTPUT);
pinMode(t_finish,OUTPUT);
pinMode(alarm,OUTPUT);
myservo.attach(5);
myservo.write(0);
delay(1000);
digitalWrite(sped1,LOW);
digitalWrite(sped2,LOW);
digitalWrite(sped3,LOW);
digitalWrite(kontak,LOW);
digitalWrite(t_finish,LOW);
lcd.clear();
lcd.setCursor(0,0);
lcd.print("Tampi & Timbang");    //printing on LCD
lcd.setCursor(4,1);            //sets the position where to print
lcd.print("  Beras");
delay(5000);
```

```
}
void loop() {
  //baca sensor berat
  scale.set_scale(calibration_factor);
  GRAM = scale.get_units(), 4;
  if ( GRAM <= 10){GRAM = 0;}
  KG = GRAM / 1000;
  lcd.clear();
  lcd.setCursor(3,0);
  lcd.print("Berat Beras ");
  lcd.setCursor(5,1);
  lcd.print(KG);
  lcd.setCursor(10,1);
  lcd.print(" kg");
  delay(100);
  // data dari nodemcu
 if (mySerial.available()>0)// Lopping menerima data dari serial...
  {
    data_mcu=(char)mySerial.read();// data yang masuk di gabungkan dengan hasil char Serial yang masuk
    Serial.println(data_mcu );// debug hasil data yang masuk dari serial ( di tampilkan dalam Serial Monitor
    delay(10);
    }
   if (data_mcu == '1' )
    { lcd.clear();
```

```
  lcd.setCursor(0,0);
  lcd.print("SPEED 1");
  digitalWrite(kontak,HIGH);
  data_mcu = "";
  delay(2000);
  digitalWrite(sped1,HIGH);
  delay(1000);
  myservo.write(20);
  delay(1000);}
else if(data_mcu == '2' )
 {lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("SPEED 2");
  digitalWrite(kontak,HIGH);
  data_mcu = "";
  delay(2000);
  digitalWrite(sped2,HIGH);
  delay(1000);
  myservo.write(20);
  delay(1000);}
else if(data_mcu == '3' )
{ lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("SPEED 3");
  digitalWrite(kontak,HIGH);
```

```
  data_mcu = "";
  delay(2000);
  digitalWrite(sped3,HIGH);
  delay(1000);
  myservo.write(20);
  delay(1000);}
 else if(data_mcu == 'A' )       // 1 kg
 { lcd.clear();
   lcd.setCursor(0,0);
   lcd.print("MODE 1 KG");
  data_mcu = "";
  delay(2000);
  status1=1; }
 else if(data_mcu == 'B' )       // 2 kg
 { lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("MODE 2 KG");
  data_mcu = "";
  delay(2000);
  status2=1;}
 else if(data_mcu == 'C' )       // 3 kg
 { lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("MODE 3 KG");
  data_mcu = "";
```

pada bagian ini berisi perintah yang artinya untuk 1 kg selanjutnya dikirim ke node mcu dan muncul notif pada telegram begitu juga lainnya.

```
    delay(2000);
    status3=1;}
  else if(data_mcu == 'D' )        // 4 kg
  { lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("MODE 4 KG");
    data_mcu = "";
    delay(2000);
    status4=1;}
  else if(data_mcu == 'E' )        // 5 kg
  { lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("MODE 5 KG");
    data_mcu = "";
    delay(2000);
    status5=1;}
//}
if (KG >= 0.94 && KG <=1.01 && status1==1) {
  myservo.write(0);
  delay(1000);
  digitalWrite(kontak,LOW);
  delay(2000);
  digitalWrite(sped1,LOW);
  digitalWrite(sped2,LOW);
  digitalWrite(sped3,LOW);
```

```
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Timbang Selesai ");
  lcd.setCursor(4,1);
  lcd.print(KG);
  lcd.setCursor(7,1);
  lcd.print(" kg");
  status1=0;
  delay(2000);
  digitalWrite(alarm,HIGH);
  digitalWrite(t_finish,HIGH);
  delay(8000);
  digitalWrite(alarm,LOW);
  digitalWrite(t_finish,LOW);
  delay(2000);
}

if (KG >= 1.94 && KG <=2.01 && status2==1) {
   myservo.write(0);
  delay(1000);
  digitalWrite(kontak,LOW);
  delay(2000);
  digitalWrite(sped1,LOW);
  digitalWrite(sped2,LOW);
```

Tujuannya agar dapat berkomunikasi dengan node mcu untuk memberi tahu timbangan selesai

```
 digitalWrite(sped3,LOW);
 delay(1000);
 lcd.clear();
 lcd.setCursor(0,0);
 lcd.print("Timbang Selesai ");
 lcd.setCursor(4,1);
 lcd.print(KG);
 lcd.setCursor(7,1);
 lcd.print(" kg");
 status2=0;
 delay(2000);
 digitalWrite(alarm,HIGH);
 digitalWrite(t_finish,HIGH);
 delay(8000);
 digitalWrite(alarm,LOW);
 digitalWrite(t_finish,LOW);
 delay(2000);
}

if (KG >= 2.94 && KG <=3.01 && status3==1) {
  myservo.write(0);
 delay(1000);
 digitalWrite(kontak,LOW);
 delay(2000);
 digitalWrite(sped1,LOW);
```

```
 digitalWrite(sped2,LOW);
 digitalWrite(sped3,LOW);
 delay(1000);
 lcd.clear();
 lcd.setCursor(0,0);
 lcd.print("Timbang Selesai ");
 lcd.setCursor(4,1);
 lcd.print(KG);
 lcd.setCursor(7,1);
 lcd.print(" kg");
 status3=0;
 delay(2000);
 digitalWrite(alarm,HIGH);
 digitalWrite(t_finish,HIGH);
 delay(8000);
 digitalWrite(alarm,LOW);
 digitalWrite(t_finish,LOW);
 delay(2000);
}

 if (KG >= 3.94 && KG <=4.01 && status4==1) {
  myservo.write(0);
 delay(1000);
 digitalWrite(kontak,LOW);
 delay(2000);
```

```
 digitalWrite(sped1,LOW);
 digitalWrite(sped2,LOW);
 digitalWrite(sped3,LOW);
 delay(1000);
 lcd.clear();
 lcd.setCursor(0,0);
 lcd.print("Timbang Selesai ");
 lcd.setCursor(4,1);
 lcd.print(KG);
 lcd.setCursor(7,1);
 lcd.print(" kg");
 status4=0;
 delay(2000);
 digitalWrite(alarm,HIGH);
 digitalWrite(t_finish,HIGH);
 delay(8000);
 digitalWrite(alarm,LOW);
 digitalWrite(t_finish,LOW);
 delay(2000);
}

 if (KG >= 4.94 && KG <=5.01 && status5==1) {
 myservo.write(0);
 delay(1000);
 digitalWrite(kontak,LOW);
```

```
    delay(2000);
    digitalWrite(sped1,LOW);
    digitalWrite(sped2,LOW);
    digitalWrite(sped3,LOW);
    delay(1000);
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("Timbang Selesai ");
    lcd.setCursor(4,1);
    lcd.print(KG);
    lcd.setCursor(7,1);
    lcd.print(" kg");
    status5=0;
    delay(2000);
    digitalWrite(alarm,HIGH);
    digitalWrite(t_finish,HIGH);
    delay(8000);
    digitalWrite(alarm,LOW);
    digitalWrite(t_finish,LOW);
    delay(2000);
  }
}
```

**Coding Node Mcu untuk Telegram**

```
#include "CTBot.h"
#include <ESP8266WiFi.h>
#include <WiFiClientSecure.h>
CTBot myBot;
#include <SoftwareSerial.h>
SoftwareSerial serial(D1,D2); //d1 ke pin 3 , d2 ke pin 2 arduino
int status1=0;
int data1=0;
#define s_input D3
//const int id = 702743900; //id mikro
String ssid = "Robotic";
String pass = "bismillah";
//String token = "667033974:AAFqfBYDcw_EZ0UCfOewVgS0gnh9uoiHO20";
//
String token = "5534423063:AAFgnCsCwgfQoRaAoVcuu9b7k1q6dJBSJoo";
//chanel siwi
TBMessage msg;
void setup() {
  serial.begin(9600);
  Serial.begin(115920);
  pinMode(s_input,INPUT);
  digitalWrite(s_input,LOW);
  myBot.wifiConnect(ssid, pass);
  myBot.setTelegramToken(token);
```

```
  if (myBot.testConnection()){
  Serial.println("WIFI TERKONEKSI Ke ");
  Serial.print(ssid);
  }
  else {Serial.print("WIFI TIDAK TERKONEKSI");}
  delay(1000);
  Serial.print("  PENAMPI DAN PENIMPANG BERAS IOT ");    //printing on
LCD
  Serial.println("");    //printing on LCD
  delay(2000);
}
void loop() {
 //baca_sensor();
  TBMessage msg;
 data1=digitalRead(s_input);
  if (data1==1 && status1==1) {
      myBot.sendMessage(msg.sender.id, "PENIMBANGAN SELESAI" );
      delay(3000);
      status1=0;
  }
 Serial.print(data1);Serial.print( "  ");Serial.println(status1);
 if (myBot.getNewMessage(msg)) {
  if (msg.text.equalsIgnoreCase("/SPEED1")) {
      myBot.sendMessage(msg.sender.id, "KECEPATAN LAMBAT" );
      serial.print("1");
```

```
    delay(100);
    serial.print("");
    status1=1;
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/SPEED2")) {
    myBot.sendMessage(msg.sender.id, "KECEPATAN SEDANG" );
    serial.print("2");
    delay(100);
    serial.print("");
    status1=1;
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/SPEED3")) {
    myBot.sendMessage(msg.sender.id, "KECEPATAN TINGGI" );
    serial.print("3");
    delay(100);
    serial.print("");
    status1=1;
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/1KG")) {
    myBot.sendMessage(msg.sender.id, "TIMBANG 1 KG" );
    serial.print("A");
    delay(100);
    serial.print("");
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/2KG")) {
```

```
    myBot.sendMessage(msg.sender.id, "TIMBANG 2 KG" );
    serial.print("B");
    delay(100);
    serial.print("");
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/3KG")) {
    myBot.sendMessage(msg.sender.id, "TIMBANG 3 KG" );
    serial.print("C");
    delay(100);
    serial.print("");
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/4KG")) {
    myBot.sendMessage(msg.sender.id, "TIMBANG 4 KG" );
    serial.print("D");
    delay(100);
    serial.print("");
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/5KG")) {
    myBot.sendMessage(msg.sender.id, "TIMBANG 5 KG" );
    serial.print("E");
    delay(100);
    serial.print("");
    delay(2000);}
else if (msg.text.equalsIgnoreCase("/START")) {
    myBot.sendMessage(msg.sender.id, "PETUNJUK PENGGUNAAN:");
```

```
    myBot.sendMessage(msg.sender.id, "1./SPEED1 (KECEPATAN
LAMBAT)");
    myBot.sendMessage(msg.sender.id, "2./SPEED2 (KECEPATAN
SEDANG)");
    myBot.sendMessage(msg.sender.id, "3./SPEED3 (KECEPATAN TINGGI)");
    myBot.sendMessage(msg.sender.id, "4./1KG (TIMBANG BERAS 1KG)");
    myBot.sendMessage(msg.sender.id, "5./2KG (TIMBANG BERAS 2KG)");
    myBot.sendMessage(msg.sender.id, "6./3KG (TIMBANG BERAS 3KG)");
    myBot.sendMessage(msg.sender.id, "7./4KG (TIMBANG BERAS 4KG)");
    myBot.sendMessage(msg.sender.id, "8./5KG (TIMBANG BERAS 5KG)");
    delay(2000); }
  else {
    String reply;
    reply = (String)"Maaf input yang anda masukkan salah.";
    myBot.sendMessage(msg.sender.id, reply); }
  }
  delay(10);
 }
```

# CURRICULUM VITAE

NAMA LENGKAP : SIWI ANDRIANI

NIM : 0618 4035 1386

TEMPAT, TANGGAL LAHIR : LUBUKLINGGAU, 12 JUNI 2000

ALAMAT :JL.MAJAPAHIT NO73 LUBUKLINGGAU

TELEPON : 085281867956

## RIWAYAT PENDIDIKAN FORMAL

| PENDIDIKAN | NAMA SEKOLAH | TAMAT TAHUN |
|---|---|---|
| SD | SD NEGERI 43 LUBUKLINGGAU | 2012 |
| SMP | SMP YPBI 11 LUBUKLINGGAU | 2015 |
| SMA | MAN 2 LUBUKLINGGAU | 2018 |

## RIWAYAT PENDIDIKAN NON FORMAL

| JENIS PENDIDIKAN NON FORMAL | TAHUN |
|---|---|
| KURSUS KOMPUTER | 2017 |
| KURSUS BAHASA INGGRIS MAC INDONESIA | 2021-2022 |

## PENGALAMAN ORGANISASI

| NO | PENGALAMAN ORGANISASI | TAHUN |
|---|---|---|
| 1 | ANGGOTA CAMERA PERSON UKM WPS | 2020 |
| 2 | ANGGOTA BEM DIVISI KOMINFO | 2021 |

Semua data yang saya isikan dan tercantum dalam daftar riwayat hidup ini adalah benar dan dapat dipertanggung jawabkan.

**Palembang, 5 September 2022**

**(SIWI ANDRIANI)**

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139 Telp. 0711-353414
Laman: http://polsri.ac.id, Pos El : info@polsri.ac.id

# KESEPAKATAN BIMBINGAN TUGAS AKHIR (TA)

Kami yang bertanda tangan di bawah ini,

**Pihak Pertama**

| | |
|---|---|
| Nama | : Siwi Andriani |
| NIM | : 061840351386 |
| Jurusan | : Teknik Elektro |
| Program Studi | : Teknik Telekomunikasi D-IV |

**Pihak Kedua**

| | |
|---|---|
| Nama | : Ir.Abdul Rakhman, M.T. |
| NIP | : 196006241990031002 |
| Jurusan | : Teknik Elektro |
| Program Studi | : Teknik Telekomunikasi D-IV |

Pada hari ini Jum'at tanggal 2022 telah sepakat untuk melakukan konsultasi bimbingan Tugas Akhir (TA).

Konsultasi bimbingan sekurang-kurangnya 1 (satu) kali dalam satu minggu. Pelaksanaan bimbingan pada setiap hari pukul tempat di Politeknik Negeri Sriwijaya.

Demikianlah kesepakatan ini dibuat dengan penuh kesadaran guna kelancaran penyelesaian Tugas Akhir.

Palembang, 2022

Pihak Pertama,

(Siwi Andriani)
NIM 061840351386

Pihak Kedua,

(Ir.Abdul Rakhman, M.T.)
NIP. 196006241990031002

Mengetahui,
Ketua Jurusan

(Ir. Iskandar Lutfi, M.T.)
NIP 196501291991031002

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139 Telp. 0711-353414
Laman: http://polsri.ac.id, Pos El : info@polsri.ac.id

# KESEPAKATAN BIMBINGAN TUGAS AKHIR (TA)

Kami yang bertanda tangan di bawah ini,

**Pihak Pertama**

| | |
|---|---|
| Nama | : Siwi Andriani |
| NIM | : 061840351386 |
| Jurusan | : Teknik Elektro |
| Program Studi | : Teknik Telekomunikasi D-IV |

**Pihak Kedua**

| | |
|---|---|
| Nama | : Ir.Suroso, M.T. |
| NIP | : 196207191993031003 |
| Jurusan | : Teknik Elektro |
| Program Studi | : Teknik Telekomunikasi D-IV |

Pada hari ini tanggal Maret 2022 telah sepakat untuk melakukan konsultasi bimbingan Tugas Akhir (TA).

Konsultasi bimbingan sekurang-kurangnya 1 (satu) kali dalam satu minggu. Pelaksanaan bimbingan pada setiap hari pukul tempat di Politeknik Negeri Sriwijaya.

Demikianlah kesepakatan ini dibuat dengan penuh kesadaran guna kelancaran penyelesaian Tugas Akhir.

Palembang, Maret 2022

Pihak Pertama,

(Siwi Andriani)
NIM 061840351386

Pihak Kedua,

(Ir.Suroso, M.T.)
NIP. 196207191993031003

Mengetahui,
Ketua Jurusan

(Ir. Iskandar Lutfi, M.T.)
NIP 196501291991031002

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139 Telp. 0711-353414
Laman: http://polsri.ac.id, Pos El.: info@polsri.ac.id

# LEMBAR BIMBINGAN TUGAS AKHIR (TA)

Lembar : 1

Nama : Siwi Andriani
NIM : 061840351386
Jurusan/Program Studi : Teknik Elektro/Teknik Telekomunikasi DIV
Judul Tugas Akhir : RANCANG BANGUN ALAT PENAMPI DAN PENIMBANG BERAS OTOMATIS BERBASIS IOT *(INTERNET OF THINGS)*

Pembimbing I : Ir. Abdul Rakhman, M.T.

| No. | Tanggal | Uraian Bimbingan | Tanda Tangan Pembimbing |
|---|---|---|---|
| 1. | 16 Maret 2022 | Proposal disetujui dengan beberapa koreksi | |
| 2. | 8 April 2022 | Perbaikan makanisme dan penggunaan pada laporan LA | |
| 3. | 6 mai 2022 | Revisi bab I | |
| 4. | 13 mai 2022 | Revisi bab II | |
| 5. | 27 mai 2022 | Hasil rancang bangun harus diperbaiki | |
| 6. | 3 Juni 2022 | Revisi bab I dan II teruskan ke rancang bangun | |
| 7. | 17 Juni 2022 | Penyelesaian data pada alat | |

| No. | Tanggal | Uraian Bimbingan | Tanda Tangan Pembimbing |
|---|---|---|---|
| 8. | 22 Juni 2022 | Mekanisme alat | |
| 9. | 28 Juni 2022 | Lakukan hasil uji dengan alat dan ambil data | |
| 10. | 8 Juli 2022 | Perbaiki data bab IV dan bab V serta daftar pustaka | |
| 11. | 15 Juli 2022 | Perakitan sudah normal dan data sudah sesuai | |
| 12. | 22 Juli 2022. | Laporan telah disetujui untuk dibawa ke sidang (ACC) | |
| 13. | | | |
| 14. | | | |

Palembang, 2022

Koordinator Program Studi
Sarjana Terapan
Teknik Telekomunikasi

( Lindawati,S.T.,M.TI)
NIP.197105282006042001

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139 Telp. 0711-353414
Laman: http://polsri.ac.id, Pos El : info@polsri.ac.id

# LEMBAR BIMBINGAN TUGAS AKHIR (TA)



Nama : Siwi Andriani

NIM : 061840351386

Jurusan/Program Studi : Teknik Elektro/Teknik Telekomunikasi DIV

Judul Tugas Akhir : RANCANG BANGUN ALAT PENAMPI DAN PENIMBANG BERAS OTOMATIS BERBASIS IOT *(INTERNET OF THINGS)*

Pembimbing II : Ir.Suroso, M.T.

| No. | Tanggal | Uraian Bimbingan | Tanda Tangan Pembimbing |
|---|---|---|---|
| 1. | 10 maret 2022 | Proposal disetujui | |
| 2. | 7 April 2022 | Perbaikan Alat | |
| 3. | 12 Mai 2022 | Revisi Bab I | |
| 4. | 26 mai 2022 | Revisi Bab II | |
| 5. | 6 Juni 2022 | Revisi Bab III | |
| 6. | 13 Juni 2022 | Revisi Bab IV | |
| 7. | 11 Juli 2022 | Revisi Pengambilan data | |

| No. | Tanggal | Uraian Bimbingan | Tanda Tangan Pembimbing |
|---|---|---|---|
| 8. | 21 Juli 2022. | Diizinkan ikut ujian TA 2122 | |
| 9. | 4 agustus 2022 | Revisi Setelah Sidang | |
| 10. | 13 agustus 2022 | Konsultasi Setelah Sidang | |
| 11. | 18 agustus 2022 | Perbaikan Revisi | |
| 12. | 20 agustus 2022 | Revisi Penulisan | |
| 13. | 25 agustus 2022 | Revisi akhir | |
| 14. | 10 agustus 2022 | Acc Pembukuan | |

Palembang, 10 agustus 2022

Koordinator Program Studi
Sarjana Terapan
Teknik Telekomunikasi

( Lindawati,S.T.,M.TI)
NIP.197105282006042001

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139 Telp. 0711-353414
Laman: http://polsri.ac.id, Pos El : info@polsri.ac.id

# REKOMENDASI UJIAN TUGAS AKHIR (TA)

Pembimbing Tugas Akhir memberikan rekomendasi kepada,

| | | |
|---|---|---|
| Nama | : | Siwi Andriani |
| NIM | : | 061840351386 |
| Jurusan/Program Studi | : | Teknik Elektro / Teknik Telekomunikasi DIV |
| Judul Tugas Akhir | : | RANCANG BANGUN ALAT PENAMPI DAN PENIMBANG BERAS OTOMATIS BERBASIS IOT (INTERNET OF THINGS) |

Mahasiswa tersebut telah memenuhi persyaratan dan dapat mengikuti Ujian Tugas Akhir (TA) pada Tahun Akademik 2021/2022

Palembang, 21 Juli 2022

Pembimbing I,

Ir.Abdul Rakhman, M.T.
NIP 196006241990031002

Pembimbing II,

Ir.Suroso, M.T.
NIP 196207191993031003

No. Dok. : F-PBM-23

Tgl. Berlaku : 13 Desember 2021 No. Rev. : 00

**KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI**
**DIREKTORAT PENDIDIKAN TINGGI VOKASI**
**POLITEKNIK NEGERI SRIWIJAYA**
**Jalan Srijaya Negara, Palembang 30139**
Telp. 0711-353414 fax. 0711-355918
**Website : www.polsriwijaya.ac.id Email : info@polsri.ac.id**

# PELAKSANAAN REVISI TUGAS AKHIR

Mahasiswa berikut,

| | | |
|---|---|---|
| Nama | : | Siwi Andriani |
| NIM | : | 061840351386 |
| Jurusan/Program Studi | : | Teknik Elektro / Sarjana Terapan Teknik Telekomunikasi |
| Judul Laporan Akhir | : | Rancang Bangun Alat Penampi dan Penimbang Otomatis Berbasis IoT |

Telah melaksanakan revisi terhadap Laporan Akhir yang diujikan pada hari Kamis, 04 Agustus 2022 Pelaksanaan revisi terhadap Laporan Akhir tersebut telah disetujui oleh Dosen Penguji yang memberikan revisi:

| No. | Komentar | Nama Dosen Penguji *) | Tanggal | Tanda Tangan |
|---|---|---|---|---|
| 1. | ACC | **Ir. Suroso, M.T.**<br>**NIP. 196207191993031003** | 1/09-22 | |
| 2. | ACC, sdh diperbaiki | **Hj. Sarjana, S.T., M.Kom**<br>**NIP. 196911061995032001** | 15/8-'22 | |
| 3. | ACC | **Sholihin, S.T., M.T**<br>**NIP. 197404252001121001** | 10/8-22 | |
| 4. | ACC | **Mohammad Fadhli, S.Pd., M.T**<br>**NIP.199004032018031001** | 9/8-22 | |

Palembang, 31 Agustus 2022
Ketua Penguji **),

**Ir. Suroso, M.T.**
**NIP. 196207191993031003**

**Catatan:**
*) Dosen penguji yang memberikan revisi saat ujian laporan akhir.
**) Dosen penguji yang ditugaskan sebagai Ketua Penguji saat ujian LA.
Lembaran pelaksanaan revisi ini harus dilampirkan dalam Laporan Akhir.

JURNAL ECOTIPE
Electronic, Control, Telecommunication, Information, and Power Engineering
ISSN 2356-0088
e-ISSN 2622-4852
Accredited by Kemdikbudristek RI
Decree No.158/E/KPT/2021
(Rank 3 SINTA 4)

Address : Dept. of Electrical Engineering - Faculty of Engineering UBB (Kampus Terpadu UBB, Balunijuk, Kab. Bangka, Prov. Kep. Bangka Belitung)
Phone: (0717) 4260033 ext. 2125, 2128 Website: https://journal.ubb.ac.id/index.php/ecotipe Email: jurnal.ecotipe@yahoo.com / jurnalecotipe@ubb.ac.id

Article ID : 3147-JE-22

19 July 2022

# Letter of Acceptance

Dear Author(s)

Based on the results of the reviewer evaluation and the coordination meeting of the editorial board of the Jurnal Ecotipe, your article entitled:

***Design and Build Automatic Rice Winning and Weighting Equipment IoT (Internet of Things) Based***

Written by : **Siwi Andriani*, Abdul Rakhman, Suroso**
Affiliation : *Dept. of Electrical Engineering, Sriwijaya State Polytechnic
Coresponden email : siwiandriani01@gmail.com

has been accepted and will be processed for publication in the **Jurnal Ecotipe** (*Electronic, Control, Telecommunication, Information, and Power Engineering*) **Volume 9 Issue 2, October 2022**. Articles with the above title may not be published in other journals. If in the future, an article with the same title above is known to have been published and plagiarism was found in another journal, then Jurnal Ecotipe is not responsible and is entirely the responsibility of the author. Your article will be published online no later than November 2022.

Thank you for choosing and submitting your article to the Jurnal Ecotipe. We look forward to submitting your other articles in our journal.

Kindly Regards,

Rudy Kurniawan
Editor-in-Chief

JURNAL ECOTIPE
Volume 9, Issue 2, October 2022, PP xx-xx
ISSN 2355-5068 : e-ISSN 2622-4352
DOI: 10.33019/jurnalecotipe.v9i2.xxxx



# Design and Build Automatic Rice Winning and Weighing Equipment IoT (Internet of Things) based

Siwi Andriani[1], Ir.Abdul Rakhman[2], Ir.Suroso[3]
[1,2,3]Politeknik Negeri Sriwijaya, Jl. Srijaya Negara, Bukit Lama, Kec. Ilir Bar. I, Palembang City, 30137, Indonesia

ARTICLE INFO

**Article historys:**

Received : .../.../...
Revised : .../.../...
Accepted : .../.../...

**Keywords:**

Iot, Load Cell, Node Mcu, Fan, Arduino uno

**ABSTRACT**

Technological developments are growing rapidly without exception in the agricultural sector. Food needs are increasing every year in Indonesia, rice is a staple food for most Indonesian people before being distributed, it is necessary to process rice including cleaning and weighing so that it can reach the hands of buyers. This research was conducted using the R&D (Research And Development) method with a prototype development model. development procedures include the stages of needs analysis, system design and design, prototyping, testing and validation. The design of this rice winnowing and weighing device uses the telegram application, arduino ide which is connected to the internet as software and hardware NodeMcu ESP 8266, Arduino uno as a controller, hx711 load cell sensor as a weighing sensor, power supply as a power supplier, relay module, LCD 16 x 20, buzzer, MG996 servo motor, and AC fan that can be controlled remotely using IoT (Internet of Things).



**Corresponding Author:**

Siwi Andriani
Jalan muhajirin iv gang keluarga, Palembang, 30137, Indonesia
Email: siwiandriani01@gmail.com

## 1. INTRODUCTION

The development of telecommunications and information technology in Indonesia is growing rapidly, one of which is in the field of the Internet of Things (IOT). A scenario that is used on objects so that data and information can be sent using a network with no human intervention used today in the world 4.0. remotely called the Internet of Things (IOT) [1]. Internet of Things (IoT) is something that certainly exists in every field without exception in agriculture. The growing population in the world so that from year to year which will certainly have an impact on increasing the need for food is getting bigger which makes the agricultural system have to be better than before [5]. Increasing agricultural production currently has many obstacles, namely in agricultural production, modern technology agriculture, agricultural drones, animal monitoring, and modern greenhouses. The application of Internet of Things technology is a breakthrough that can make agricultural production more effective, sustainable and accelerate the process in helping jobs. farmers [3].

The increasing development of Internet of Things (IOT) technology today has made many changes to the agricultural system in this era [6]. The emergence of new technologies can be used by farmers to increase food production. Developed countries are currently easier to adopt technology than developing countries [7]. In developing countries such as Indonesia, farmers still use traditional and conventional methods compared to advanced technology, one of these things happens because farmers do not understand how to access the latest technology, inadequate knowledge , costs, and uncertainty about the effectiveness of the new technology [2].

JURNAL ECOTIPE
Volume 9 Issue 2 October 2022 PP 88-88
ISSN 2355-5068 e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe.v9i2.8888


To overcome this problem the Internet of Things (IOT) can be applied so as to help the performance of farmers in maximizing food production in Indonesia, one of which is a rice winnowing tool. The use of winnowing and rice weighing tools is still conventional, farmers in Indonesia still use winnowing tools in the form of winnowing tools made of bamboo so that it takes a lot of time and energy [8]. The weighing equipment used by farmers is also an ordinary weighing tool so that after the winnowing process is complete, the farmer must manually weigh the rice again [4].

Over vertime these tools can be modified so that their use is more effective. Winnowing and weighing rice tools are made to maximize the performance of farmers, with the concept of a tool that can clean and weigh rice simultaneously using one tool then the rice that has been cleaned and weighed will be directly recorded in a telegram application [9]. this can help three jobs, namely cleaning, weighing, and recording the results of the rice. This will certainly be very effective and efficient in helping the performance of farmers in Indonesia[10].

## 2. RESEARCH METHOD

### 2.1. Device Design

In this study, a device design was made based on the needs that exist in the winnowing and automatic weighing device. The research framework is as follows.

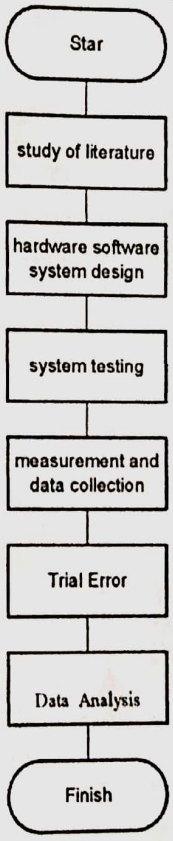



**Figure 1.** Research Framework Flowchart

Figure 1. Describes the Flowchart. The research framework starts from literature study, hardware and software system design, system testing, trial error and when the tool has been completed it will be analyzed.

JURNAL ECTIPE Electric Control Telecommunication Information and Power Engineering
Volume 9, Issue 2, October 2022, PP xx-xx
ISSN 2355-5068 ; e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe.v9i2.xxxx

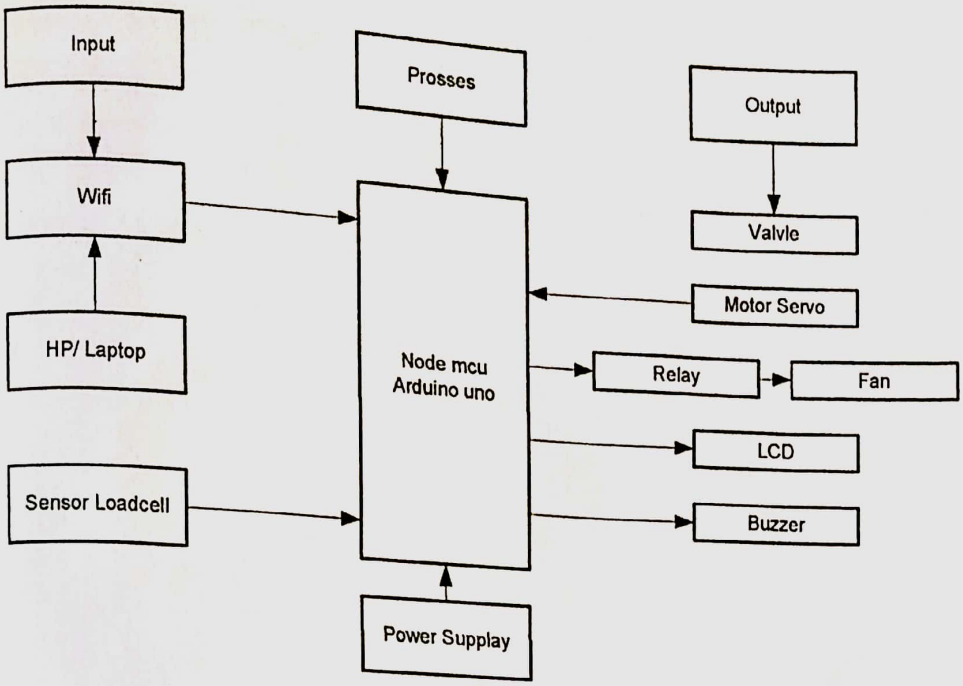




Figure 2. Block Diagram of Hardware (Hardware)

In figure 2. The process is carried out by the mcu and arduino uno nodes that communicate serially and function as a microcontroller, the power flow is obtained by the power supply. The output is obtained from the servo motor which functions to move the valve, the relay functions to control the flow of electricity, the LCD serves to display the results, and the bazzer functions as an alarm signal that the process has been completed. Furthermore, the input is in the form of wifi or hotspot and the loadcell sensor is used as a weight sensor.

## 2.2. How Automatic Winning and Weighing Tools Work.

The orkings of this automatic winnowing and weighing device is that when the rice enters the reservoir, it starts controlling the tool using a telegram to turn it on then press /star then a notification will appear on how to use it starting from speed 1 for low speed, speed 2 for medium speed and speed speed 3 for high speed, then a notification in the form of the weight of rice that you want to process starting from 1kg to 5 kg then if it is appropriate then the valve will open, rice will be winnowed using a fan, dirt will fly to the side, while clean rice will fall into the loadcell sensor if the weight has reached then the valve will be automatically closed, the fan will turn off and an alarm will sound indicating the process has been completed, then a notification will appear on the tool's LCD and a telegram in the form of weighing completed.

JURNAL ECTIPE Electric Control Telecommunication Information and Power Engineering
Volume 9, Issue 2, October 2022, pp. xx-xx
ISSN 2355-5068 , e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe.v9i2.xxxx


## 3. RESULTS AND DISCUSSION

### 3.1. RESULTS

The design of automatic winnowing and weighing tools based on IoT (internet of think) is the design of tools that can be controlled using telegram. The appearance of the tool is as follows.

1. Display of Automatic Winning and Weighing Machine.

**Figure 6.** Automatic Winnowing and Weighing Display.

In figure 6 This is display of the automatic winnowing and weighing machine, the machine has a height of 130 cm and a width of 60 cm with the function of cleaning and weighing rice simultaneously.

**Figure 7.** Display in Automatic Winning and Weighing.

In Figure 8. There is a series of automatic winnowing and weighing machines, the circuit consists of various components that are arranged in order to run the machine properly.

JURNAL ECOTIPE Electric, Control, Telecommunication, Information, and Power Engineering
Volume 9, Issue 2, October 2022, PP. XX-XX
ISSN 2355-5068 ; e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe.v9i2.xxxx


**Figure 8.** Display of Automatic Winning and Weighing Circuit.

In Figure 8. There is a series of automatic winnowing and weighing machines, the circuit consists of various components that are arranged in order to run the machine properly.

2. Automatic winnowing and weighing device control application.

The application used to control this automatic winnowing and weighing device is a telegram application that will send notifications in the form of messages.

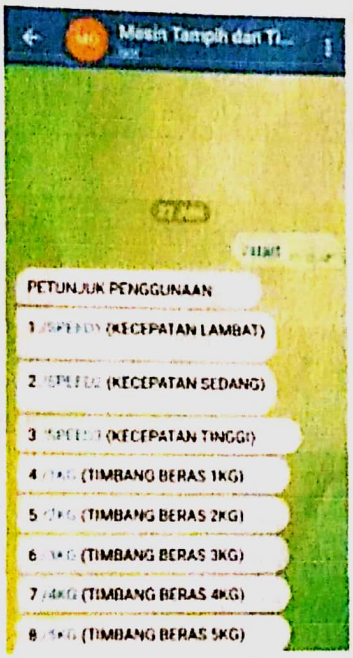



**Figure 9.** Initial Appearance of Telegram.

In Figure 9. Contains the initial display of the Telegram application, if you want to start then type /star then automatically a message notification will be sent in the form of usage instructions.

JURNAL ECOTIPE Electrical, Electronic, Telecommunication, Information and Power Engineering
Volume 9, Issue 2, October 2022, pp. xx-xx
ISSN 2355-5068 | e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe v9i2 xxxx



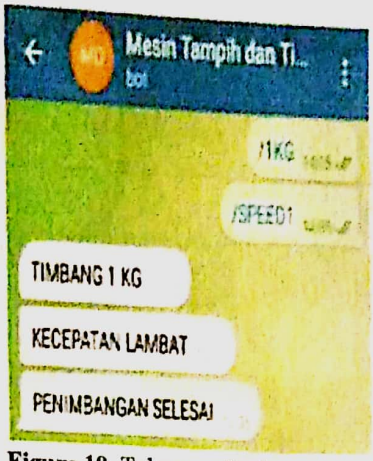
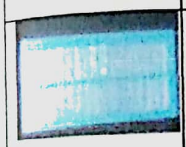
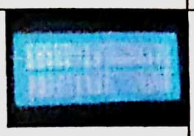
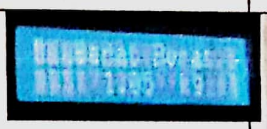
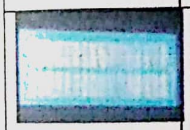



**Figure 10.** Telegram display at work.

In figure 10. Contains the display of the telegram application while working if you want to start then type the desired weight for example /1 kg and select a speed for example /speed 1 then a notification message will automatically be sent in the form of weighing 1 kg, slow speed and when finished a notification will come out weighing is complete.

### 3.2. Test

**Table 1. Test results**

| Heavy | Speed | Tool results | Digital scales | Before cleaning | After cleaning |
|---|---|---|---|---|---|
|  1 kg |  Speed 1 |  1050 g |  1042 g |  |  |
|  2 kg |  Speed 3 |  2060g |  2055g |  |  |

Volume 9, Issue 2, October 2022, PP. xx-xx
ISSN 2355-5068 ; e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe.v9i2.xxxx



In table 1. There are trials using 3 speeds, namely speed 1 low speed, speed 2 medium speed, and speed 3 high speed. The weighing process is carried out for 5 weights, namely 1 kg, 2 kg, 3 kg, 4 kg and 5 kg, this can be seen in the picture above.

### 3.3. Bibliography and citation in text

In the research, automatic rice winnowing and weighing tools were measured and tested using rice weighing 1 kg, 2 kg, 3 kg, 4 kg and 5 kg. The rice winnowing process uses an AC fan where the dirt will fly to the side while the clean rice will fall under the loadcell sensor. As for sending data, the data sent is in the form of weight data that is obtained from the weight sensor or loadcell and can be seen on the lcd hardware and can also be controlled on the telegram application. During the measurements and tests carried out, it can be seen that the condition of the rice is dirty and the weight of the rice has not been weighed when it enters the top of the funnel. Measurement of weight is divided into 3 times, namely using speed or speed 1 means low speed, speed 2 means medium speed and speed 3 means high speed.

Sensor measurements using speed 1 or low speed results obtained on average have a tolerance of 50g while the results from digital scales get an average difference of 46.8g, meaning that the tolerance for a weight of 50g is about 5%, the accuracy obtained is around 95%. Sensor measurements using speed 2 or medium speed results obtained on average have a tolerance of 60g while the results from digital scales get an average difference of 50.8g, meaning that the tolerance for a weight of 50-60g is

JURNAL ECOTIPE Electronics, Information, and Power Engineering
Volume 9, Issue 2, October 2022, pp. xx-xx
ISSN 2355-5068 : e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe.v9i2.xxxx


about 5% accuracy, which is around 94%. Sensor measurements using speed 3 or high speed results obtained on average have a tolerance of 60g while the results from digital scales get an average difference of 60g, meaning that the tolerance for a weight of 50-100g is about 5%, the accuracy obtained is around 94%.

At the time of measurement, it can be analyzed that the accuracy of the loadcell sensor is not good, this is due to the small diameter of the sensor so that the rice that falls on the right side will weigh differently if it falls to the left side, therefore modifications are needed for the heavy sensor by making a buffer using plywood in the form of round to the top and bottom. The fan and valve controlled by the servo motor can be turned on as needed. In this study the fan and valve will turn on and off automatically. The fan will be controlled with 3 speeds, low, medium and high. While the valve controlled by the servo motor previously had problems because the servo motor could not pull the valve properly, this caused too much excess weight, therefore modification of the valve using acrylic was shaped in such a way that it could open and close automatically.

Data transmission is carried out serially from the Arduino Uno to the MCU node which can then be controlled using the Telegram application as desired. The results of the rice for speed 1, namely rice, can be said to be not very clean because the wind obtained is not strong, for speed 2 the rice is clean because the wind is moderate, and for speed 3 the rice is clean, but some grains of rice fly to the dirt catchment, this is because the wind is too strong. The results of the rice tray are quite good, the dirt in the form of powder goes to the left side, there are several grains of rice that fly and enter the dirt place, this happens because the mass is small and the fan at speed 3 is too tight.

## 4. CONCLUSION

Based on the results of the design, measurements and system testing that have been carried out, it can be concluded that the sensor output data is created using the Arduino Ide application then the data will be sent to the MCU node to Telegram in the form of message notifications. Furthermore, the loadcell sensor measurement data that has been processed is displayed in the form of numbers and writing on the LCD of the automatic winnowing and weighing machine. From the test results, the sensitivity of the loadcell sensor can run well, but the accuracy is 95% this is because when the valve is closed, the remaining rice that falls first enters the scale reservoir. The use of the IoT application in the form of telegram can only be accessed locally and the speed of the device responding varies depending on the connection speed used.

JURNAL ECOTIPE Electric, Control, Telecommunication, Information, and Power Engineering
Volume 9, Issue 2, October 2022, pp. xx-xx
ISSN 2355-5068 ; e-ISSN 2622-4852
DOI: 10.33019/jurnalecotipe.v9i2.xxxx


## REFERENCES

[1] A. Sutrisno and J. Sutopo, "Arduino Uno-Based Automatic Rice Cleaning Tool," 2019, [Online]. Available: http://eprints.uty.ac.id/2588/%0Ahttp://eprints.uty.ac.id/2588/1/publikasi adip.pdf.

[2] A. N. Aliyanto, M. Saleh, and A. Hartoyo, "Design of a Digital Scale System Based on Arduino Mega 2560."

[3] A. I. Sourav, "IOT-Based Intelligent System Architecture Design in Precision Agriculture in Bangladesh," 2020, [Online]. Available: http://e-journal.uajy.ac.id/23468/%0Ahttp://e-journal.uajy.ac.id/23468/1/1953030601.pdf.

[4] A. Sutrisno and J. Sutopo, "Arduino Uno-Based Automatic Rice Cleaning Tool," 2019, [Online]. Available: http://eprints.uty.ac.id/2588/%0Ahttp://eprints.uty.ac.id/2588/1/publikasi adip.pdf.

[5] A. N. Aliyanto, M. Saleh, and A. Hartoyo, "Design of a Digital Scale System Based on Arduino Mega 2560."

[6] A. I. Sourav, "IOT-Based Intelligent System Architecture Design in Precision Agriculture in Bangladesh," 2020, [Online]. Available: http://e-journal.uajy.ac.id/23468/%0Ahttp://e-journal.uajy.ac.id/23468/1/1953030601.pdf.

[7] Y. Yudhanto, "What is I O T (I n t e r n e t Of T h i n g s)?," Computing Science., pp. 1–7, 2007, [Online]. Available: https://ilmucomputer.org/wp-content/uploads/2015/05/apa-itu-iot-internet-of-things.pdf.

[8] A. Junaidi, "Internet of Things, History, Technology and Its Application: Review," J. Ilm. Technol. Inf., vol. IV, no. 3, pp. 62–66, 2015.

[9] Ginanjar Wiro Sasmito, "The Study of Introducing the Internet of Things for Teachers and Students of Bina Nusa Slawi Vocational High School as Insight into One of the Characteristics of the Industrial Revolution 4.0," Din. J. Servant. to Masy., vol. 4, no. 1, 2020, doi:10.31849/dinamisia.v4i1.3692.

[10] L. Da Whitmore, A., Agarwal, A., Xu, "The Internet of Things—A survey of topics and trends," p. Inf Syst Front. 17:21–274, 2015.