

The background of the page is a repeating pattern of the Universitas 17 Agustus 1945 Surabaya logo. The logo is a blue pentagon containing a shield with a book, a lamp, and a gear, with the text 'UNIVERSITAS 17 AGUSTUS 1945 SURABAYA' around it.

LAMPIRAN

LAMPIRAN

Lampiran 1

Coding Arduino IDE

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd (0x27,16,2);
#include <HX711_ADC.h>
#include "Adafruit_Thermal.h"
#include "SoftwareSerial.h"
SoftwareSerial mySerial(14, 15);
Adafruit_Thermal printer(&mySerial);
const int echoPinE = 13;
const int trigPinE = 12;
const int echoPinD = 11;
const int trigPinD = 10;
const int echoPinC = 9;
const int trigPinC = 8;
const int echoPinB = 7;
const int trigPinB = 6;
const int echoPinA = 5;
const int trigPinA = 4;
const int tombol = 22;
const int HX711_dout = 2;
```

```
const int HX711_sck = 3;
HX711_ADC LoadCell(HX711_dout, HX711_sck);
int kg;
long jarak;

long durationE;
long durationD;
long durationC;
long durationB;
long durationA;
int distanceE;
int distanceD;
int distanceC;
int distanceB;
int distanceA;
long panjang, lebar, tinggi, volume;

void setup() {
  Serial.begin(9600);
  LoadCell.begin();
  LoadCell.start(2000);
  LoadCell.setCalFactor(20.65);
  pinMode(trigPinE, OUTPUT);
  pinMode(echoPinE, INPUT);
  pinMode(trigPinD, OUTPUT);
  pinMode(echoPinD, INPUT);
  pinMode(trigPinC, OUTPUT);
```

```
pinMode(echoPinC, INPUT);
pinMode(trigPinB, OUTPUT);
pinMode(echoPinB, INPUT);
pinMode(trigPinA, OUTPUT);
pinMode(echoPinA, INPUT);
pinMode(tombol, INPUT_PULLUP);
Serial.begin(9600);
lcd.init();
lcd.backlight();
mySerial.begin(9600);
printer.begin();
}
```

```
void loop() {
digitalWrite(trigPinE, LOW);
delayMicroseconds(2);
digitalWrite(trigPinE, HIGH);
delayMicroseconds(10);
digitalWrite(trigPinE, LOW);
durationE = pulseIn(echoPinE, HIGH);
digitalWrite(trigPinD, LOW);
delayMicroseconds(2);
digitalWrite(trigPinD, HIGH);
delayMicroseconds(10);
digitalWrite(trigPinD, LOW);
durationD = pulseIn(echoPinD, HIGH);
```

```
digitalWrite(trigPinC, LOW);
delayMicroseconds(2);
digitalWrite(trigPinC, HIGH);
delayMicroseconds(10);
digitalWrite(trigPinC, LOW);
durationC = pulseIn(echoPinC, HIGH);
digitalWrite(trigPinB, LOW);
delayMicroseconds(2);
digitalWrite(trigPinB, HIGH);
delayMicroseconds(10);
digitalWrite(trigPinB, LOW);
durationB = pulseIn(echoPinB, HIGH);
digitalWrite(trigPinA, LOW);
delayMicroseconds(2);
digitalWrite(trigPinA, HIGH);
delayMicroseconds(10);
digitalWrite(trigPinA, LOW);
durationA = pulseIn(echoPinA, HIGH);
```

```
LoadCell.update();
long i = LoadCell.getData();
if(i<0){i=0;}
kg = i/1000;
Serial.print("Gram ::");
Serial.println(i);
delay(100);
```

```
distanceE = (durationE - 57.4)/56.1;
distanceD = (durationD - 18.2)/55.5;
distanceC = (durationC - 32.2)/56.7;
distanceB = (durationB - 26.7)/58.6;
distanceA = (durationA - 34.8)/55.7;
```

```
panjang = 107 - (distanceA+distanceB);
lebar = 106-(distanceC+distanceD);
tinggi = 110-distanceE;
volume = panjang*lebar*tinggi;
```

```
if ( kg >100){
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("beban melebihi");
    lcd.setCursor(0,1);
    lcd.print("kapasitas");
} else {
    lcd.setCursor(0,0);
    lcd.print("P=");
    lcd.setCursor(2,0);
    lcd.print(panjang);
    lcd.setCursor(4,0);
    lcd.print("cm");

    lcd.setCursor(7,0);
    lcd.print("L=");
```

```
lcd.setCursor(9,0);  
lcd.print(lebar);  
lcd.setCursor(11,0);  
lcd.print("cm");
```

```
lcd.setCursor(0,1);  
lcd.print("T=");  
lcd.setCursor(2,1);  
lcd.print(tinggi);  
lcd.setCursor(4,1);  
lcd.print("cm");
```

```
lcd.setCursor(7,1);  
lcd.print("B=");  
lcd.setCursor(10,1);  
lcd.print(kg);  
lcd.setCursor(14,1);  
lcd.print("kg");  
}
```

```
Serial.print( "jarakE : ");  
Serial.println(distanceE);  
Serial.print( "jarakD : ");  
Serial.println(distanceD);  
Serial.print( "jarakC : ");  
Serial.println(distanceC);
```

```

Serial.print( "jarakB : ");
Serial.println(distanceB);
Serial.print( "jarakA : ");
Serial.println(distanceA);
int sensorValue = digitalRead(tombol);
if (sensorValue == LOW ){
  printer.begin();
  printer.wake();
  printer.justify('C');
  printer.setSize('S');
  printer.println("Rancang Bangun Alat pengukur Berat dan Volume Paket berbasis
Arduino\n");
  printer.setSize('L');
  printer.print("panjang :");
  printer.print(panjang);
  printer.println(" cm\n");
  printer.setSize('L');
  printer.print("Lebar :");
  printer.print(lebar);
  printer.println(" cm\n");
  printer.setSize('L');
  printer.print("tinggi :");
  printer.print(tinggi);
  printer.println(" cm\n");
  printer.setSize('L');
  printer.print("Berat :");
  printer.print(kg);

```



```
printer.println(" kg\n");
printer.setSize('L');
printer.print("Volume :");
printer.print(volume);
printer.println(" m3\n\n");
printer.sleep();
delay(3000L);
printer.wake();
printer.setDefault();
} else {
  printer.sleep();
}
}
```

Lampiran 2

Foto Dokumentasi Pembuatan Alat

- a. Pemotongan besi untuk pembuatan frame



- b. Pembuatan Frame dudukan sensor loadcell



c. Frame timbangan setelah di pasang loadcell



d. Pemasangan Papan timbangan dengan Frame



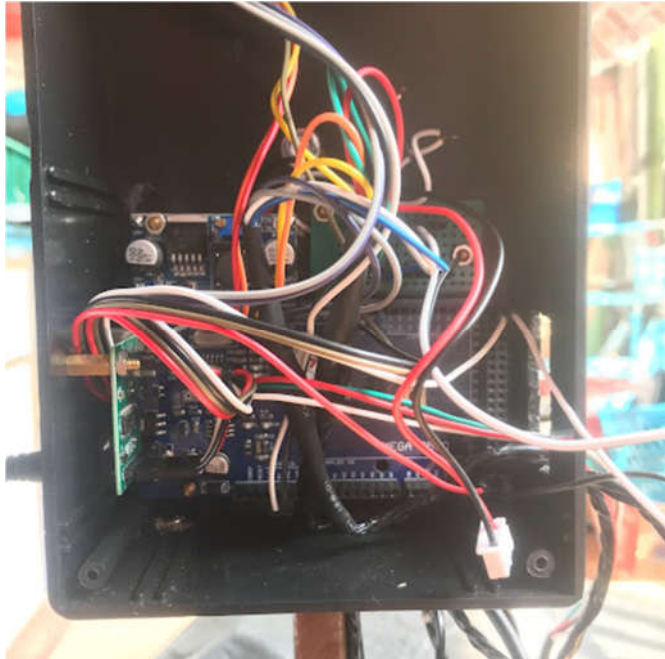
e. Instalasi Sensor Ultrasonik



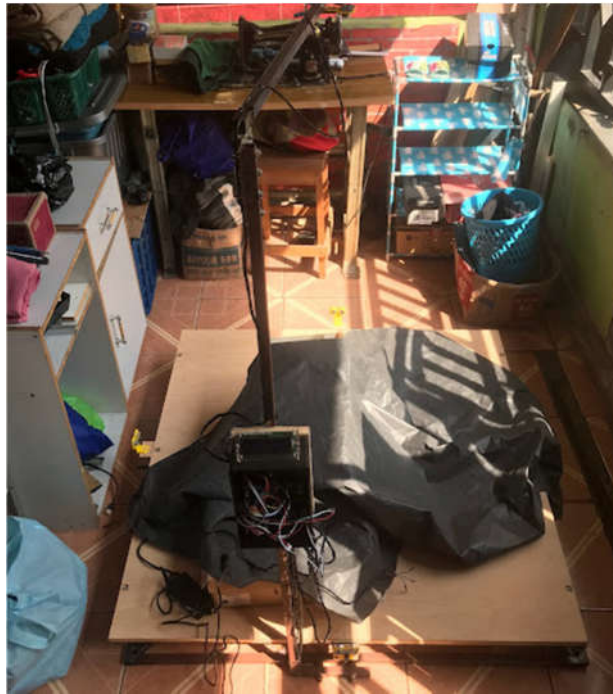
f. Pemasangan Tiang adjuster untuk sensor tinggi paket



g. Pemasangan Modul



h. Instalasi Kabel & modul



i. Pembuatan Coding

```
File Edit Sketch Tools Help
Coding_tugas_akhir_REV | Arduino 1.8.19

Coding_tugas_akhir_REV
#include <Wire.h>
#include <liquidcrystal_I2C.h>
LiquidCrystal_I2C lcd (0x27,16,2);
#include <DHT11.h>
#include "Adafruit_Thermal.h"
#include "SoftwareSerial.h"
SoftwareSerial mySerial(14, 15);
Adafruit_ThermalPrinter mySerial;
const int echoPinE = 13;
const int trigPinE = 12;
const int echoPinD = 11;
const int trigPinD = 10;
const int echoPinC = 9;
const int trigPinC = 8;
const int echoPinB = 7;
const int trigPinB = 6;
const int echoPinA = 5;
const int trigPinA = 4;
const int tombol = 22;
const int HX711_dout = 2;
const int HX711_sck = 3;
HX711_ADC LoadCell(HX711_dout, HX711_sck);
int kg;
long jarak;

long durationE;
long durationD;
long durationC;
long durationB;
long durationA;

Error downloading http://www.github.com/arduino/arduino-1.8.19/packages/package_index.tar.gz
Error downloading http://downloads.arduino.cc/packages/package_index.tar.gz

Arduino Mega or Mega 2560, ATmega2560 (Mega 2560) on COM7
```

j. Hasil pembuatan Alat



Lampiran 3

Foto Dokumentasi Percobaan Pengukuran



