LAMPIRAN

A. Hasil Perhitungan Modul Tugas Akhir Pada Kursi Roda

1. Perhitungan Rata-Rata Jarak Tempuh 10meter

$$\text{Rata} - \text{Rata} = \frac{Jumlah\ nilai\ data}{Banyak\ data}$$

$$= \frac{15,28+15,57+15,44+15,34+15,44+15,50+16,34+15,59+16,24}{9} = 15,63\ \text{detik}$$

2. Perhitungan Kelajuan Kursi Roda Elektrik

$$\text{Kelajuan 50kg} = \frac{10\ \text{meter}}{15,43\ \text{detik}} = 0,64\ meter/detik$$

$$\text{Kelajuan 55kg} = \frac{10\ \text{meter}}{15,42\ \text{detik}} = 0,64\ meter/detik$$

$$\text{Kelajuan 60kg} = \frac{10\ \text{meter}}{16,05\ \text{detik}} = 0,62\ meter/detik$$

$$\text{Kelajuan rata} - \text{rata} = \frac{10\ \text{meter}}{15,63\ \text{detik}} = 0,64\ meter/detik$$

3. Perhitungan Akurasi dan *Error* Perintah Eksekusi *Accelerometer*

$$\text{Persentase Akurasi (\%): } \left(\frac{jumlah\ percobaan-hasil\ kegagalan}{jumlah\ percobaan}\right) \text{ x } 100\%$$

   a. Perintah Maju $= \frac{25-3}{25}$ x $100\% = 88\%$

   b. Perintah Kanan $= \frac{25-4}{25}$ x $100\% = 84\%$

   c. Perintah Kiri $= \frac{25-3}{25}$ x $100\% = 88\%$

   d. Perintah Mundur $= \frac{25-2}{25}$ x $100\% = 92\%$

B. Program Arduino

```
const int joy = 12;
const int acc = 13;
#define joyX A0
#define joyY A1
#define xpin A3
#define ypin A2
#define b_safety A4
const int
trigPin1=2,echoPin1=3,ledP
in1=7,bypass=6;
const int DWN=11, UP=10,
LEFT=9, RT =8;
int durasi1, jarak1;
int xValue,yValue;
long x, y;
int  aktifacc=0,
aktifjoy=0,aktifbp,aktifsf
;
boolean safety=true;
void setup() {
Serial.begin(9600);
pinMode(joy,INPUT_PULLUP);
pinMode(acc,INPUT_PULLUP);
pinMode (bypass,
INPUT_PULLUP);
pinMode (b_safety,
INPUT_PULLUP);

pinMode(trigPin1,OUTPUT);
pinMode(echoPin1,INPUT);
pinMode(ledPin1, OUTPUT);

pinMode(DWN, OUTPUT);
pinMode(UP, OUTPUT);
pinMode(LEFT, OUTPUT);
pinMode(RT, OUTPUT);}
```

```
 void loop() {
 aktifacc=digitalRead(acc);
 aktifjoy=digitalRead(joy);
aktifbp=digitalRead(bypass)
;
aktifsf=digitalRead(b_safet
y);

if (safety == true){
if (aktifjoy == LOW){
perintahjoy();
ultrasoundsatu();}
else if (aktifacc == LOW){
perintahacc();
ultrasoundsatu();}
if (aktifbp==LOW){
digitalWrite (ledPin1,LOW);
digitalWrite
(echoPin1,LOW);}
else if (jarak1 <=100){
digitalWrite (ledPin1,
HIGH);
stop_();
delay(2000);}
else {digitalWrite
(ledPin1, LOW);}
delay(50);}
if (aktifsf==LOW){
safety=false;}}

void perintahacc()
{
x = analogRead(xpin);
y = analogRead(ypin);

if (x<=320){
backward();}
else if (x>=370){
maju();}
```

```
else if (y<=310){                        void maju(){
left();}                                   Serial.println("");
else if (y>350){                           Serial.println("MAJU");
right();}                                  digitalWrite(UP,LOW);
else                                       digitalWrite(DWN,LOW);
{stop_();}                                 digitalWrite(LEFT,HIGH);
delay(100);}                               digitalWrite(RT,HIGH);}


void perintahjoy() {
xValue = analogRead(joyX);
yValue = analogRead(joyY);               void backward(){
                                           Serial.println("");
if (xValue>=400 &&                         Serial.println("MUNDUR");
xValue<=600 && yValue<=10){                digitalWrite(UP,HIGH);
left();}                                    digitalWrite(DWN,HIGH);
else if (xValue<=10 &&                     digitalWrite(LEFT,LOW);
yValue>=400 &&                             digitalWrite(RT,LOW);}
yValue<=600){
backward();}
else if (xValue>=400 &&                  void left(){
xValue<=600 &&                             Serial.println("");
yValue>=700){                              Serial.println("KIRI");
right();}                                  digitalWrite(UP,LOW);
else if (xValue>=700 &&                    digitalWrite(DWN,LOW);
yValue>=400 &&                             digitalWrite(LEFT,HIGH);
yValue<=600){                              digitalWrite(RT,LOW);}
maju();}
else{stop_();}
delay(50);}                              void right(){
                                           Serial.println("");
void stop_(){                              Serial.println("KANAN");
  Serial.println("");                      digitalWrite(UP,LOW);
  Serial.println("STOP");                  digitalWrite(DWN,LOW);
  digitalWrite(UP,LOW);                     digitalWrite(LEFT,LOW);
  digitalWrite(DWN,LOW);                    digitalWrite(RT,HIGH);}
  digitalWrite(LEFT,LOW);
  digitalWrite(RT,LOW);
  delay(100);}                           void ultrasoundsatu() {
                                         digitalWrite (trigPin1,
                                         HIGH);
                                         delayMicroseconds (10);
                                         digitalWrite (trigPin1,
                                         LOW);
```

```
durasi1 = pulseIn
(echoPin1, HIGH);
jarak1 = (durasi1 / 2) /
29.4;}
```