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DAFTAR LAMPIRAN
LAMPIRAN A
PROGRAM ARDUINO

1.   Program Dimmer

```
#include <RBDdimmer.h>//
#include <SoftwareSerial.h>
#define outputPin  7
#define zerocross  2 // for boards with CHANGEBLE input pins

#include <Wire.h>
#include <LiquidCrystal_I2C.h>

// Set the LCD address to 0x27 for a 16 chars and 2 line display
LiquidCrystal_I2C lcd(0x27, 16, 2);

SoftwareSerial mySerial(10, 11); // RX, TX

dimmerLamp dimmer(outputPin);


const int numReadings = 5;

int data1, data2, data3;
int countdata=0;
int rata2;

int readings[numReadings];     // the readings from the analog input
int readIndex = 0;          // the index of the current reading
int total = 0;            // the running total
int average = 0;           // the average



int outVal = 0;

char x[3];
int count=0;
```

```
int jumlah;


void setup() {
  // put your setup code here, to run once:
Serial.begin(9600);
mySerial.begin(9600);
Serial.print("run");
  lcd.begin();
  lcd.backlight();

lcd.setCursor(0,0);
lcd.print("MOTOR CONTROL");
delay(500);
dimmer.begin(NORMAL_MODE,    ON);   //dimmer    initialisation:
name.begin(MODE, STATE)
  // initialize all the readings to 0:
  for (int thisReading = 0; thisReading < numReadings; thisReading++) {
   readings[thisReading] = 0;
  }

}

void printSpace(int val)
{
 if ((val / 100) == 0) Serial.print(" ");
 if ((val / 10) == 0) Serial.print(" ");
}

void loop() {
// put your main code here, to run repeatedly:

  int buf2;
  int preVal = outVal;

while(mySerial.available()){
 char data = mySerial.read();
 //Serial.println(data);
 if ((data !=13) && (data !=10))
```

```
   {
   x[count]=data;
   count++;
   }
   else if (data==13)
   {
    count=0;
    //Serial.println(x);
    int buf = atoi(x);

if (buf != 0)
{
    if (countdata==0)
    {
     data1 = buf;
     countdata=1;
    }
    else if (countdata==1)
    {
     data2 = buf;
     countdata=2;
    }
    else
    {
     data3 = buf;
     buf2 = (data1 + data2 + data3) / 3;

    //lcd.clear();
    }
}

   if (buf2 != 0)
     {
//------------------------------------------
   // subtract the last reading:
   total = total - readings[readIndex];
   // read from the sensor:
   readings[readIndex] = buf2;
   // add the reading to the total:
```

```
  total = total + readings[readIndex];
  // advance to the next position in the array:
  readIndex = readIndex + 1;

  // if we're at the end of the array...
  if (readIndex >= numReadings) {
    // ...wrap around to the beginning:
    readIndex = 0;
  }

  // calculate the average:
  average = total / numReadings;
  // send it to the computer as ASCII digits
//--------------------------------------------------


    outVal =average;
    if (outVal > 400)
    {
     dimmer.setPower((outVal * 100) / 600);
    }
    else
    {
     dimmer.setPower(0);
    }

  //Serial.print("Nilai=");
  //Serial.println(outVal);
  delay(20);


    }

 }
 delay(5);
}
if (preVal != outVal)
 {
//   dimmer.setPower((outVal * 100) / 600);
```

```
    delay(20);

    //Serial.print("lampValue -> ");
    printSpace(dimmer.getPower());
    //Serial.print(dimmer.getPower());
    //Serial.println("%");
    lcd.setCursor(0, 0);
    lcd.print("PWM= ");
    lcd.print(String(dimmer.getPower()));
    lcd.print("%        ");
    lcd.setCursor(10,0);
    if (dimmer.getPower() < 20)
    {
    lcd.print("TUTUP");
    }
    else if (dimmer.getPower() < 75)
    {
    lcd.print("KECIL");
    }
    else if (dimmer.getPower() < 80)
    {
    lcd.print("SEDANG");
    }
    else
    {
    lcd.print("BESAR");
    }
    lcd.setCursor(0, 1);
    lcd.print(outVal);
    lcd.print(" L/Jam   ");
    delay(50);
  }
}
```

2.   Program Sensor *Water Flow*
Program Sensor *Water Flow*
```
#include <SoftwareSerial.h>

const int numReadings = 5;
```

```
int readings[numReadings];      // the readings from the analog *input*
int readIndex = 0;              // the index of the current reading
int total = 0;              // the running total
int average = 0;               // the average



SoftwareSerial mySerial(10, 11); // RX, TX

volatile int pulsa_sensor;
unsigned int literPerjam;
unsigned char pinFlowsensor = 2;
unsigned long waktuAktual;
unsigned long waktuLoop;
double liter;
int i;

void cacahPulsa()
{
 pulsa_sensor++;
}

void setup()
{
 Serial.begin(9600);
 mySerial.begin(9600);

 pinMode(pinFlowsensor, INPUT);
 digitalWrite(pinFlowsensor, HIGH);
 Serial.begin(9600);
 attachInterrupt(0, cacahPulsa, RISING);
 sei();
 waktuAktual = millis();
 waktuLoop = waktuAktual;
 for (i=0;i<15;i++)
 {
    mySerial.println(600);
    Serial.println(600);
```

```
    delay(50);
  }

for (int thisReading = 0; thisReading < numReadings; thisReading++) {
  readings[thisReading] = 0;
  }

}

void loop()
{
  waktuAktual = millis();
  if(waktuAktual >= (waktuLoop + 1000))
  {
   waktuLoop = waktuAktual;
   literPerjam = (pulsa_sensor*60/7.5);
   pulsa_sensor = 0;

//------------------------------------------
    // subtract the last reading:
  total = total - readings[readIndex];
  // read from the sensor:
  readings[readIndex] = literPerjam;
  // add the reading to the total:
  total = total + readings[readIndex];
  // advance to the next position in the array:
  readIndex = readIndex + 1;

  // if we're at the end of the array...
  if (readIndex >= numReadings) {
   // ...wrap around to the beginning:
   readIndex = 0;
  }

  // calculate the average:
  average = total / numReadings;
  // send it to the computer as ASCII digits
//------------------------------------------
```

```
    mySerial.println(average, DEC);
    Serial.println(literPerjam, DEC);
  }
    delay(5);
}
```

Proses pengambilan data perbandingan Tachometer

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Penulis telah mengikuti sidang Tugas Akhir pada tanggal 24 Agustus 2022 sebagai salah satu persyaratan untuk memperoleh gelar Ahli Madya (A.Md).