Modul 11 : Pengenalan Komunikasi Data Processing

11.1 Tujuan

Mahasiswa mampu melakukan komunikasi data Processing dengan Arduino.

11.2 Alat & Bahan

1. Komputer/Laptop
2. Software Processing (download di processing.org)
3. Arduino yang telah deprogram komunikasi serial
4. Arduino IDE (download di https://www.arduino.cc/en/main/software)
5. Kabel Serial

11.3 Prosedur Praktikum

Langkah-langkah percobaan :

1. Pengiriman data dari arduino ke processing

   A. Processing

```
Serial myPort;  // Create object from Serial class
String val;     // Data received from the serial port // I know that
the first port in the serial list on my mac
// is Serial.list()[0].
// On Windows machines, this generally opens COM1.
// Open whatever port is the one you're using.
String portName = Serial.list()[0]; //change the 0 to a 1 or 2 etc. to
match your port
myPort = new Serial(this, portName, 9600);
background(204, 153, 0);
void draw()
{
  if ( myPort.available() > 0)
  {  // If data is available,
  val = myPort.readStringUntil('\n');         // read it and store it
in val
  }
println(val); //print it out in the console
}
```

   B. Arduino

```
void setup()
{
//initialize serial communications at a 9600 baud rate
Serial.begin(9600);
}
void loop()
{
//send 'Hello, world!' over the serial port
Serial.println("Hello, world!");
//wait 100 milliseconds so we don't drive ourselves crazy
```

```
delay(100);
}
```

2. Pengiriman data dari processing ke arduino

A. Processing

```
import processing.serial.*;

Serial myPort;  // Create object from Serial class

void setup()
{
  size(200,200); //make our canvas 200 x 200 pixels big
  String portName = Serial.list()[0]; //change the 0 to a 1 or 2 etc.
to match your port
  myPort = new Serial(this, portName, 9600);
}
void draw() {
  if (mousePressed == true)
  {                           //if we clicked in the window
   myPort.write('1');         //send a 1
   println("1");
  } else
  {                           //otherwise
  myPort.write('0');          //send a 0
  }
}
```

B. Arduino

```
char val; // Data received from the serial port
 int ledPin = 13; // Set the pin to digital I/O 13
void setup() {
   pinMode(ledPin, OUTPUT); // Set pin as OUTPUT
   Serial.begin(9600); // Start serial communication at 9600 bps
 }
void loop() {
   if (Serial.available())
   { // If data is available to read,
     val = Serial.read(); // read it and store it in val
   }
   if (val == '1')
   { // If 1 was received
     digitalWrite(ledPin, HIGH); // turn the LED on
   } else {
     digitalWrite(ledPin, LOW); // otherwise turn it off
   }
   delay(10); // Wait 10 milliseconds for next reading
}
```

3. Shaking hands data dari processing ke arduino

A. Processing

```
import processing.serial.*; //import the Serial library
 Serial myPort;  //the Serial port object
 String val;
// since we're doing serial handshaking,
```

```
// we need to check if we've heard from the microcontroller
boolean firstContact = false;
void setup() {
  size(200, 200); //make our canvas 200 x 200 pixels big
  //  initialize your serial port and set the baud rate to 9600
  myPort = new Serial(this, Serial.list()[4], 9600);
  myPort.bufferUntil('\n');
}
void draw() {
  //we can leave the draw method empty,
  //because all our programming happens in the serialEvent (see below)
}
```

B. Arduino

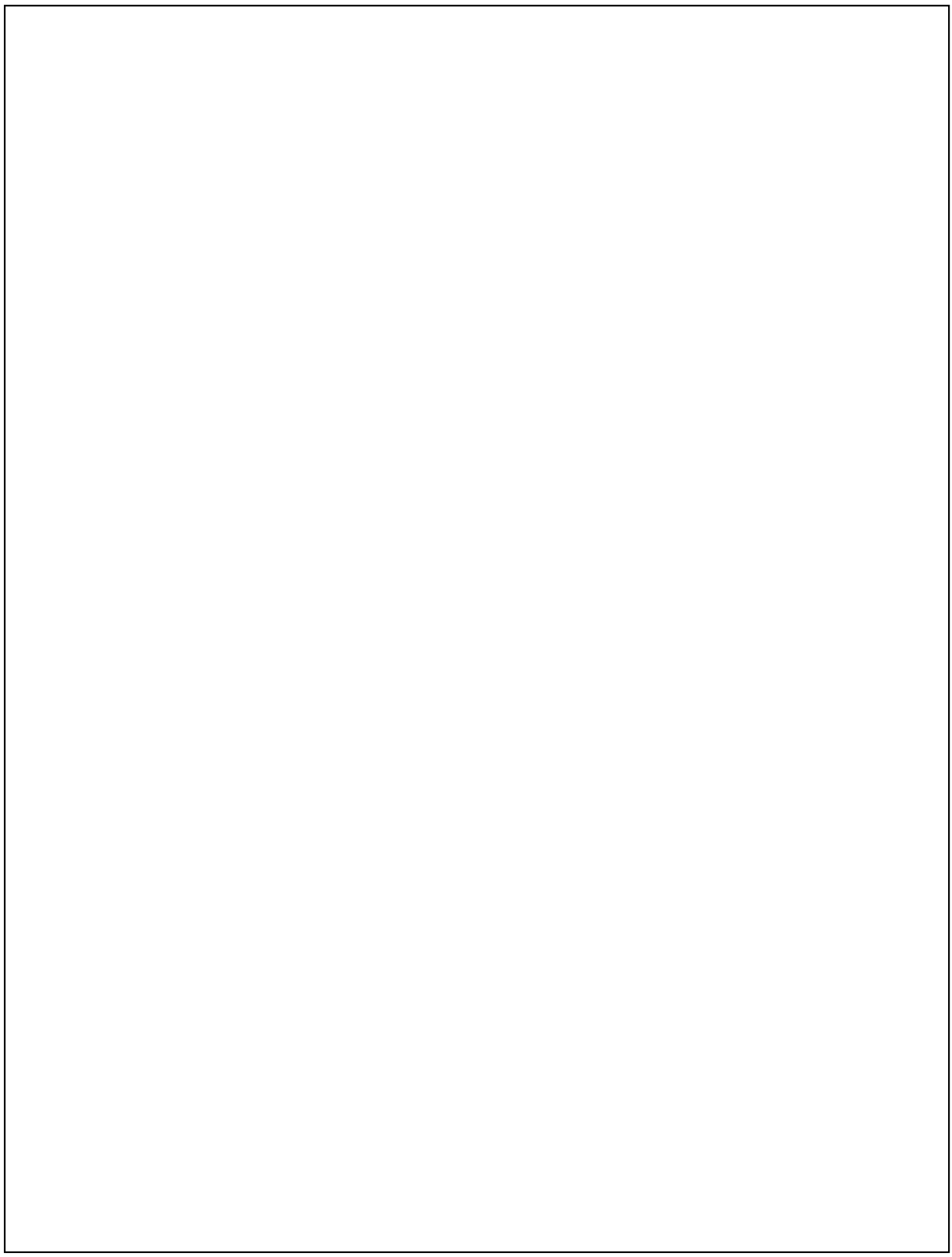
```
char val; // Data received from the serial port
int ledPin = 13; // Set the pin to digital I/O 13
boolean ledState = LOW; //to toggle our LED
void setup()
{
  pinMode(ledPin, OUTPUT); // Set pin as OUTPUT
  //initialize serial communications at a 9600 baud rate
  Serial.begin(9600);
  establishContact();  // send a byte to establish contact until
receiver responds
}
void loop()
{
  if (Serial.available() > 0) { // If data is available to read,
    val = Serial.read(); // read it and store it in val
    if(val == '1') //if we get a 1
    {
       ledState = !ledState; //flip the ledState
       digitalWrite(ledPin, ledState);
    }
    delay(100);
  }
    else {
    Serial.println("Hello, world!"); //send back a hello world
    delay(50);
    }
}
void establishContact() {
  while (Serial.available() <= 0) {
  Serial.println("A");   // send a capital A
  delay(300);
  }
}
```

11.4 Latihan

1. Buat Sistem untuk menyalakan lampu 3 Lampu LED pada arduino
2. Buat sebuah sistem untuk menggerakkan gambar pada processing dari arduino

11.5 Jurnal

Capture dan dan beri komentar dan keterangan Hasil Eksekusi syntax:



DAFTAR PUSTAKA

- https://processing.org/
- https://www.arduino.cc/en/main/software