Proyek
Mikrokontroler & Sensor 1

Sistem Greenhouse
terautomatisasi pengairan,
suhu, dan pencahayaan

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Latar Belakang Masalah

KENAPA?

Pengendalian iklim di dalam greenhouse secara manual sulit untuk dilakukan dan akan sangat melelahkan

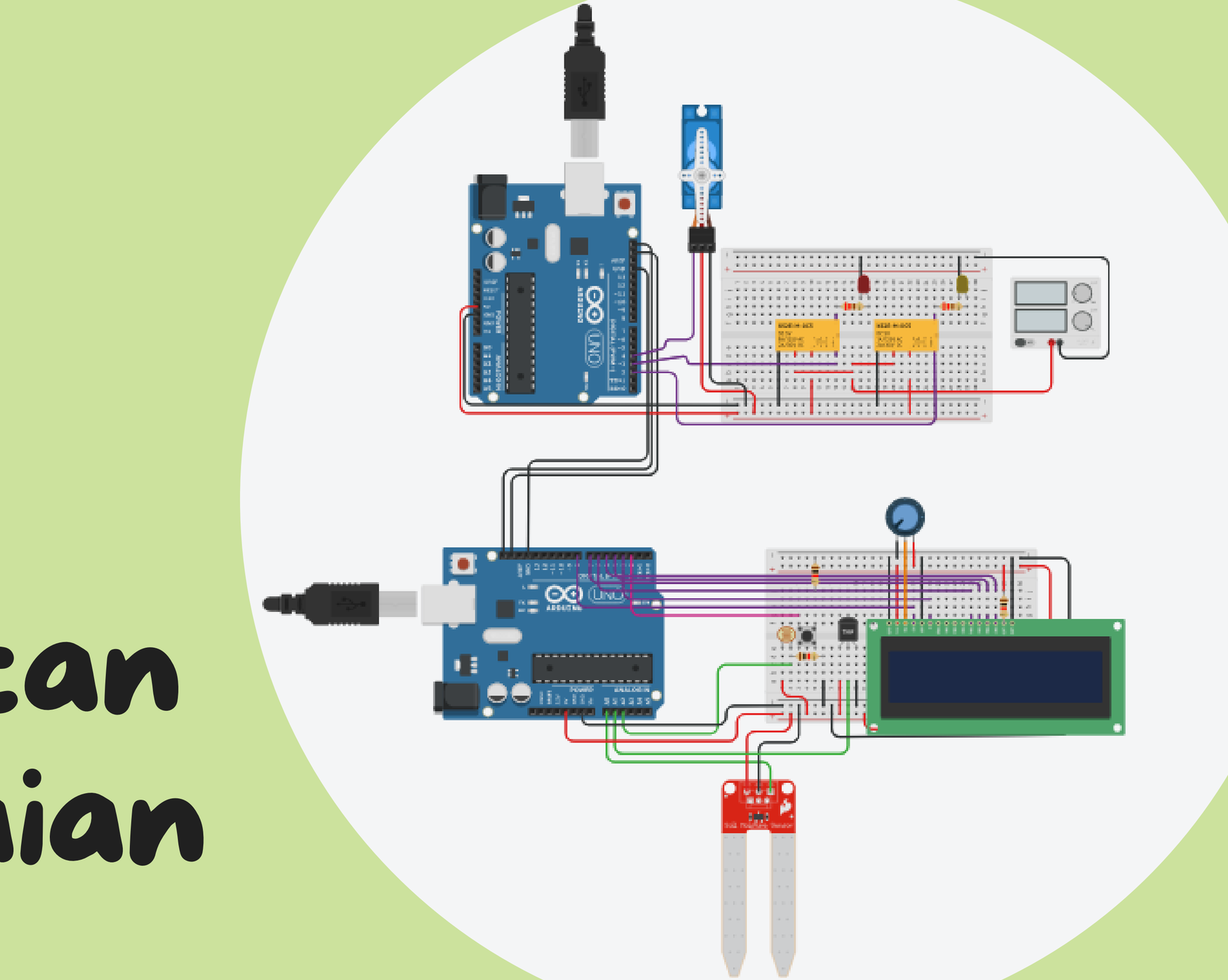
Tujuan Proyek

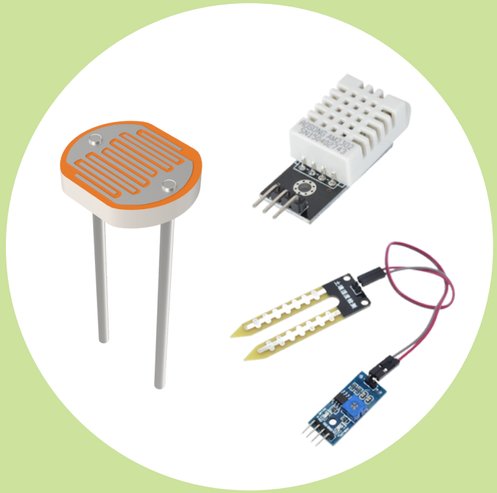
Merancang dan mengimplementasikan sistem pengendalian iklim otomatis yang dapat membantu perawat tanaman dalam mengendalikan pengairan tanaman, suhu ruang greenhouse, dan pencahayaan secara otomatis

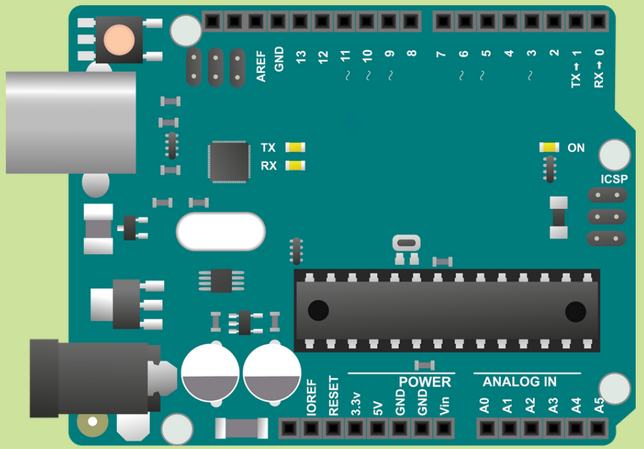
Manfaat

Meningkatkan efisiensi dan produktivitas dalam budidaya tanaman di greenhouse

Perakitan Rangkaian






AREF
GND
13
12
11
10
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7
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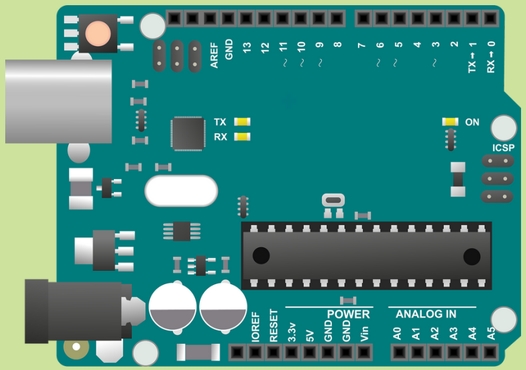
5
4
3
2
TX → 1
RX ← 0
TX
RX
ON
ICSP
POWER
ANALOG IN
IOREF
RESET
3.3v
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5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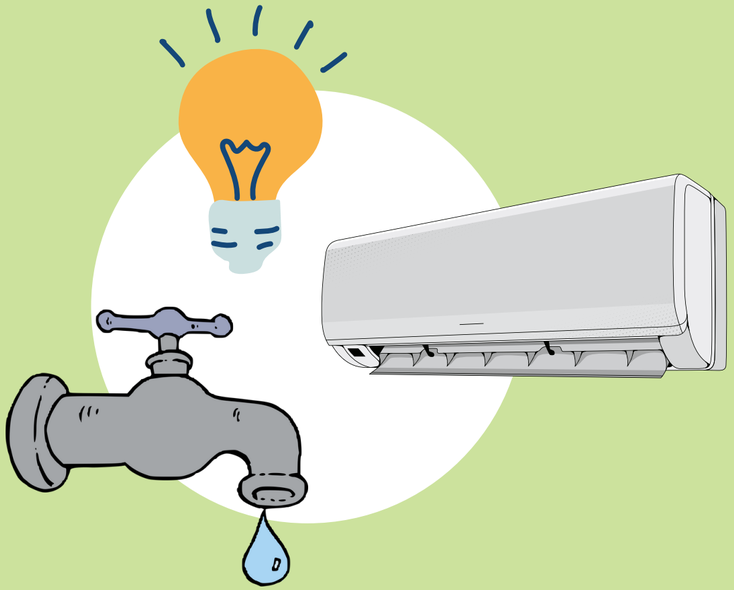
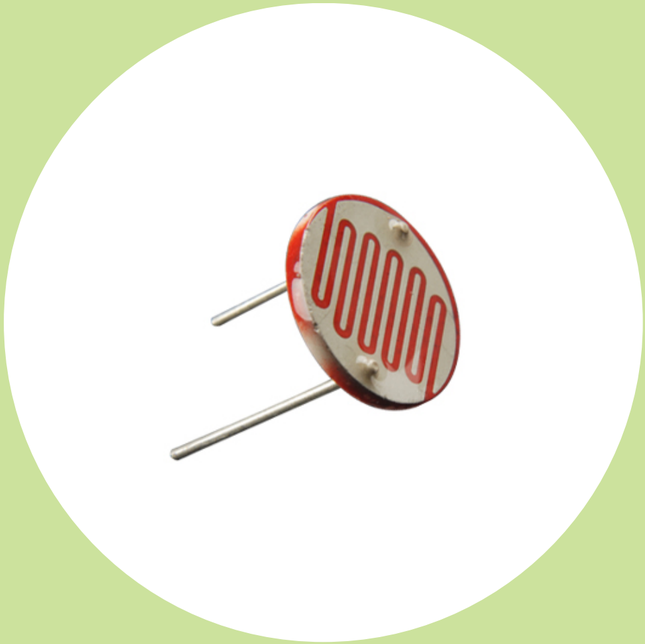
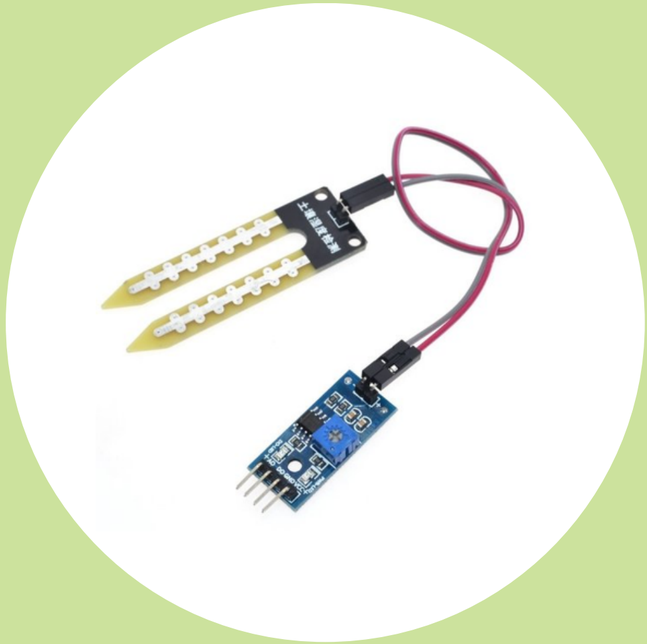


Sensor



SENSOR PHOTORESISTOR LDR



SOIL MOISTURE SENSOR

SENSOR SUHU

Aktuator

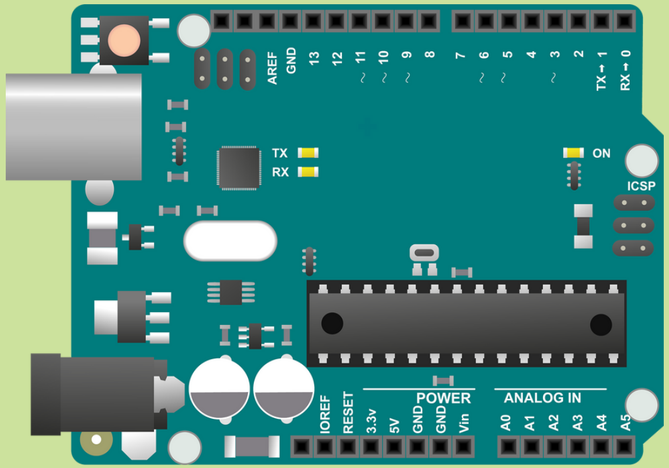
MICRO SERVO

RELAY UNTUK AC

RELAY UNTUK LAMPU

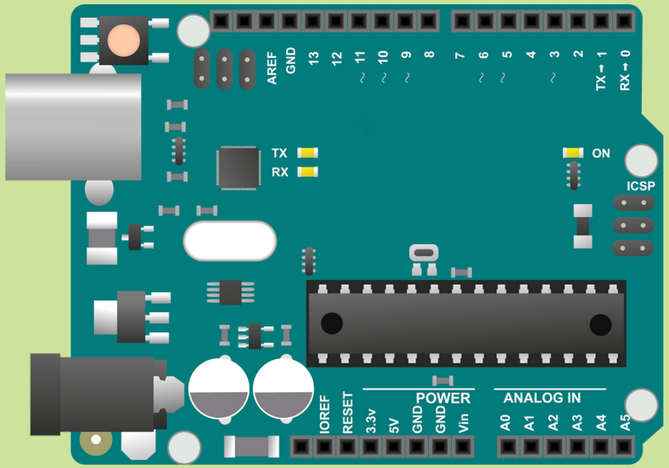
Komunikasi

MASTER (SENSOR)

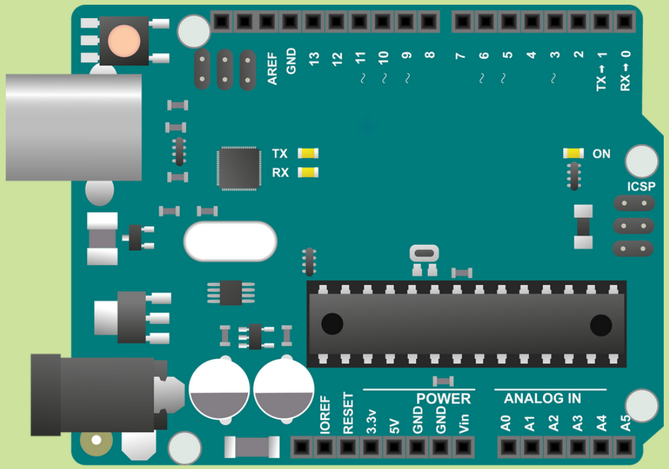


I2C

SLAVE (AKTUATOR)

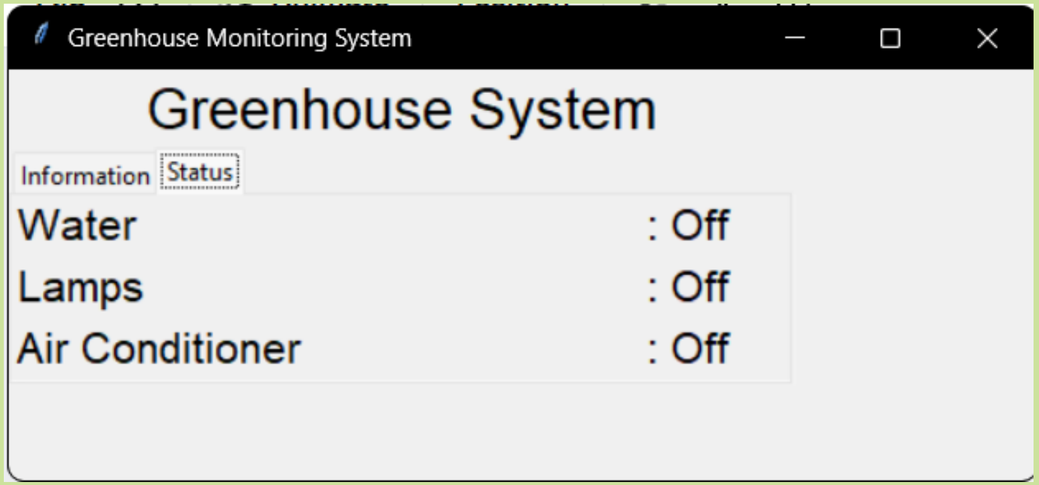


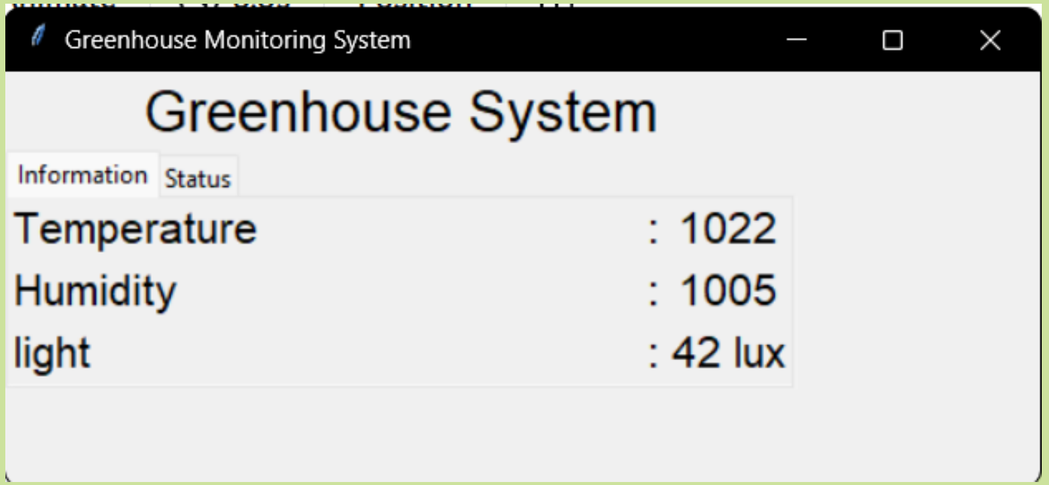
Komunikasi



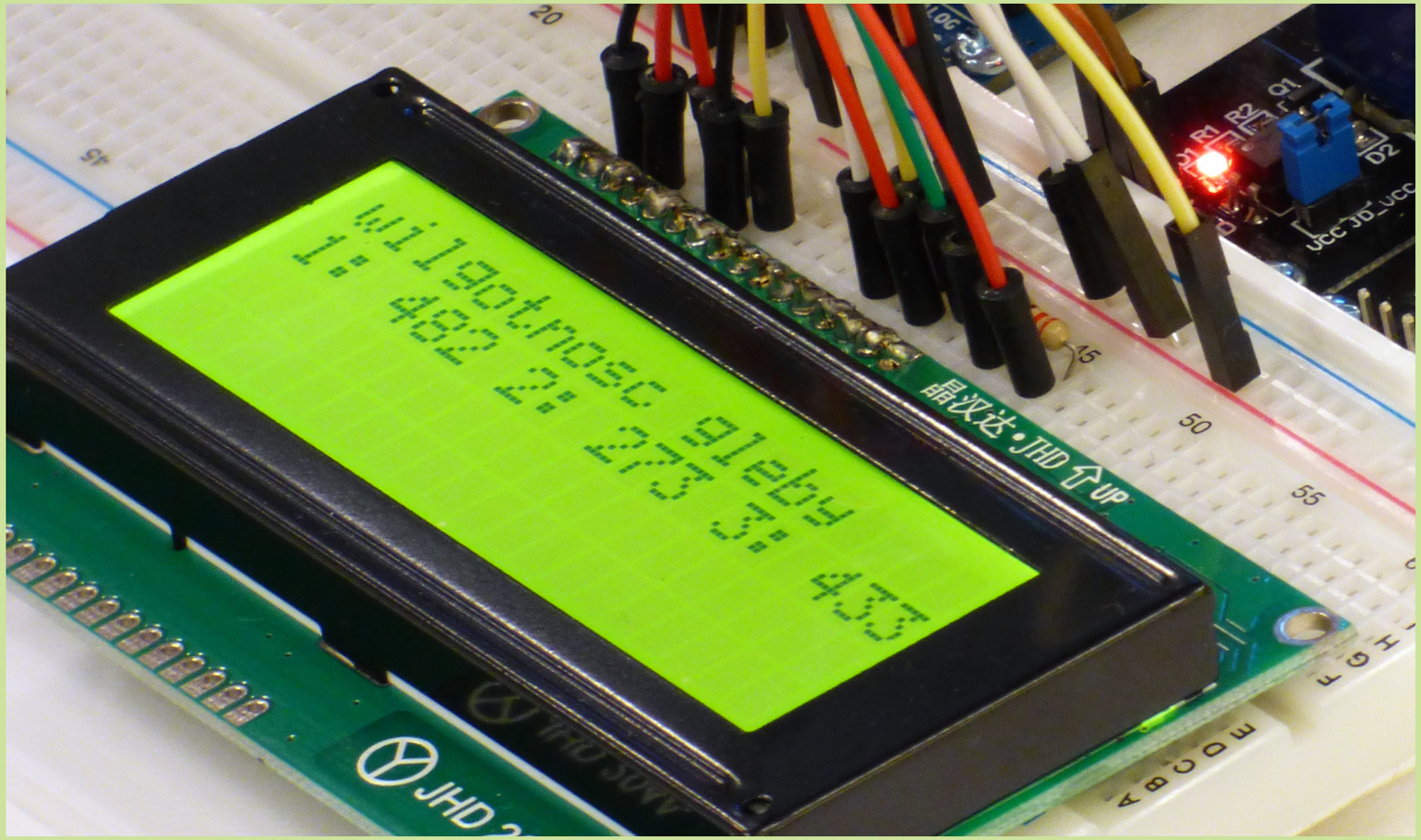
SERIAL

Antarmuka Pengguna Grafis





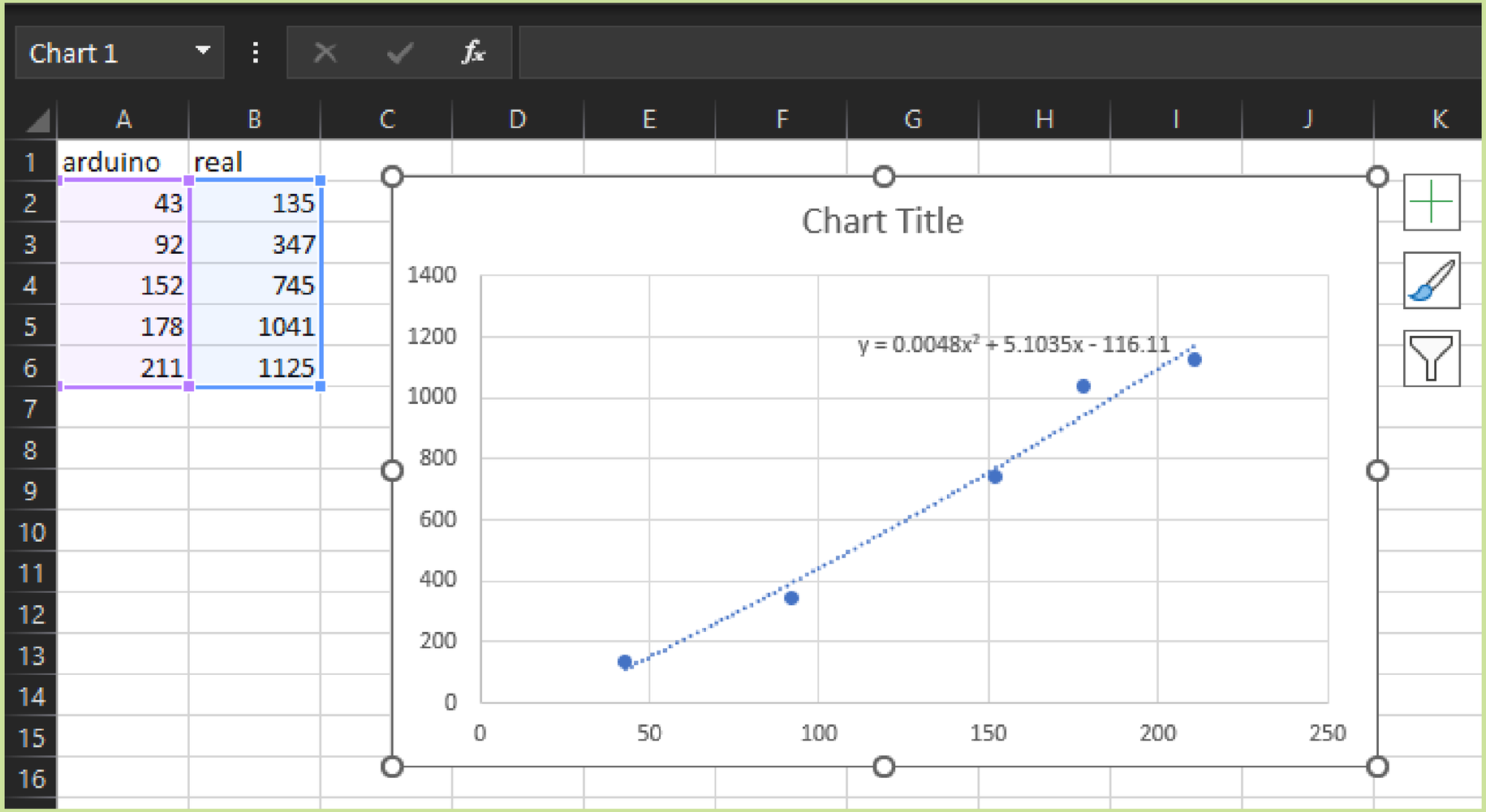
Antarmuka Pengguna



Basis data

tanggal	time	kelembapan	suhu	cahaya	status_keran	status_ac	status_lampu
2023-04-28	12:37:31	1005	1022	123	Off	On	Off
2023-04-28	12:37:32	1005	1022	106	Off	On	Off
2023-04-28	12:37:33	1005	1022	117	Off	On	Off
2023-04-28	12:37:34	1006	1022	128	Off	On	Off
2023-04-28	12:37:35	1005	1022	117	Off	On	Off
2023-04-28	12:37:36	1005	1022	106	Off	On	Off
2023-04-28	12:37:37	1005	1022	117	Off	On	Off
2023-04-28	12:37:38	1005	1022	90	Off	On	Off
2023-04-28	12:37:39	1005	1022	-6	Off	On	On
2023-04-28	12:37:40	1005	1022	-38	Off	On	On
2023-04-28	12:37:41	1006	1022	-74	Off	On	On
2023-04-28	12:37:42	1005	1022	-69	Off	On	On
2023-04-28	12:37:43	1005	1022	128	Off	On	Off
2023-04-28	12:37:44	1005	1022	112	Off	On	Off
2023-04-28	12:37:45	1005	1022	106	Off	On	Off
2023-04-28	12:37:46	1005	1022	123	Off	On	Off
2023-04-28	12:37:47	1005	1021	128	Off	On	Off
2023-04-28	12:37:48	1005	1022	106	Off	On	Off
2023-04-28	12:37:49	1005	1014	117	Off	Off	Off
2023-04-28	12:37:50	1005	1011	128	Off	Off	Off
2023-04-28	12:37:52	1005	1010	128	Off	Off	Off
2023-04-28	12:37:53	1005	1010	123	Off	Off	Off
2023-04-28	12:37:54	1005	1007	112	Off	Off	Off
2023-04-28	12:37:55	1005	1007	117	Off	Off	Off
2023-04-28	12:37:56	1005	1022	117	Off	On	Off
2023-04-28	12:37:57	1005	1022	128	Off	On	Off
2023-04-28	12:37:58	941	1021	106	On	On	Off
2023-04-28	12:37:59	1009	1022	106	Off	On	Off
2023-04-28	12:38:0	967	1022	117	On	On	Off
2023-04-28	12:38:1	972	1022	95	On	On	Off
2023-04-28	12:38:2	979	1022	117	On	On	Off

Kalibrasi Sensor LDR



Pemrosesan data

```
  Wire.beginTransmission(8);
int x = analogRead(l_sens);
  temp = analogRead(t_sens);
  light = 0.0048*pow(x,2) + 5.1035*x - 116.11;
  moist = analogRead(m_sens);

  byte dataArray[3];

  if (temp > 1020) {
    ac = "On";
    dataArray[0] = 1;
  } else {
    ac = "Off";
    dataArray[0] = 0;
  }
  if (light < 15) {
    lamps = "On";
    dataArray[1] = 1;
  } else {
    lamps = "Off";
    dataArray[1] = 0;
  }
  if (moist < 1000) {
    tap = "On";
    dataArray[2] = 1;
  } else {
    tap = "Off";
    dataArray[2] = 0;
  }
  digitalWrite(13, HIGH);
  Wire.write(dataArray, 3);
  digitalWrite(13, LOW);

  Wire.endTransmission();
```

```
void setup() {
  Wire.begin(8);
  servo5.attach(4);
  Wire.onReceive(receiveEvent);
  Serial.begin(9600);
}

void loop() {
  delay(100);
}

void receiveEvent(int numBytes) {
  while(Wire.available() > 0) {
    for (int i=0; i<3; i++) {
      int data = Wire.read();
      Serial.println(data);
      if (i == 2) {
        servo5.write(90 * data);
      }
      digitalWrite(pinArray[i], data);

    }
  }
}
```

Terima kasih!