Program Prototype Alat Pemilah dan Penghitung Bola Berwarna Menggunakan LDR dengan Tampilan LCD Berbasis Arduino UNO

```
#include <Servo.h>
#include <LiquidCrystal.h>

Servo penahan;
Servo penggerak;

LiquidCrystal lcd1(2, 3, 6, 7, 8, 9);
LiquidCrystal lcd2(2, 4, 6, 7, 8, 9);
LiquidCrystal lcd3(2, 5, 6, 7, 8, 9);

int sensorPin = A3;
int LedBiru = 10; // Led warna biru digital pin 10
int LedHijau = 11; // Led warna hijau digital pin 11
int LedKuning = 12; // Led warna merah digital pin 12
int hasil, hasilb, hasilk, hasilh;
int k = 10; // toleransi warna
int bolaKuning = 0;
int bolaHijau = 0;
int bolaBiru = 0;
byte buzz = A0;
```

```
void setup() {
  // put your setup code here, to run once:
  pinMode(LedBiru, OUTPUT);
  pinMode(LedKuning, OUTPUT);
  pinMode(LedHijau, OUTPUT);
  pinMode(buzz, OUTPUT);
  digitalWrite(LedBiru, LOW);
  digitalWrite(LedKuning, LOW);
  digitalWrite(LedHijau, LOW);
  penahan.attach(A2);
  penahan.write(100);
  //penggerak.write(80);
  penggerak.attach(A0);
  penggerak.write(100);//posisi awal hidup
  Serial.begin(9600);
  delay(1000);
  lcd1.begin(16, 2);
  lcd2.begin(16, 2);
  lcd3.begin(16, 2);
  delay(500);
  lcd1.setCursor(0, 0);
  lcd1.print("BOLA KUNING");
  lcd2.setCursor(0, 0);
  lcd2.print("BOLA HIJAU");
  lcd3.setCursor(0, 0);
```

```
  lcd3.print("BOLA BIRU");
}


void loop() {
  // nyalakan LedKuning
  digitalWrite(LedKuning, HIGH);
  //delay 150 ms agar LDR baca stabil
  delay(150);
  delay(3000);
  // baca data sensor
  hasil = analogRead(sensorPin);
  hasilk = map(hasil, 0, 1023, 0, 255);
  Serial.print("R,G,B = ");
  Serial.print(hasilk);
  //lcd1.setCursor(0,0);
  //lcd1.print(hasilk);
  digitalWrite(LedKuning, LOW);
  delay(150);
  delay(3000);
  // nyalakan LedHijau
  digitalWrite(LedHijau, HIGH);
  //delay 150 ms agar LDR baca stabil
  delay(150);
  delay(3000);
```

```
// baca data sensor
hasil = analogRead(sensorPin);
hasilh = map(hasil, 0, 1023, 0, 255);
Serial.print(",");
Serial.print(hasilh);
//lcd1.setCursor(7,0);
//lcd1.print(hasilh);
digitalWrite(LedHijau, LOW);
delay(150);
delay(3000);
// nyalakan LedBiru
digitalWrite(LedBiru, HIGH);
//delay 150 ms agar LDR baca stabil
delay(150);
delay(3000);
// baca data sensor
hasil = analogRead(sensorPin);
hasilb = map(hasil, 0, 1023, 0, 255);
Serial.print(",");
Serial.println(hasilb);
//lcd1.setCursor(0,1);
//lcd1.print(hasilb);
digitalWrite(LedBiru, LOW);
delay(150);
delay(3000);
```

```
// cek warna dibandingkan dengan nilai hasil kalibrasi
if ((abs(hasilk - 254) < k) && (abs(hasilh - 254) < k) && (abs(hasilb - 240) <= k)) {
  bolaKuning++;
  lcd1.clear();
  lcd1.setCursor(0, 0);
  lcd1.print("BOLA KUNING");
  lcd1.print("                ");
  lcd1.setCursor(1, 1);
  lcd1.print(bolaKuning);
  delay(100);
  penggerak.write(100);
  delay(500);
  penahan.write(40);
  delay(200);
  penahan.write(100);
  delay(150);
  penggerak.write(100);
  delay(100);
  Serial.println(" -> kuning!\n");
}

if ((abs(hasilk - 222) < k) && (abs(hasilh - 254) < k) && (abs(hasilb - 242) < k)) {
  bolaBiru++;
  lcd3.clear();
```

```
  lcd3.setCursor(0, 0);
  lcd3.print("BOLA BIRU");
  lcd3.print("                ");
  lcd3.setCursor(1, 1);
  lcd3.print(bolaBiru);
  delay(100);
  penggerak.write(20);
  delay(500);
  penahan.write(40);
  delay(200);
  penahan.write(100);
  delay(500);
  penggerak.write(100);
  delay(100);
  Serial.println(" -> biru!\n");
 }

 if ((abs(hasilk - 242) < k) && (abs(hasilh - 254) < k) && (abs(hasilb - 254) < k)) {
  bolaHijau++;
  lcd2.clear();
  lcd2.setCursor(0, 0);
  lcd2.print("BOLA HIJAU");
  lcd2.print("                ");
  lcd2.setCursor(1, 1);
  lcd2.print(bolaHijau);
```

```
   delay(200);
   penggerak.write(180);//servobawah gerak ke tmpt keranjang
   delay(500);//selama2dtk
   penahan.write(40);//servo nahan bukak
   delay(200);//sealama 500ms
   penahan.write(100);//penahan nutup
   delay(500);//selama 150ms
   penggerak.write(100);//servo bawah kembali ke tengah
   delay(100);//selama 100ms
   Serial.println(" -> hijau!\n");
  }

  else {
   penggerak.write(100);//servobawah gerak ke tmpt keranjang
   delay(10);//selama2dtk
   penahan.write(100);//penahan nutup
   delay(10);//selama 150ms
  }
}
```