

Laboratoriya mashg'ulot № 2

Mavzu: Yorug'lik diodi, Arduino yordamida yorug'lik diodini o'chirib-yoqish

Ishdan maqsad: VVB dasturi yoki arduino qurilmasi orqali LED lampani qanday boshqarishni o'rgaimkoniyatlarni va hayotimizda texnik ish unumdorligini oshirish.

Kerakli jixozlar:

- ✓ VVB dasturi yoki arduino plata qurilmasi.
- ✓ Breadboard.
- ✓ USB Kabel.
- ✓ LED lampalar
- ✓ Kerakli ehtiyot qismlari.

Jixozlarning vazifalari:

VVB dasturi yoki arduino plata qurilmasi. Istalgan kerakli qurilmalarni tizimlashtirish imkoniyatiga ega va avtomatik tarzda ishlash xususiyatlariga ega.

Breadboard. Ehtiyot qismlarini o'rnatish platasi ya'ni (zapchast) larni o'rnatish uchun va qurilmani tizim orqali tekshirib ko'rishimiz uchun kerak bo'ladi.

USB Kabel. Bu kabellar Arduino qurilmasini kompyuterga ulash uchun foydalanamiz.

Kerakli ehtiyot qismlari. Masalan led(svetodiod), diod(diod) va x.k.z.

Dasturdan foydalanish:

Arduino qurilmasi barcha qurilmalarni avtomatlashtirish uchun mo'ljallangan va u qo'llanishda ko'p qulayliklarga ega.

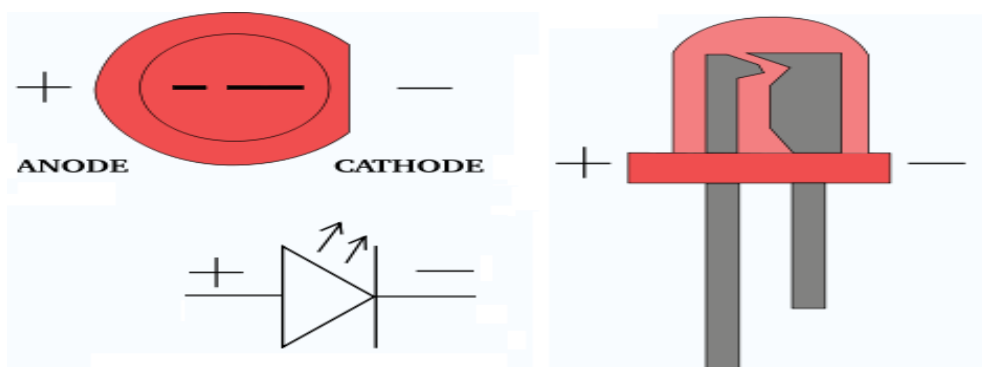
Foydalanuvchi kod bilan ehtiyot qisimlarni o'ziga moslashtira oladi.

Arduino qurilmasi oddiy va sodda ko'rinishga ega bulgani bilan juda ko'p funksiyalarga ega.

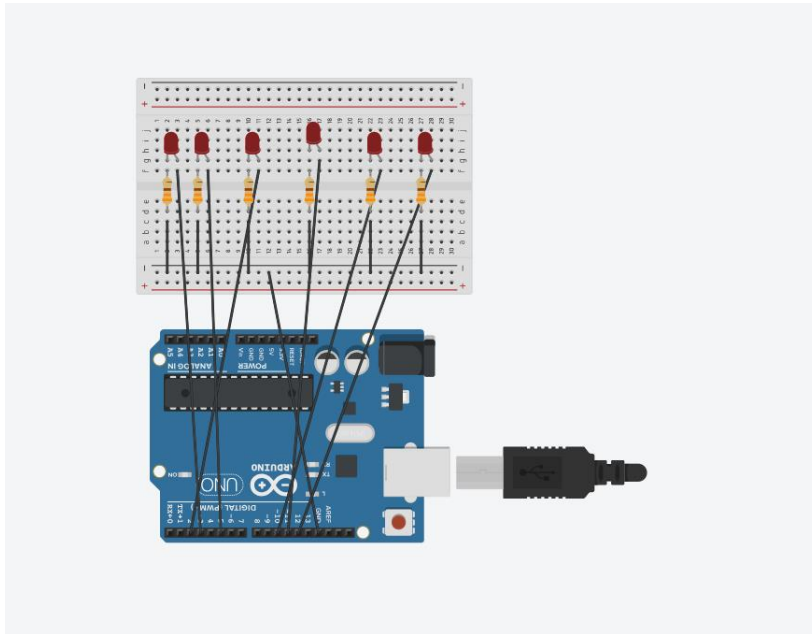
Dasturni ayniqsa C++ dasturlash tili orqali amalga oshirishi kerak bo'ladi.

Yozilgan dastur asosan bitta Atmega 328 kontrolleriga o'rnatib Arduino qurilmasida amaliy natijani ko'rish mumkin.

LED Lampa tuzilishi



Arduino nano qurilmasini ulash



VVB dasturini oynasida dastur yozishi

```
// C++ code
//
void setup()
{
  pinMode(11, OUTPUT);
  pinMode(9, OUTPUT);
  pinMode(10, OUTPUT);
  pinMode(2, OUTPUT);
  pinMode(13, OUTPUT);
  pinMode(3, OUTPUT);
  pinMode(12, OUTPUT);
  pinMode(4, OUTPUT);
  pinMode(7, OUTPUT);
  pinMode(5, OUTPUT);
  pinMode(6, OUTPUT);
}

void loop()
{
  analogWrite(11, 51);
  analogWrite(9, 255);
  analogWrite(10, 51);
  // Turn on two green LEDs for half second.
  digitalWrite(2, HIGH);
  digitalWrite(13, HIGH);
  delay(400); // Wait for 200 millisecond(s)
  digitalWrite(2, LOW);
  digitalWrite(13, LOW);
}
```

```
analogWrite(11, 255);
analogWrite(9, 0);
analogWrite(10, 0);
// Turn on two red LEDS for half second.
digitalWrite(3, HIGH);
digitalWrite(12, HIGH);
delay(200); // Wait for 500 millisecond(s)
digitalWrite(3, LOW);
digitalWrite(12, LOW);
analogWrite(11, 255);
analogWrite(9, 255);
analogWrite(10, 0);
// Turn on two yellow LEDS for half second.
digitalWrite(4, HIGH);
digitalWrite(7, HIGH);
delay(200); // Wait for 500 millisecond(s)
digitalWrite(4, LOW);
digitalWrite(7, LOW);
analogWrite(11, 51);
analogWrite(9, 51);
analogWrite(10, 255);
// Turn on two blue LEDS for half second.
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
delay(200); // Wait for 500 millisecond(s)
digitalWrite(5, LOW);
digitalWrite(6, LOW);
}
```