

Lab Assignment No 5

Problem Statement:

Write a program using Arduino to control LED (one or more ON/OFF), or Blinking.

Code:

```
int led1=7;
void setup() {
  pinMode(led1, OUTPUT);
}

void loop() {
  digitalWrite(led1, HIGH);
  delay(1000);
  digitalWrite(led1, LOW);
  delay(1000);
}
```

Lab Assignment No 6

Problem Statement:

Create a program that illuminates the green LED if the counter is less than 100, illuminates the yellow LED if the counter is between 101 and 200 and illuminates the red LED if the counter is greater than 200.

Code:

```
int led1=2; // green led
int led2=4; // yellow led
int led3=7; // red led
int count=0;
void setup() {
  pinMode(led1, OUTPUT);
  pinMode(led2, OUTPUT);
  pinMode(led3, OUTPUT);
}

void loop() {
  if(count<=100) {
    digitalWrite(led1, HIGH);
    digitalWrite(led2, LOW);
    digitalWrite(led3, LOW);
  }
  else if(count>100 && count<=200) {
    digitalWrite(led1, LOW);
    digitalWrite(led2, HIGH);
    digitalWrite(led3, LOW);
  }
  else {
    digitalWrite(led1, LOW);
    digitalWrite(led2, LOW);
    digitalWrite(led3, HIGH);
  }
  count++;
  delay(50);
}
```

Lab Assignment No 7

Problem Statement:

To create a program so that when the user enters 'b' the green light blinks, 'g' the green light is illuminated, 'y' the yellow light is illuminated and 'r' the red light is illuminated, using Arduino.

Code:

```
int led1 = 2; // green LED
int led2 = 4; // yellow LED
int led3 = 7; // red LED
char key;    // variable to store the user input

void setup() {
  Serial.begin(9600);
  pinMode(led1, OUTPUT);
  pinMode(led2, OUTPUT);
  pinMode(led3, OUTPUT);
  Serial.print("\nEnter char: ");
}

void loop() {
  if (Serial.available() > 0) {
    Serial.flush();
    key = Serial.read(); // Read the user input

    digitalWrite(led1, LOW);
    digitalWrite(led2, LOW);
    digitalWrite(led3, LOW);

    if (key == 'b' || key == 'B') {
      // blink green led 3 times
      for(int i=0; i<3; i++) {
        digitalWrite(led1, HIGH);
        delay(500);
        digitalWrite(led1, LOW);
        delay(500);
      }
    }
    else if (key == 'g' || key == 'G') {
      digitalWrite(led1, HIGH);    // illuminate green led
    }
    else if (key == 'y' || key == 'Y') {
      digitalWrite(led2, HIGH);    // illuminate yellow led
    }
    else if (key == 'r' || key == 'R') {
      digitalWrite(led3, HIGH);    // illuminate red led
    }
    delay(1000);
    Serial.print("\nEnter char: ");
  }
}
```

Lab Assignment No 8

Problem Statement:

To calculate the square of the number given by the user, using Arduino.

Code:

```
int n;

void setup() {
  Serial.begin(9600);
  Serial.print("\nEnter the number:");
}

void loop() {
  if (Serial.available() > 0) {
    String input = Serial.readStringUntil('\n');
    n = input.toInt();
    Serial.print("\nThe square of ");
    Serial.print(n);
    Serial.print(" is : ");
    Serial.print(n * n);
    delay(500);
    Serial.print("\nEnter the number:");
  }
}
```

Output:

```
Enter the number:25
The square of  25  is : 625
```

Lab Assignment No 9

Problem Statement:

To change the color of the RGB LED using the input from 3 different potentiometers, using Arduino.

Code:

```
const int rPin = 9;    // PWM pin for Red color
const int gPin = 10;   // PWM pin for Green color
const int bPin = 11;   // PWM pin for Blue color

const int rPotPin = A0; // Analog input pin for Red potentiometer
const int gPotPin = A1; // Analog input pin for Green potentiometer
const int bPotPin = A2; // Analog input pin for Blue potentiometer

void setup() {
    // Set RGB LED pins as output
    pinMode(rPin, OUTPUT);
    pinMode(gPin, OUTPUT);
    pinMode(bPin, OUTPUT);
    Serial.begin(9600);
}

void loop() {
    // Read the potentiometer values
    int rValue = analogRead(rPotPin);
    int gValue = analogRead(gPotPin);
    int bValue = analogRead(bPotPin);

    // Map the potentiometer values to a range of 0 to 255 (PWM range)
    rValue = map(rValue, 0, 1023, 0, 255);
    gValue = map(gValue, 0, 1023, 0, 255);
    bValue = map(bValue, 0, 1023, 0, 255);

    // Set the color of the RGB LED using PWM
    analogWrite(rPin, rValue);
    analogWrite(gPin, gValue);
    analogWrite(bPin, bValue);

    // Print values to Serial Monitor
    Serial.print("\n\nRed: ");
    Serial.print(rValue);
    Serial.print(" Green: ");
    Serial.print(gValue);
    Serial.print(" Blue: ");
    Serial.print(bValue);

    delay(50); // Small delay for stability
}
```