Practical No:5

//Write a program using Raspberry-pi to control LED (One or more ON/OFF) or Blinking

```
const int led1Pin = 7;
const int led2Pin = 8;
const int led3Pin = 9;
const int led4Pin = 10;

void setup() {
  pinMode(led1Pin, OUTPUT);
  pinMode(led2Pin, OUTPUT);
  pinMode(led3Pin, OUTPUT);
  pinMode(led4Pin, OUTPUT);
}

void loop() {
  try {
    digitalWrite(led1Pin, LOW);
    delay(500);
    digitalWrite(led1Pin, HIGH);
    digitalWrite(led2Pin, LOW);
    delay(500);
    digitalWrite(led2Pin, HIGH);
    digitalWrite(led3Pin, LOW);
    delay(500);
    digitalWrite(led3Pin, HIGH);
    digitalWrite(led4Pin, LOW);
    delay(500);
    digitalWrite(led4Pin, HIGH);
    delay(500);
  } catch (const std::exception &e) {
    Serial.println("Closing");
    exit(0);
  }
}
```

Lab Practical 6

Problem Statement:

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

```
const int led1Pin = 7;
const int led2Pin = 8;
const int led3Pin = 9;
int number = 0;

void setup() {
  pinMode(led1Pin, OUTPUT);
  pinMode(led2Pin, OUTPUT);
  pinMode(led3Pin, OUTPUT);
}

void loop() {
  delay(200); // Wait for 200 milliseconds

  if (number <= 100) {
    digitalWrite(led1Pin, LOW);
    digitalWrite(led2Pin, HIGH);
    digitalWrite(led3Pin, HIGH);
  } else if (number > 201 && number <= 300) {
    digitalWrite(led1Pin, HIGH);
    digitalWrite(led2Pin, LOW);
    digitalWrite(led3Pin, HIGH);
  } else if (number > 101 && number <= 200) {
    digitalWrite(led1Pin, HIGH);
    digitalWrite(led2Pin, HIGH);
    digitalWrite(led3Pin, LOW);
  }

  number = (number + 1) % 301;  // Reset number after 300 iterations
}
```

Lab Practical 7

Problem Statement:

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

```
const int led1Pin = 7;
const int led2Pin = 8;
const int led3Pin = 9;
const int led4Pin = 10;

void setup() {
  pinMode(led1Pin, OUTPUT);
  pinMode(led2Pin, OUTPUT);
  pinMode(led3Pin, OUTPUT);
  pinMode(led4Pin, OUTPUT);

  digitalWrite(led1Pin, HIGH);
  digitalWrite(led2Pin, HIGH);
  digitalWrite(led3Pin, HIGH);
  digitalWrite(led4Pin, HIGH);
  Serial.begin(9600);
}

void loop() {
  char key;

  while (Serial.available() <= 0) {
    delay(100); // Wait for input
  }

  key = Serial.read();

  Serial.println(key);

  if (key == 'g' || key == 'G') {
    digitalWrite(led1Pin, LOW);
    digitalWrite(led2Pin, HIGH);
    digitalWrite(led3Pin, HIGH);
    digitalWrite(led4Pin, HIGH);
  } else if (key == 'r' || key == 'R') {
    digitalWrite(led1Pin, HIGH);
```

```
    digitalWrite(led2Pin, LOW);
    digitalWrite(led3Pin, HIGH);
    digitalWrite(led4Pin, HIGH);
  } else if (key == 'y' || key == 'Y') {
    digitalWrite(led1Pin, HIGH);
    digitalWrite(led2Pin, HIGH);
    digitalWrite(led3Pin, LOW);
    digitalWrite(led4Pin, HIGH);
  } else {
    digitalWrite(led1Pin, HIGH);
    digitalWrite(led2Pin, HIGH);
    digitalWrite(led3Pin, HIGH);
    digitalWrite(led4Pin, HIGH);
  }

  delay(200); // Delay to stabilize LED changes
}
```

Lab Practical 8

Problem Statement:

Write a program that asks the user for a number and outputs the number squared that is entered.

```
int num;
int sq;

void setup() {
  Serial.begin(9600);
  while (!Serial) {
    ; // Wait for serial port to connect
  }
}

void loop() {
  while (Serial.available() <= 0) {
    delay(100); // Wait for input
  }

  num = Serial.parseInt();
  sq = num * num;

  Serial.print("The square of ");
  Serial.print(num);
  Serial.print(" is: ");
  Serial.println(sq);
}
```