Overview of IoT systems architecture, key components, and communication protocols

IoT Lab

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#Task 2

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#Task 2:

DC Motor circuit

- **Connect directly to power source**
- **Connect using transistor (2N2222 or TIP120)**

LED and DC motor circuit using push buttons

- **One push button turns on both of Motor and LED**

As shown in Figure 1, I used **"Tinkercad"** website to simulate and build the circuit

:

Requirements:

- NPN Transistor 2N2222
- Diode
- Push button
- LED
- Dc Motor
- Resistors [Transistor (1kΩ), LED (220Ω), pushbutton(10kΩ)]

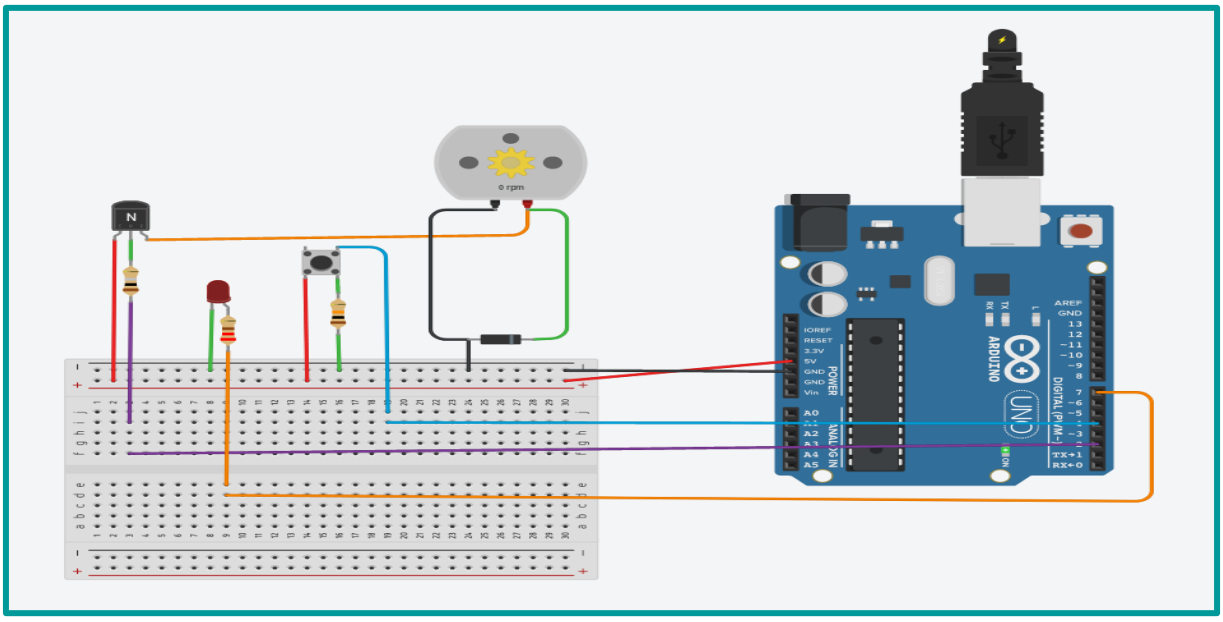

Figure 1: the circuit diagram of Dc Motor&LED controlled by push button

The code:

```
int button = 0;// variable for the button

int antState = 0;// variable for the anterior state of the button

int buttonOff = 0;// 0 = dc motor ON, 1 = dc motor OFF

void setup() {

  pinMode(4,INPUT);// BUTTON as INPUT

  pinMode(2,OUTPUT);// DC MOTOR as OUTPUT

  pinMode (7,OUTPUT);

}


void loop() {

  int button = digitalRead(4);// reading the state of the button


  if((button == LOW) && (antState == HIGH)){

    buttonOff = 1 - buttonOff;

  }

  antState = button;// reads the actual value


  if(buttonOff == 1){

    digitalWrite(2,HIGH);
    digitalWrite(7,HIGH);

  }

  else {

    digitalWrite(2, LOW);
    digitalWrite(7, LOW);
  }

}
```

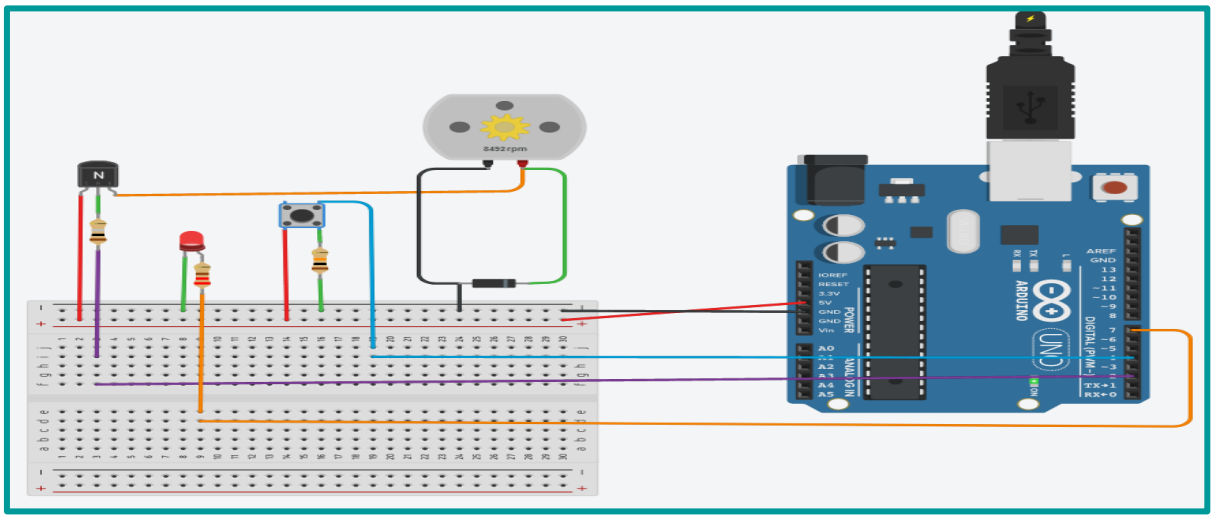

Figure 2 O/P of the circuit after push button is pressed.

What are the colors of the following resistors (4 Colors)?

Bands Reading: From Left to Right

220Ω:

Red (2), Red (2), Brown ($x10^1$).

470Ω:

Yellow (4), Violet (7), Brown ($x10^1$), Gold (5% tolerance).

1KΩ:

Brown (1), Black (0), Red($x10^2$), Gold (5% tolerance).

1.2K Ω:

Brown (1), Red (2), Red($x10^2$), Gold (5% tolerance).

4.7KΩ:

Yellow (4), Violet (7), Red($x10^2$), Gold (5% tolerance).

100KΩ:

Brown (1), Black (0), Yellow ($x10^3$), Gold (5% tolerance).