Exercise 3B – Interfacing Motor with Arduino Via Relay and Control It with PushButton

Aim: To interface motor with Arduino via relay module and turn it ON or OFF with a push button.

Apparatus Required:

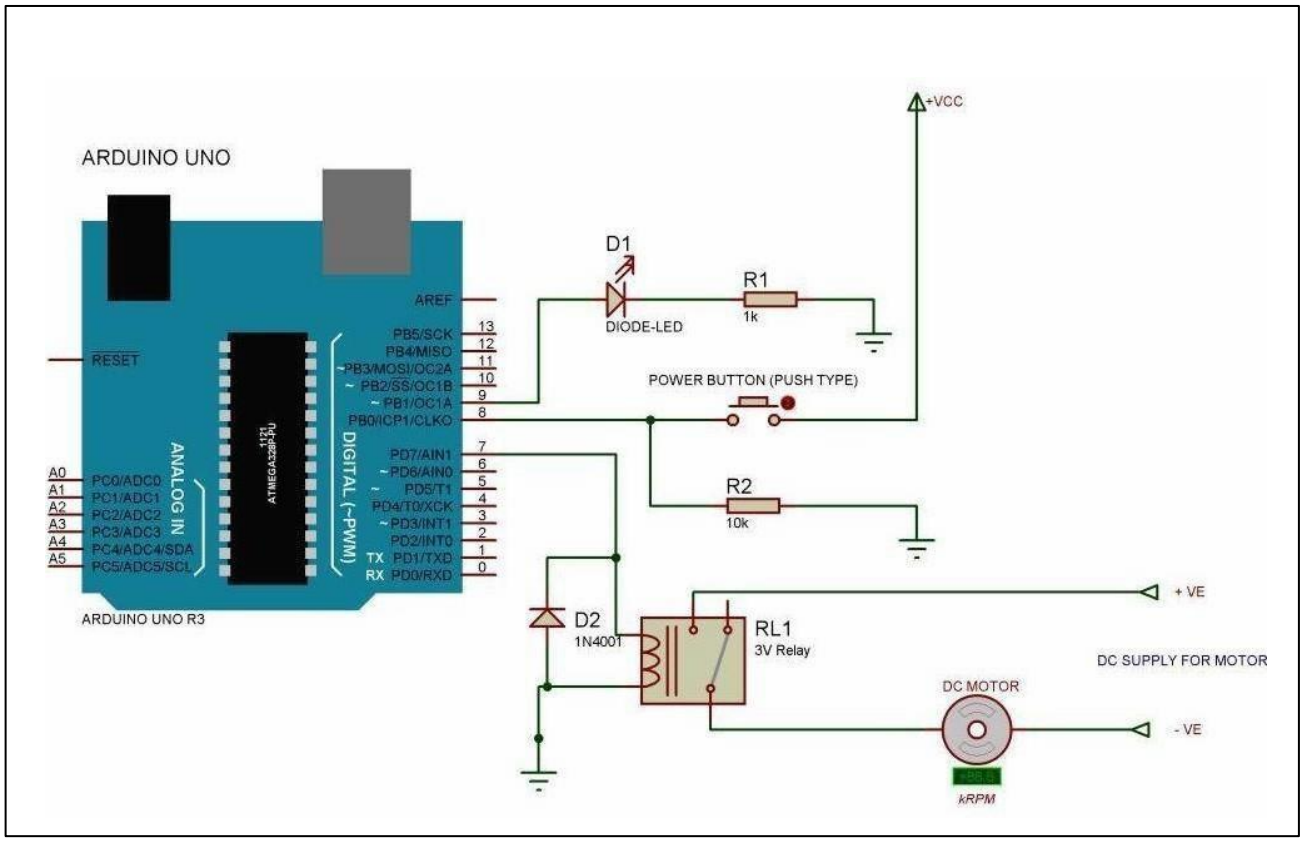
Sign Number	Name of the Equipment	Quantity
1	Arduino UNO	1
2	Computer with Arduino IDE	1
3	USB Cable	1
4	Relay Module	1
5	Push Button	1
6	Breadboard	1
7	Jumper Wires	As Required

Theory:

The pushbutton is a component that connects two points in a circuit when you press it. When the pushbutton is open (unpressed) there is no connection between the two legs of the pushbutton, so the pin is connected to 5 volts (through the pull-up resistor) and we read a HIGH. When the button is closed (pressed), it makes a connection between its two legs, connecting the pin to ground, so that we read a LOW. (The pin is stillconnected to 5 volts, but the resistor in-between them means that the pin is "closer" to ground.)

A relay is an electrically operated switch. It consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals. The switch may have any number of contacts in multiple contact forms, such as make contacts, break contacts, or combinations thereof.

Circuit Diagram:



Code:

```
#define PUSH_BUTTON 8 // Use push button with pull-down resistor.#define RELAY
7

bool motorState = false;void

setup()
{
   pinMode(RELAY, OUTPUT);
   pinMode(PUSH_BUTTON, INPUT);
}


void loop()
{
   if(digitalRead(PUSH_BUTTON) == HIGH)
   {
      if(motorState == false) // If already OFF, turn it ON.
      {
         digitalWrite(RELAY, HIGH);
         motorState = true;
      }
      else
      {
         digitalWrite(RELAY, LOW); // Else, turn it OFF.motorState =
         false;
      }
      delay(100); // Delay to avoid debounce of push button.
   }
}
```

Procedure:

1. Make connections as per the circuit diagram.
2. Open the Arduino IDE in your computer and write the above sketch.
3. Compile the sketch and upload it to Arduino UNO.
4. Once uploaded, press the button. The relay turns ON and hence, the motor runs.
5. If the button is pressed again, the relay turns OFF and hence, the motor stops running.

Result:

Thus, motor is successfully interfaced with Arduino via relay module and is turned ON and OFF with push button.