

Ex.No: **STEPPER MOTOR(ANTI-CLOCKWISE)**

Date :

AIM:

To Interface a stepper motor using a driver circuit with Arduino and to write a program to rotate anticlockwise direction.

COMPONENTS REQUIRED:

COMPONENTS	NOS
ARDUINO UNO R3	1
MOTOR-BI STEPPER	1
L293D	1
USB 2.0 CABLE A/B	1

PROCEDURE:

Step1: Wiring the Stepper Motor to the Arduino

Step2: Connect the ULN2003 Driver to Arduino

Step3: Connect IN1, IN2, IN3, IN4 pins of the ULN2003 driver to Arduino pins (pins 9, 10, 11 and 12).

Step4: Connect the GND of ULN2003 to GND on Arduino

Step5: Connect VCC of ULN2003 to 5V on Arduino

Step6: Connect the Stepper Motor to the ULN2003 Driver

Step 7: Connect the 4 wires from the stepper motor to the 4 output pins of the ULN2003 driver (pins 1, 2, 3, 4).

Step8: Connect your Arduino to the computer via USB.

Step 9: Open the Arduino IDE and select your board type and COM port.

Step10: Type the code and Click on the Upload button to upload the code to your Arduino.

Step11: Once the code is uploaded, the stepper motor should start rotating according to the instructions in the code.

PROGRAM:

```
#define STEPPER_PIN_1 9
#define STEPPER_PIN_2 10
#define STEPPER_PIN_3 11
#define STEPPER_PIN_4 12
int step_number = 0;
void setup() {
  pinMode(STEPPER_PIN_1, OUTPUT);
  pinMode(STEPPER_PIN_2, OUTPUT);
  pinMode(STEPPER_PIN_3, OUTPUT);
  pinMode(STEPPER_PIN_4, OUTPUT);

}

void loop() {

  OneStep(false);
  delay(2);
}

void OneStep(bool dir){
  if(dir){
    switch(step_number){
      case 0:
        digitalWrite(STEPPER_PIN_1, HIGH);
        digitalWrite(STEPPER_PIN_2, LOW);
        digitalWrite(STEPPER_PIN_3, LOW);
        digitalWrite(STEPPER_PIN_4, LOW);
        break;
      case 1:
        digitalWrite(STEPPER_PIN_1, LOW);
        digitalWrite(STEPPER_PIN_2, HIGH);
        digitalWrite(STEPPER_PIN_3, LOW);
        digitalWrite(STEPPER_PIN_4, LOW);
        break;
      case 2:
        digitalWrite(STEPPER_PIN_1, LOW);
        digitalWrite(STEPPER_PIN_2, LOW);
        digitalWrite(STEPPER_PIN_3, HIGH);
        digitalWrite(STEPPER_PIN_4, LOW);
        break;
      case 3:
        digitalWrite(STEPPER_PIN_1, LOW);
        digitalWrite(STEPPER_PIN_2, LOW);
        digitalWrite(STEPPER_PIN_3, LOW);
        digitalWrite(STEPPER_PIN_4, HIGH);
        break;
```

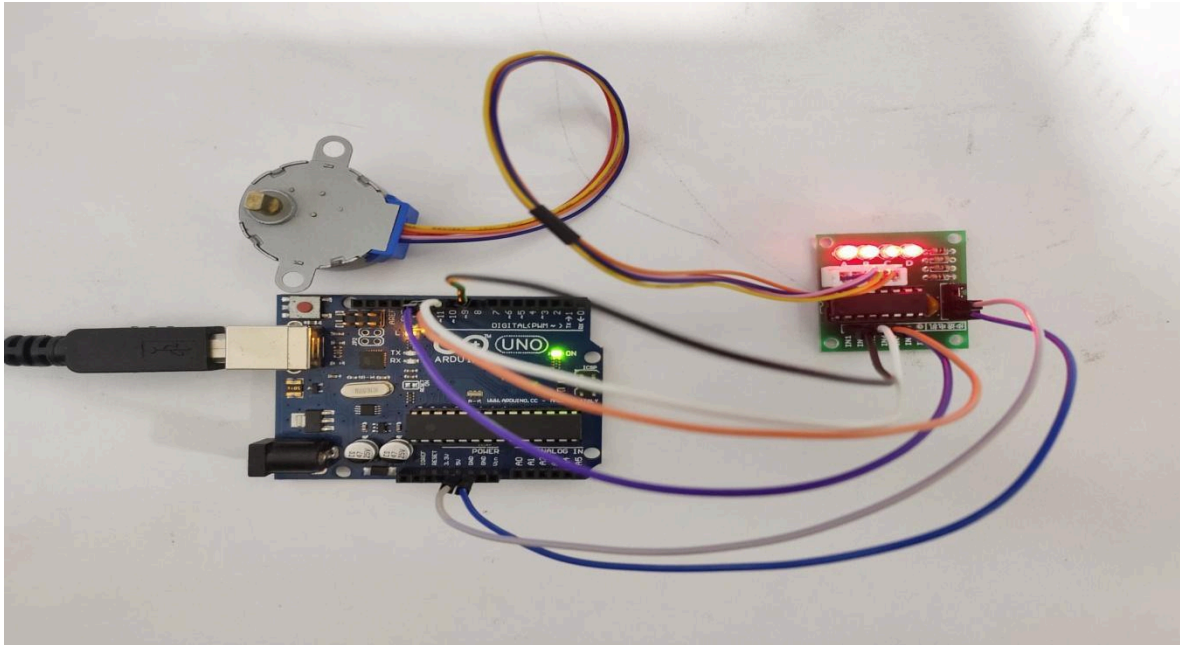
```

    }
    }else{
switch(step_number){
case 0:
digitalWrite(STEPPER_PIN_1, LOW);
digitalWrite(STEPPER_PIN_2, LOW);
digitalWrite(STEPPER_PIN_3, LOW);
digitalWrite(STEPPER_PIN_4, HIGH);
break;
case 1:
digitalWrite(STEPPER_PIN_1, LOW);
digitalWrite(STEPPER_PIN_2, LOW);
digitalWrite(STEPPER_PIN_3, HIGH);
digitalWrite(STEPPER_PIN_4, LOW);
break;
case 2:
digitalWrite(STEPPER_PIN_1, LOW);
digitalWrite(STEPPER_PIN_2, HIGH);
digitalWrite(STEPPER_PIN_3, LOW);
digitalWrite(STEPPER_PIN_4, LOW);
break;
case 3:
digitalWrite(STEPPER_PIN_1, HIGH);
digitalWrite(STEPPER_PIN_2, LOW);
digitalWrite(STEPPER_PIN_3, LOW);
digitalWrite(STEPPER_PIN_4, LOW);

        }
    }
    step_number++;
    if(step_number> 3){
step_number = 0;
    }
}

```

OUTPUT:



RESULT:

Thus interfacing a stepper motor using a driver circuit with Arduino and programming to rotate Anti-clockwise direction has been executed successfully.