Task 7: To interface motor using relay with Arduino write a program to control the direction of the motor

Aim:

To interface motor using relay with Arduino write a program to control the direction of the motor using L293D Motor driver controller.

Apparatus Required:

- Arduino board
- L293D Motor Driver
- DC motor
- Push Button (for motor direction control)
- Jumper wires
- ThinerCAD Simulator

Procedure

Step 1: Open TinkerCAD

Visit TinkerCAD (https://www.tinkercad.com/) and log in or create an account.

Step 2: Create a New Circuit

Step 3: Add Components to the Circuit

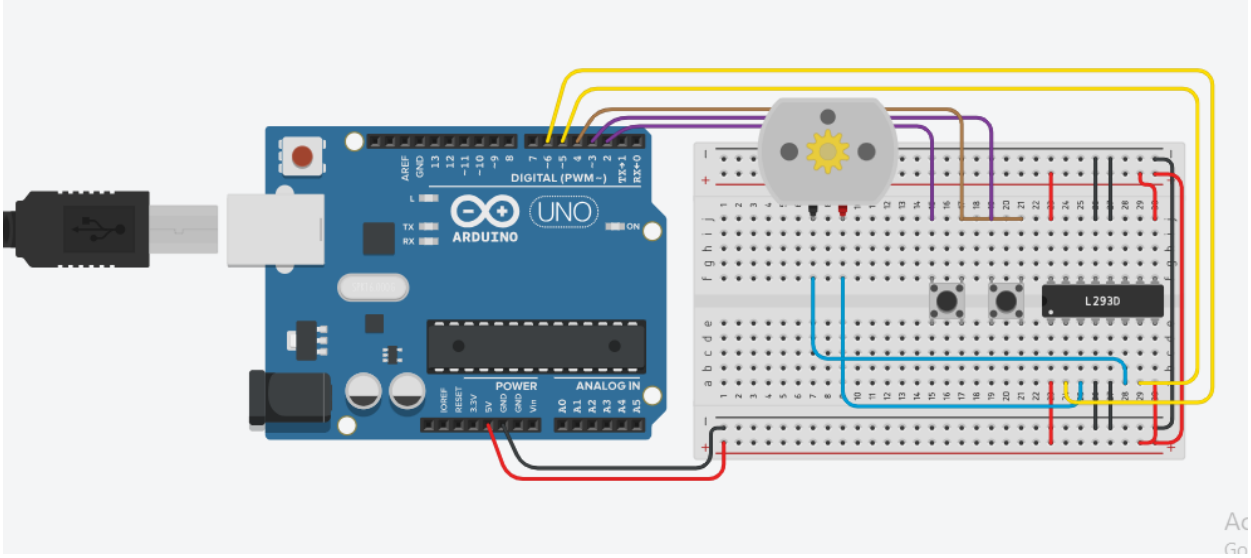
Arduino Uno, L293D Motor Driver, DC Motor, Two Push Buttons

Step 4: Connect the Components as per circuit mentioned.

Step 5: Write and Upload the Arduino Code into the TinkerCAD Code Editor.

Step 6: Simulate using the "Start Simulation" button to see the motor's behavior in response to the push button presses.

Circuit Diagram



Program

```
#include <Keypad.h>
int motorPin1 =  5;    // One motor wire connected to digital pin 5
int motorPin2 =  6;    // One motor wire connected to digital pin 6
const byte ROWS = 2; //Two rows
const byte COLS = 1;  //one columns
//define the symbols on the buttons of the keypads
char hexaKeys[ROWS][COLS] = {
{'2'},
{'1'}
};
byte rowPins[ROWS] = {3, 2}; //connect to the row pinouts of the keypad
byte colPins[COLS] = {4}; //connect to the column pinouts of the keypad
//initialize an instance of class NewKeypad
//Keypad keypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS );
Keypad customKeypad = Keypad( makeKeymap(hexaKeys), rowPins, colPins, ROWS, COLS);
```

```
void setup(){
  Serial.begin(9600);
}
void loop(){
  char customKey = customKeypad.getKey();
  switch (customKey) {
    case '1':
      Serial.println("Rotates To Left");
      rotateLeft();
      break;
    case '2':
      Serial.println("Rotates To Right");
      rotateRight();
      break;
  }
}
void rotateLeft(){
  digitalWrite(motorPin1, HIGH); //rotates motor
  digitalWrite(motorPin2, LOW);    // set the Pin motorPin2 LOW
}
void rotateRight(){
  digitalWrite(motorPin2, HIGH); //rotates motor
  digitalWrite(motorPin1, LOW);    // set the Pin motorPin1 LOW
}
```

Result

Thus the motor Direction controller using arduino has designed and experimented successfully using TinkerCAD Simulator.