Practical 4

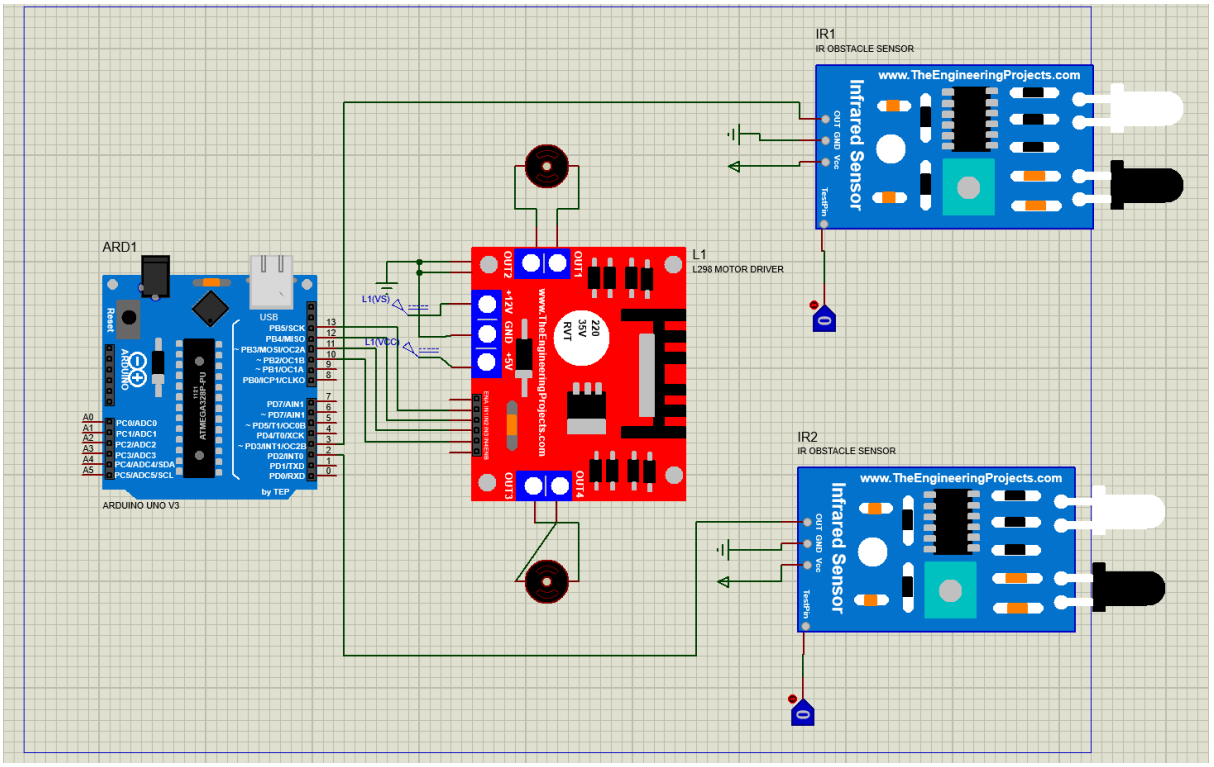
Aim: - Add the sensors to the Robot object and develop the line following behaviour code.

(Note: Add the provided libraries following this guide)

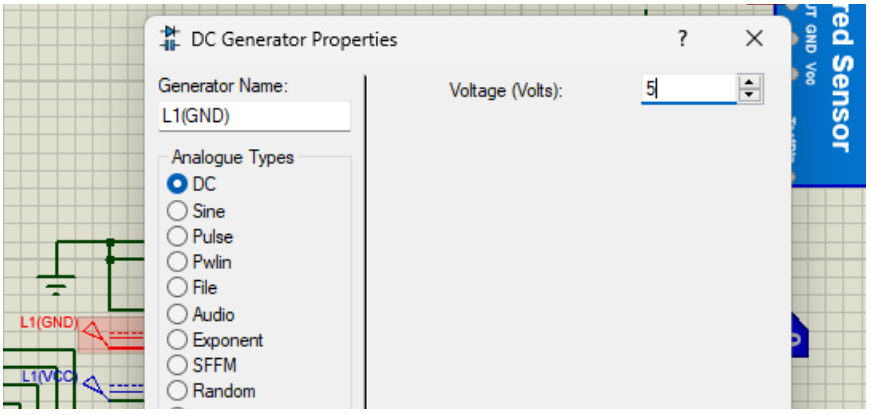
Components

- **L298 Motor Driver**
- **2 IR Obstacle Sensor**
- **Arduino UNO 3**
- **2 Logic Toggle**
- **2 Motor**
- **3 Ground (Terminals)**
- **2 Power (Terminals)**
- **2 DC (Generators)**

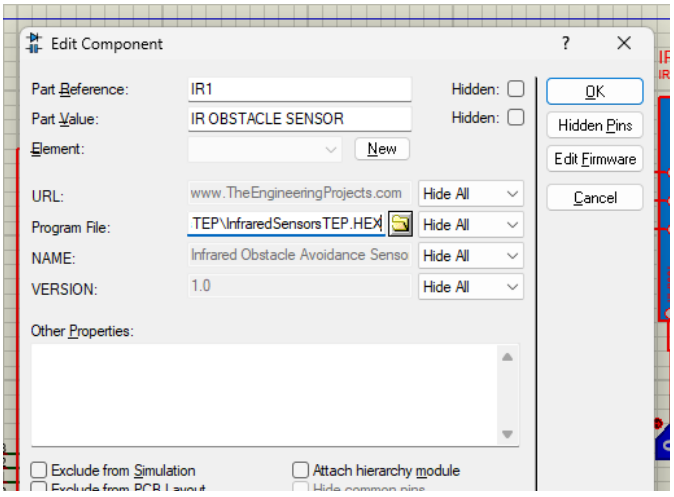
Step 1: Create the following circuit



Step 2: Set both DC Generators voltage to 5



Step 3: Add the provided InfraredSensorsTEP.Hex file to both IR sensors

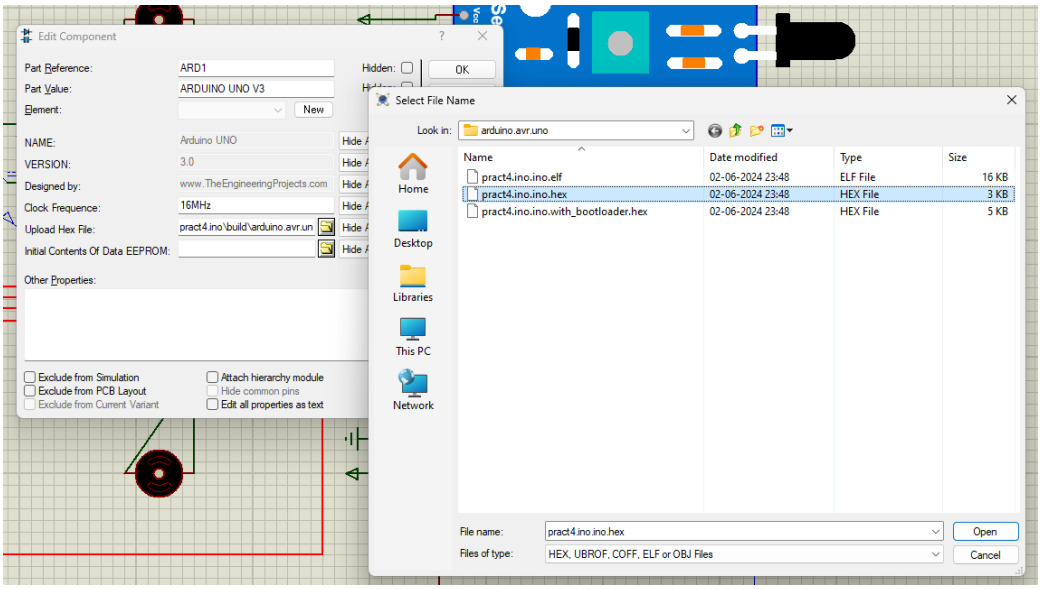


Step 3: Write the Code for Arduino and extract the hex file

```
void setup() {
  pinMode(2, INPUT);
  pinMode(3, INPUT);
  pinMode(10, OUTPUT);
  pinMode(11, OUTPUT);
  pinMode(12, OUTPUT);
  pinMode(13, OUTPUT);
}

void loop() {

  int v = digitalRead(2);
  int s = digitalRead(3);

  if (v == 1 and s == 1) {
```

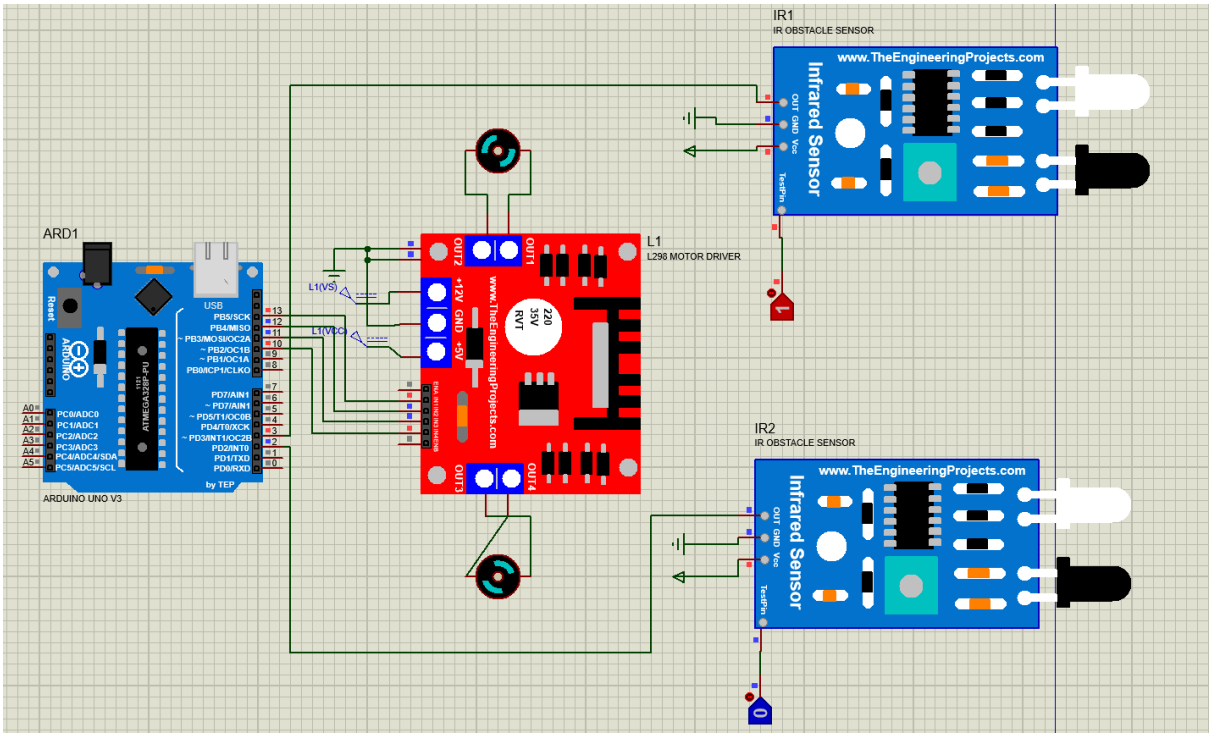
```
    digitalWrite(13, 1);
    digitalWrite(12, 0);
    digitalWrite(11, 1);
    digitalWrite(10, 0);
  }

  if (v == 1 and s == 0) {
    digitalWrite(13, 0);
    digitalWrite(12, 1);
    digitalWrite(11, 0);
    digitalWrite(10, 1);
  }

  if (v == 0 and s == 1) {

    digitalWrite(13, 1);
    digitalWrite(12, 0);
    digitalWrite(11, 0);
    digitalWrite(10, 1);
  }

  if (v == 0 and s == 0) {

    digitalWrite(13, 0);
    digitalWrite(12, 1);
    digitalWrite(11, 0);
    digitalWrite(10, 1);
  }
}
```

Step 4: Add the hex file to Arduino



Step 5: Start the simulation

When the upper IR Sensor is on the motor spins in clockwise director (In the direction of sensor)



When lower sensor is on the lower motor spins the direction of sensor