Practical 4

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

(Note: Add the provided libraries following this <u>guide</u>) 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

🕌 DC Generator Propertie	es	?	×	IT GND	red S
Generator Name: L1(GND) Analogue Types	Voltage (Volts):	5	-	100	iensor
Sine Pulse Pwlin File Audio Exponent SFFM Random					

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

Part <u>R</u> eference:	IR1	Hidden: 🗌 🗌 <u>D</u> K	
Part <u>¥</u> alue:	IR OBSTACLE SENSOR	Hidden: 🗌	Hidden <u>P</u> ins
Element:	∨ <u>N</u> ew		Edit <u>F</u> irmware
URL:	www.TheEngineeringProjects.com	Hide All \sim	Cancel
Program File:	TEP\InfraredSensorsTEP.HEX	Hide All \sim	
NAME:	Infrared Obstacle Avoidance Senso	Hide All \sim	
VERSION:	1.0	Hide All \sim	
Other Properties:			
		-	

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 \text{ 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

