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TE A

# Assignment No: 4

**Aim:** Understanding the connectivity of Rasberry-Pi/ Beagle board circuit with IR sensor write an application to detect obstacle & notify user using LED's.

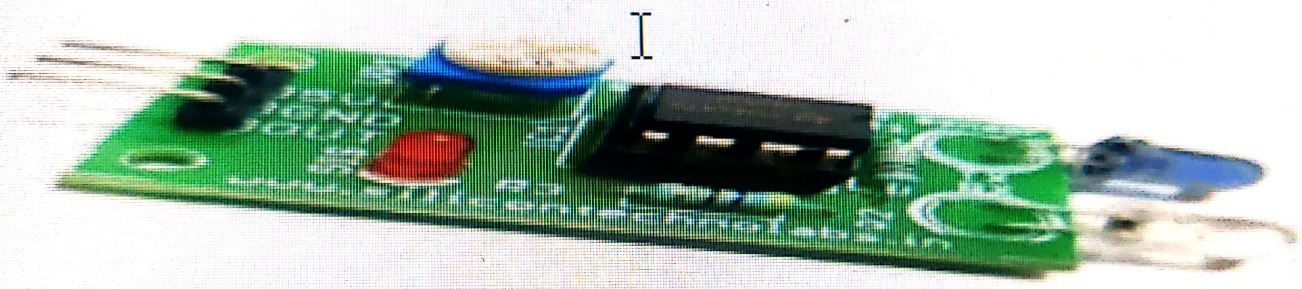
## Theory

- Emitter : The component continuously emits the signal
- Receiver : It waits for the signal which is bounced back by obstacle
- Indicator : An board LED to signal if obstacle is decided by the sensor.
- O/p : Could be used as I/p for future processing of the signal.
- Ground : ground / Negative
- voltage : I/p 3.3V

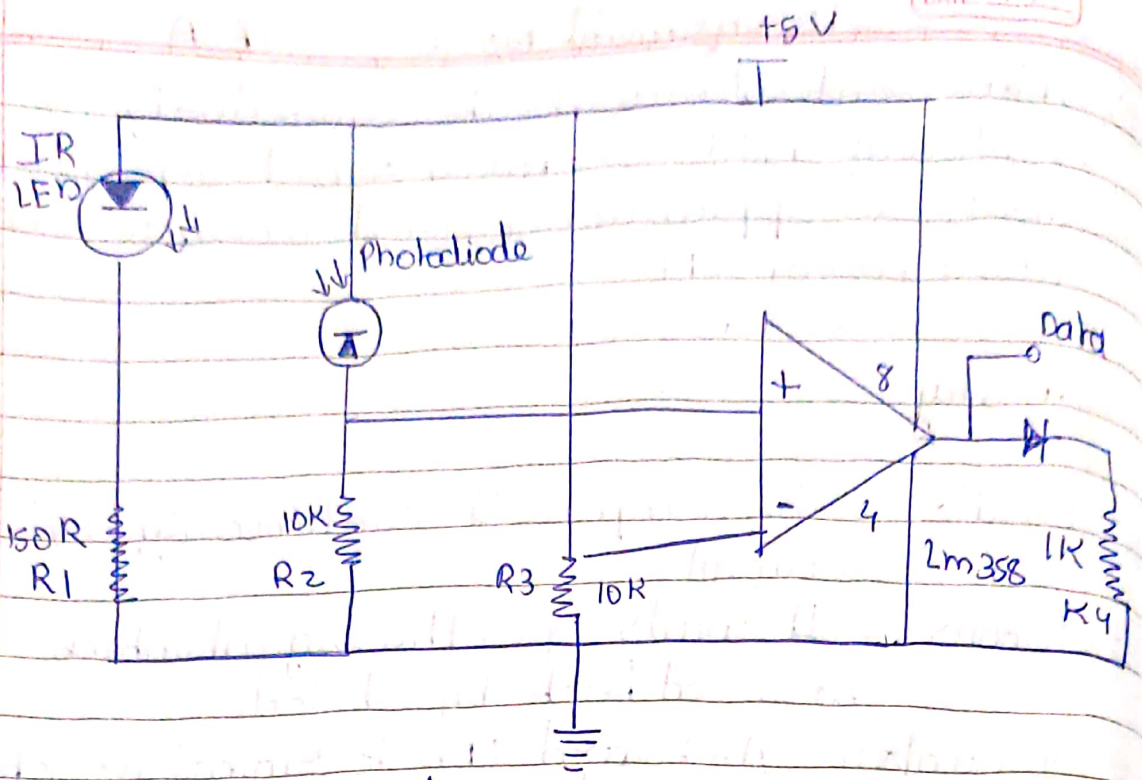
## Objective

We will be creating circuit using following components

- Rasberry pi-3
- IR sensor
- 1 LED
- 1 register (330 Ω)
- Few jumper cables
- 1 Breadboard



IR Sensor Fig.1




Circuit diagram for IR sensor

Circuit to detect obstacles

Part I Conecting IR sensor

IR sensor has 3 pins, Vi2, Vcc, GND & out we will use GPIO for receiving i/p from sensor

1. Connect GPIO no from Rasberry Pi to Breadboard
2. Connect out pin of sensor with Breadboard
3. Connect GND with -ve line on left side of the breadboard
4. Connect GND of IR sensor to breadboard
5. Connect GND for step 3 to breadboard
6. Connect Vcc of the IR sensor to breadboard
7. Connect 3V3 (Pin #1) to +ve line on left side of the breadboard.
8. Connect 3V3 to breadboard.

Now circuit is completed and sensor will detect the obstacle. It can be tested by putting

anything in front of IR sensor

Part 2 Connecting LED.
Objective is to turn on LED when obstacle is detected
1. Connected GPIO 4 follow the board to the breadboard
2. Connect the pt of LED to breadboard.
3. Connect -ve pt of LED to the breadboard.
Now we are ready to send signal based on i/p received from IR sensor to turn on/off the LED

Part 3: code to connect IR sensor I/P with LED status

Part 4: Executing the code
- open terminal
- Navigate to directory where the above code is saved
- Type $ python 3 ir obstacle.py $ press enter

Conclusion
Thus we have done connectivity of raspberry Pi / beagle board circuit with IR sensor. and wrote app to detect obstacle & notify user using LED.

**Part 3: Code to Connect IR Sensor I/P with LED status**

```
from GPO zero import LED
from signal import pause
import R pi.GPO as GPO
import time
```

```
GPO.set mode(GPIO.BCM)
LED_PIN = 27
IR_PIN = 17

indicator = LED(LED_PIN)
GPIO.setup(IR_PIN, GPIO.IN)

count = 1

while True:
        got_something = GPIO.input(IR_PIN)
        if got_something:
                indicator.on()
                print("{:>3} Got something".format(count))
        else:
                indicator.off()
                print("{:>3} Nothing detected".format(count))
                count += 1
        time.sleep(0.2)
```