EXP NO: **DATE:**

AIM:

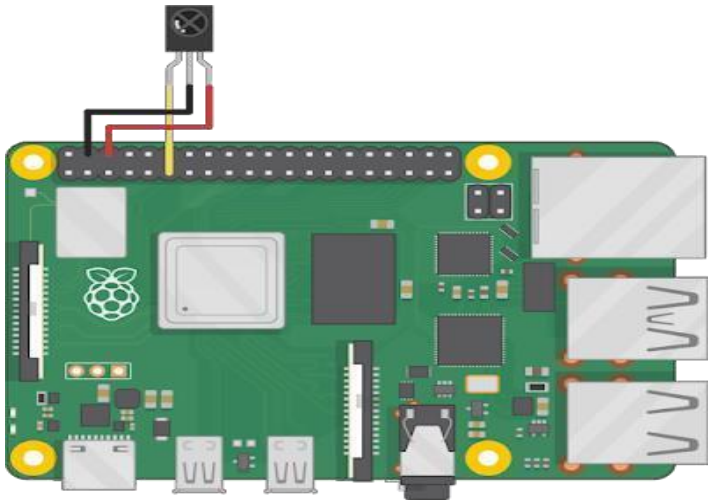
To interface IR sensor with Raspberry PI

APPARATUS REQUIRED:

- Raspberry Pi
- IR Sensor
- Connecting cables

IR SENSOR:

An IR sensor or infrared sensor is a type of electronic device that emits light in order to detect certain aspects of its surroundings. The sensor module is ambient light-adaptable, with a pair of infrared emitting and receiving tubes. At a specific frequency, the transmitting tubes emit infrared. When the direction of an obstacle is detected (reflective surface), the receiving tube receives the infrared reflected. After a comparator circuit processing, the green light turns on. And the signal output interfaces a digital signal (a low-level signal). The sensor's effective distance range is 2 ~ 30cm. The sensor's detection range can be adjusted by adjusting the potentiometer.



PROGRAM:

```
import RPi.GPIO as GPIO
import time
sensor=3
GPIO.setmode(GPIO.BCM)
GPIO.setup(sensor,GPIO.PIN)
print "IR sensor detected"
print ""
Try:
        While True:
                If GPIO.input(sensor):
                        print("object not detected")
                        While GPIO.input(Sensor):
                                time.sleep(0.2)
                Else:
                        print("object detected")
Except KeyboardInterrupt:
        GPIO.cleanup()
```

OUTPUT:

RESULT:

Thus the IR sensor is interfaced with Raspberry Pi and the obstacle detection was monitored.

EXP NO: **DATE:**

COMMUNICATE ARDUINO AND RASPBERRY PI

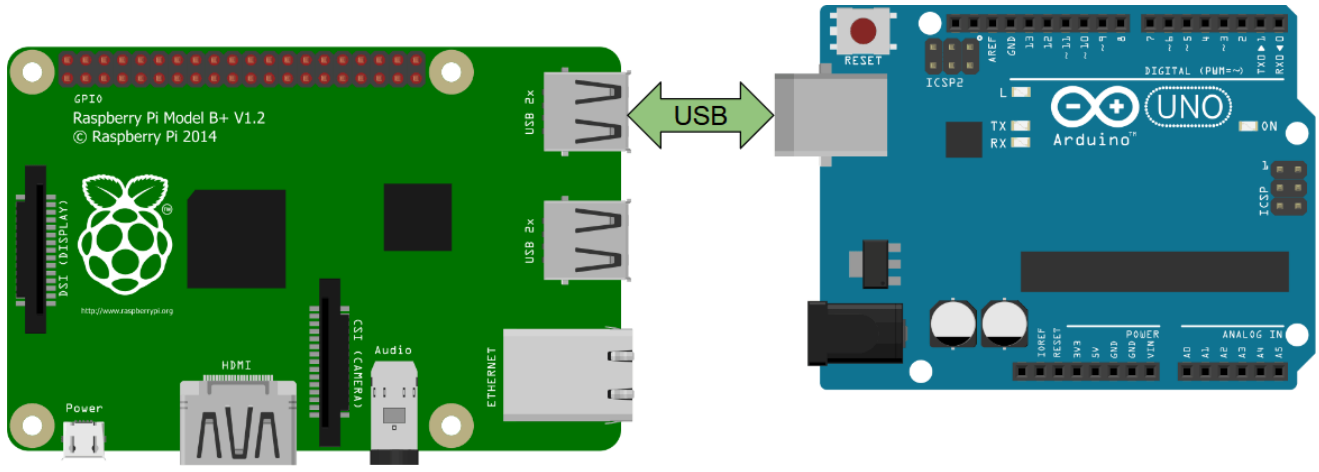
AIM:

To communicate between Arduino and Raspberry Pi and forward a message from Arduino to Raspberry Pi.

APPARATUS REQUIRED:

- Arduino UNO Board
- Raspberry Pi
- Connecting Cables

DIAGRAM



PROGRAM:

Raspberry Pi and Arduino Communication

Step 1: Connect the Arduino to the raspberry pi with the help of a USB cable

Step 2: Open thonny and type in the following code to create a serial communication device with the specified name and port

```
import serial
ser = serial.Serial('/dev/ttyACM0', 9600)
```

Step 3: check if the device was created by opening the terminal and typing the following command

ls /dev/tty*

Step 4: Open the arduino ide and upload the following code to the arduino board

```
void setup()
{
Serial.begin(9600);
}
void loop(){
Serial.println("Hello Pi");
delay(2000);
}
```

Step 5: Now connect the Arduino to the raspberry pi again and add the following code to thonny

```
while 1 :
    print(ser.readline())
```

Step 6: Now run the code again to observe the data being sent

OUTPUT:

Hello Pi

RESULT:

Thus the communication between Arduino and Raspberry Pi was established and the message was sent from Arduino to Raspberry Pi using serial communication.