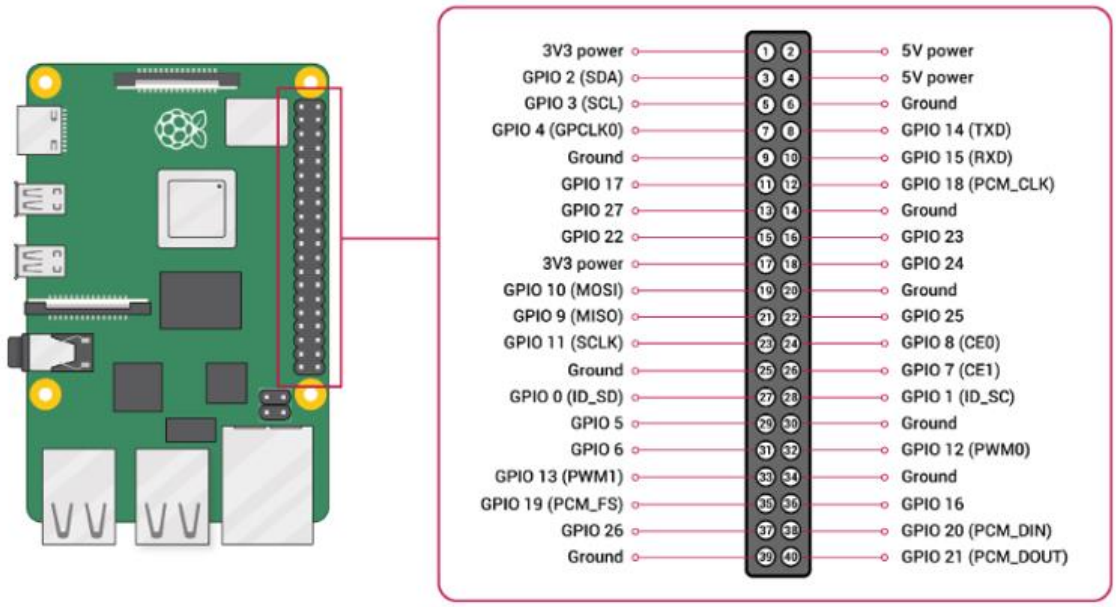
NAME: ANANYA PILLAI

1) RASPBERRY PI – ULTRASONIC SENSOR

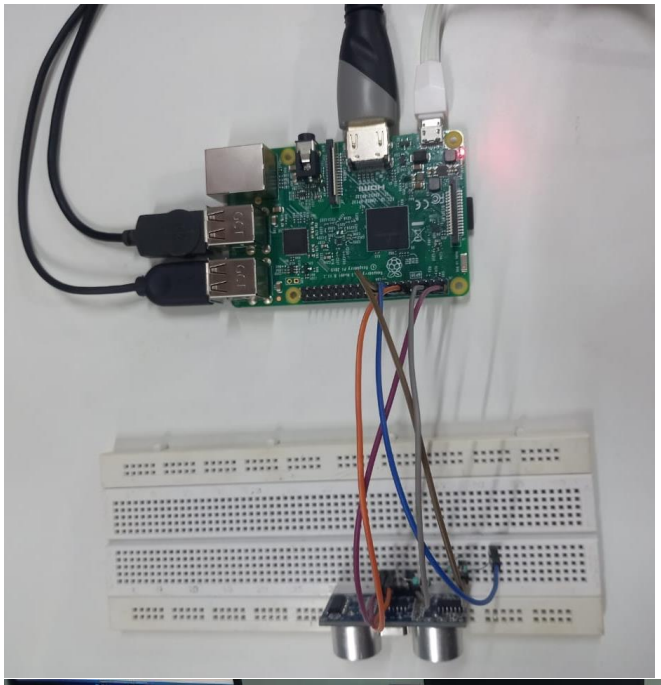


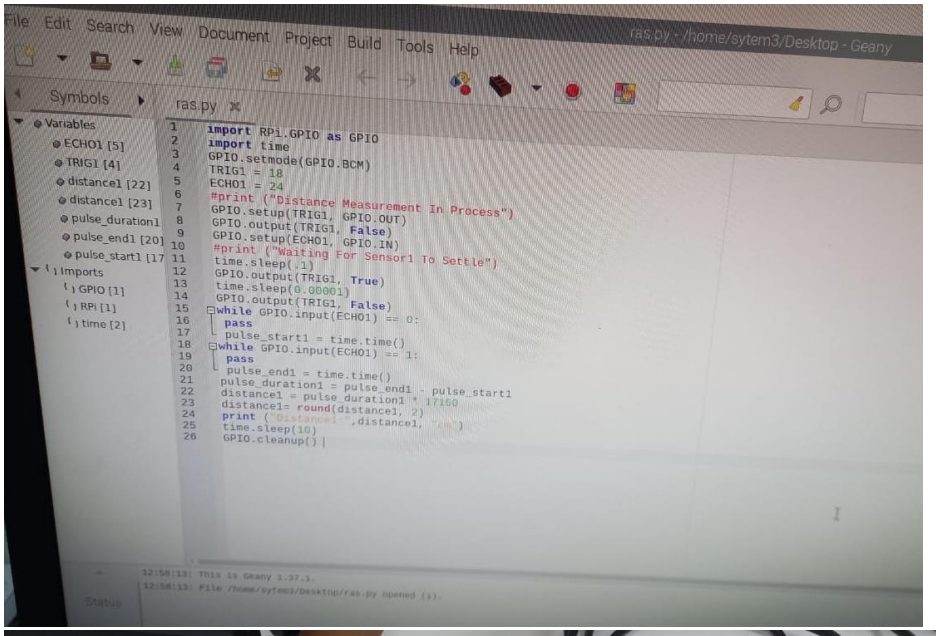
CODE:

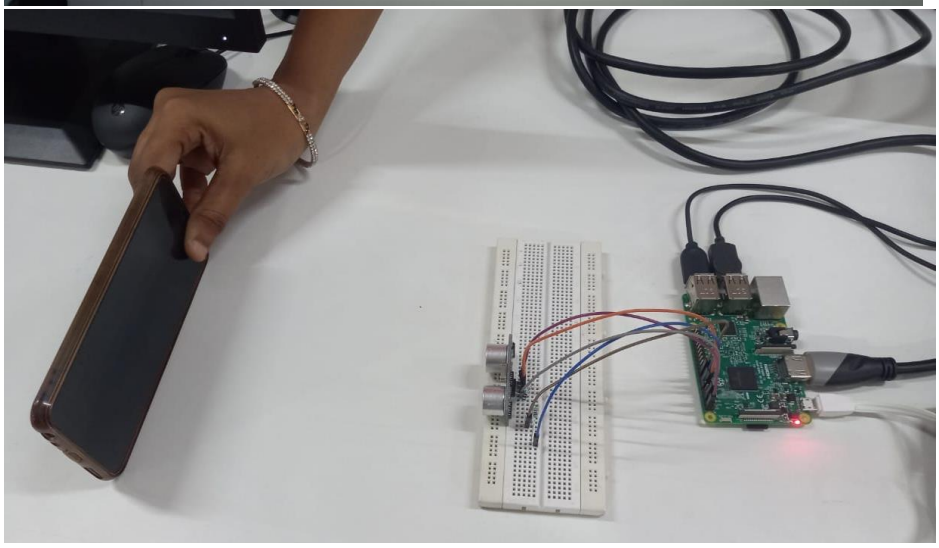
```
import RPi.GPIO as GPIO
import time
GPIO.setmode(GPIO.BCM)
TRIG1 = 18
ECHO1 = 24
#print ("Distance Measurement In Process")
GPIO.setup(TRIG1, GPIO.OUT)
GPIO.output(TRIG1, False)
GPIO.setup(ECHO1, GPIO.IN)
#print ("Waiting For Sensor1 To Settle")
time.sleep(.1)
GPIO.output(TRIG1, True)
time.sleep(0.00001)
GPIO.output(TRIG1, False)
while GPIO.input(ECHO1) == 0:
```

```
    pass
    pulse_start1 = time.time()
while GPIO.input(ECHO1) == 1:
    pass
    pulse_end1 = time.time()
pulse_duration1 = pulse_end1 - pulse_start1
distance1 = pulse_duration1 * 17150
distance1= round(distance1, 2)
print ("Distance1:",distance1, "cm")
time.sleep(10)
GPIO.cleanup()
```

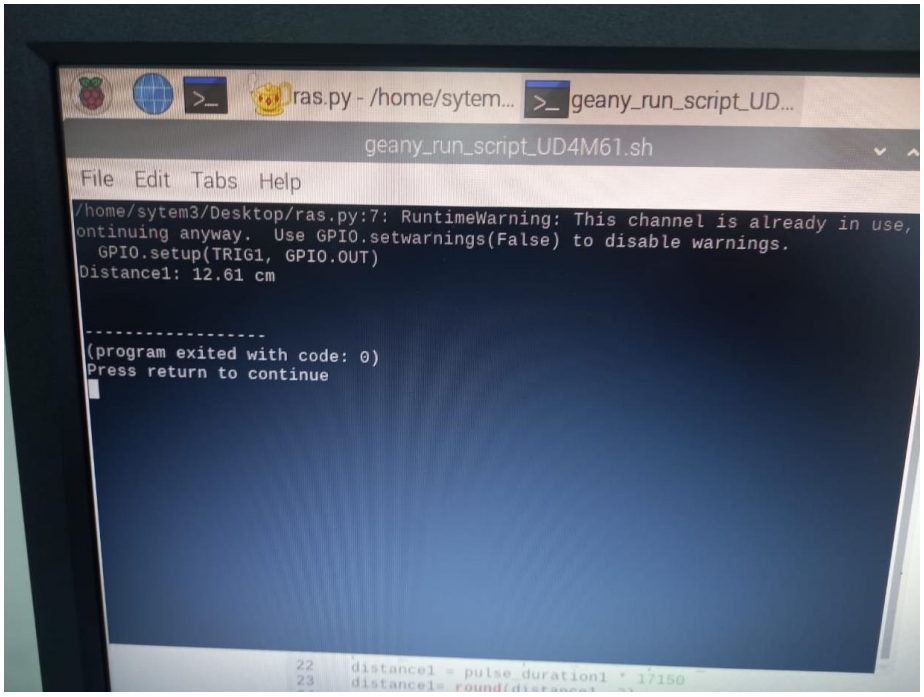
CONNECTIONS AND SETUP:

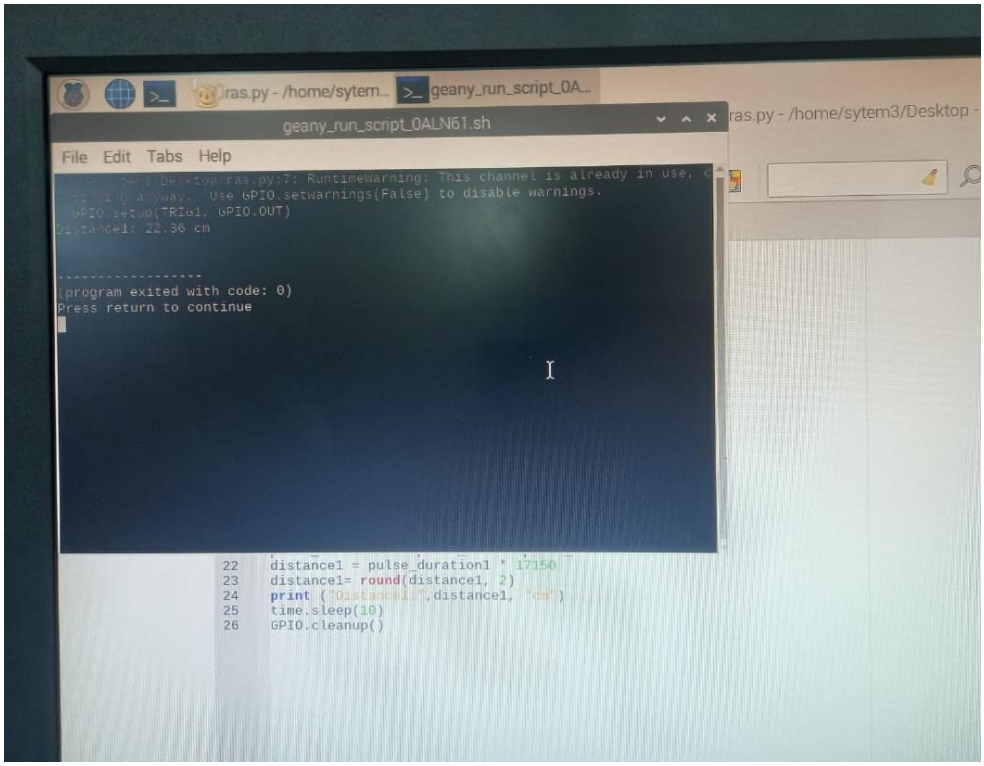



File Edit Search View Document Project Build Tools Help
ras.py - /home/sytem3/Desktop - Geany
Symbols
ras.py
Variables
ECHO1 [5]
TRIG1 [4]
distance1 [22]
distance1 [23]
pulse_duration1
pulse_end1 [20]
pulse_start1 [17]
Imports
GPIO [1]
RPi [1]
time [2]
1 import RPi.GPIO as GPIO
2 import time
3 GPIO.setmode(GPIO.BCM)
4 TRIG1 = 18
5 ECHO1 = 24
6 #print ("Distance Measurement In Process")
7 GPIO.setup(TRIG1, GPIO.OUT)
8 GPIO.output(TRIG1, False)
9 GPIO.setup(ECHO1, GPIO.IN)
10 #print ("Waiting For Sensor1 To Settle")
11 time.sleep(.1)
12 GPIO.output(TRIG1, True)
13 time.sleep(0.00001)
14 GPIO.output(TRIG1, False)
15 while GPIO.input(ECHO1) == 0:
16 pass
17 pulse_start1 = time.time()
18 while GPIO.input(ECHO1) == 1:
19 pass
20 pulse_end1 = time.time()
21 pulse_duration1 = pulse_end1 - pulse_start1
22 distance1 = pulse_duration1 * 17150
23 distance1= round(distance1, 2)
24 print ("Distance1 :",distance1, "cm")
25 time.sleep(10)
26 GPIO.cleanup()
Status



OUTPUT:


ras.py - /home/sytem...
geany_run_script_UD...
geany_run_script_UD4M61.sh
File Edit Tabs Help
/home/sytem3/Desktop/ras.py:7: RuntimeWarning: This channel is already in use,
ontinuing anyway. Use GPIO.setwarnings(False) to disable warnings.
GPIO.setup(TRIG1, GPIO.OUT)
Distance1: 12.61 cm
(program exited with code: 0)
Press return to continue
22 distance1 = pulse_duration1 * 17150
23 distance1= round(distance1, 2)


ras.py - /home/sytem...
geany_run_script_0A...
geany_run_script_0ALN61.sh
File Edit Tabs Help
ras.py - /home/sytem3/Desktop -
(program exited with code: 0)
Press return to continue
22 distance1 = pulse_duration1 * 17150
23 distance1= round(distance1, 2)
24 print ("Distance1:",distance1, "cm")
25 time.sleep(10)
26 GPIO.cleanup()

2) NODE MC

CODE:

```
#include "ThingSpeak.h"
#include <ESP8266WiFi.h>
//---------- Enter you Wi-Fi Details---------//
char ssid[] = "vivo 1904"; //SSID
char pass[] = "resh7604"; // Password
//-----------------------------------------//
const int trigger = 16;
const int echo = 5;
long T;
float distanceCM;
WiFiClient client;
unsigned long myChannelField = 2204739; // Channel ID
const int ChannelField = 1; // Which channel to write data
const char * myWriteAPIKey = " LRFT3R8SP6RDUPV1"; // Your write API Key
void setup()
{
 Serial.begin(9600);
 pinMode(trigger, OUTPUT);
 pinMode(echo, INPUT);
 WiFi.mode(WIFI_STA);
 ThingSpeak.begin(client);
}
void loop()
{
 if (WiFi.status() != WL_CONNECTED)
 {
```

```
 Serial.print("Attempting to connect to SSID: ");
 Serial.println(ssid);
 while (WiFi.status() != WL_CONNECTED)
 {
 WiFi.begin(ssid, pass);
 Serial.print(".");
 delay(5000);
 }
 Serial.println("\nConnected.");
 }
 digitalWrite(trigger, LOW);
 delay(1);
 digitalWrite(trigger, HIGH);
 delayMicroseconds(10);
 digitalWrite(trigger, LOW);
 T = pulseIn(echo, HIGH);
 distanceCM = T * 0.034;
 distanceCM = distanceCM / 2;
 Serial.print("Distance in cm: ");
 Serial.println(distanceCM);
 ThingSpeak.writeField(myChannelField, ChannelField, distanceCM,
myWriteAPIKey);
 delay(1000);}
```

OUTPUT:

sketch_jun13a.ino

```
#include "ThingSpeak.h"
#include <ESP8266WiFi.h>

//---------- Enter you Wi-Fi Details---------//
char ssid[] = "vivo 1904"; //SSID
char pass[] = "resh7604"; // Password
//-------------------------------------------//

const int trigger = 16;
const int echo = 5;
long T;
float distanceCM;
WiFiClient client;

unsigned long myChannelField =  2204739; // Channel ID
const int ChannelField = 1; // Which channel to write data
const char * myWriteAPIKey = "LRFT3R8SP6RDUPV1"; // Your write API Key

void setup()
{
Serial.begin(9600);
pinMode(trigger, OUTPUT);
pinMode(echo, INPUT);
WiFi.mode(WIFI_STA);
ThingSpeak.begin(client);
}
void loop()
{
if (WiFi.status() != WL_CONNECTED)
{
Serial.print("Attempting to connect to SSID: ");
Serial.println(ssid);
while (WiFi.status() != WL_CONNECTED)
{
WiFi.begin(ssid, pass);
```

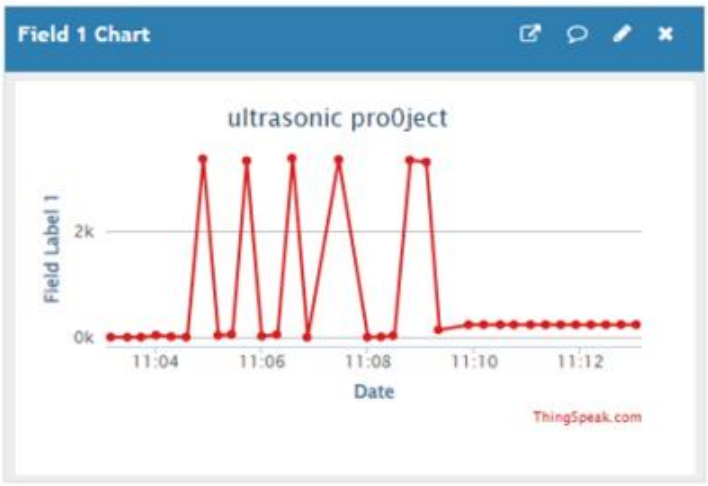
```
void setup()
{
Serial.begin(9600);
pinMode(trigger, OUTPUT);
pinMode(echo, INPUT);
WiFi.mode(WIFI_STA);
ThingSpeak.begin(client);
}
void loop()
{
if (WiFi.status() != WL_CONNECTED)
{
Serial.print("Attempting to connect to SSID: ");
Serial.println(ssid);
while (WiFi.status() != WL_CONNECTED)
{
WiFi.begin(ssid, pass);
Serial.print(".");
delay(5000);
}
Serial.println("\nConnected.");
}
digitalWrite(trigger, LOW);
delay(1);
digitalWrite(trigger, HIGH);
delayMicroseconds(10);
digitalWrite(trigger, LOW);
T = pulseIn(echo, HIGH);
distanceCM = T * 0.034;
distanceCM = distanceCM / 2;
Serial.print("Distance in cm: ");
Serial.println(distanceCM);
ThingSpeak.writeField(myChannelField, ChannelField, distanceCM, myWriteAPIKey);
delay(1000);
}
```

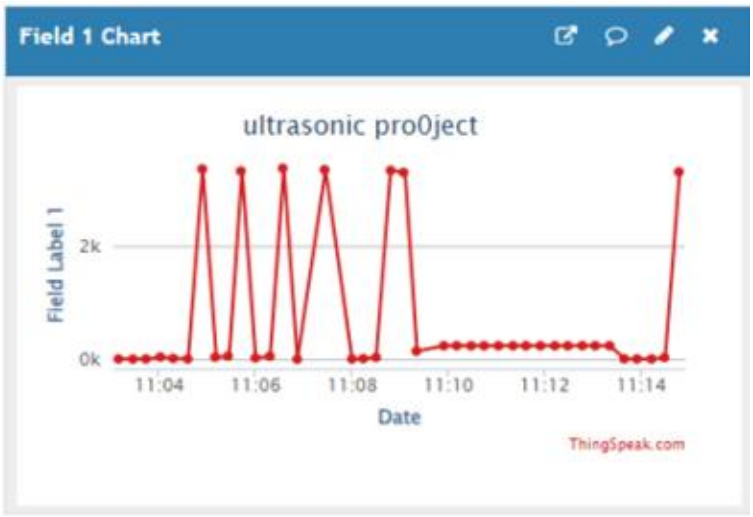
```
19  void setup()
20  {
21  Serial.begin(9600);
```

Output Serial Monitor ×

Message (Enter to send message to 'NodeMCU 1.0 (ESP-12E Module)' on 'COM12') New Line 9600 baud

```
.............Attempting to connect to SSID: vivo 1904
.
Connected.
Distance in cm: 5.63
Distance in cm: 3402.74
Distance in cm: 5.13
Distance in cm: 9.83
Distance in cm: 3346.77
Distance in cm: 10.63
Distance in cm: 2.57
Distance in cm: 3.25
Distance in cm: 6.17
Distance in cm: 3.69
Distance in cm: 3.45
Distance in cm: 4.22
Distance in cm: 2.52
Distance in cm: 5.86
Distance in cm: 3.98
Distance in cm: 5.47
Distance in cm: 15.01
Distance in cm: 6.97
Distance in cm: 4.49
Distance in cm: 42.08
Distance in cm: 9.81
Distance in cm: 18.14
Distance in cm: 15.62
Distance in cm: 15.62
Distance in cm: 15.64
Distance in cm: 15.62
Distance in cm: 39.07
Distance in cm: 3347.22
Distance in cm: 3.98
```





THANK YOU !