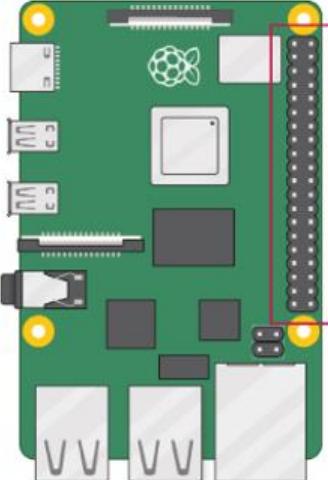


NAME: ANANYA PILLAI

1) RASPBERRY PI – ULTRASONIC SENSOR



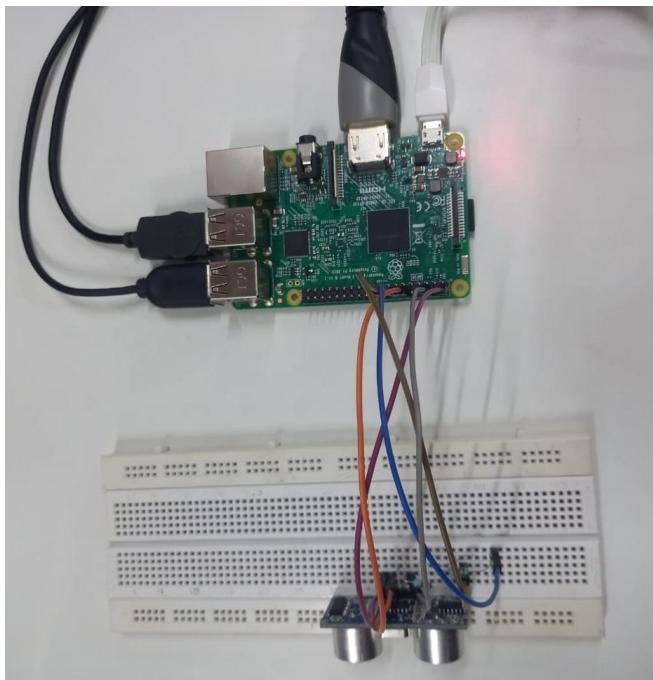
3V3 power	1	5V power
GPIO 2 (SDA)	2	5V power
GPIO 3 (SCL)	3	Ground
GPIO 4 (GPCLK0)	4	GPIO 14 (TXD)
Ground	5	GPIO 15 (RXD)
GPIO 17	6	GPIO 18 (PCM_CLK)
GPIO 27	7	Ground
GPIO 22	8	GPIO 23
3V3 power	9	GPIO 24
GPIO 10 (MOSI)	10	Ground
GPIO 9 (MISO)	11	GPIO 25
GPIO 11 (SCLK)	12	GPIO 8 (CE0)
Ground	13	GPIO 7 (CE1)
GPIO 0 (ID_SD)	14	GPIO 1 (ID_SC)
GPIO 5	15	Ground
GPIO 6	16	GPIO 12 (PWM0)
GPIO 13 (PWM1)	17	Ground
GPIO 19 (PCM_FS)	18	GPIO 16
GPIO 26	19	GPIO 20 (PCM_DIN)
Ground	20	GPIO 21 (PCM_DOUT)

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:



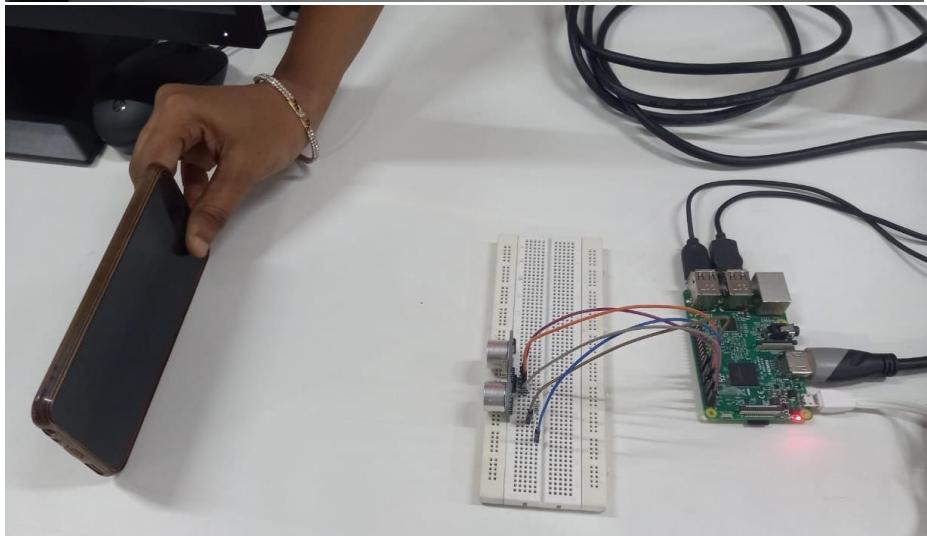
File Edit Search View Document Project Build Tools Help

ras.py - /home/system3/Desktop - Geany

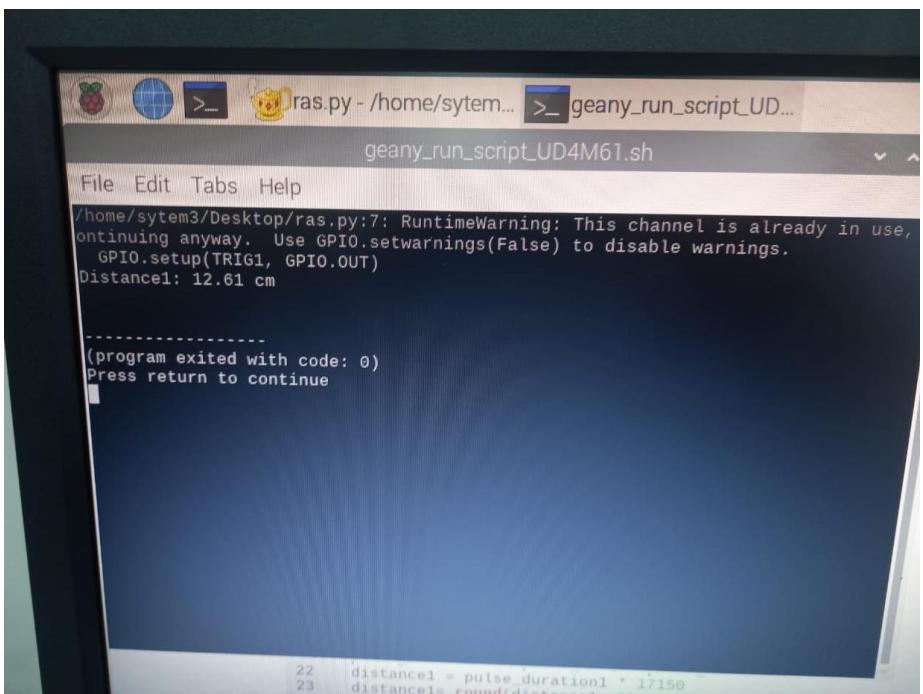
Symbols Variables ras.py

```
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 GPIO.output(ECHO1, True)
11 time.sleep(0.0001)
12 GPIO.output(TRIG1, True)
13 time.sleep(0.0001)
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()
```

12:58:13: This is Geany 1.37.1.
12:58:13: File /home/system3/Desktop/ras.py opened (3).

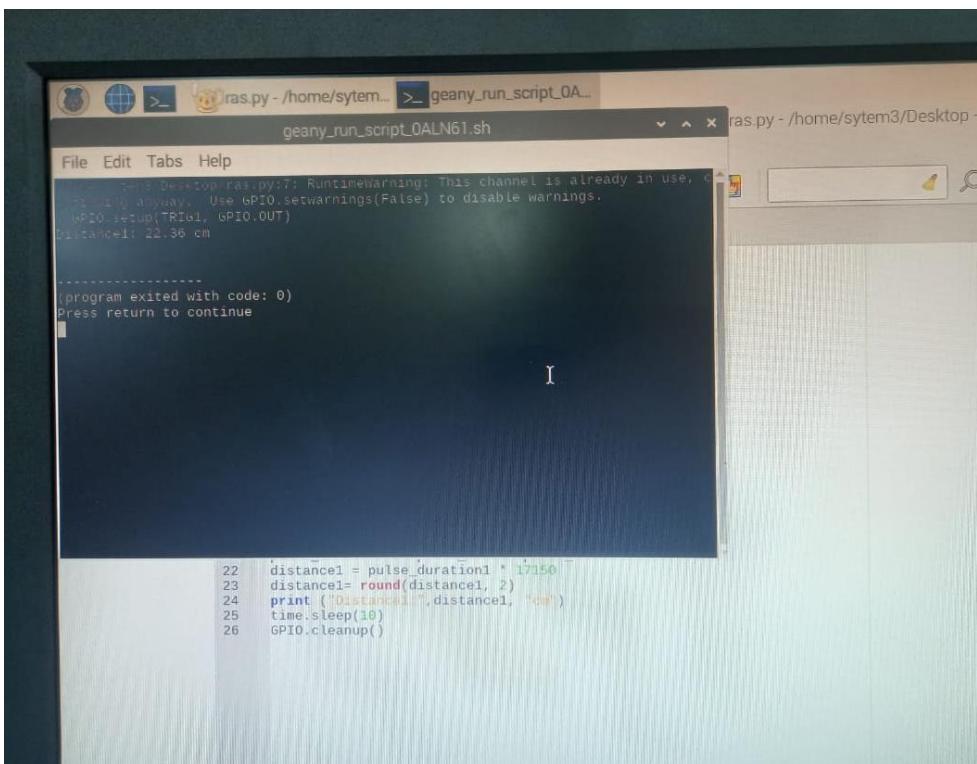


OUTPUT:



```
/home/system3/Desktop/ras.py:7: RuntimeWarning: This channel is already in use, continuing 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
```



```
/home/system3/Desktop/ras.py:7: RuntimeWarning: This channel is already in use, continuing anyway. Use GPIO.setwarnings(False) to disable warnings.
  GPIO.setup(TRIG1, GPIO.OUT)
Distance1: 22.36 cm

-----
(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 your 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)  
    {
```

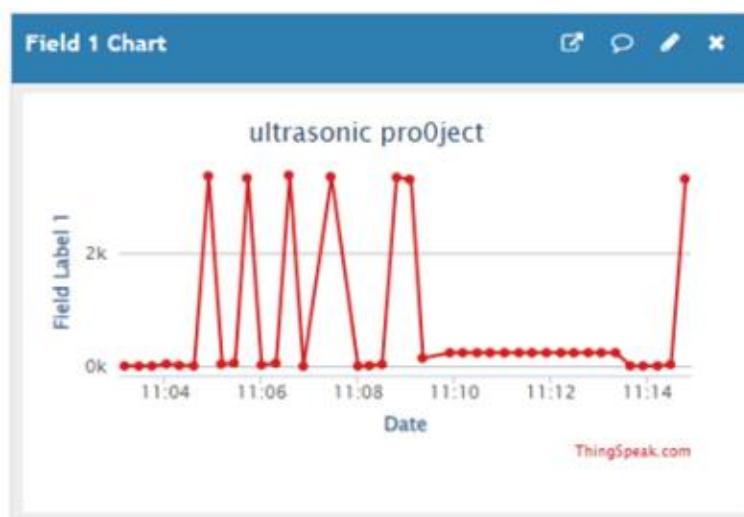
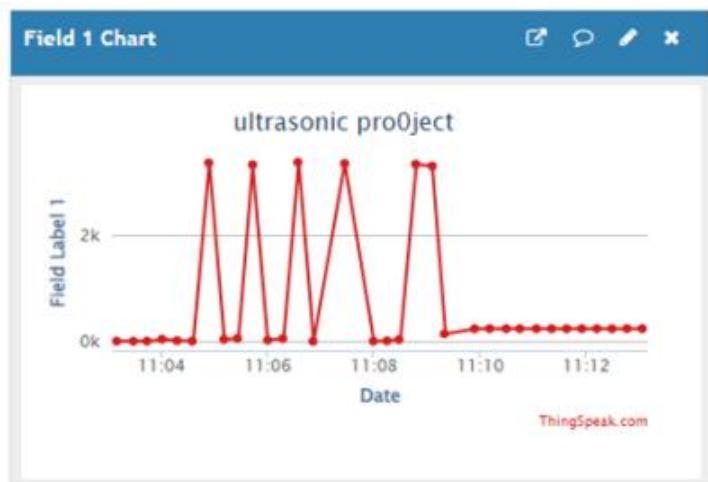
```
Serial.print("Attempting to connect to SSID: ");
Serial.println(ssid);
while (WiFi.status() != WL_CONNECTED)
{
    WiFi.begin(ssid, pass);
    Serial.print(".");
    delay(5000);
}
Serial.println("\nConnected.");
}

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
1 #include "ThingSpeak.h"
2 #include <ESP8266WiFi.h>
3
4 //----- Enter your Wi-Fi Details-----//
5 char ssid[] = "vivo 1904"; //SSID
6 char pass[] = "resh7604"; // Password
7 //-----//
8
9 const int trigger = 16;
10 const int echo = 5;
11 long T;
12 float distanceCM;
13 WiFiClient client;
14
15 unsigned long myChannelField = 2204739; // Channel ID
16 const int ChannelField = 1; // Which channel to write data
17 const char * myWriteAPIKey = "LRFT3R8SP6RDUPV1"; // Your write API Key
18
19 void setup()
20 {
21   Serial.begin(9600);
22   pinMode(trigger, OUTPUT);
23   pinMode(echo, INPUT);
24   WiFi.mode(WIFI_STA);
25   ThingSpeak.begin(client);
26 }
27 void loop()
28 {
29   if (WiFi.status() != WL_CONNECTED)
30   {
31     Serial.print("Attempting to connect to SSID: ");
32     Serial.println(ssid);
33     while (WiFi.status() != WL_CONNECTED)
34     {
35       WiFi.begin(ssid, pass);
36
37       void setup()
38     {
39       Serial.begin(9600);
40       pinMode(trigger, OUTPUT);
41       pinMode(echo, INPUT);
42       WiFi.mode(WIFI_STA);
43       ThingSpeak.begin(client);
44     }
45     void loop()
46     {
47       if (WiFi.status() != WL_CONNECTED)
48       {
49         Serial.print("Attempting to connect to SSID: ");
50         Serial.println(ssid);
51         while (WiFi.status() != WL_CONNECTED)
52         {
53           WiFi.begin(ssid, pass);
54           Serial.print(".");
55           delay(5000);
56         }
57         Serial.println("\nConnected.");
58       }
59       digitalWrite(trigger, LOW);
60       delay(1);
61       digitalWrite(trigger, HIGH);
62       delayMicroseconds(10);
63       digitalWrite(trigger, LOW);
64       T = pulseIn(echo, HIGH);
65       distanceCM = T * 0.034;
66       distanceCM = distanceCM / 2;
67       Serial.print("Distance in cm: ");
68       Serial.println(distanceCM);
69       ThingSpeak.writeField(myChannelField, ChannelField, distanceCM, myWriteAPIKey);
70       delay(1000);
71     }
72   }
73 }
```

```
19 void setup()
20 {
21     Serial.begin(9600);
Output Serial Monitor X
Message (Enter to send message to 'NodeMCU 1.0 (ESP-12E Module)' on 'COM12')
.....100010100000Attempting 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 !

