Internet of Things Lab

B E (ECE)

EXPERIMENT NO: 9

Roll No:	Class: BE	Division: A	Date:

TITLE: Understanding the connectivity of Raspberry-Pi circuit with ultrasonic sensor. Write an application program of for measurement of distance.

AIM: To understand the connectivity of a Raspberry Pi circuit with an ultrasonic sensor and write an application program to measure distance.

Task: Measurement of distance using ultrasonic sensor. Source Code:

```
import RPi.GPIO as GPIO
import time
#GPIO Mode (BOARD / BCM)
GPIO.setmode(GPIO.BCM)
#set GPIO Pins
GPIO TRIGGER = 19
GPIO\_ECHO = 22
#set GPIO direction (IN / OUT)
GPIO.setup(GPIO_TRIGGER, GPIO.OUT)
GPIO.setup(GPIO_ECHO, GPIO.IN)
def distance():
  # set Trigger to HIGH
  GPIO.output(GPIO_TRIGGER, True)
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  # set Trigger after 0.01ms to LOW
  time.sleep(0.00001)
  GPIO.output(GPIO_TRIGGER, False)
  StartTime = time.time()
  StopTime = time.time()
  # save StartTime
  while GPIO.input(GPIO_ECHO) == 0:
    StartTime = time.time()
  # save time of arrival
  while GPIO.input(GPIO_ECHO) == 1:
    StopTime = time.time()
  # time difference between start and arrival
  TimeElapsed = StopTime - StartTime
```

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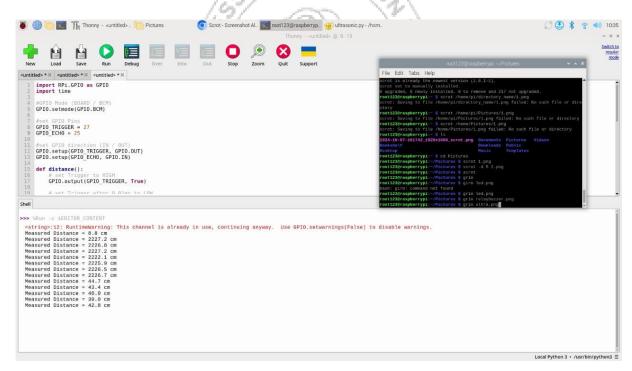
```
# multiply with the sonic speed (34300 cm/s)
# and divide by 2, because there and back
distance = (TimeElapsed * 34300) / 2

return distance

if __name__ == '__main__':
    try:
    while True:
        dist = distance()
        print ("Measured Distance = %.1f cm" % dist)
        time.sleep(1)

# Reset by pressing CTRL + C
except KeyboardInterrupt:
    print("Measurement stopped by User")
        GPIO.cleanup()
```

Output:



Observations: