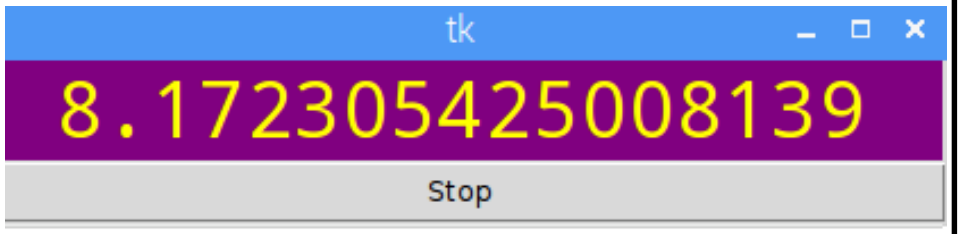
Ultrasonic Distance Measurement Using Python and Tool Kit Interface



By :

Aula Jazmati

Python code:

```
1
2   import tkinter as tk
3   import RPi.GPIO as GPIO
4   import time
5   GPIO.setwarnings(False)
6   GPIO.setmode(GPIO.BOARD)
7   TRIGPIN = 11
8   ECHO = 15
9
10  print ("Distance Measurement In Progress")
11  GPIO.setup(TRIGPIN,GPIO.OUT)
12  GPIO.setup(ECHO, GPIO.IN, pull_up_down= GPIO.PUD_DOWN)
13
14  root = tk.Tk()
15  root.title("Calculating Distance")
16
17  GPIO.output(TRIGPIN, False)
18  print ("Delay for sensor stability")
19  time.sleep(2)
20  GPIO.output(TRIGPIN, True)
```

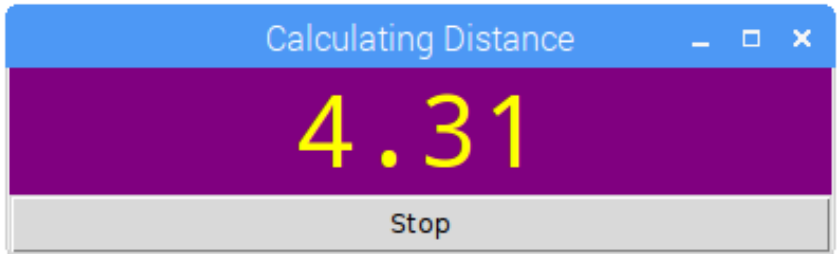
Python code:

```
21   time.sleep(0.00001)
22   GPIO.output(TRIGPIN, False)
23   while GPIO.input(ECHO)==0:
24       pulse_start= 0
25       pulse_start= time.time()
26   while GPIO.input(ECHO)==1:
27       pulse_end= 0
28       pulse_end= time.time()
29   duration = pulse_end-pulse_start
30
31   distance = duration * 34029
32   distance = distance / 2
33   distance = round(distance, 2)
34   print ("Distance:",distance,"cm")
```

Python code:

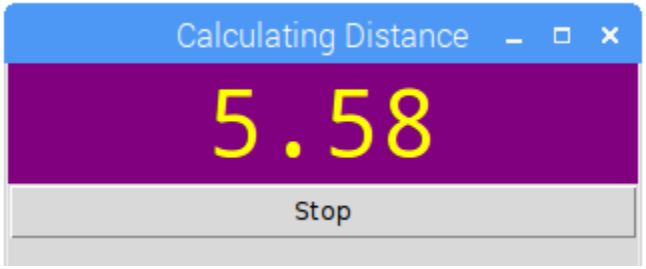
```
35
36
37  label = tk.Label(root,width=40, fg="yellow" , bg = "purple")
38  label.config(font=("Courier", 36))
39  label.config(text=str(distance))
40  label.pack()
41  button = tk.Button(root, text='Stop', width=50, command=root.destroy)
42  button.pack()
43  root.mainloop()
44  GPIO.cleanup()
```

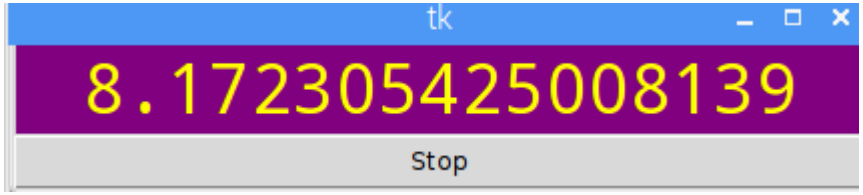
```
Python 3.4.2 (default, Oct 19 2014, 13:31:11)
[GCC 4.9.1] on linux
Type "copyright", "credits" or "license()" for more information.
>>> ================================ RESTART ================================
>>>
Distance Measurement In Progress
Delay for sensor stability
Distance: 4.31 cm
```



Ultrasonic Distance Measurement Using Python

Construction and Testing:





Ultrasonic Distance Measurement Using Python

Construction and Testing:

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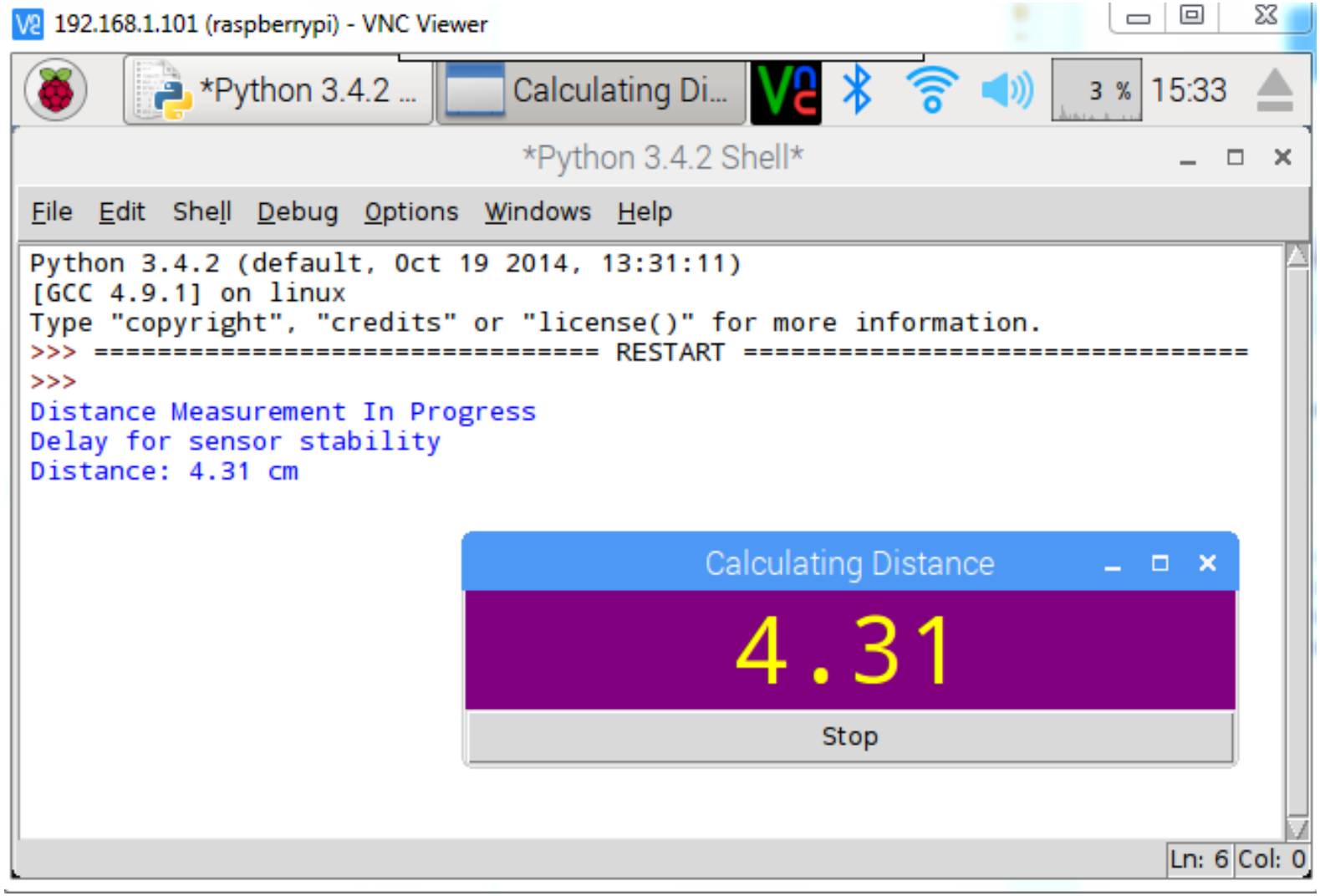
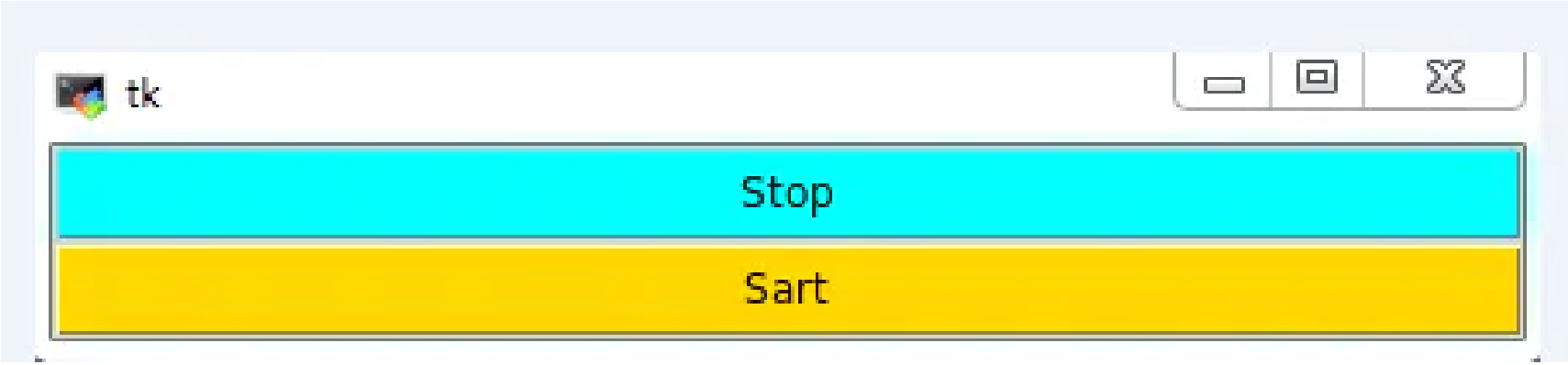


Note:

The project can be developed by adding a button with a new function such as start

function to repeat the measurement process:



```
from Tkinter import *
import RPi.GPIO as GPIO
import time
GPIO.setmode(GPIO.BOARD)
GPIO.setwarnings(False)
TRIG=11
ECHO=15
GPIO.setup(TRIG,GPIO.OUT)
GPIO.setup(ECHO,GPIO.IN,pull_up_down=GPIO.PUD_DOWN)
root=Tk()

def start():
  global distance,pulse_end, p
  TRIG=11
  ECHO=15
  GPIO.output(TRIG,False)
  print("delay")
  time.sleep(2)
  GPIO.output(TRIG,True)
  time.sleep(0.00001)
  GPIO.output(TRIG,False)
  while GPIO.input(ECHO)==0:
    p=0
    p=time.time()
  while GPIO.input(ECHO)==1:
   pulse_end=0
   pulse_end=time.time()
   d =pulse_end - p
   distance=d*17150
  #distance=round(distance,2)
  print("Distance:",distance,"cm")
  lable= Label (root,width=36,fg="yellow",bg="purple")
  lable.config(font=("Courier",36))
  lable.config(text=distance)
  lable.pack()
```

```
button=Button(root,text='Stop',bg ='cyan',width=50,command=root.destroy)
button.pack()
button2=Button(root,text='Sart', bg ='gold',width=50,command=start)
button2.pack()
root.mainloop()
GPIO.cleanup()
```

Thank You