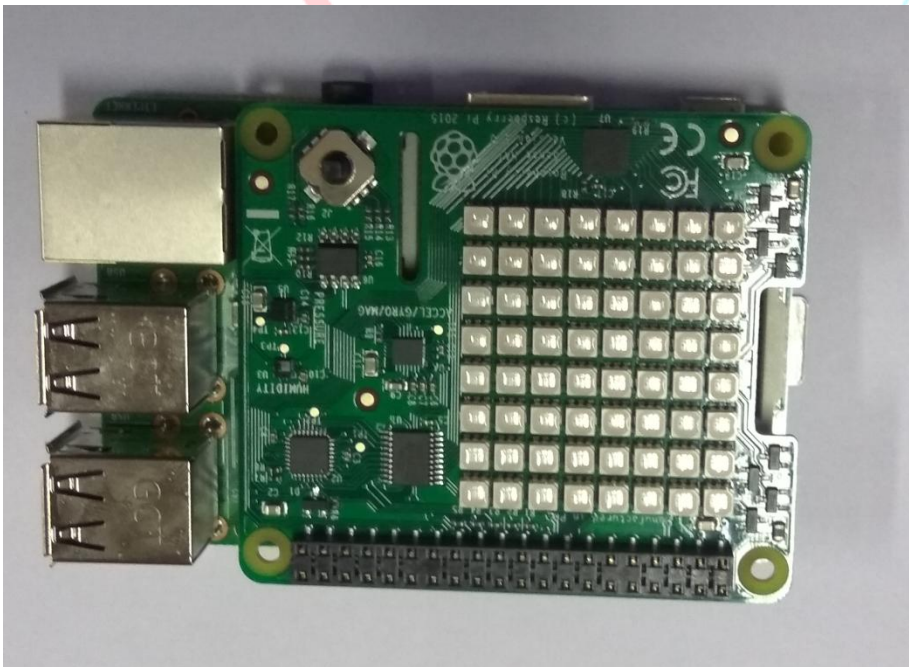




2016

Interfacing SenseHat With Raspberry Pi



Author: Palanikasi

Introduction:

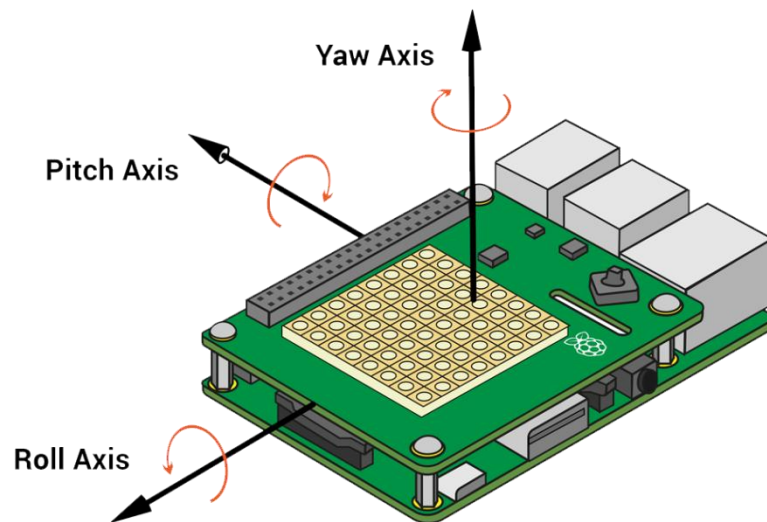
Raspberry Pi is a credit card sized computer that plugs into a computer monitor or TV, and uses standard keyboard and mouse. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games. Here we are going to interface sensehat with Raspberry Pi.

Hardware Requirements:

1. Raspberry Pi board.
2. Sense Hat

Sensehat:

The Sense HAT is an add-on board for Raspberry Pi, made especially for the Astro Pi mission – it launched to the International Space Station in December 2015 – and is now available to buy.



The Sense HAT has an 8×8 RGB LED matrix, a five-button joystick and includes the following sensors:

- Gyroscope
- Accelerometer
- Magnetometer
- Temperature
- Barometric pressure
- Humidity

Code:

Printing letter on LED Matrix

```
from sense_hat import SenseHat
from time import sleep

sense = SenseHat()
sense.show_letter('T', text_colour=[255, 0, 0])
sense.clear()
```

Print Message on LED Matrix

```
from sense_hat import SenseHat
from time import sleep

sense = SenseHat()

while 1:
    sense.show_message("Tenet Technetronics")
    sleep(1)
```

Measuring Temperature with Sensehat:

```
from sense_hat import SenseHat
from time import sleep

sense = SenseHat()

while 1:
    data = sense.get_temperature()
    print("Temperature is %s C", data)
    sleep(1)
```

Measuring Humidity with Sensehat:

```
fromsense_hat import SenseHat
from time import sleep
sense=SenseHat()
while 1:
    data=sense.get_humidity()
    print("Humidity is %s is"%data)
    sleep(1)
```

Measuring Pressure with Sensehat:

```
fromsense_hat import SenseHat
from time import sleep
sense=SenseHat()
while 1:
    data=sense.get_pressure()
    print("Pressure is %s millibars",data)
    sleep(1)
```

Measuring Accelerometer with Sensehat:

```
fromsense_hat import SenseHat
from time import sleep
sense=SenseHat()
while 1:
    data=sense.get_accelerometer()
    print("p: {pitch}, r: {roll}, y: {yaw}".format(**data))
    sleep(1)
```

Measuring Gyroscope with Sensehat:

```
from sense_hat import SenseHat
from time import sleep

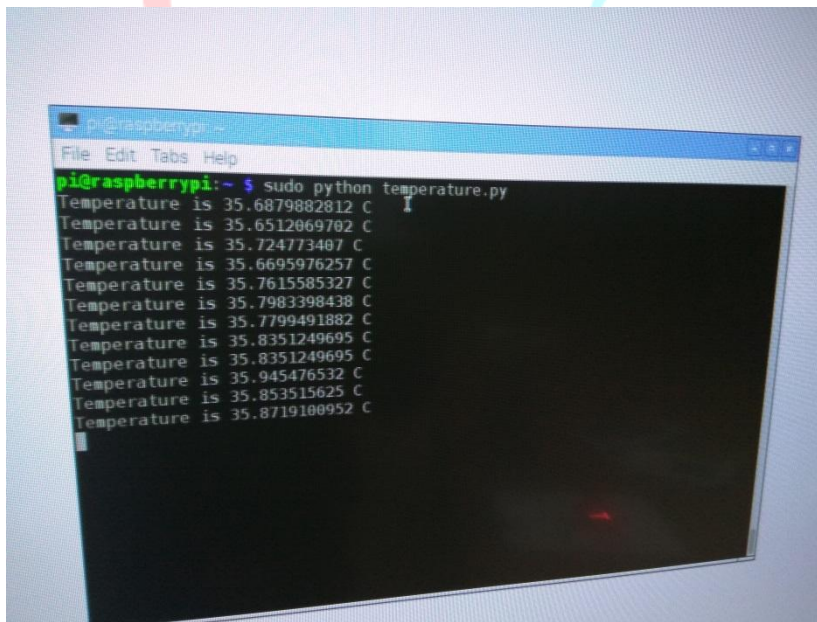
sense=SenseHat()

while 1:

    data=sense.get_gyroscope()
    print("p: {pitch}, r: {roll}, y: {yaw}".format(**data))
    sleep(1)
```

Output:

Experiment 1: Temperature



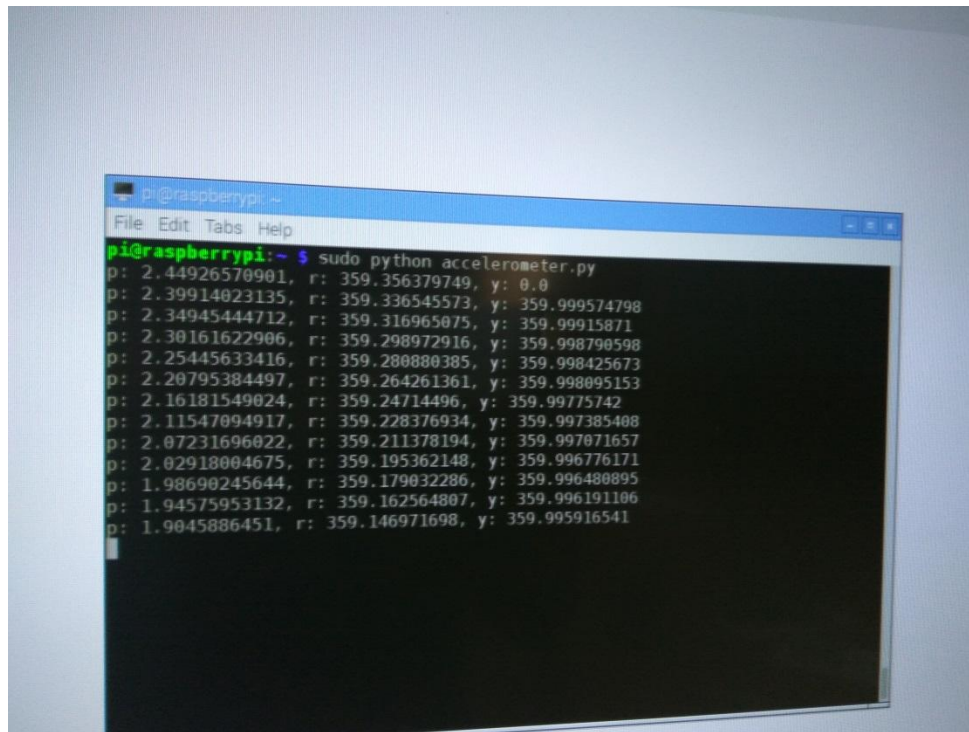
Experiment 2: Printing Letter on LED Matrix



Experiment 3: Measuring Humidity

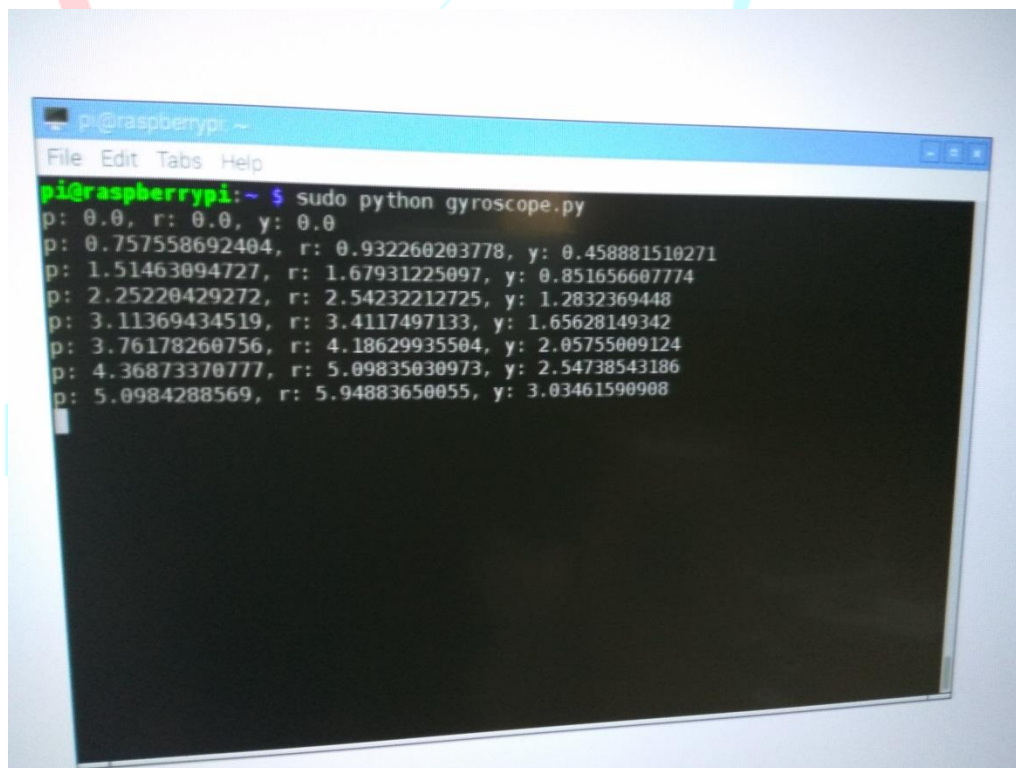
```
pi@raspberrypi: ~  
File Edit Tabs Help  
NameError: name 'data' is not defined  
pi@raspberrypi:~ $ sudo nano humidity.py  
pi@raspberrypi:~ $ sudo python humidity.py  
Humidity is 41.862679  
Humidity is 42.465569  
Humidity is 42.360062  
Humidity is 42.375137  
Humidity is 42.061634  
Humidity is 42.115894  
Humidity is 42.221397  
Humidity is 42.019432  
Humidity is 42.022446  
Humidity is 41.980244  
Humidity is 42.278671  
Humidity is 41.986271  
Humidity is 41.624535  
Humidity is 41.898853  
Humidity is 42.788116  
Humidity is 42.492699  
Humidity is 42.308819  
Humidity is 42.329918  
Humidity is 42.384178  
Humidity is 42.233456
```


Experiment 4: Measuring Accelerometer



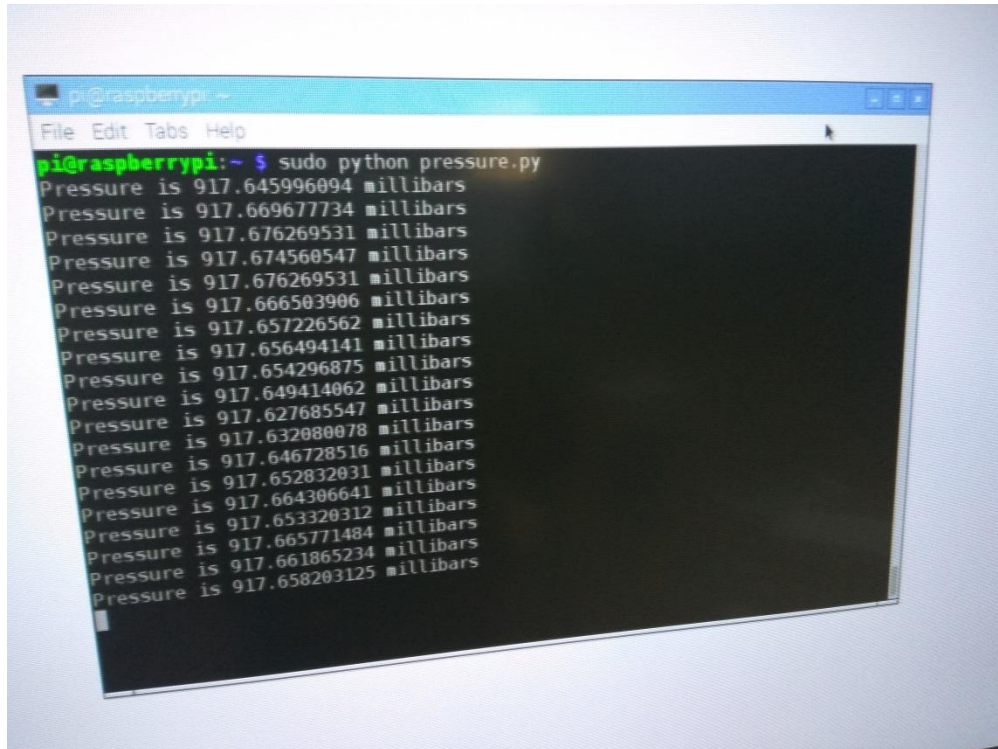
```
pi@raspberrypi:~$ sudo python accelerometer.py
p: 2.44926570901, r: 359.356379749, y: 0.0
p: 2.39914023135, r: 359.336545573, y: 359.999574798
p: 2.34945444712, r: 359.316965075, y: 359.99915871
p: 2.30161622906, r: 359.298972916, y: 359.998790598
p: 2.25445633416, r: 359.280880385, y: 359.998425673
p: 2.20795384497, r: 359.264261361, y: 359.998095153
p: 2.16181549024, r: 359.24714496, y: 359.99775742
p: 2.11547094917, r: 359.228376934, y: 359.997385408
p: 2.07231696022, r: 359.211378194, y: 359.997071657
p: 2.02918004675, r: 359.195362148, y: 359.996776171
p: 1.98690245644, r: 359.179032286, y: 359.996480895
p: 1.94575953132, r: 359.162564807, y: 359.996191106
p: 1.9045886451, r: 359.146971698, y: 359.995916541
```

Experiment 5: Measuring Gyro



```
pi@raspberrypi:~$ sudo python gyroscope.py
p: 0.0, r: 0.0, y: 0.0
p: 0.757558692404, r: 0.932260203778, y: 0.458881510271
p: 1.51463094727, r: 1.67931225097, y: 0.851656607774
p: 2.25220429272, r: 2.54232212725, y: 1.2832369448
p: 3.11369434519, r: 3.4117497133, y: 1.65628149342
p: 3.76178260756, r: 4.18629935504, y: 2.05755009124
p: 4.36873370777, r: 5.09835030973, y: 2.54738543186
p: 5.0984288569, r: 5.94883650055, y: 3.03461590908
```

Experiment 6: Measuring Pressure



```
pi@raspberrypi: ~  
File Edit Tabs Help  
pi@raspberrypi:~$ sudo python pressure.py  
Pressure is 917.645996094 millibars  
Pressure is 917.669677734 millibars  
Pressure is 917.676269531 millibars  
Pressure is 917.674560547 millibars  
Pressure is 917.676269531 millibars  
Pressure is 917.666503906 millibars  
Pressure is 917.657226562 millibars  
Pressure is 917.656494141 millibars  
Pressure is 917.654296875 millibars  
Pressure is 917.649414062 millibars  
Pressure is 917.627685547 millibars  
Pressure is 917.632080078 millibars  
Pressure is 917.646728516 millibars  
Pressure is 917.652832031 millibars  
Pressure is 917.664306641 millibars  
Pressure is 917.653320312 millibars  
Pressure is 917.665771484 millibars  
Pressure is 917.661865234 millibars  
Pressure is 917.658203125 millibars
```

For more information please visit: www.tenettech.com

For technical query please send an e-mail: info@tenettech.com

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