8.Get Atmospheric pressure

Learning goals: Read the atmospheric pressure data detected by the onboard sensor.

Experimental phenomena: The terminal prints the currently detected pressure value, and the RGB matrix scrolls to display the "pressure=atmospheric value". The output value can be changed by changing the height of the sensor.

Tips: The output of the pressure detector is in millibars, and 1 mbar means that the force is 1000 dynes on an area of 1 square centimeter. The dyne is a small force.

A millibar is a physical unit used to measure pressure. The mbar is not an SI unit, the SI unit is Pascal (Pa), 1 mbar = 100 Pa = 1 hPa = 0.1 kPa.

The average sea level pressure is 1013.25 hPa (mbar), which decreases as the height increases.

1 standard atmospheric pressure = 101.325 kPa = 1013.25 mbar.

1.Create python file

nano pressure.py

We need to input content as shown below:

```python
#!/usr/bin/python
from sense_hat import SenseHat
sense = SenseHat()

# Set the direction of rotation (0,90,180,270 for choice), default is 0
sense.set_rotation(180)

# Set color R G B value
color_text = (0, 0, 255)
color_back = (0, 0, 0)
while True:
    # Obtain the atmospheric pressure value on the sensor
    # pressure = sense.pressure
    pressure = sense.get_pressure()
    # The terminal prints out the atmospheric pressure value and saves two decimal places.
    print("Pressure: %0.2f Millibars" % pressure)
    # The parameter scroll_speed changes the scrolling speed, the default is 0.1,
    # text_colour is the font color , and back_colour is the background color.
    sense.show_message("Pressure=%0.2fmbar" % pressure, scroll_speed=0.05,
                       text_colour=color_text, back_colour=color_back)
```

Please press ==Ctrl+O== to save, press ==Ctrl+X== to quit.

The code of the experiment, please refer to **pressure.py** in the Python sample program folder.

2.Commonly function

①Two methods to read the relative atmospheric pressure on the sensor.

```
# Obtain the atmospheric pressure value on the sensor.
# pressure = sense.pressure
pressure = sense.get_pressure()
```

②Print the current relative atmospheric pressure through the terminal, save the two digits after the decimal point, and display it on the RGB matrix.

```
# The terminal prints out the atmospheric pressure value and saves two decimal places.
print("Pressure: %0.2f Millibars" % pressure)

# The parameter scroll_speed changes the scrolling speed, the default is 0.1,
# text_colour is the font color , and back_colour is the background color.
sense.show_message("Pressure=%0.2fmbar" % pressure, scroll_speed=0.05,
                    text_colour=color_text, back_colour=color_back)
```

3.Running program

Input the following command to running:

python pressure.py

After running the program, the atmospheric pressure value will be printed in the terminal. The RGB matrix scrolls to display the "pressure=atmospheric pressure value".

When we take the sense_hat expansion board higher, the output value will decrease; When we take the sense_hat expansion board lower, the output value will increase.

```
pi@raspberrypi:~/sense_hat $ python pressure.py
Pressure: 1004.68 Millibars
Pressure: 1004.71 Millibars
Pressure: 1004.69 Millibars
Pressure: 1004.68 Millibars
Pressure: 1004.68 Millibars
Pressure: 1004.68 Millibars
```