Python control HQ camera

1.Install python-camera library

Input following command to install python-camera library.

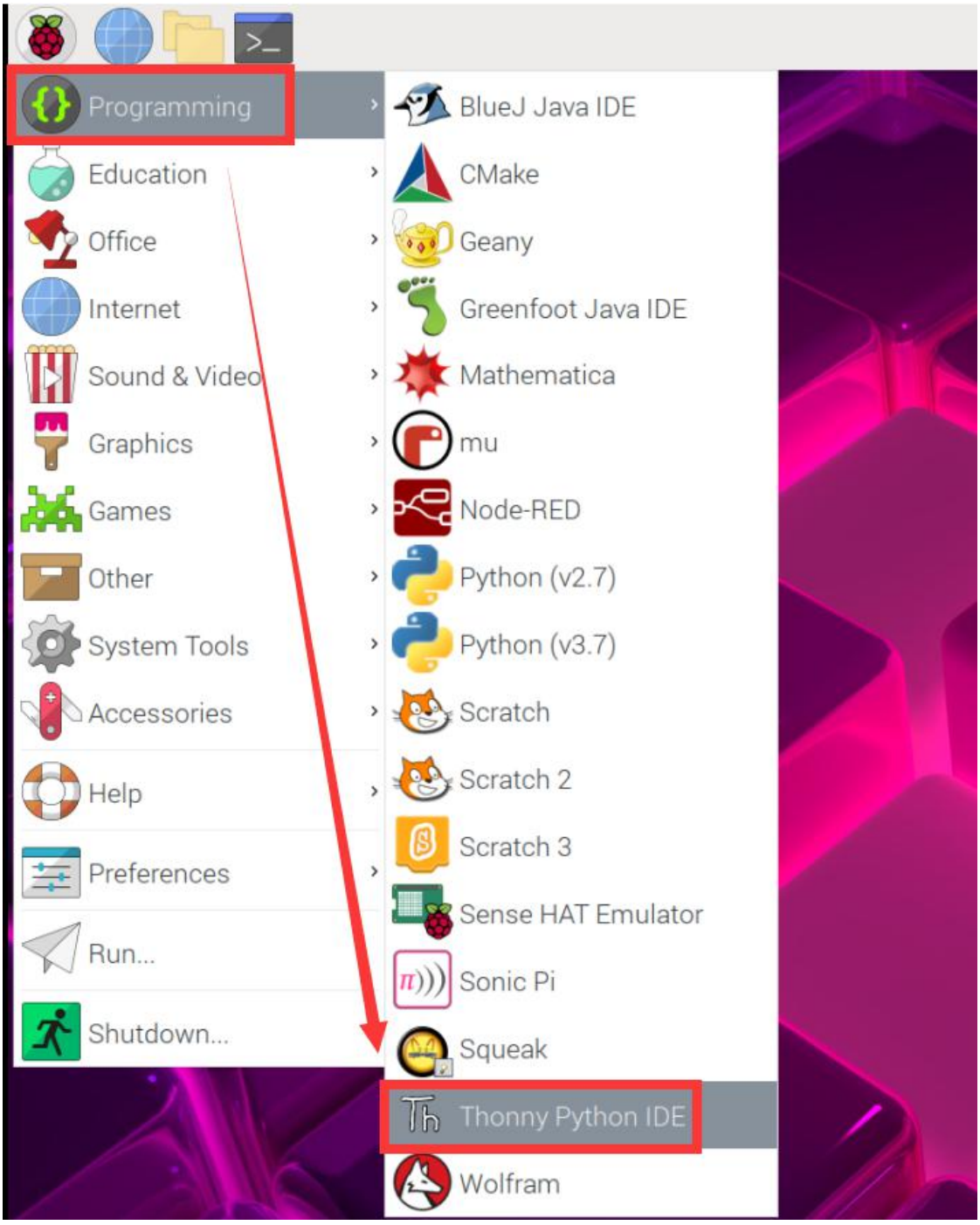
sudo apt-get install python-picamera python3-picamera

```
pi@raspberrypi:~ $ sudo apt-get install python-picamera python3-picamera
```

2.Write Python code

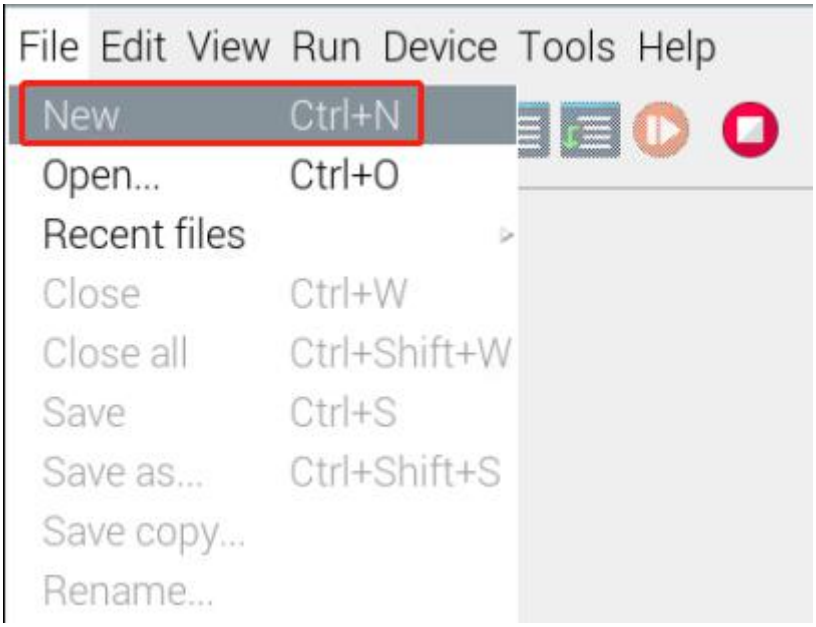
1) Open Python IDE

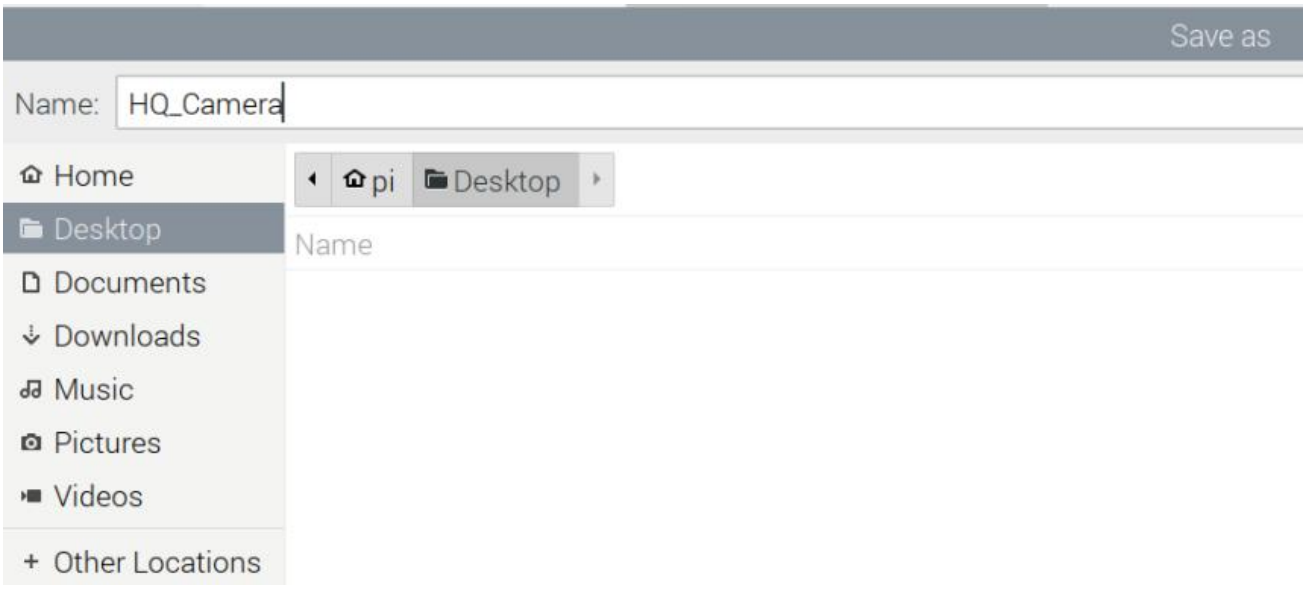
Click Raspberry Pi desktop left upper corner, choose **[Programming]** ---> **[Thonny Python IDE]**.



In Thonny toolbar.
The first is to create a new file.
The second is to open the file.
The third is to save the file.
The fourth is to run the program.
The fifth to ninth are the debug buttons.
The last button is to stop the program.

2)New create file, then press “Ctrl+S” save it to desktop, its name is **HQ_Camera.py**.
!Note:Do not name the file to **picamera**, because this is the file name of the **picamera** library itself.





We can see HQ_camera.py file are be saved on desktop.

3. Import camera library and initialize camera

```
from picamera import PiCamera
camera = PiCamera()
```

4. Display preview window for 5seconds. The sleep library is used,unit is seconds. **camera.start_preview ()** opens the preview, **camera.stop_preview ()** closes the preview.

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()

camera.start_preview()
sleep(5)
camera.stop_preview()
```

5.Create a new program, take a picture after 5 seconds of preview window, save it to the local desktop, the name is **HQ_Camera_1.py**.

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()

camera.start_preview()
sleep(5)
camera.capture('/home/pi/Desktop/HQ_IMG_1.jpg')
camera.stop_preview()
```

6.Take a picture every 5 seconds, for a total of five pictures, set its name to HQ_Camera_2

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()
camera.start_preview()
for i in range(5):
    sleep(5)
    camera.capture('/home/pi/Desktop/image%s.jpg' % i)
camera.stop_preview()
```

7.Take pictures with various special effects, set it's name to **HQ_Camera_3.py**.
camera.image_effect() .
Parameter: none (the default), negative, solarize, sketch, denoise, emboss, oilpaint, hatch, gpen (graphite sketch effect), pastel, watercolor, film, blur, saturation, colorswap, washedout, posterise, colorpoint, colorbalance, cartoon, deinterlace1, and deinterlace2.

HQ_Camera_3.py

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()
camera.start_preview()
camera.image_effect = 'colorswap'
sleep(5)
camera.capture('/home/pi/Desktop/colorswap.jpg')
camera.stop_preview()
```

8. Switch a picture display effect every 5 seconds, the name is **HQ_Camera_4.py**.

HQ_Camera_4.py

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()
camera.start_preview()
for effect in camera.IMAGE_EFFECTS:
    camera.image_effect = effect
    camera.annotate_text = "Effect: %s" % effect
    sleep(5)
camera.stop_preview()
```

9. Take a video for 10 seconds, set its name to **HQ_Camera_5.py.**

HQ_Camera_5.py

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()
camera.start_preview()
camera.start_recording('/home/pi/Desktop/video.h264')
sleep(10)
camera.stop_recording()
camera.stop_preview()
```