

3v3 Power	1	●	●	2	5v Power
GPIO 2 (I2C1 SDA)	3	●	●	4	5v Power
GPIO 3 (I2C1 SCL)	5	●	●	6	Ground
GPIO 4 (GPCLK0)	7	●	●	8	GPIO 14 (UART TX)
Ground	9	●	●	10	GPIO 15 (UART RX)
GPIO 17	11	●	●	12	GPIO 18 (PCM CLK)
GPIO 27	13	●	●	14	Ground
GPIO 22	15	●	●	16	GPIO 23
3v3 Power	17	●	●	18	GPIO 24
GPIO 10 (SPI0 MOSI)	19	●	●	20	Ground
GPIO 9 (SPI0 MISO)	21	●	●	22	GPIO 25
GPIO 11 (SPI0 SCLK)	23	●	●	24	GPIO 8 (SPI0 CE0)
Ground	25	●	●	26	GPIO 7 (SPI0 CE1)
GPIO 0 (EEPROM SDA)	27	●	●	28	GPIO 1 (EEPROM SCL)
GPIO 5	29	●	●	30	Ground
GPIO 6	31	●	●	32	GPIO 12 (PWM0)
GPIO 13 (PWM1)	33	●	●	34	Ground
GPIO 19 (PCM FS)	35	●	●	36	GPIO 16
GPIO 26	37	●	●	38	GPIO 20 (PCM DIN)
Ground	39	●	●	40	GPIO 21 (PCM DOUT)

In an electrolytic cell, the anode is positive and the cathode is negative

To install python ide if thonny is not there we can install by this way :

```
5 sudo apt-get install idle3
```

Blinking led code easy and simple

```
1 import RPi.GPIO as GPIO
2 import time
3 GPIO.setmode(GPIO.BEAD)
4 GPIO.setup(7,GPIO.OUT)
5 for i in range(10):
6     GPIO.output(7,True)
7     print("LED IS FINALLY ON")
8     time.sleep(1)
9
10    GPIO.output(7,False)
11    print("LED IS OFF")
12
13    time.sleep(1)
14 print("PROGRAM COMPLETE!")
15 GPIO.cleanup()
```

camera module sits in CSI connector CSI (Camera Serial Interface)

```
pi@raspberrypi:~ $ sudo apt-get install python3-pip
Reading package lists... Done
Building dependency tree
Reading state information... Done
python3-pip is already the newest version (18.1-5+rpt1).
0 upgraded, 0 newly installed, 0 to remove and 244 not upgr
pi@raspberrypi:~ $ pip3 install picamera
```

camera module but image capturecode

```
import time
from picamera import PiCamera
camera = PiCamera()
camera.resolution = (1280,720)
camera.start_preview()
time.sleep(5)
camera.capture('/home/pi/Desktop/ty1.jpg')
camera.stop_preview()
```

camera module but video recording

```
File Edit Format Run Options Window Help
import time
from picamera import PiCamera
camera = PiCamera()
camera.start_preview()
camera.start_recording('/home/pi/Desktop/video1.h264')
camera.wait_recording(5)
camera.stop_recording()
print("Finished Recording")
```

if the recording doesn't stop its a glitch just do ctrl + c