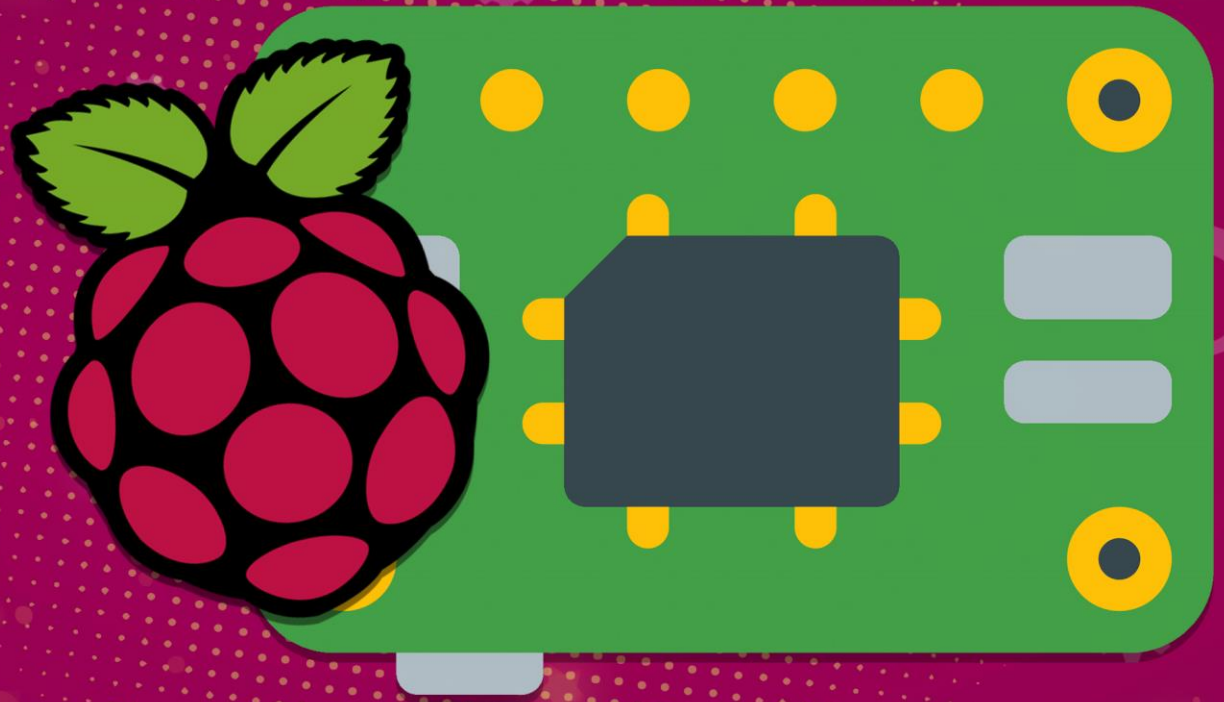
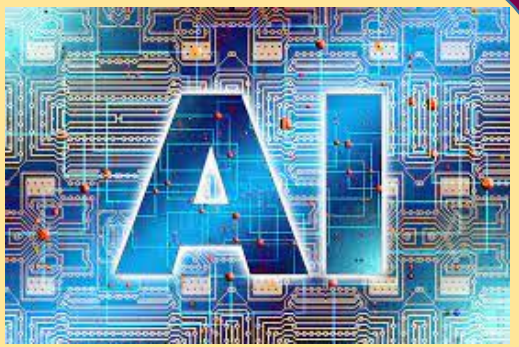
KEMENTERIAN PENDIDIKAN TINGGI

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

RASPBERRY PI
FUN PROJECTS





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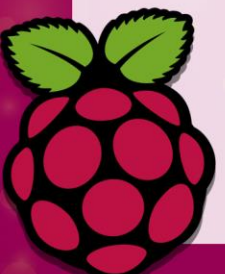
Facilitator: Norhazifa

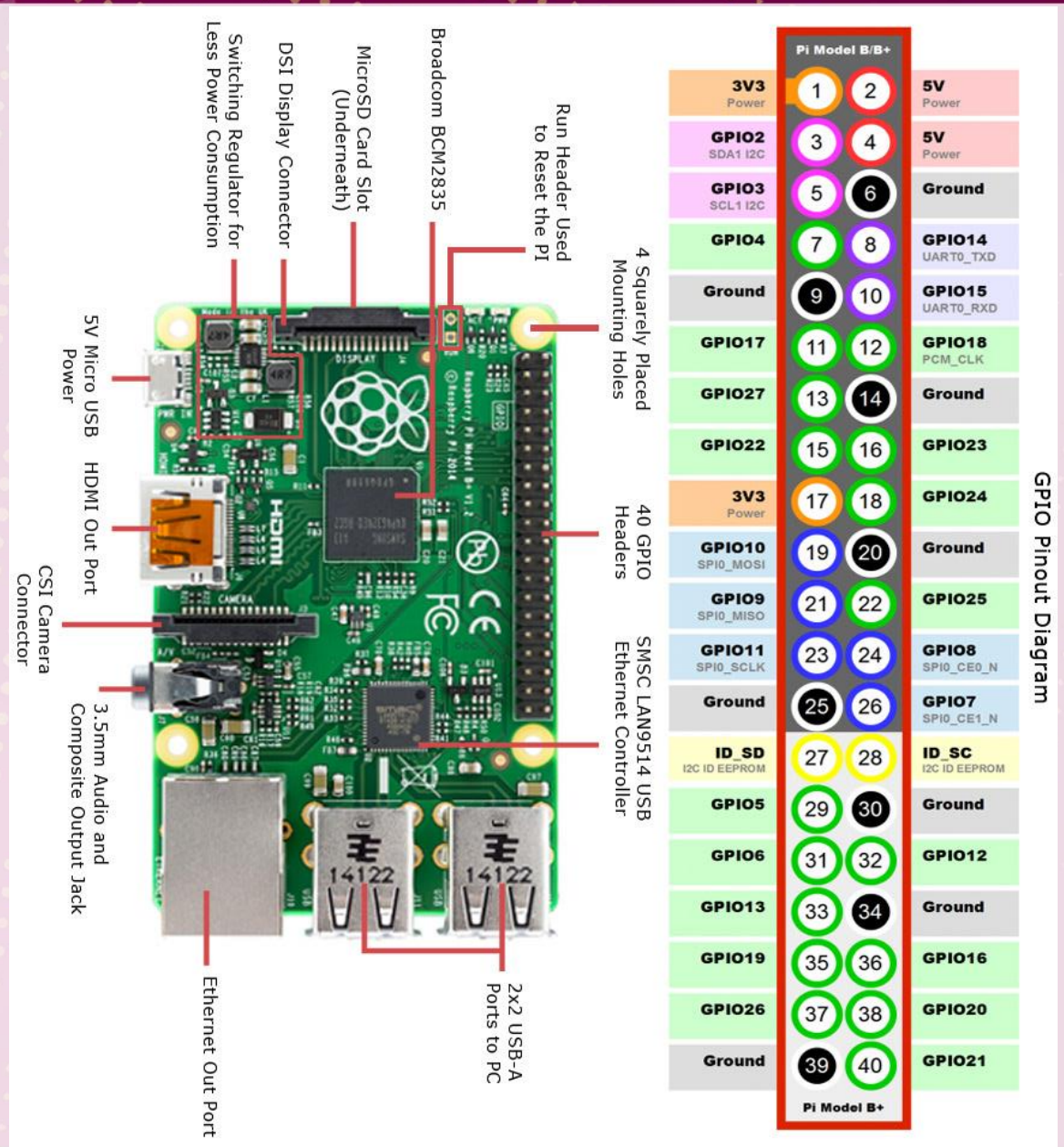
What are you going to learn today?

- What is Raspberry Pi
- Raspberry Pi Project Example
- Hands On
  - Set up Raspberry Pi
  - Hands On 1: ON OFF LED
  - Hands On 2: Blinking LED
  - Hands On 3: Traffic Light



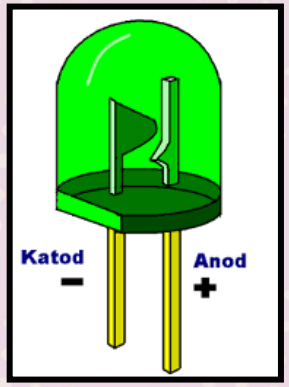
GPIO

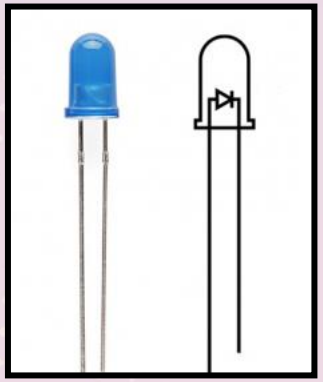
- GPIO to connect LED, sensor from breadboard to raspberry Pi

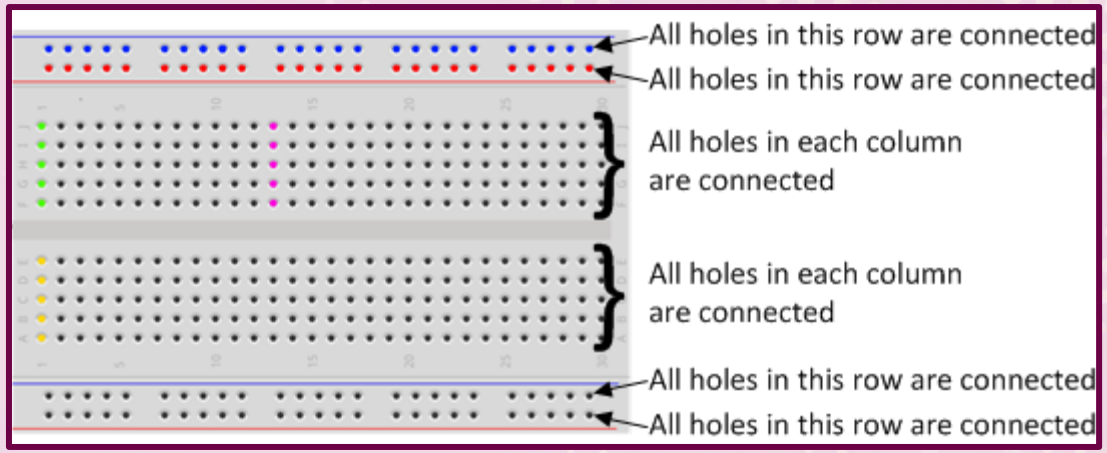


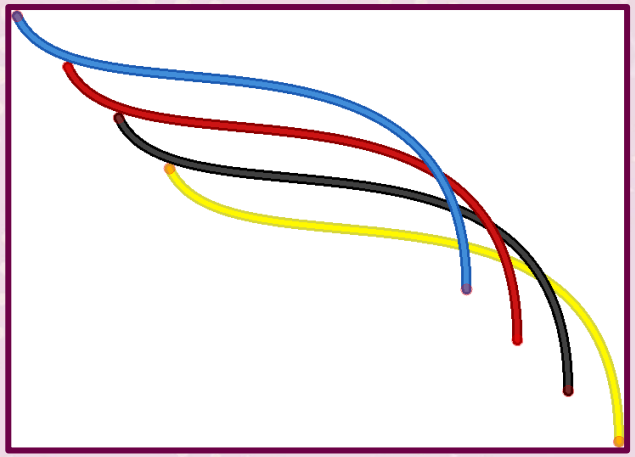
Equipment

- A Breadboard
- 3 LED (Red, Green and Yellow)
- 4 Male-Female jumper wires



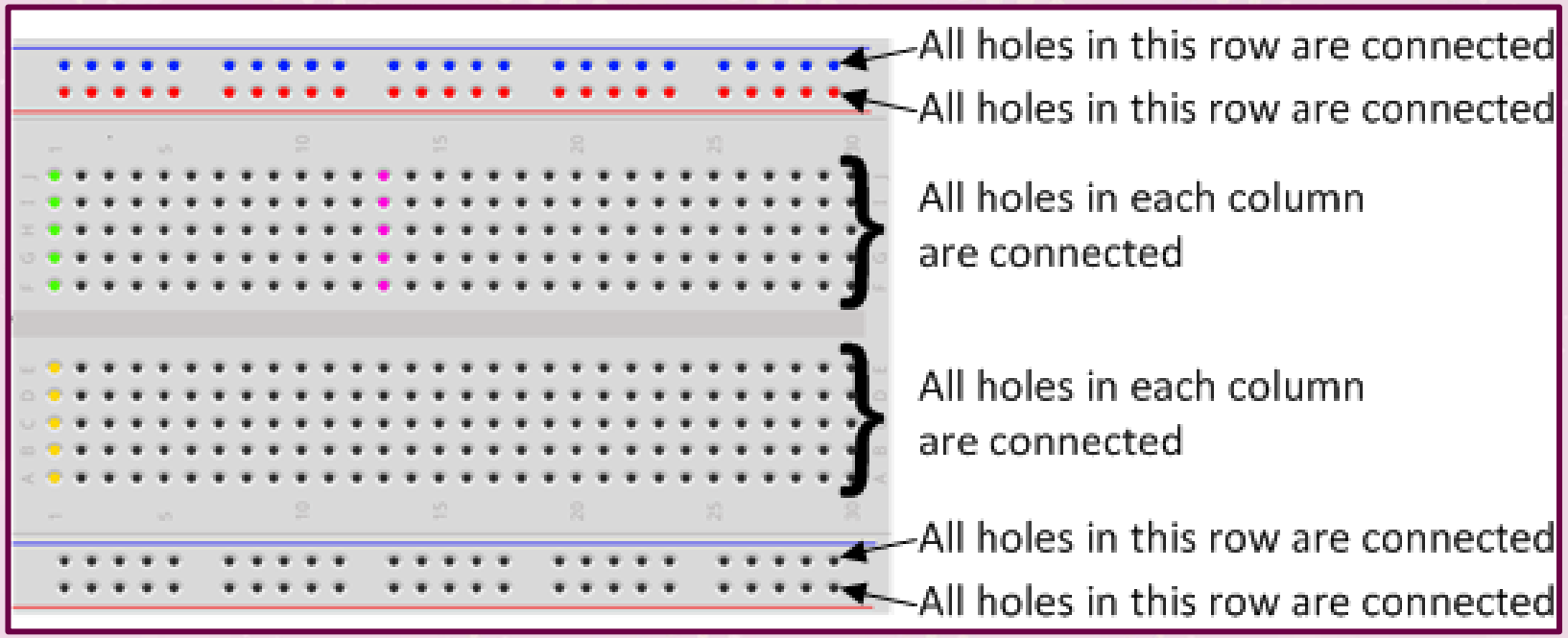






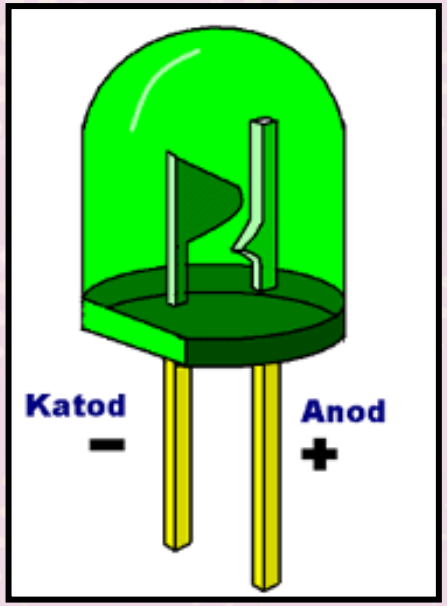
Breadboard

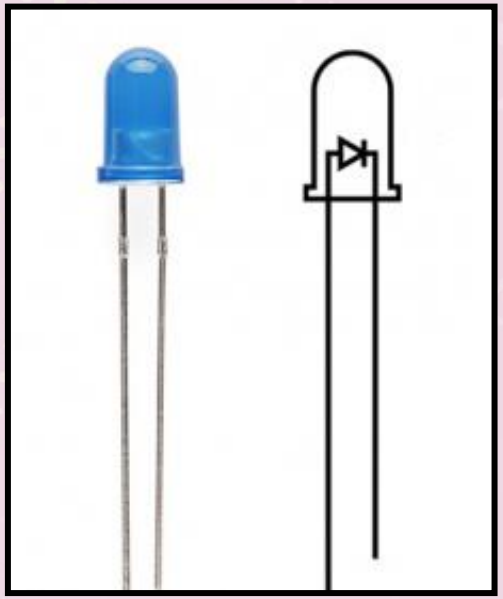
- The breadboard is a way of connecting electronic components to each other without having to solder them together.



The LED

- Glows when electricity is passed through it.
- The longer leg (anode), is always connected to the positive supply of the circuit.
- The shorter leg (cathode) is connected to the negative side of the power supply, known as ‘ground’.



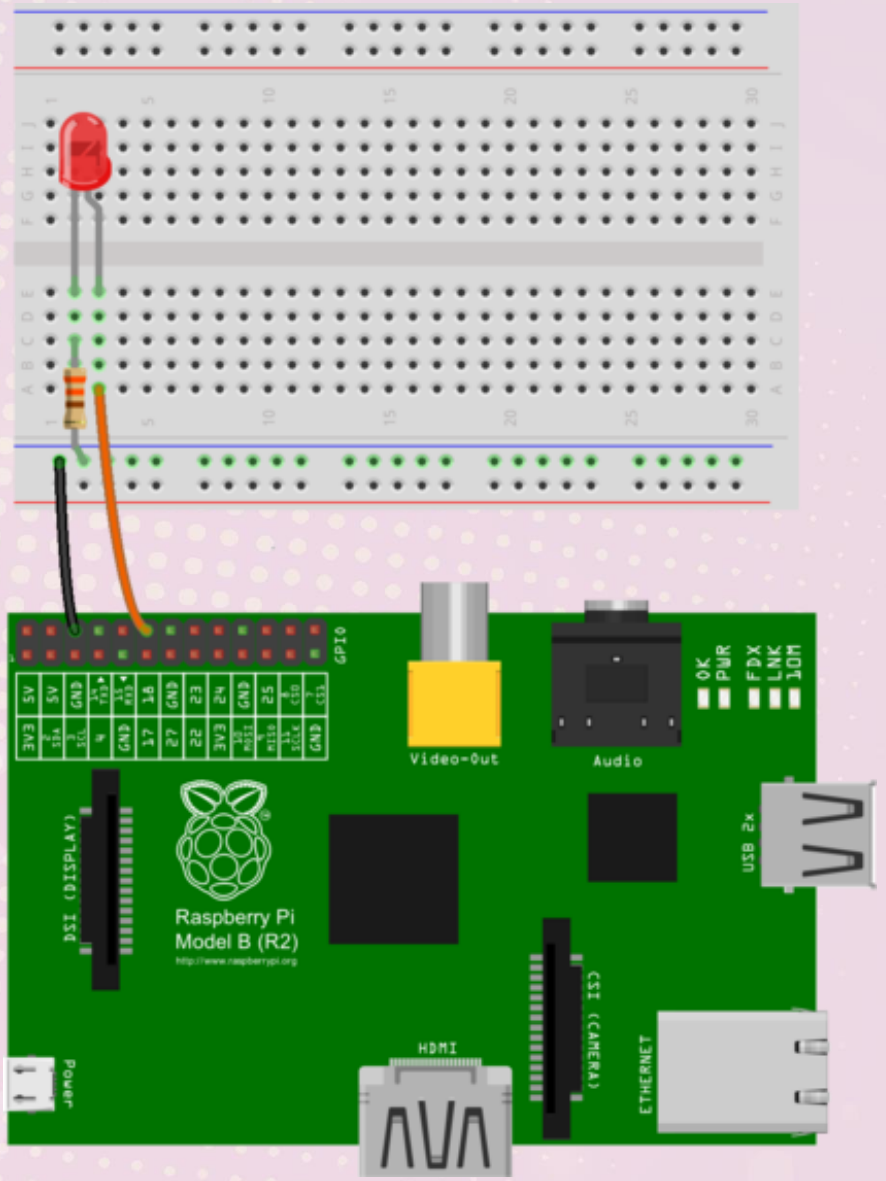


Jumper Wires

- Used on breadboards to ‘jump’ from one connection to another

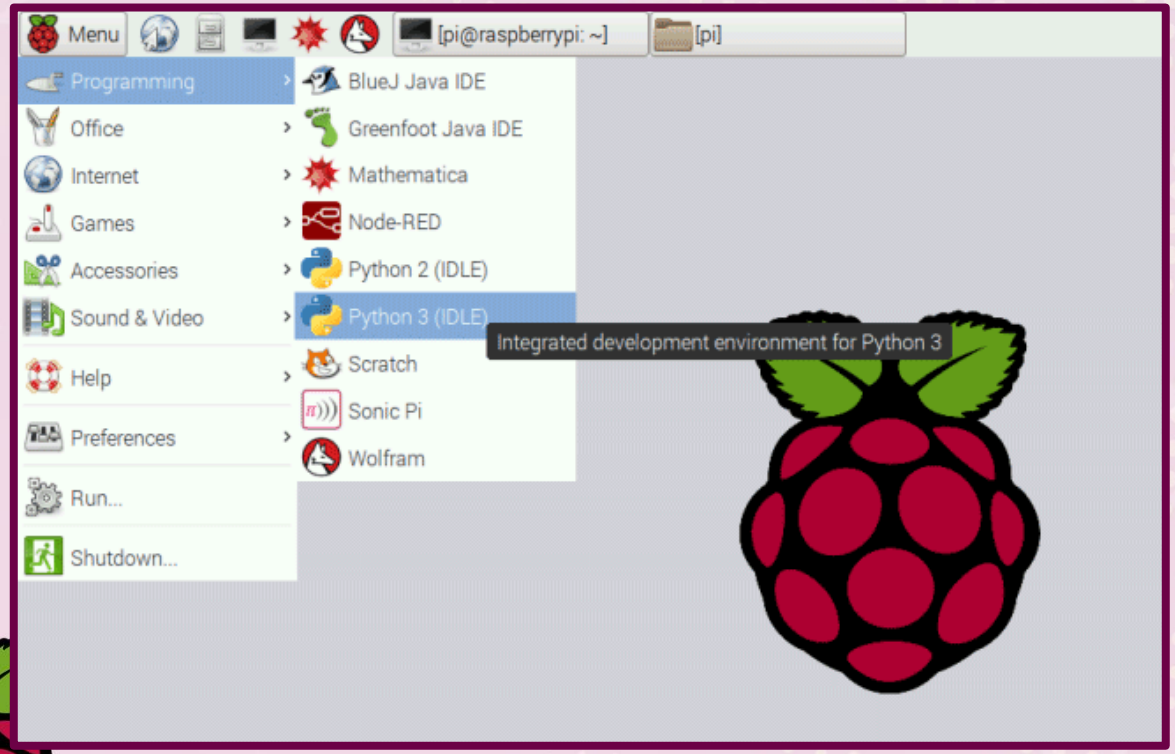
Building the Circuit

- Connect the jumper wires
- Connect the LED

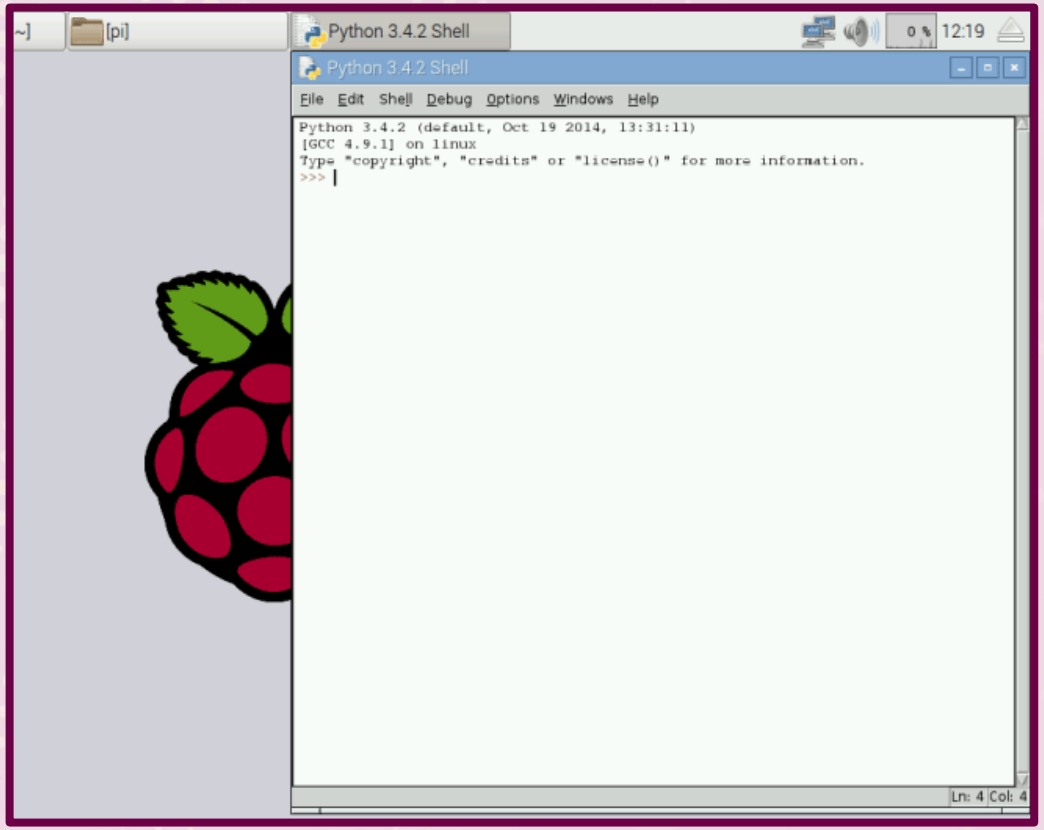


Create New Python Project

1. On the desktop, go the Start Menu and choose for the **PYTHON 3**, as shown in figure below.

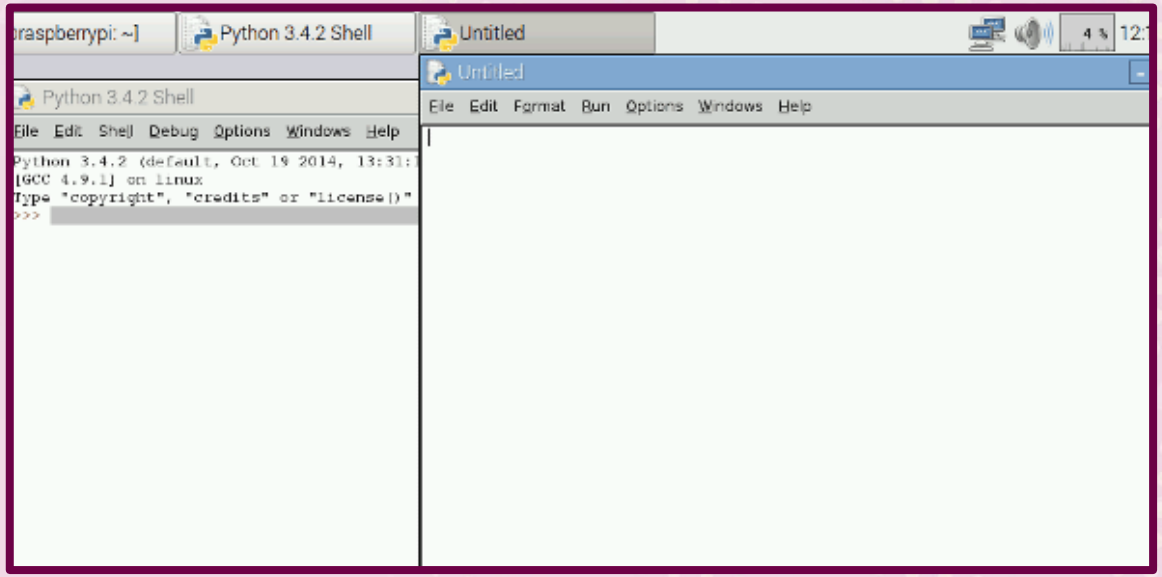


2. After that, PYHON will run and you will see a window as shown in below figure.

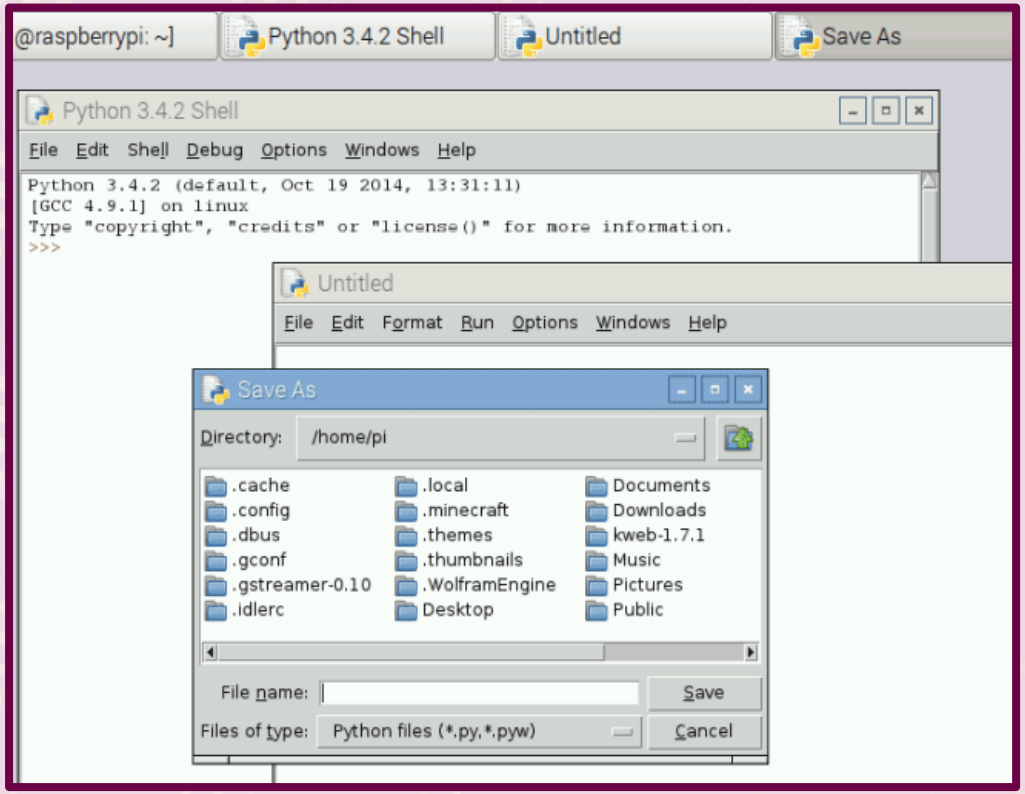


Create New Python Project

3. After that, click on *New File* in *File* Menu, You will see a new Window open,

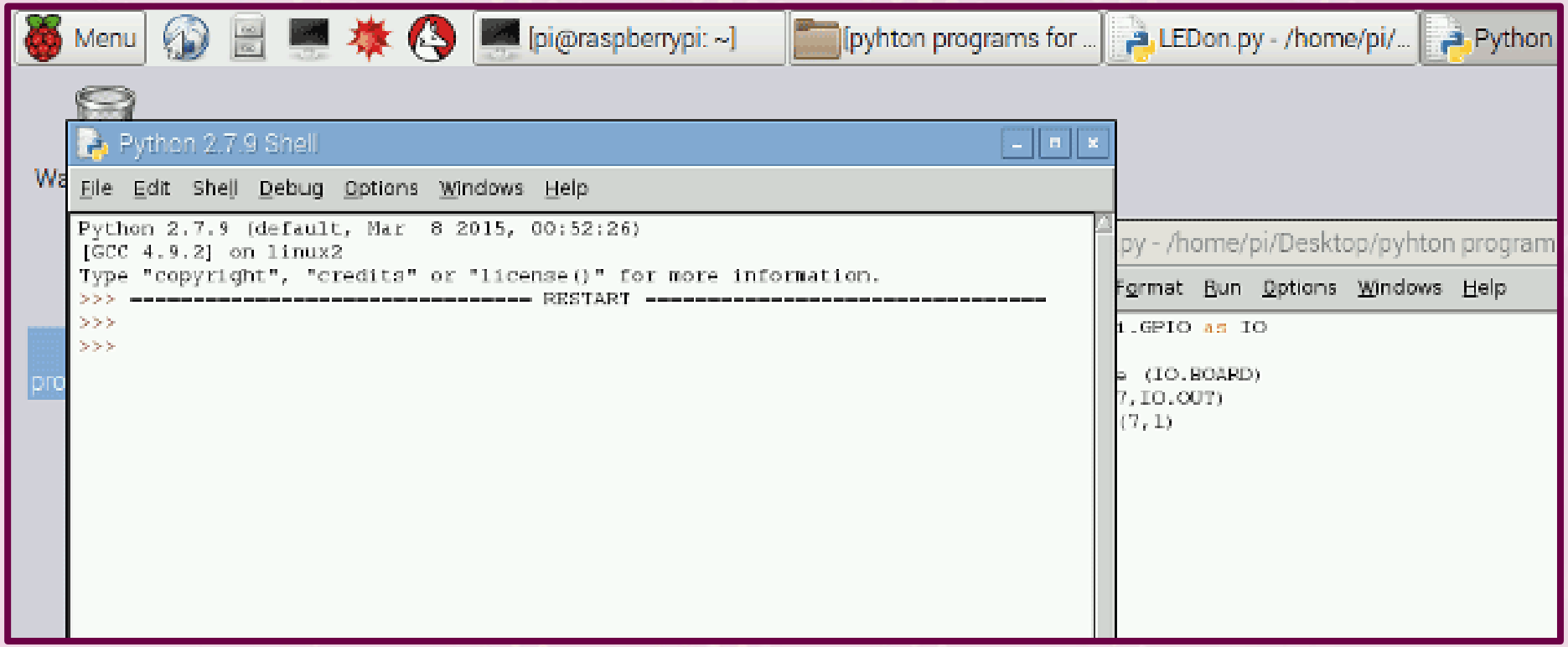


4. Save this file as *blinky* on the desktop,



Create New Python Project

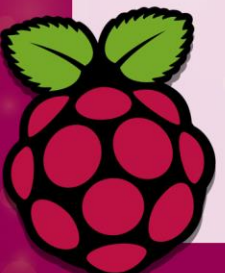
5. After that write the program for *blinky* as given below and execute the program by clicking on “RUN” on ‘DEBUG’ option or use F5.



Hands On 1: ON OFF LED

- Attach 1 LED on **GPIO 18**
- Create new **Python** File
- Run the following code:

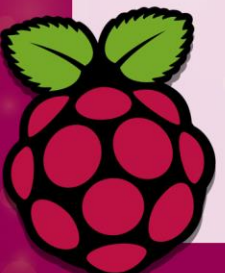
```
import RPi.GPIO as GPIO
import time
GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)
GPIO.setup(18,GPIO.OUT)
print ("LED on“)
GPIO.output(18,GPIO.HIGH)
time.sleep(1)
print ("LED off“)
GPIO.output(18,GPIO.LOW)
```



Hands On 2: Blinking LED

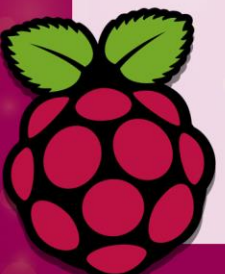
- Attach 1 LED on **GPIO 18**
- Create new **Python** File
- Run the following code:

```
Import RPi.GPIO as GPIO
Import time
GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)
GPIO.setup(6,GPIO.OUT)
While True:
print("LED on")
GPIO.output(6,GPIO.HIGH)
time.sleep(5)
print("LED off")
GPIO.output(6,GPIO.LOW)
time.sleep(2)
print("LED on")
GPIO.output(6,GPIO.HIGH)
time.sleep(5)
```



Hands On 3: Traffic Light

- Attach 3 LED on 3 different **GPIO pins**
- Create new **Python** File
- Run the following code:



```
Import RPi.GPIO as GPIO
Import time
GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)
GPIO.setup(26,GPIO.OUT)
GPIO.setup(13,GPIO.OUT)
GPIO.setup(5,GPIO.OUT)
while True:
   print("LED on")
   GPIO.output(26,GPIO.HIGH)
   time.sleep(1)
   Print("LED off")
   GPIO.output(26,GPIO.LOW)
   time.sleep(1)
   print("LED on")
   GPIO.output(13,GPIO.HIGH)
   time.sleep(1)
   print("LED off")
   GPIO.output(13,GPIO.LOW)
   time.sleep(1) print("LED on")
   GPIO.output(26,GPIO.HIGH)
   time.sleep(1)
   Print("LED off")
   GPIO.output(26,GPIO.LOW)
   time.sleep(1)
```

That's all for our course

Thank You