



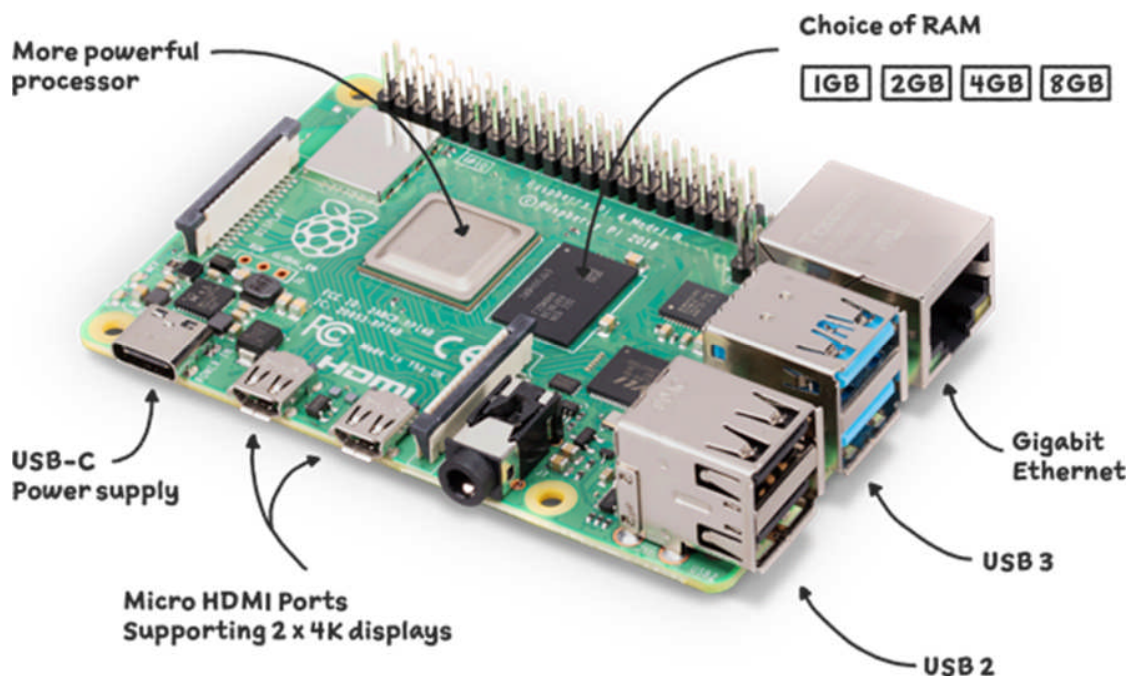
LAB MANUAL - 1

Getting Started with Raspberry PI (Light Version Raspbian OS)

The Raspberry Pi is a low-cost, credit-card-sized microprocessor computer that connects to a computer monitor or TV and uses a standard keyboard and mouse.

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.

Raspberry Pi recommends the use of Raspberry Pi Imager to install an operating system on to your SD card. You will need another computer with an SD card reader to install the image. Raspberry Pi Imager can be run on another Raspberry Pi, but also works on Microsoft Windows, Apple macOS, and Linux.



Step-1

Using Raspberry Pi Imager

Raspberry Pi have developed a graphical SD card writing tool that works on Mac OS, Ubuntu 18.04, and Windows called Raspberry Pi Imager; this is the easiest option for most users since it will download the image automatically and install it to the SD card.

Download the latest version of [Raspberry Pi Imager](#) and install it. If you want to use Raspberry Pi Imager from a second Raspberry Pi, you can install it from a terminal using `sudo apt install rpi-imager`. Then:

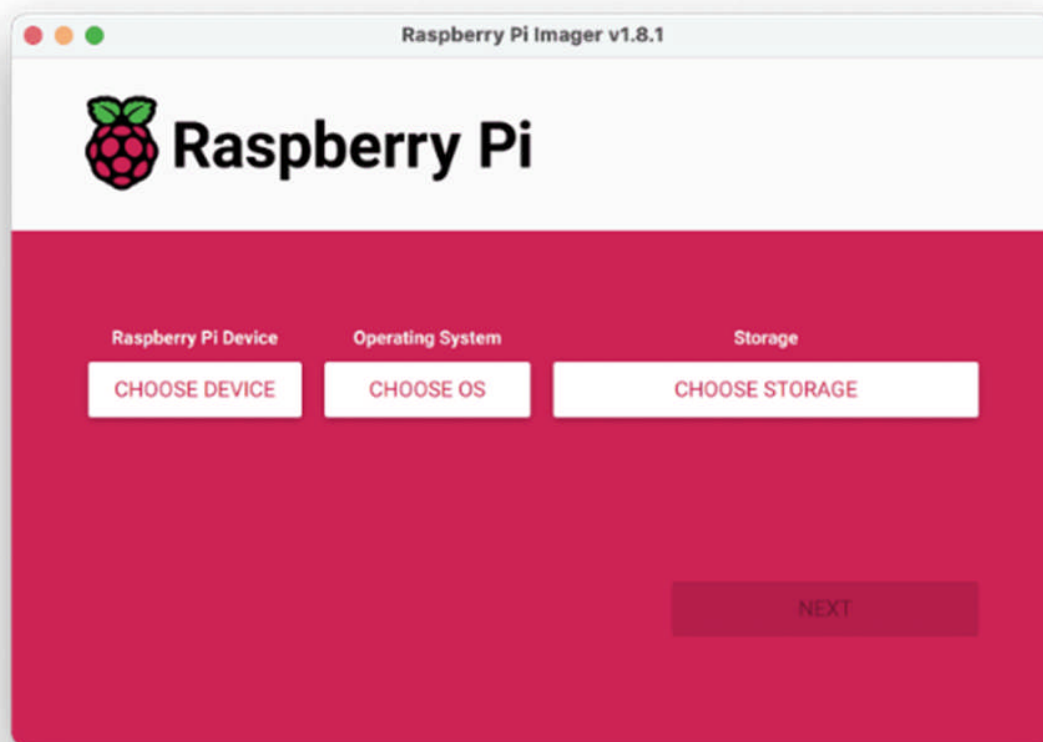
- Connect an SD card reader with the SD card inside.
- Open Raspberry Pi Imager and choose the required OS from the list presented.
- Choose the SD card you wish to write your image to.
- Review your selections and click on the Write button to begin writing data to the SD Card.

Note:

If using Raspberry Pi Imager on Windows 10 with controlled folder access enabled, you will need to explicitly allow Raspberry Pi Imager permission to write the SD card. If this is not done, the imaging process will fail with a "failed to write" error.

Advanced Options

When you have the Raspberry Pi Imager open, and after you have selected the operating system to install, a cog wheel will appear allowing you to open an "Advanced Options" menu if it is supported by the operating system. This menu lets you carry out tasks like enabling SSH, or setting your Raspberry Pi's hostname, and configuring the default user before first boot.



Amongst other things the Advanced Options menu is useful for when you want to configure a headless Raspberry Pi.

If you are installing Raspberry Pi OS Lite and intend to run it headless, you will still need to create a new user account. Since you will not be able to create the user account on first boot, you **MUST** configure the operating system using the Advanced Menu.

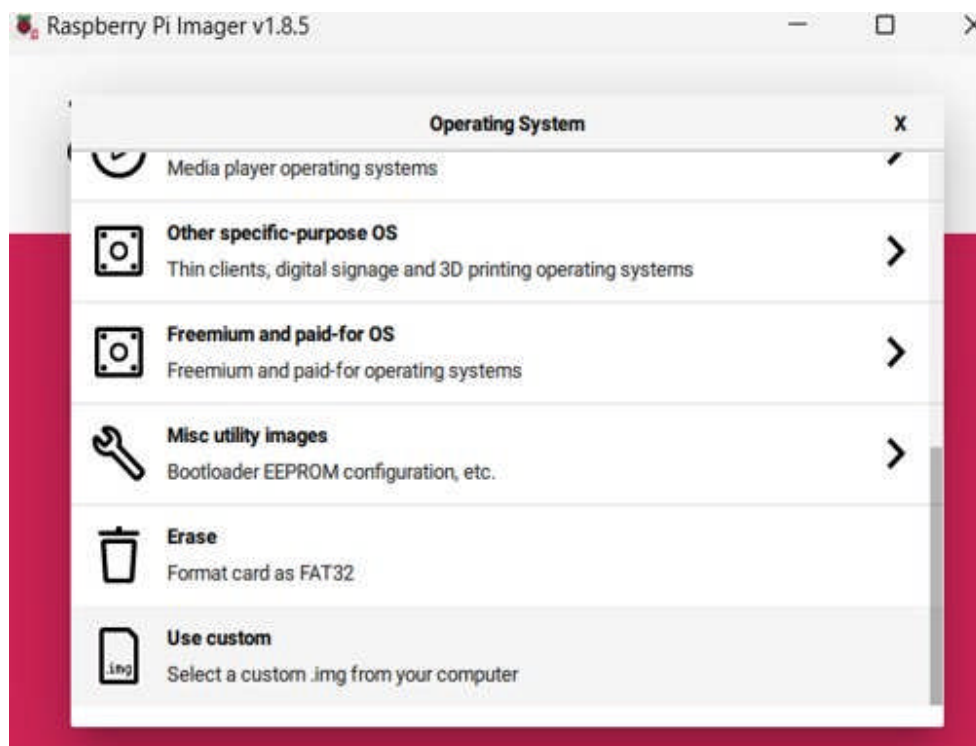
Downloading an Image

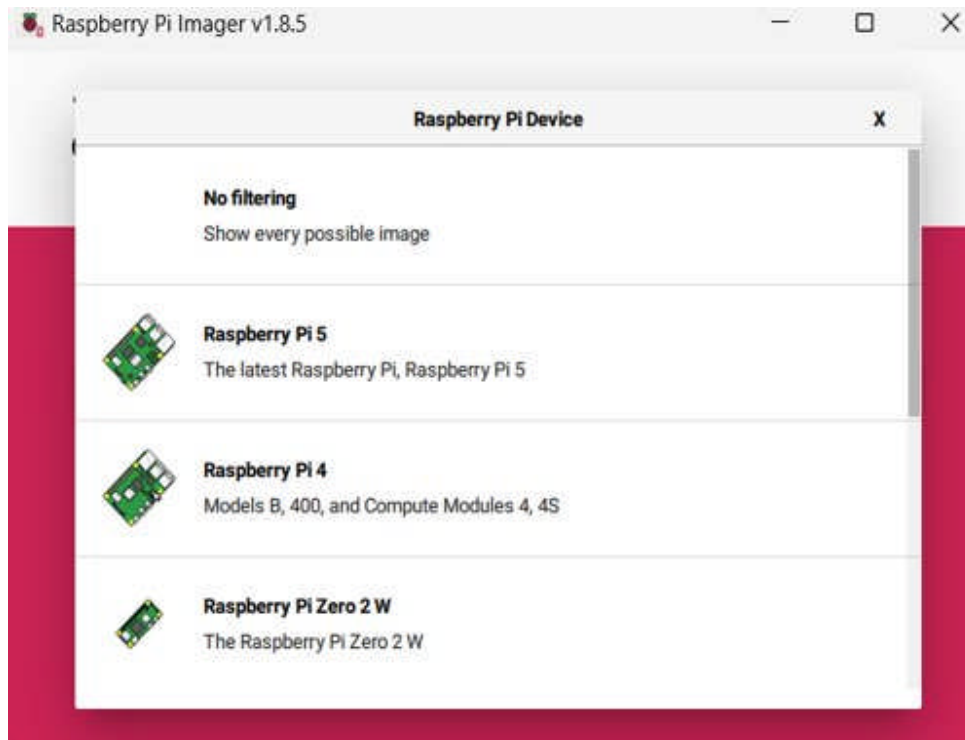
If you are using a different tool than Raspberry Pi Imager to write to your SD Card, most require you to download the image first, then use the tool to write it to the card. Official images for recommended operating systems are available to download from the Raspberry Pi website downloads page. Alternative operating systems for Raspberry Pi computers are also available from some third-party vendors.

You may need to unzip the downloaded file (.zip) to get the image file (.img) you need to write to the card.

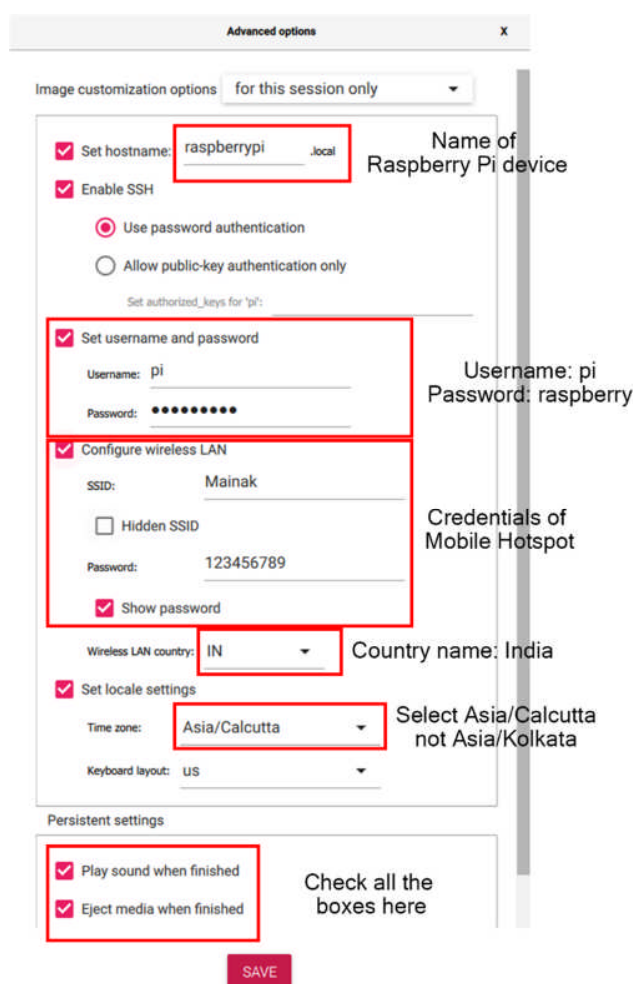
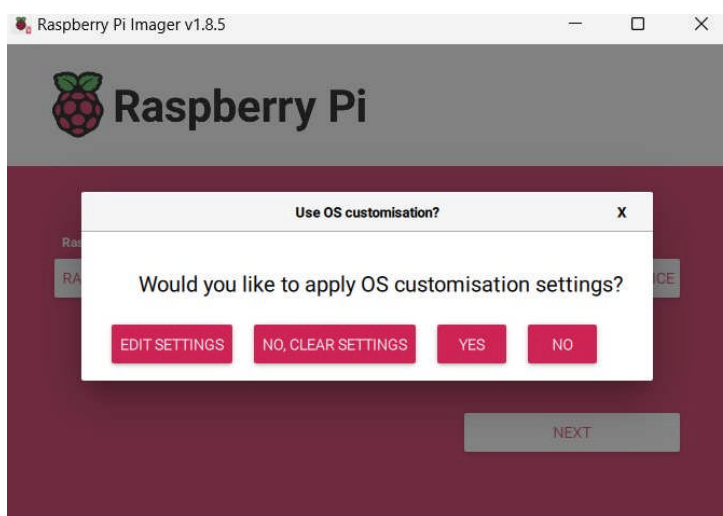
Step- 2

Open Raspberry Pi Imager and select OS – Raspberry Pi OS (Legacy) or choose the custom option and manually select OS from local storage.

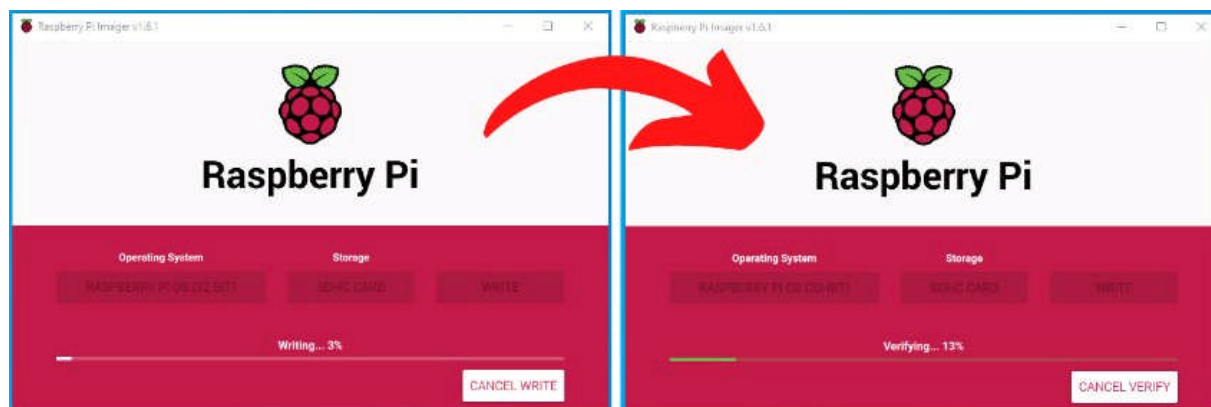




- Select storage and then click next so you will get **OS customisation window**. Click on the edit setting.
- Click on the check box of hostname and remain it default then user name of your raspberry pi you can take and remember it for login(default name is pi and password is raspberry).
- Next you need to configure wireless Lan (try to connect with mobile hotspot only) and save it.

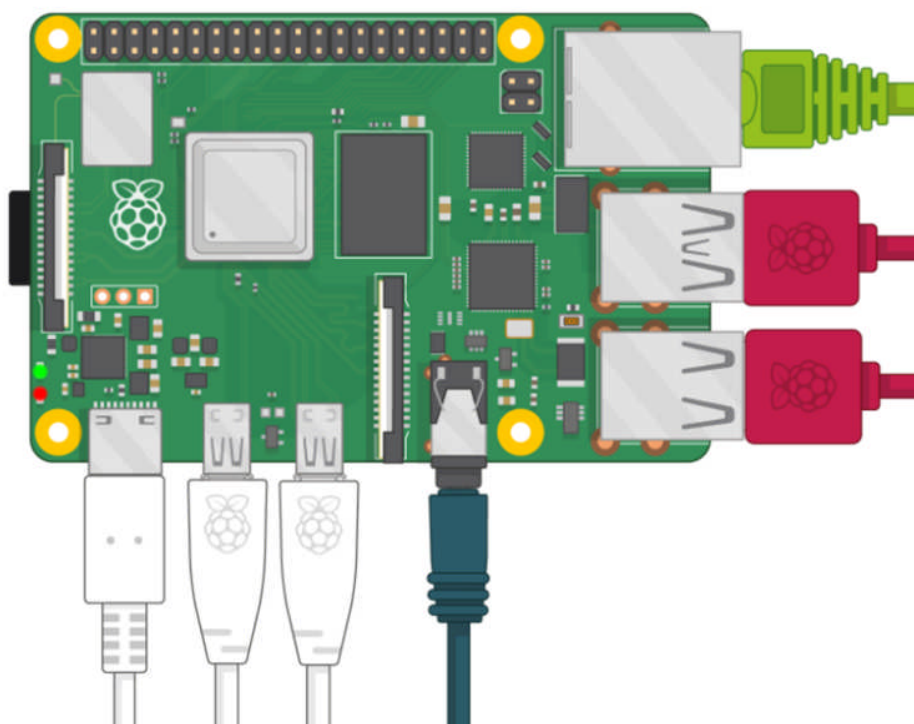


- Click on the next button so OS writing starts. This process will take 5 minutes for verification and stay on the on-imager window.



Step- 3

Complete Setup:-



Connection

Display Raspberry Pi OS

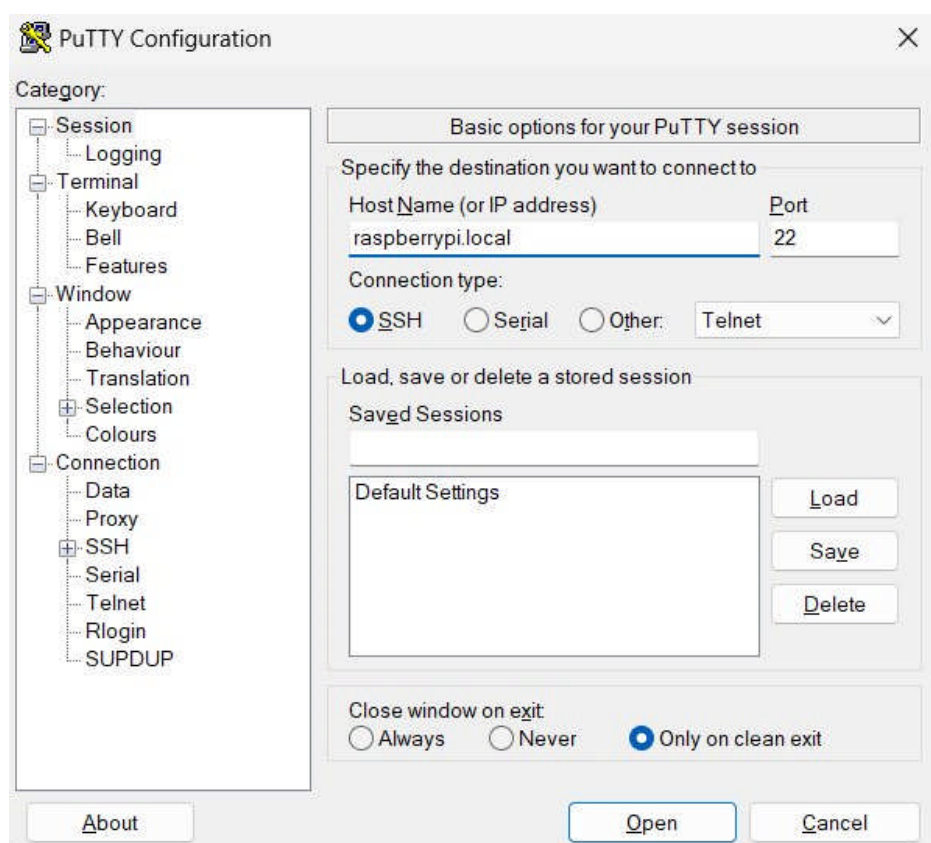
After successfully connecting check out Raspberry OS on Display. Click on the raspberry icon and select preference option. Go into configuration window and enable all interface like i2c ,vnc etc.



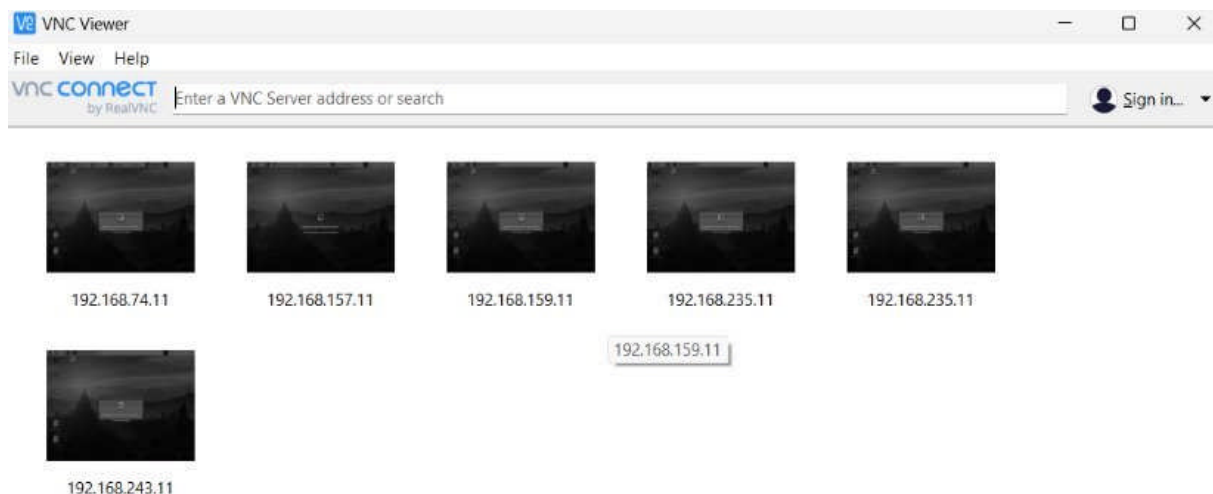
Display

Display Raspberry Pi OS using VNC-Viewer

- In your laptop install Putty <https://www.putty.org/> and VNC <https://www.realvnc.com/en/connect/download/viewer/>
- Open putty and in host name write **raspberrypi.local**
- You will get the cmd access to the raspberry pi
- Login : pi Pwd : raspberry
- Run **ifconfig**
- Note-down raspberrypi IP Address(exp-192.168.46.23)
- Run **sudo raspi-config**
- Go to display option and select **resolution**
- Select **DMT MODE-9**.
- Then go back and inside **interface** options **enable all one by one**.



- Put the noted IP address here in VNC server address

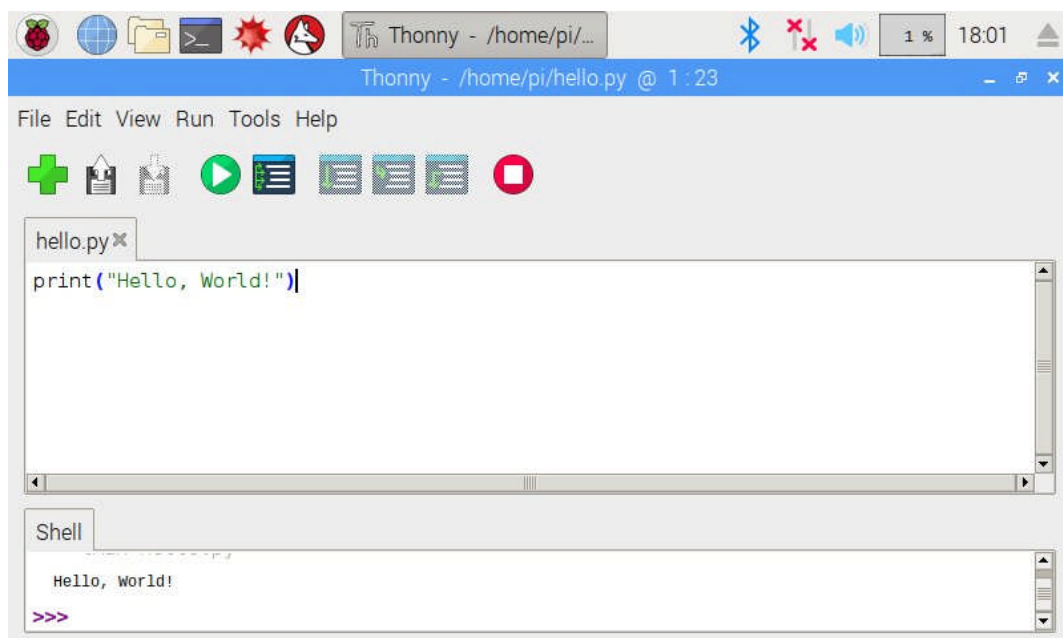


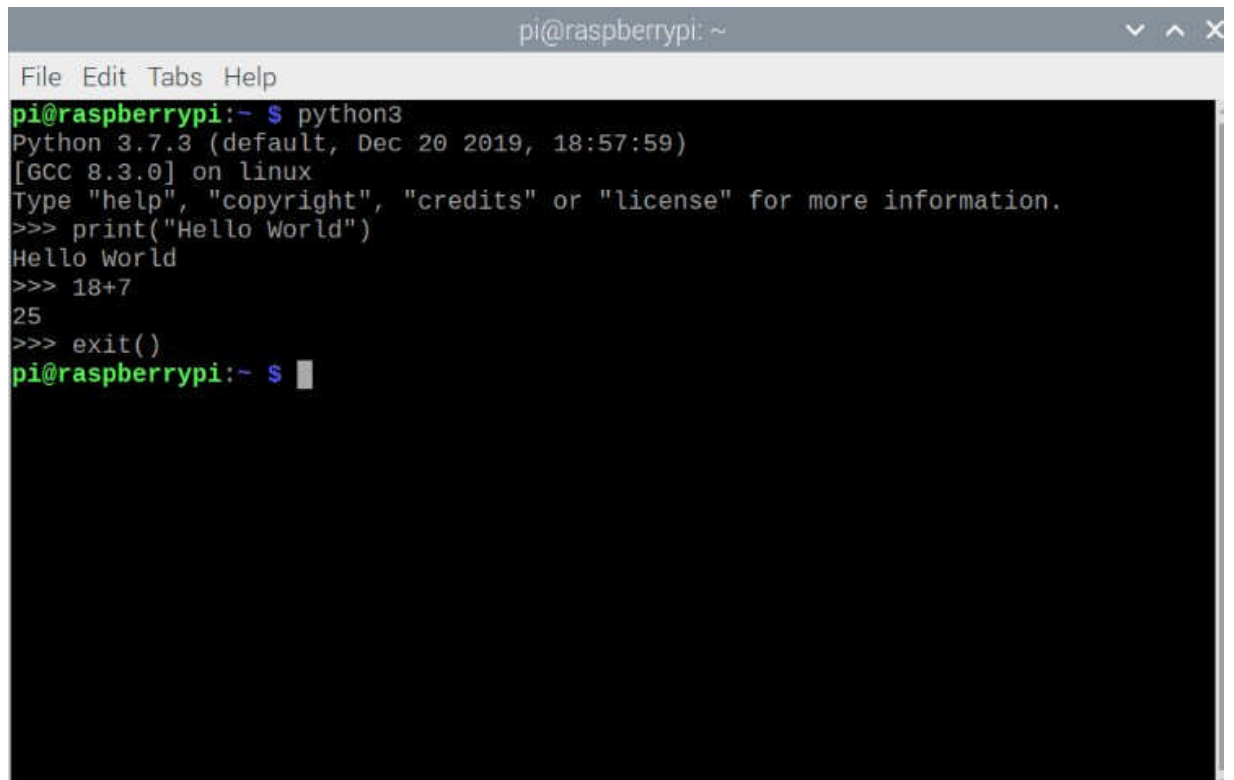
Step-4

Write First program in raspberry-pi

Procedure-

- Open Thony python IDE
- Write a program for printing hello world.
- Save that file on Desktop .
- Run it from terminal and identify output of the program on terminal.





```
pi@raspberrypi: ~  
File Edit Tabs Help  
pi@raspberrypi:~ $ python3  
Python 3.7.3 (default, Dec 20 2019, 18:57:59)  
[GCC 8.3.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> print("Hello World")  
Hello World  
>>> 18+7  
25  
>>> exit()  
pi@raspberrypi:~ $
```