Introduction ubuntu and linux

Ubuntu

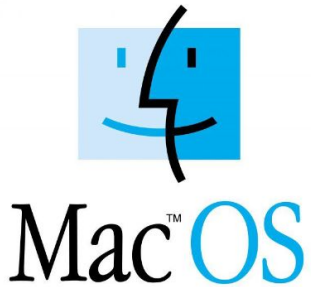
Ho Phu Quy

Topic

1. Summary about Linux and Ubuntu
2. Important Structures and Terminology in Linux
3. How to Install Linux
    - Install as a Primary Operating System
    - Install on a Virtual Machine (e.g., VirtualBox)
    - Windows Subsystem for Linux (WSL)

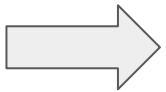
Summary about Linux and Ubuntu

Some popular Operating Systems



What is Linux Operating System?

Developed by Linus Torvalds in 1991, the Linux operating system is a powerful and flexible open-source software platform. It acts as the basis for a variety of devices, such embedded systems, cell phones, servers, and personal computers



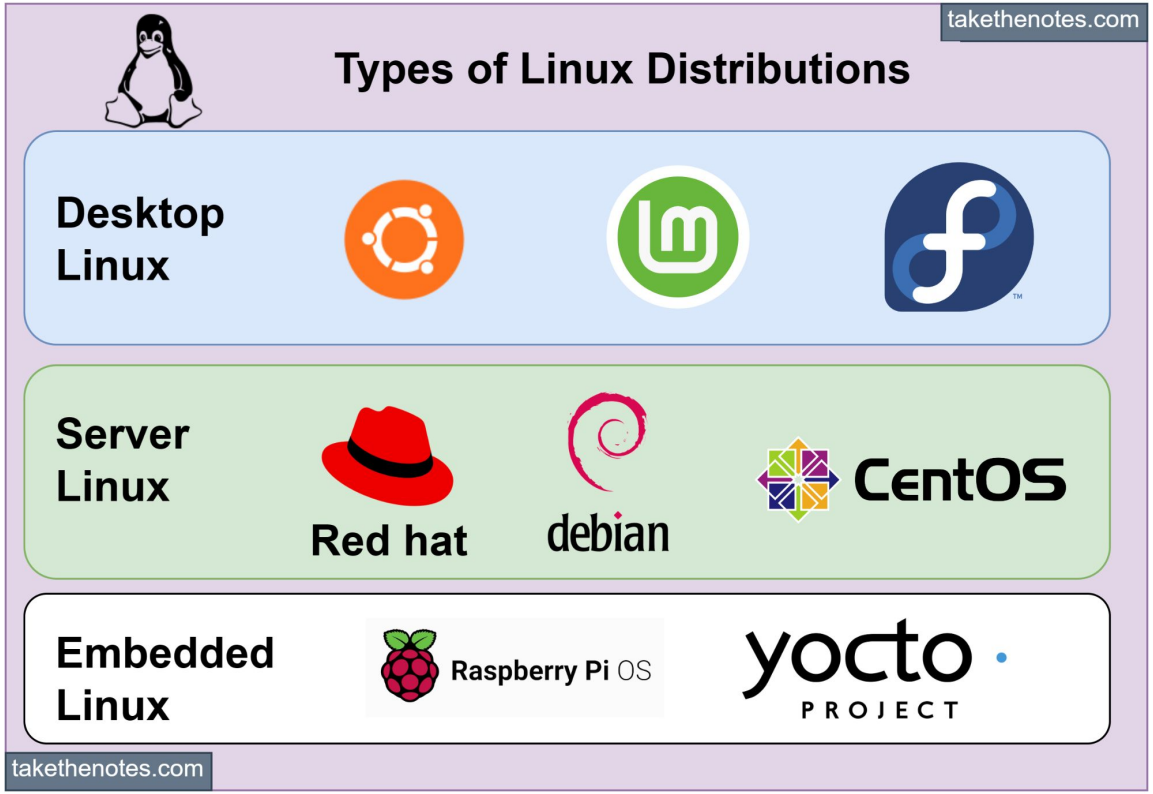
Just know Linux is an operating system like Windows.

Why linux for bioinformatic?

1. Easy to build simple pipelines (awk, bash, piping, bash redirection, texttools)
2. Simple to install and use software development tools
3. Multiple versions of a program can be installed by the user himself and switched on/off with sourcing some scripts without being administrator
4. A lot of good scientific software is written in a non portable way for linux/unix (almost all short read aligners, samtools). This makes it necessary to use Unix for genomics.
5. Ability to perform analyses on computer clusters (important for big/long computational jobs)

https://xie186.github.io/Novice2Expert4Bioinformatics/why-linux.html

Overview of different types of Linux distributions



https://takethenotes.com/linux-distributions/

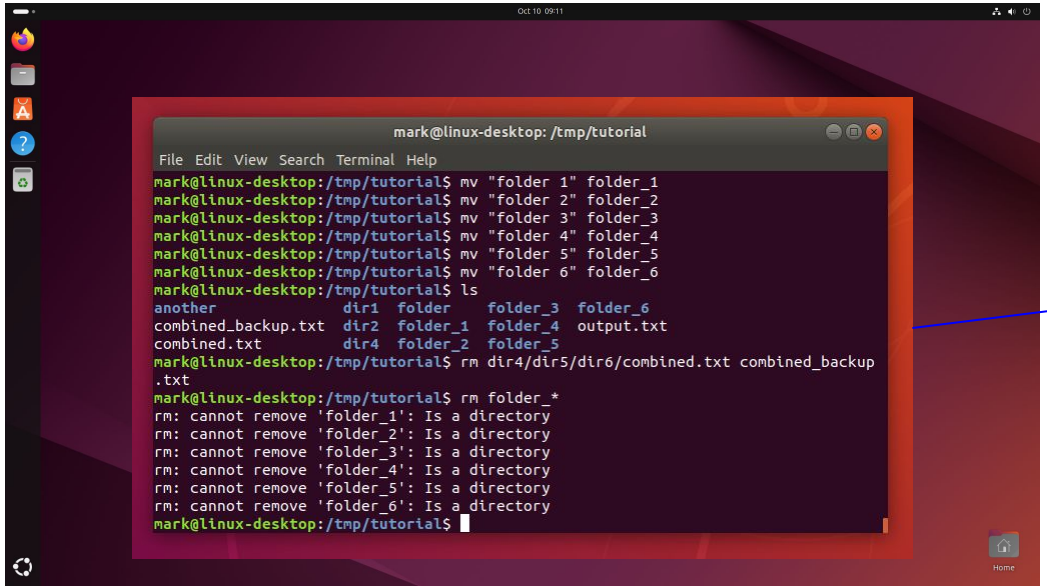
Desktop distributions

1. User-friendly graphical interface
2. Range of applications for everyday use
3. Easy to install and set up
4. Good hardware compatibility

https://takethenotes.com/linux-distributions/

What is Ubuntu?

Ubuntu is a consumer-pleasant, loose Linux-primarily based running machine. it's miles free of cost, unlike Windows and macOS, and everybody can make contributions to its improvement because it is open-supply.



Terminal window

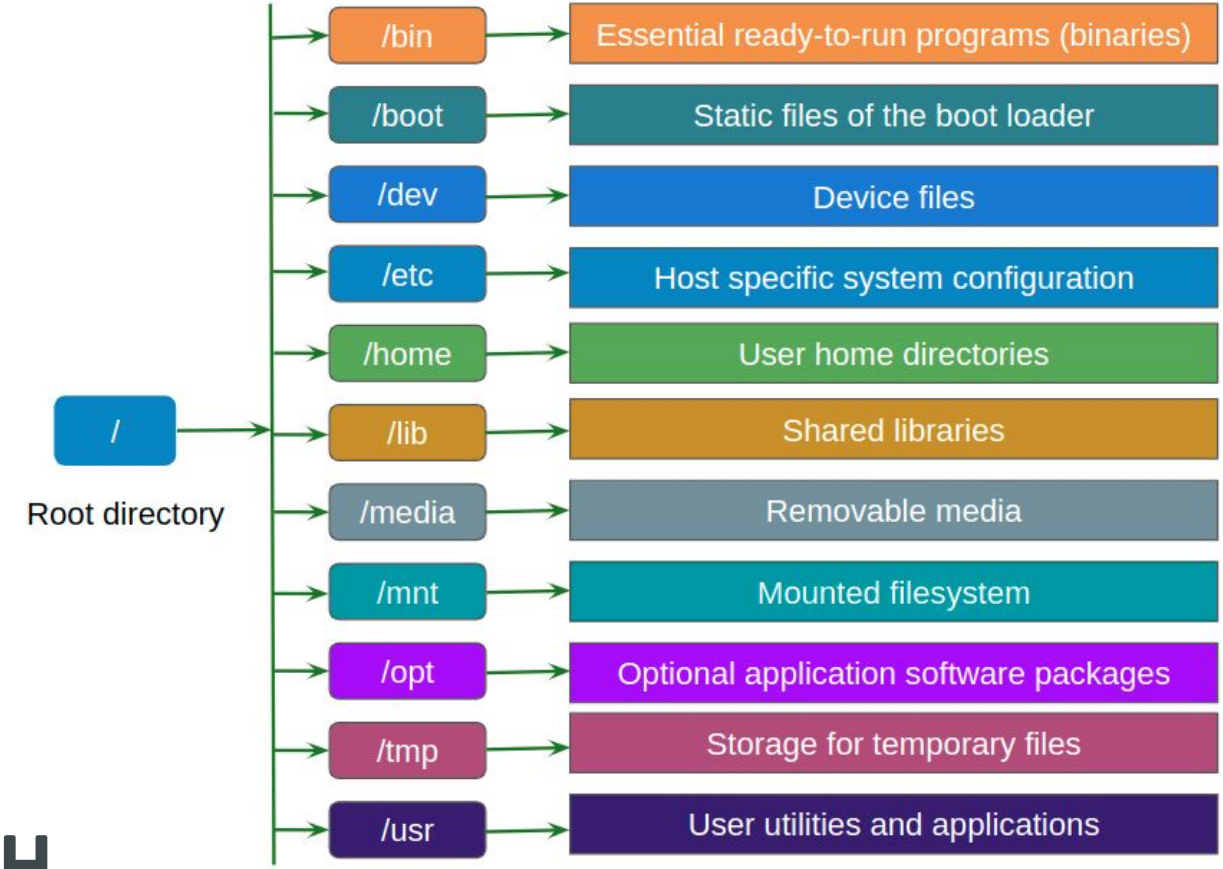
is where you type commands

Open:
Ctrl + Alt + T keys on the keyboard

https://takethenotes.com/linux-distributions/

Important Structures and Terminology in Linux

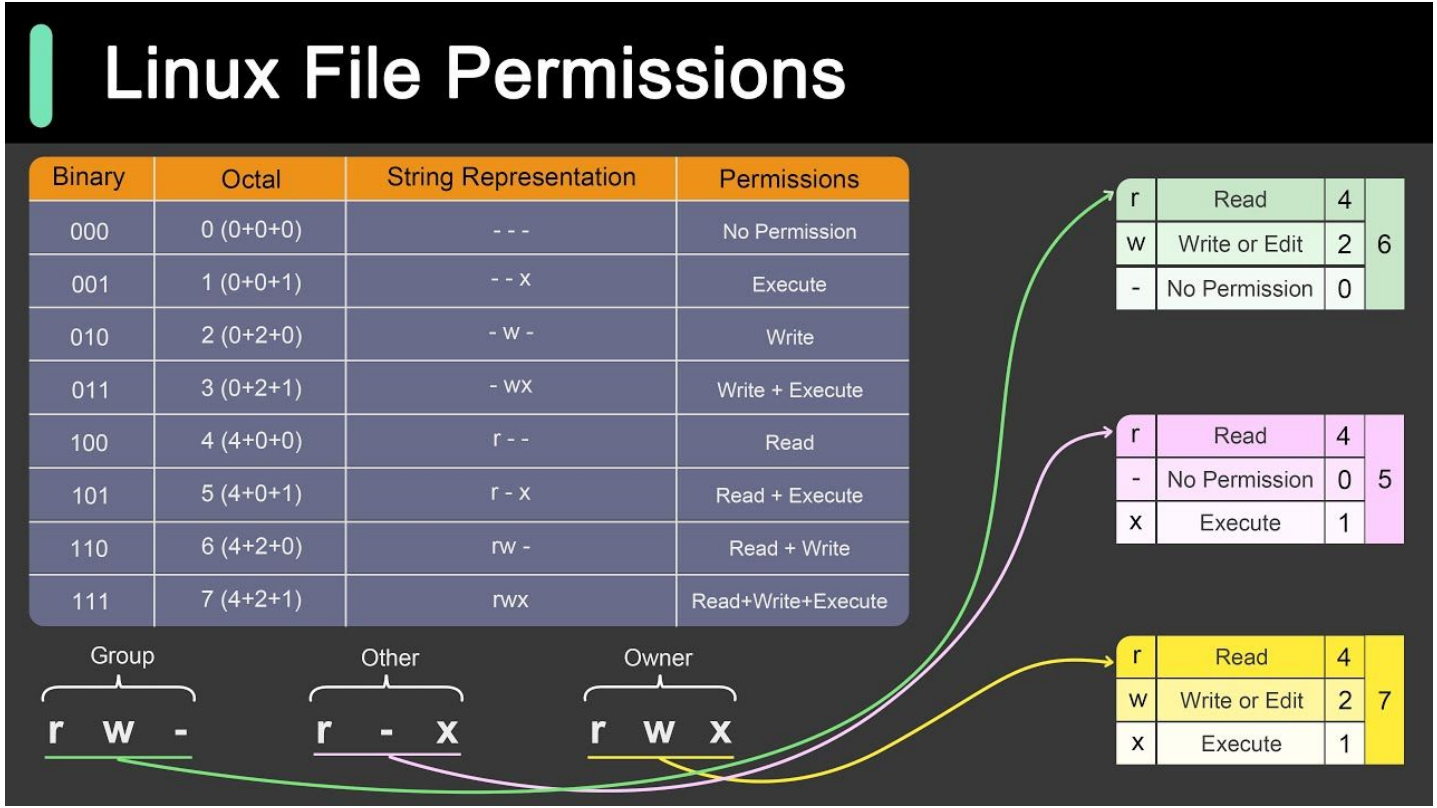
linux file system structure



BASH
THE BOURNE-AGAIN SHELL

https://www.enablegeek.com/tutorial/work-file-system-in-linux/

linux file system structure



BASH
THE BOURNE-AGAIN SHELL

https://www.youtube.com/watch?v=4N4Q576i3zA

What is Shell?

- A shell is a special user program that provides an interface for the user to use operating system services.

- Terminal is where we interact with the shell through commands.

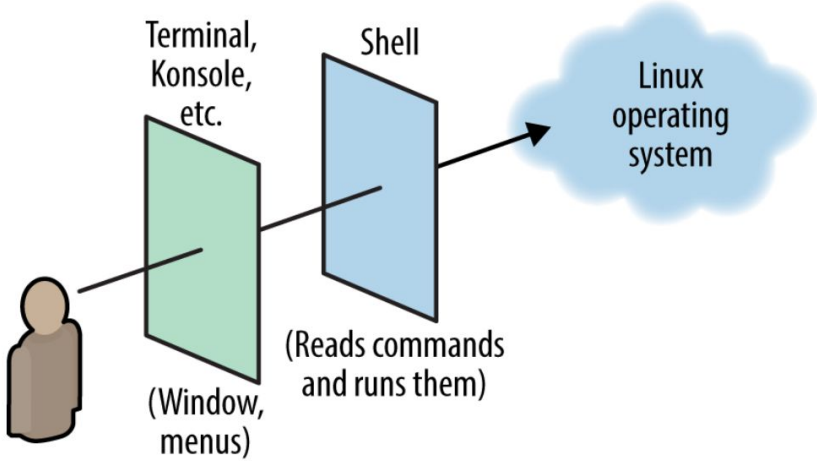
- Several types of Shell:

  +Bourne Shell (sh)

  + C Shell (csh)

  +**Bourne Again Shell (bash): most popular**

  + Z Shell (zsh)



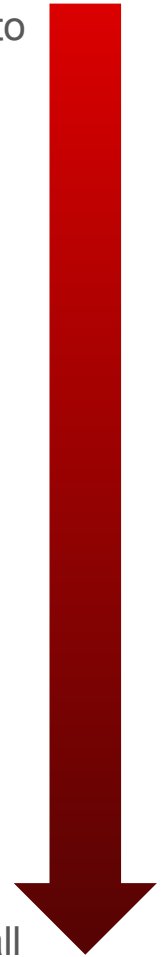
(Daniel J. Barrett, Linux pocket guide)

BASH
THE BOURNE-AGAIN SHELL

How to Install Linux

Some ways to get the Terminal

easy to install



a bit difficult to install

1. macOS: How to open Terminal:
   https://support.apple.com/en-vn/guide/terminal/apd5265185d-f365-44cb-8b09-71a064a42125/mac

   Windows 10/11: Install Ubuntu on Windows Subsystem for Linux (WSL): Recommended for beginners
   https://canonical-ubuntu-wsl.readthedocs-hosted.com/en/latest/guides/install-ubuntu-wsl2/

2. Install Ubuntu on virtual machine (VM):
   Windows: Install Ubuntu on VirtualBox: https://www.youtube.com/watch?v=ngJQPt-xEeo
   macOS: Install Ubuntu on VirtualBox: https://www.youtube.com/watch?v=b_tOialCSXE

3. Install Ubuntu on physical computer: Best for long term use
   Delete Windows & install Ubuntu: https://www.youtube.com/watch?v=oZcvqfWf_ps&t=100s
   If you don't want to delete windows:
   or a) Dual boot: Ubuntu and Windows on the same hard drive:
   https://www.youtube.com/watch?v=GXxTxBPKecQ&t=229s
   or b) Dual boot: Ubuntu and Windows on the separate hard drive:
   (Ubuntu on hard drive 1, Windows on hard drive 2)
   https://www.youtube.com/watch?v=KX85vZ3ANVk
   Recommended method b) if you want dual-boot.

Warning: backup your data before install!!

More reference: https://www.youtube.com/watch?v=oZcvqfWf_ps&t=100s

Thank you