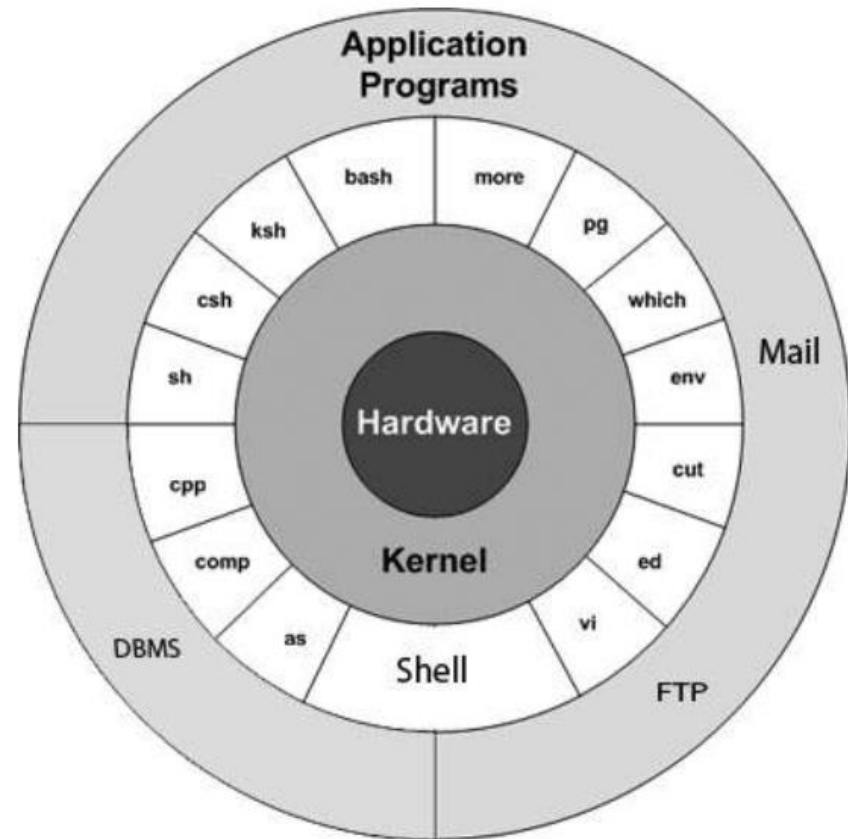# Introduction to Linux

fit@hcmus

Unix

☐ Unix was originally developed in 1969 **Ken Thompson**, **Dennis Ritchie**, … at Bell Labs.

☐ **Mainly used for scientific-technical applications** on mainframes and workstations, but has become, because of Linux, also popular for classical PC-applications throughout the last years.

☐ Is perfectly suited for **application in networks**. Larger systems and networks require an administrator.

☐ Offers various alternatives for the solution of most tasks. The multitude of commands (more than in any other OS) are brief and flexible.

☐ Is originally **command-line oriented**, but can be used via a graphical user interface (X Window system).

Unix Architecture

☐ Kernel − The kernel is the heart of the operating system

☐ Shell − The shell is the utility that processes your requests

☐ Commands and Utilities : use in your day to day activities

Linux

- ☐ Linus devised a Kernel named **Linux in 1991**. Though he would need programs like File Manager, Document Editors, Audio-Video programs

- ☐ He collaborated with other programmers in places like MIT and applications for Linux started to appear.

- ☐ The earlier versions of Linux OS were **not so user-friendly**

- ☐ This definitely curbed the Linux's popularity as other commercially oriented **Operating System Windows** got famous.

- ☐ Nonetheless, the **open-source aspect** of the Linux operating system made it more robust.

Linux

☐ The main advantage of Linux was that programmers were able to use the Linux Kernel to **design their own custom** operating systems.

☐ With time, a new range of **user-friendly OS**'s stormed the computer world.

☐ Now, Linux is one of the most popular and widely used Kernel, and it is the backbone of popular operating systems like **Debian, Knoppix, Ubuntu, and Fedora.**

☐ Linux Kernel is normally used in combination of GNU project by Dr. Richard Stallman. All mordern distributions of Linux are actually distributions of **Linux/GNU**

Benefits of Linux

☐ Being **open-source**, anyone can modify it.

☐ It is **easy to learn** Linux for beginners

☐ The Linux operating systems now offer millions of programs/applications and Linux softwares to choose from, most of them are **free**!

☐ Once you have Linux installed you no longer need an antivirus! Linux is a **highly secure system**.

☐ Linux freeware is the OS of choice for Server environments due to its **stability and reliability** (Mega-companies like Amazon, Facebook, and Google use Linux for their Servers). A Linux based server could run non-stop without a reboot for years on end.

Summary

☐ Linux is an OS which is open-source, free, and widely used

☐ (especially for server computer)

☐ Precisely, Linux is not a full-fledged OS, but is the OS's core/kernel

☐ Because Linux source code is published, many groups out there have used Linux to build OS's with different flavors (a Linux-based OS with a specific flavor is call a Linux distribution or Linux distro): Debian, Ubuntu, Linux Mint, Arch, Manjaro, …

☐ Why are Linux commands and Mac commands similar to each other? Because both share the same root: the ancient Unix OS (Linux gets inspired by Unix, but Linux source code is rewritten from scratch and different from Unix source code; Mac is related more directly to Unix)

Why using Linux

☐ When working for companies in the future, it's likely that you have to interact with Linux computer, and probably have to interact with it through commands (e.g. when you use remote server)

☐ Or when you work with Google Colab, the only way to interact with Linux computer behind Google Colab is to use commands

Basic command line

☐ https://cheatography.com/davechild/cheat-sheets/linux-command-line/

Simple Tutorial

- [ ] https://missing.csail.mit.edu/2020/course-shell/

- [ ] https://ubuntu.com/tutorials/command-line-for-beginners

- [ ] https://missing.csail.mit.edu/

- [ ] https://ryanstutorials.net/linuxtutorial/