Using Linux

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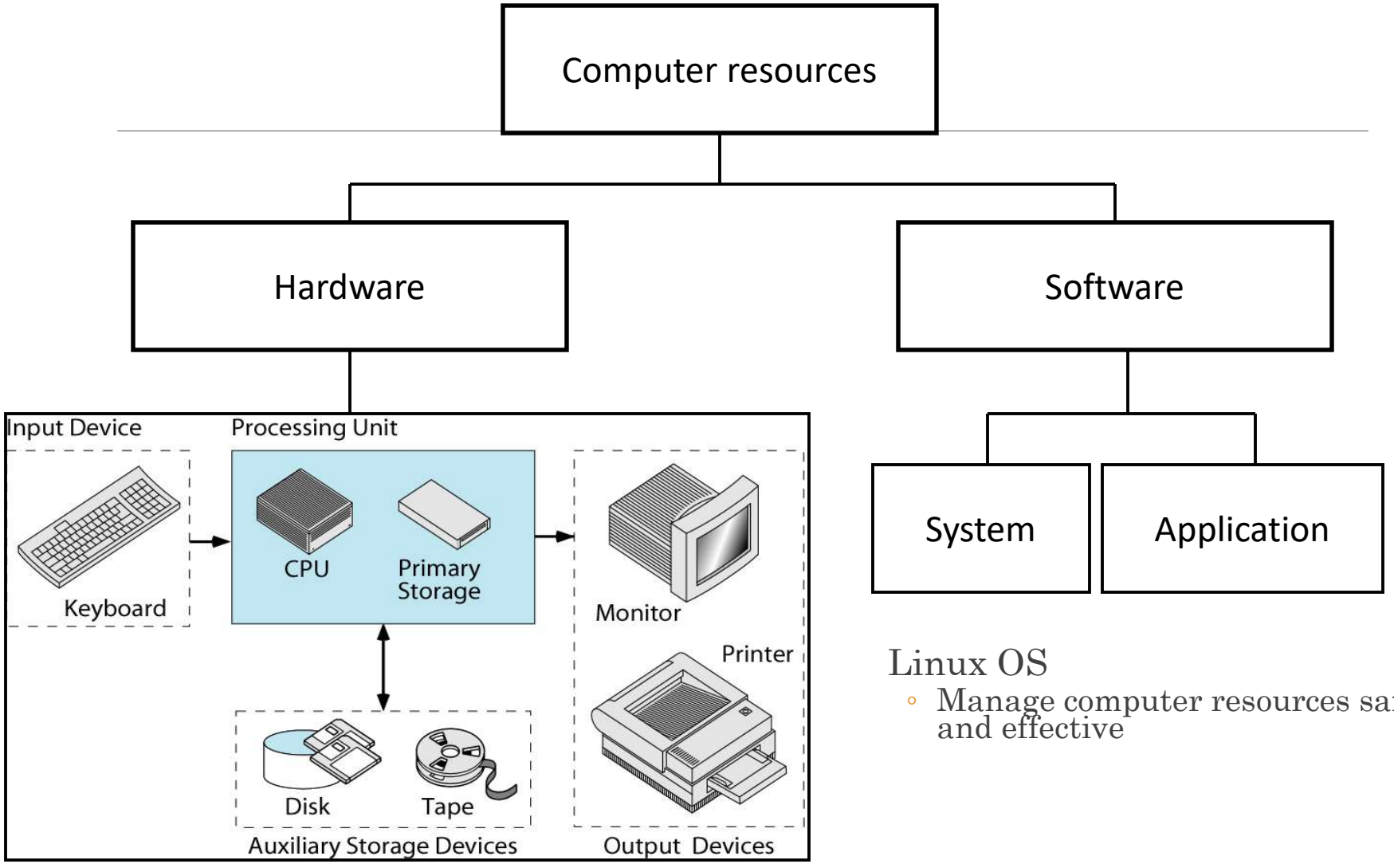


Linux OS

- Manage computer resources safe and effective

“Old” OS vs modern OS

- Old OS:
  - Single user, single-tasking
    - Example: DOS, Windows 3.1
  - Single user, multi-tasking
    - Example: OS/2
- Modern OS:
  - Multiusers, multitasking
  - Example: Unix, Windows NT/2000/XP/Vista/7/10

Linux OS

- Linux OS is a multi-user and multitasking OS
- Support programming, text process, exchange information

- User applications
  - Text processing (vi, sed, awk)
  - Other applications
- Support programming languages
  - C, C++, Java, including compliers
  - Shell scripts
  - Manage versions
    - Source Code Control System (SCCS)
    - Revision Control System (RCS)
- Server applications
  - Web server, mail server, application server

LINUX installation

Install Linux

- Separate computer
- Shared computer with other OS like Windows 7
- Live CD, Live USB

Other

- Cygwin: Linux utilities on Windows
- Windows Services For Linux (for some versions of Windows)
- MacOS X

LINUX installation

- Use the installation disk(s)
- Steps
  - Boot sytem
  - Disk partitioning
  - Uncompress and copy files
  - Configure system
  - Make user accounts

System booting

- Check disk storage for new OS installation
  - Can install with Windows OS in a single PC
  - Clean disks before installation
- Boot by CD-ROM
- Boot by USB flash disk

Disk partitioning

- One single disk can be splitted to many partitions
  - Under Windows, a partition means a logic disk
- Can only install one OS for one partition
- There can be 4 primary partitions of a hard-disk nguyên thuỷ trên một đĩa cứng, trong đó
  - Only one primary partition contains many logic partitions (extended partitions)

Disk partitioning for Linux

- LINUX needs at least 2 partitions
  - One for system files of Linux
  - The other one for swap memory (/swap)
- Should consider to create partitions for storaging data
  - Improve safety and reliability
  - For example, create a partition for user data (/home)
- Size of partitions
  - swap: double of RAM size
  - Sizes of others dépend on data needed to be stored

Re-partition a disk (if needed)

- Suppose
  - There is an existing OS on the whole hard disk
  - Re-partition the disk to install Linux on empty partition(s)
- Method(s)
  - (bad) backup, partition, format, and recover the old OS
  - (better) use partitioning software to reduce to size of existing partitions and add a new partition for Linux installation (QMagic)

Disk partitioning while installing Linux

- fdisk
  - Create, remove, and show partitions
- mkswap
  - Format swap partition
- swapon
  - Turn on swap partition and use as virtual memory
- mkfs.ext2/3
  - Format a partion follow a Linux system file

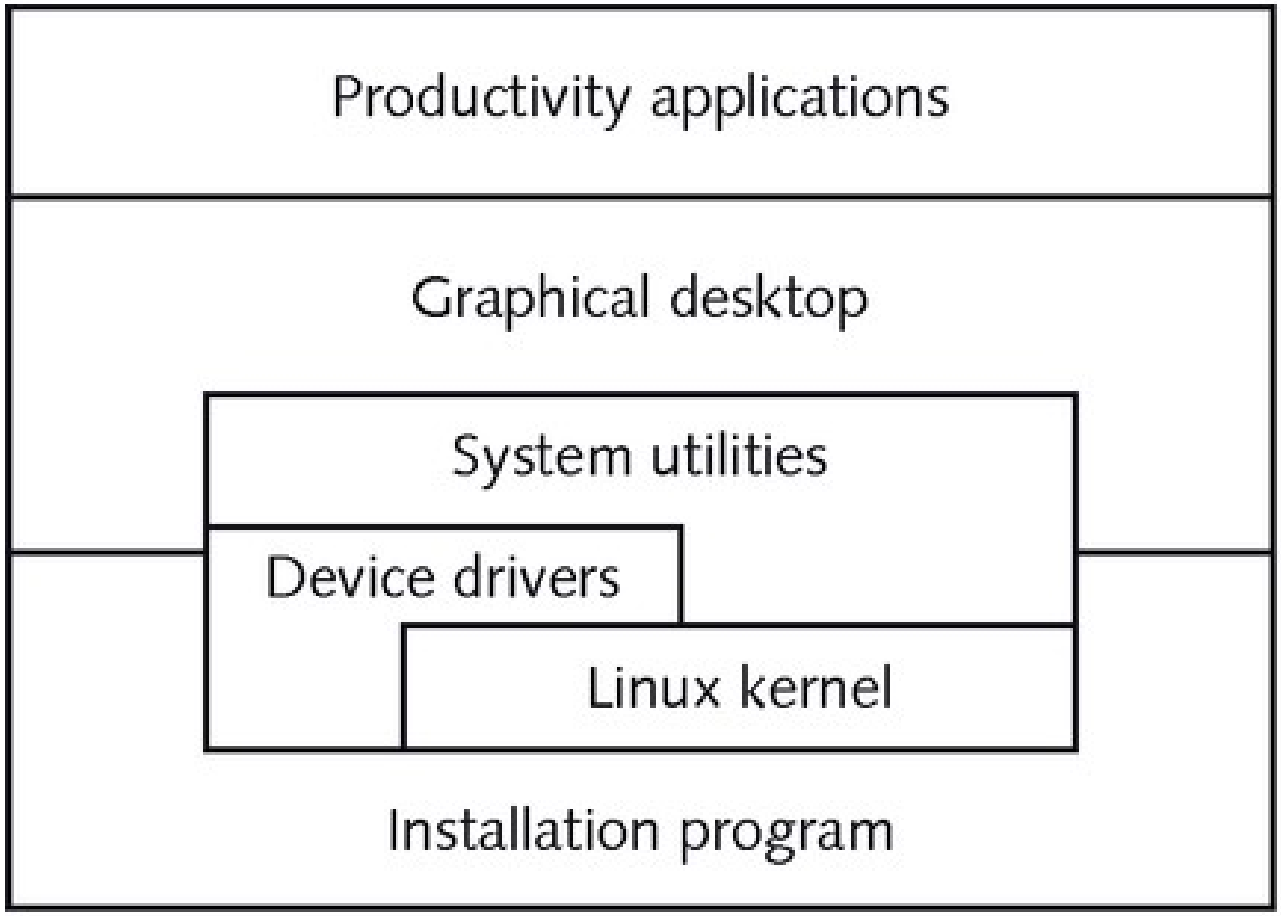
Install packages

- A package contains application(s) with compressed files
  - Installing a packet means uncompressing, copying files to computer, and configuring if needed
- Can select one of pre-defined configuration to install packages
  - Workstation
  - Server
  - Manual
  - V.v.

User accounts

- Two types
  - **root** : the superuser account in Unix and Linux, with the highest access rights on the system.
  - Other accounts are created for many purposes
    - For users to access to the system
    - For services such as http, samba, mysql,…
  - Note: You should avoid to work as root user for daily routine tasks

Linux components



Linux Distributions

Original distributions

- Redhat
- Debian
- Suse
- …

Derived distributions

- Fedora
- Ubuntu
- …

www.distrowatch.com

Login

- Each user need an username and password
- Login to the Linux system using the provided username and password through consoles
- Two console types
  - Text mode (use interpreter)
  - Graphical mode (use Windows X)
- After finishing your work, quit your session using exit or logout

Login in text mode

An shell interpreter is automatically started when a session begins

- Interact with users through commands
- Input by keyboard, print as text on screen
- Use minimum resources, suitable to work remotely
- Depend on programming script language

Virtual console/terminal

- Can open multiple sessions on a single workstation
- Linux supports 8 virtual terminal on a single computer.
- Each virtual console represents a working session
- To select a console, use the combination from Ctrl+Alt+F1 to F8
  - Ctrl+Alt-F1 : Console 1
  - Ctrl+Alt-F2 : Console 2
  - ...
  - Ctrl+Alt-F7 : Console 7 (GUI)

Shell

the command line interface (CLI)

Functionality

- Intepreter and execute commands
- History and command editing
- scripting
- Manage taks

Popular shell(s)

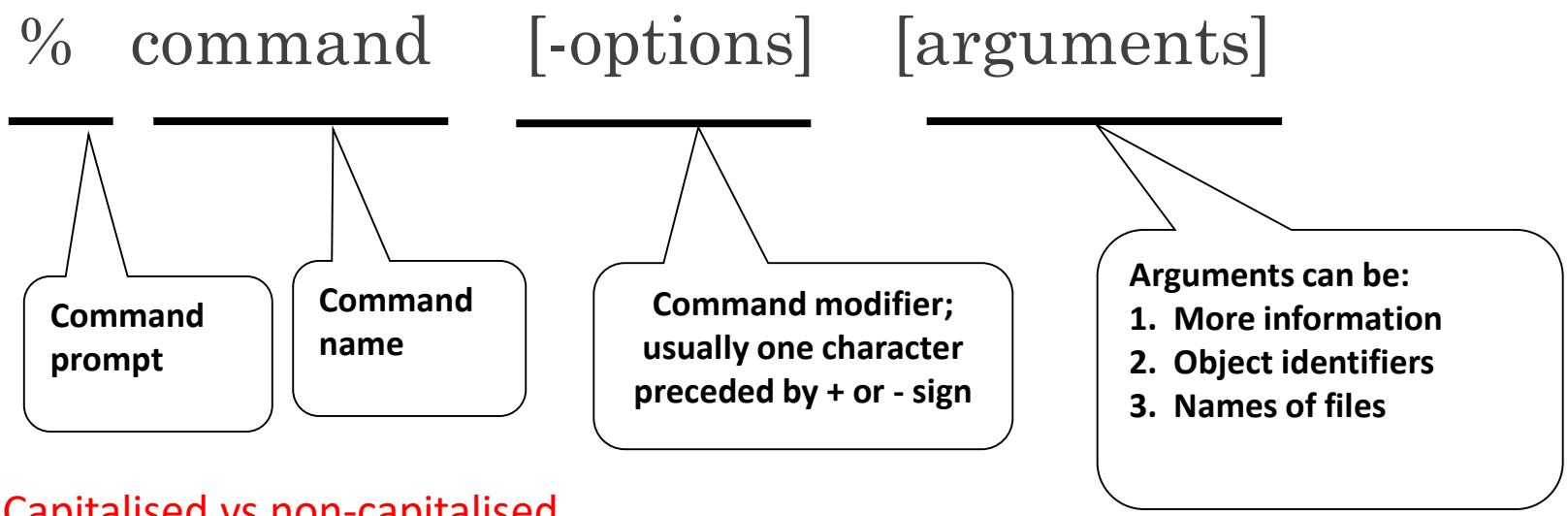
sh
- Bourne shell: Steve Bourne, 1978
- Almquist shell (ash): BSD sh replacement
- Bourne-Again shell (bash): GNU/Linux

csh
- C shell, Bill Joy, BSD, 1978

tcsh
- Tenex C shell (tcsh): GNU/Linux

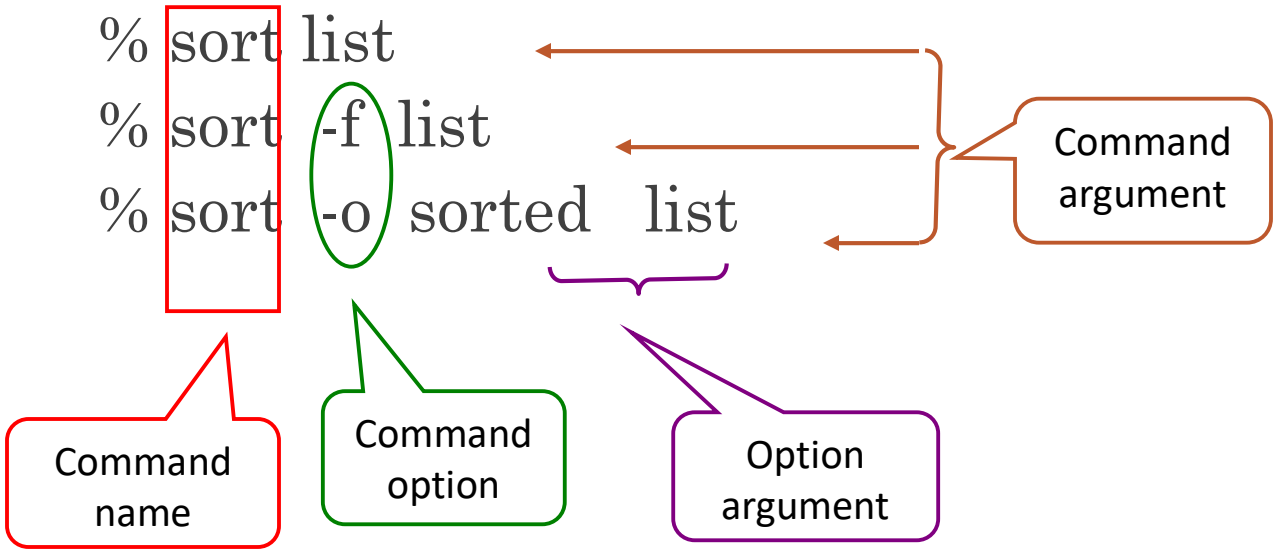
Others: Korn shell (ksh), Zshell (zsh), …

Command structure



- Capitalised vs non-capitalised
- Need spaces between command elements
- No space after "-"
- Content in [] is optional

Example


% sort list
% sort -f list
% sort -o sorted list
Command argument
Command name
Command option
Option argument

Some key combinations

Key	Function
Backspace, Ctrl-h	**Delete a character on the left, back the pointer one space to the left**
Ctrl-c	**End the current command**
Ctrl-s / Ctrl-q	**Stop / run the screen**
Ctrl-w	**Clear a word on the left**
Ctrl-u	**Clear the whole command**

Các câu lệnh thường dùng

passwd - Thay đổi mật khẩu
ls - liệt kê tệp
less - hiển thị nội dung tệp
logout - đăng xuất

date - hiển thị ngày giờ
who - ai đang đăng nhập
clear - dọn dẹp màn hiền
script - ghi lại các thao tác
uname -a - thông tin về HĐH

man - HDSD

Some more basic commands

logname : show username of the current session

hostname : name of thecurrent workstation

clear : clear the screen

who : list usernames of logged users

exit : quit the current session

passwd : change password

date : show date of OS

mkdir : create a new directory

rmdir : remove a(n) (empty) directory

cd : change working directory

pwd : current working directory

cp : copy files

rm : remove files/directories

ps : show process

v.v…

RTFM: man

- Show command manuals from OS

Syntax: man [options] [-S section] command-name

```
% man date
% man -k date
% man crontab
% man -S 5 crontab
```

- Note:

  Some commands are links/alias (you can make them yourselves)

  Some commands are core components

Similar commands

apropos

whatis

info

Some sources

Web sites

- www.unixtools.com
- www.ugu.com
- www.unix-manuals.com
- www.unixcities.com
- www.tldp.org
- www.linux.com
- www.linux.org
- linux.die.net

Or:

- Google

Bài tập

Cài đặt một hệ thống Linux

Không sử dụng internet, tìm hiểu về các lệnh cơ bản sử dụng các câu lệnh thông tin

Thực hiện thử nghiệm các lệnh cơ bản