

# Chapter 14:

## System Software and Application Software

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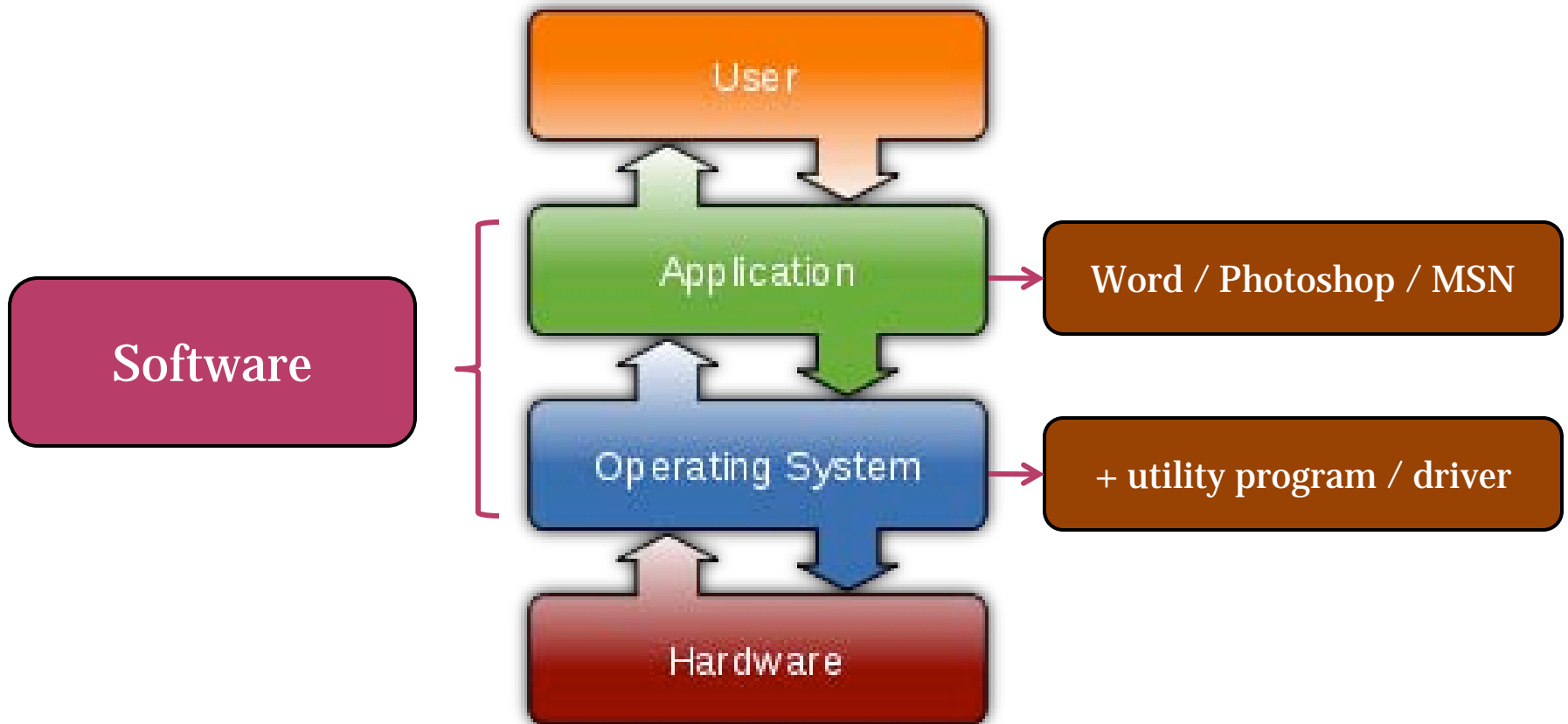
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# Curriculum

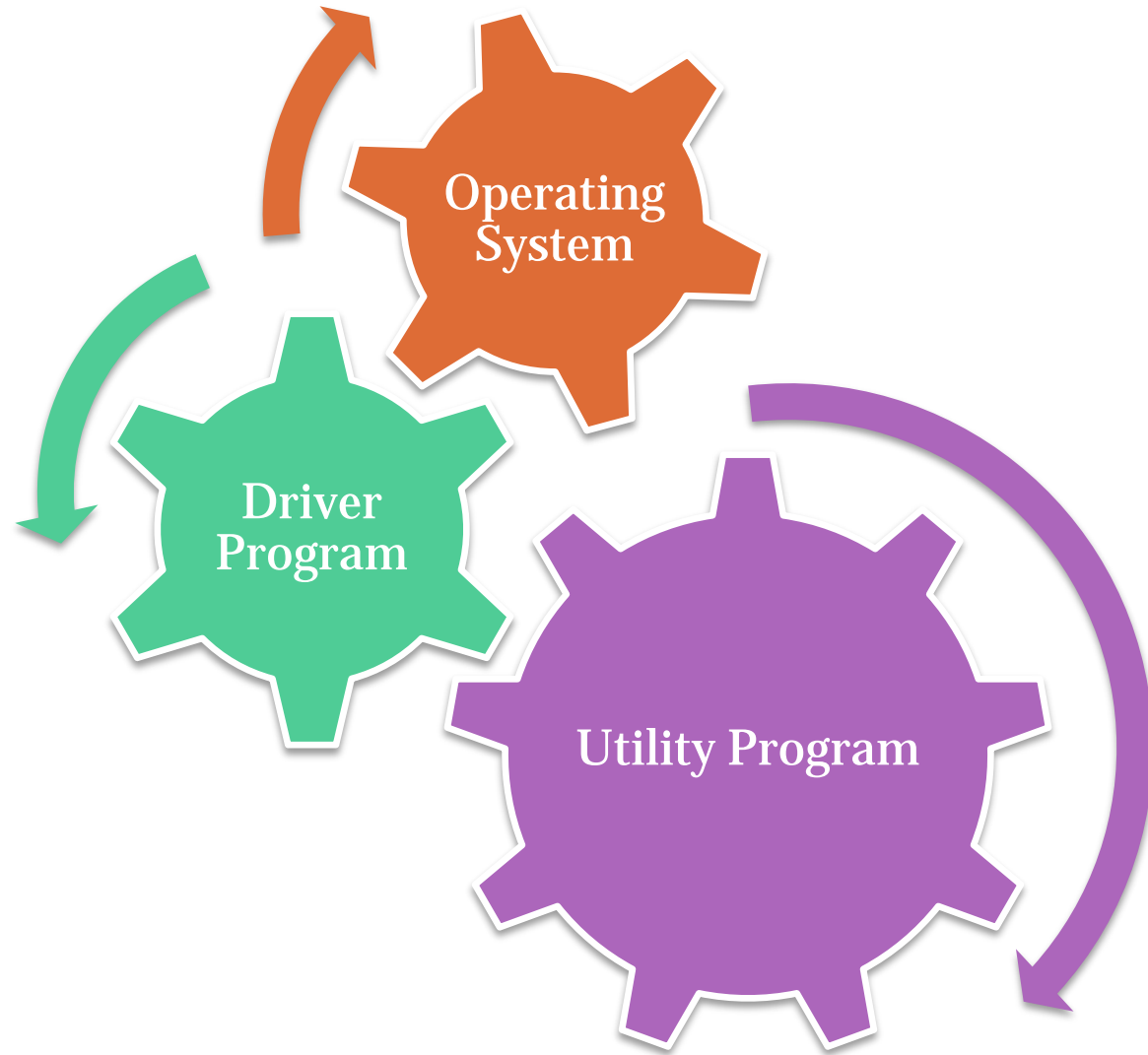
- **Know the functions of system software and applications software, and the relationship between hardware, system software, applications software and users.**
- **Outline the basic functions of an operating system and describe some common operating systems, and their differences and applications.**
- **State the functions and needs of utility programs and driver programs.**

Hardware <-> Software <-> Users



What is the role of software?

# System Software



# Operating System

- **Types:**

- **Features:**

- Single / Multi-user

- Single/ Multi-tasking

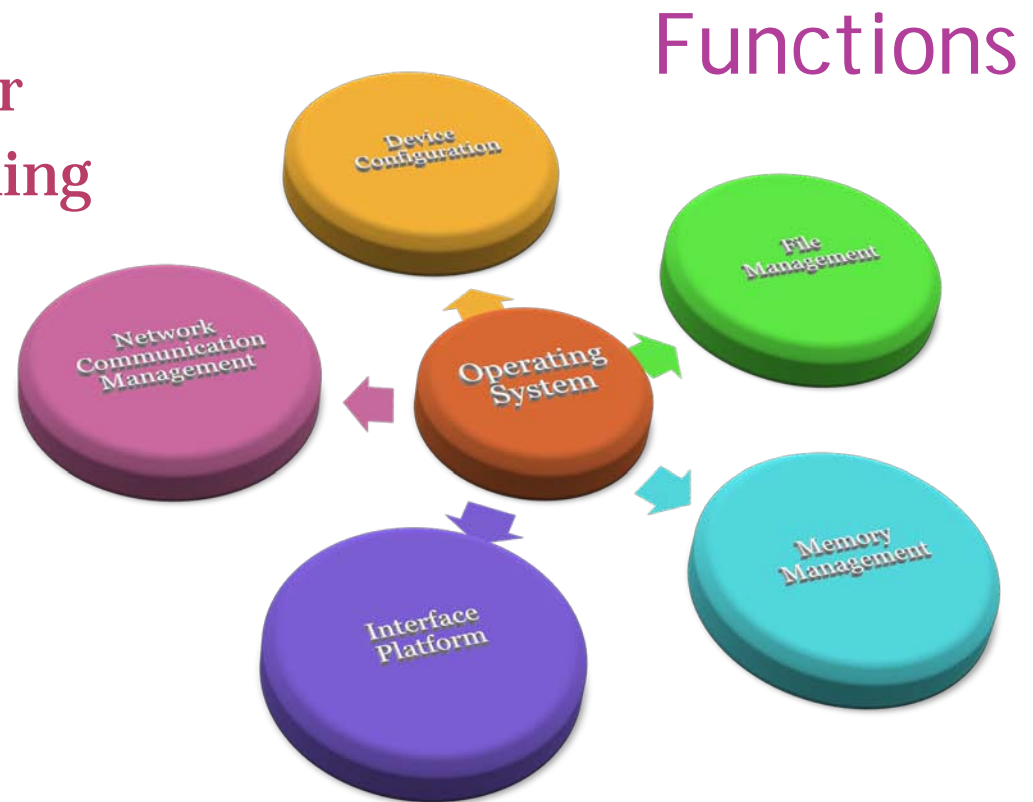
- Multi-processing

- **Devices:**

- Network

- Desktop

- Mobile



# Disk Operating System (DOS)

- Single user
- Single tasking
- Command line interface

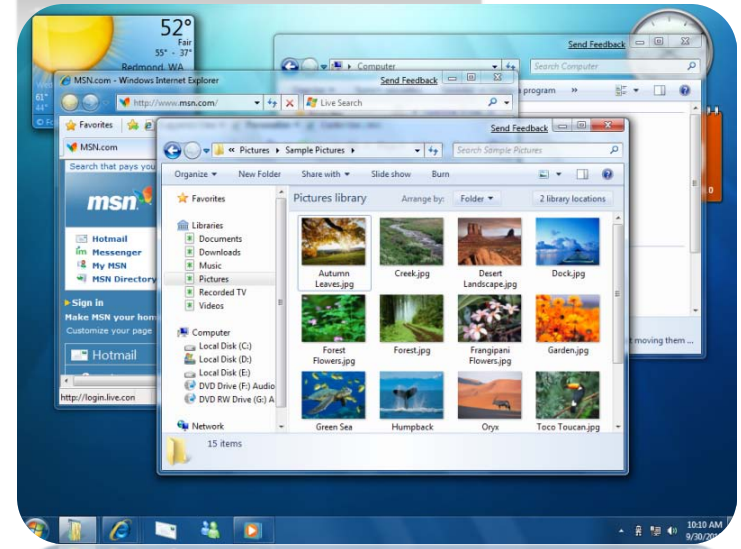
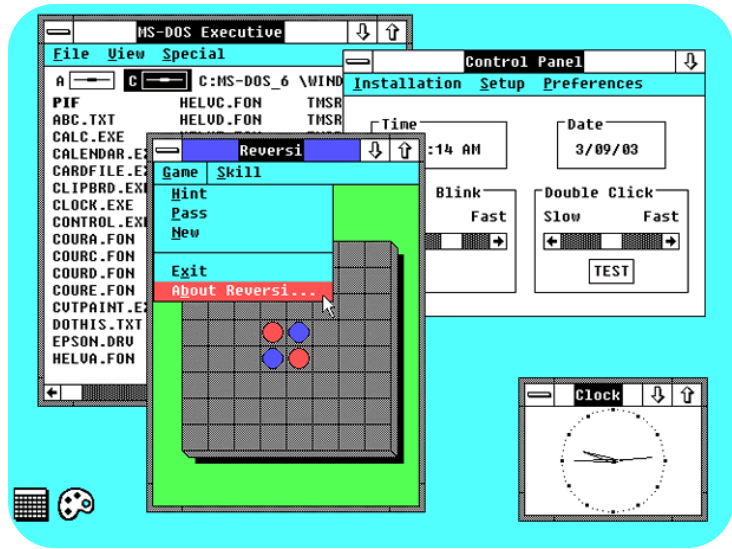
# Microsoft Windows

- GUI

```

Options (See manual for full details):
-no          Set the output file, if appropriate
-i          Add an input file
-stdin     Read input from standard input
-stdout    Send result to standard output
-change-id  Change the file's ID tag
-keep-version 1 Don't change the version number
-linearize  Linearize output files where possible
-merge     Merge a number of files into one
-retain-numbering  Retain numbering when merging
-remove-duplicate-fonts  Remove duplicate fonts when merging
-split     Split a file into individual pages
-chunk     Set chunk size for -split (Default 1)
-split-bookmarks  Split a file at bookmark boundaries at a given level
-scale-page  -scale page "x y" scales by (dx, dy).
-shift     -shift "dx dy" shifts the chosen pages by (dx, dy).
-rotate    Rotate pages by 90, 180 or 270 degrees
-rotateby  Rotate contents of pages
-upright   Make pages upright
-flip      Flip pages horizontally
-vflip     Flip pages vertically
-crop      Crop specified pages
-remove-crop  Remove cropping on specified pages
-media-box  Set media box on specified pages
-encrypt   Encrypt a document
-decrypt   Decrypt a file
-no-edit   No edits
-no-print  No printing
-no-copy   No copying
-no-annot  No annotations
-no-forms  No forms
-no-extract  No extracting
-no-assemble  No assembling
-no-hq-print  No high quality printing
-no-encrypt-metadata  Don't encrypt metadata (AES only)
-decompress  Decompress
-compress  Compress with FlatoDecode. Leaves metadata alone.
-list-bookmarks  List bookmarks
-remove-bookmarks  Remove bookmarks from a file
-add-bookmarks  Add bookmarks from the given file
-presentation  Make a presentation
-trans     Set the transition method for -presentation
-duration  Set the display duration for -presentation
-vertical  Set dimension for Split and Blinds styles
-outward   Set direction for Split and Box presentation styles
-direction  Set direction for View and Glitter presentation style
-effect-duration  Set the effect duration in seconds
-stamp-on  Stamp a file on some pages of another
-stamp-under  Stamp a file under some pages of another
-combine-pages  Combine two files by merging individual pages
-add-text  Superimpose text on the given range of pages
-remove-text  Remove text previously added by cpdf
-hates     Remove text previously added by cpdf
-bates     Set the base hates number

```



# Macintosh Operating System (Mac OS)

- For Macintosh Computer
- UNIX-based

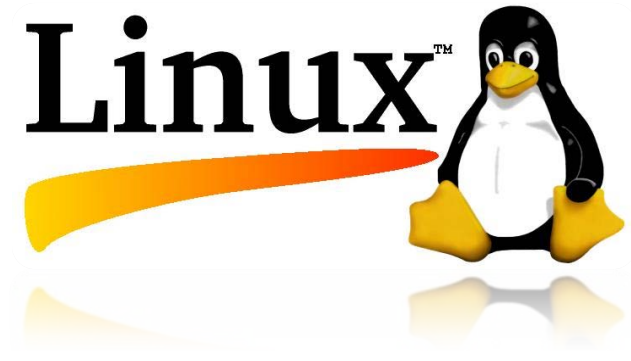
## UNIX

- Network Operating System exclusively for network servers
- Capable of handling a high volume of transaction
- Supports multiprocessors



# Linux

- UNIX-like for PC
- Open source software



# Mobile OS





# User interface

# Efficiency?

# User friendliness?

```

Options (See manual for full details):
-q          Set the output file, if appropriate
-i          Read an input file
-stdin     Read input from standard input
-stdout    Send result to standard output
-change-id  Change the file's ID tag
-keep-version 1 Don't change the version number
-linearize  Linearize output files where possible
-merge     Merge a number of files into one
-quit      Quit when merging pages when merging
-remove-duplicate-fonts Remove duplicate fonts when merging
-split     Split a file into individual pages
-chunk     Set chunk size for -split (default 1)
-split-bookmarks Split a file at bookmark boundaries at a given level
-scale-page -scale page "x y" scales by (cx, cy).
-shift     -shift "dx dy" shifts the chosen page by (dx, dy).
-rotate    Set rotation of pages to 0, 90, 180, 270
-rotateby  Rotate pages by 90, 180 or 270 degrees
-rotatec   Rotate contents of pages
-upright   Make pages upright
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-no-form  No forms
-no-extract No extracting
-no-assemble No assembling
-no-hq-print No high quality printing
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-decompress Decompress
-compress Compress with FlateDecode. Leaves metadata alone.
-list-bookmarks List bookmarks
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-remove-text Remove text previously added by cpdf
-hides Set the base hites number

```

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Setup for Microsoft Network Client v3.0 for MS-DOS

Names:
  Your User Name is Administrator

Setup Options:
  Use the Full Redirector.
  Run Network Client and Load Pop-up.

Network Configuration:
  Modify your adapter and protocols with this option.

Change Names
Change Setup Options
Change Network Configuration

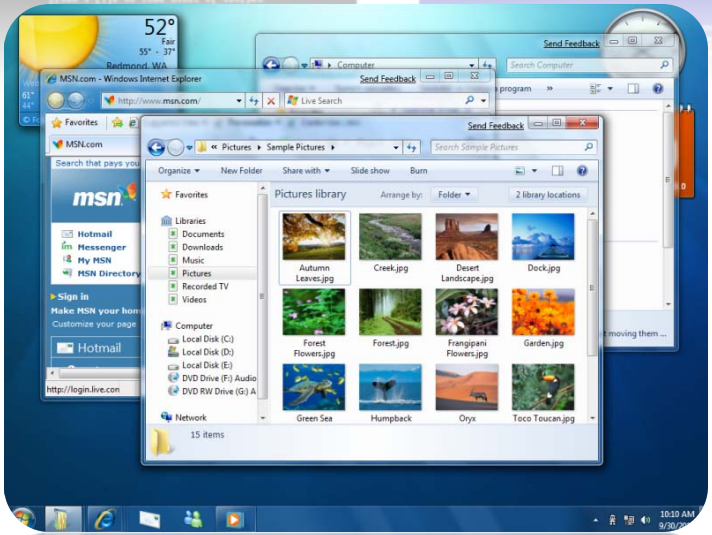
The listed options are correct.

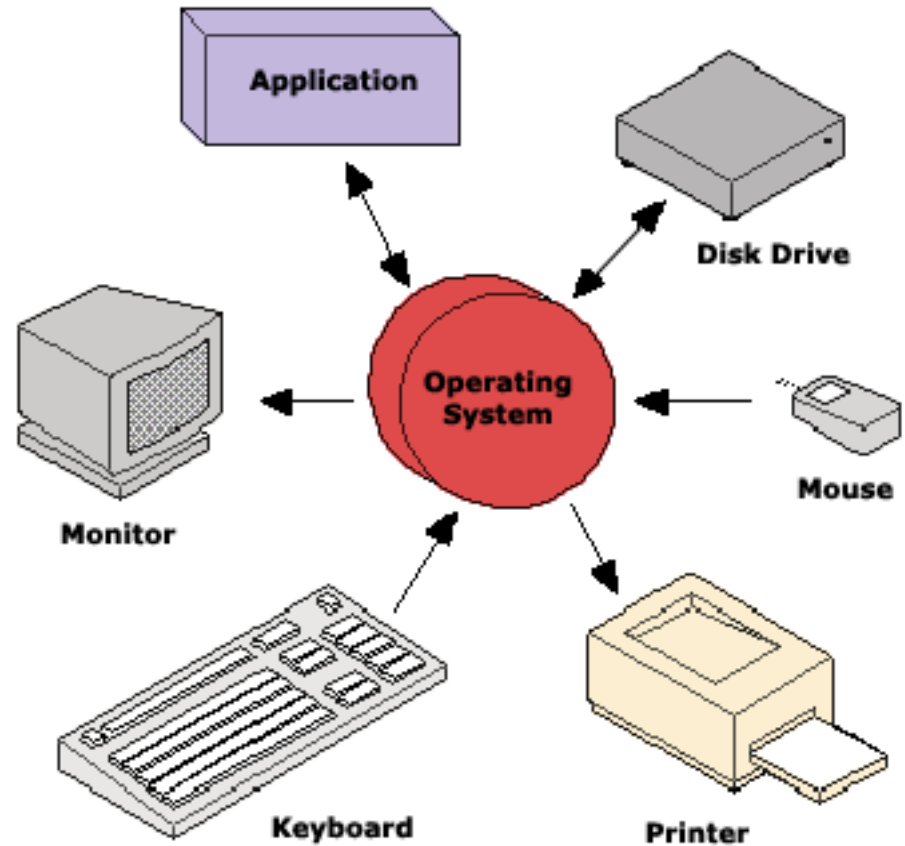
ENTER=Continue F1=Help F3=Exit

```

# Beauty?

# Speed?





# System Software

Utility Program & Driver Program



# Curriculum

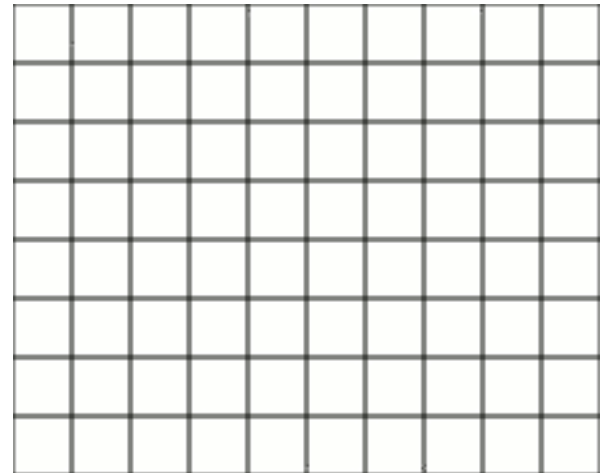
- State the functions and needs of utility programs and driver programs.
- Examples of the utilities are **data compressors, virus checkers, file managers, defragmentation software** and **system monitoring** software.
- Technical details of these programs are not required but demonstration or practice on their use should be given.

# Utility Program

- **Utility software is a kind of system software designed to help analyze, configure, optimize and maintain the computer. A single piece of utility software is usually called a utility or tool.**

# Disk Utilities

- Creation, conversion, compression and encryption of disk;
- Disk erasing, formatting, partitioning and cloning;
- Defragmentation tool;
- Backup, data recovery;
- File manager



Disk Cleanup for (C:)

Disk Cleanup More Options



You can use Disk Cleanup to free up to 3.41 GB of disk space on (C:).

Files to delete:

- Downloaded Program Files 8.00 KB
- Temporary Internet Files
- Hibernation File
- Office Shortcuts
- Recycle Bin

Total amount

磁碟重組工具



磁碟重組工具可以合併電腦硬碟中分散的檔案及資料夾，以提升系統效能。[磁碟重組工具將如何協助您？](#)

控制台 &gt; 系統及安全性 &gt; 備份與還原

搜尋控制台

控制台首頁

- 建立系統映像
- 建立系統修復光碟

備份或還原檔案

備份

尚未設定 Windows 備份。

設定備份(S)

還原

Windows 找不到這部電腦的備份。

選取其他用來還原檔案的備份(N)

修復系統設定或電腦(Y)

請參閱

行動作業中心

Windows 輕鬆傳輸

修改排程(M)...

取磁碟區(S)...

立即重組(N)...

定

取消

start up from

staller, click

Clear History

Verify Disk

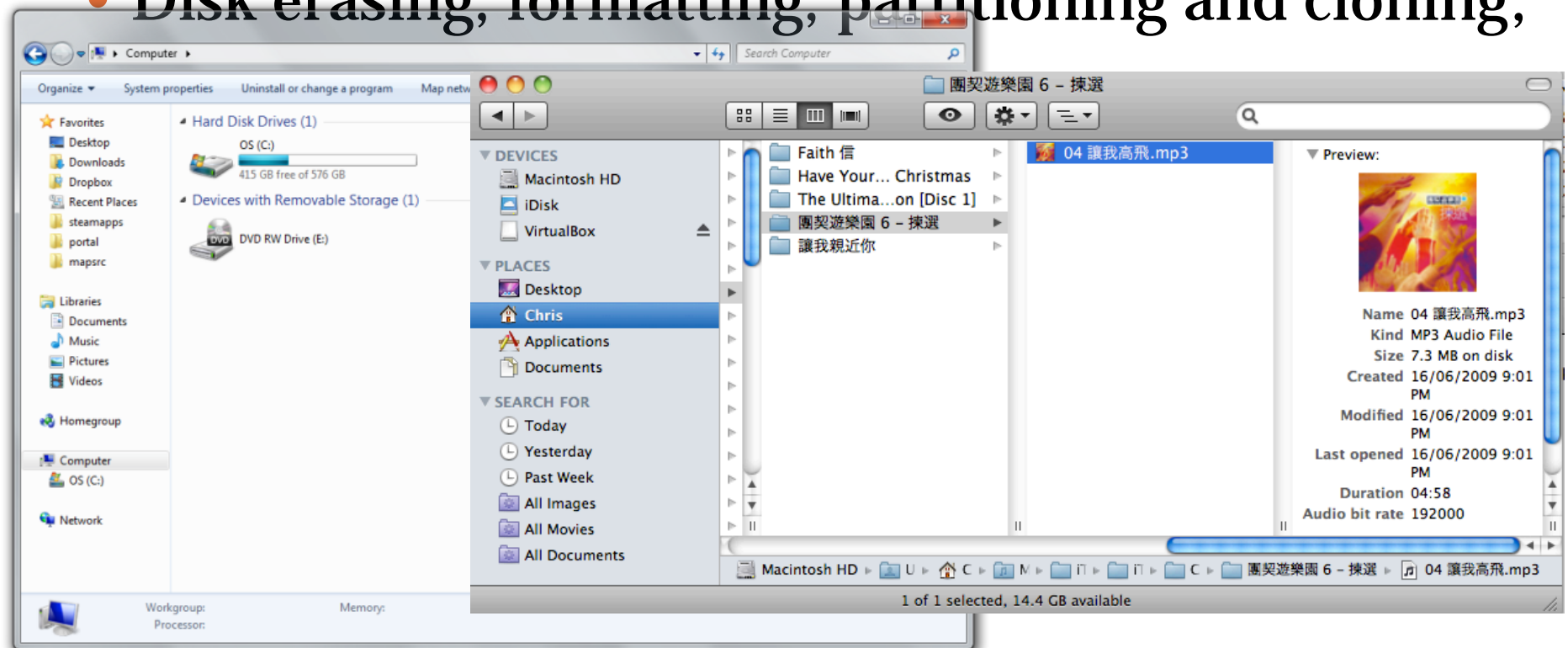
Repair Disk

Format : Mac OS Extended (Journaled)  
 Owners Enabled : Yes  
 Number of Folders : 245,324

Capacity : 159.7 GB (159,697,911,808 Bytes)  
 Available : 15.95 GB (15,952,207,872 Bytes)  
 Used : 143.75 GB (143,745,703,936 Bytes)  
 Number of Files : 887,076

# File Manager

- Creation, conversion, compression and encryption of disk;
- Disk erasing, formatting, partitioning and cloning;



# Anti-Virus / Firewall

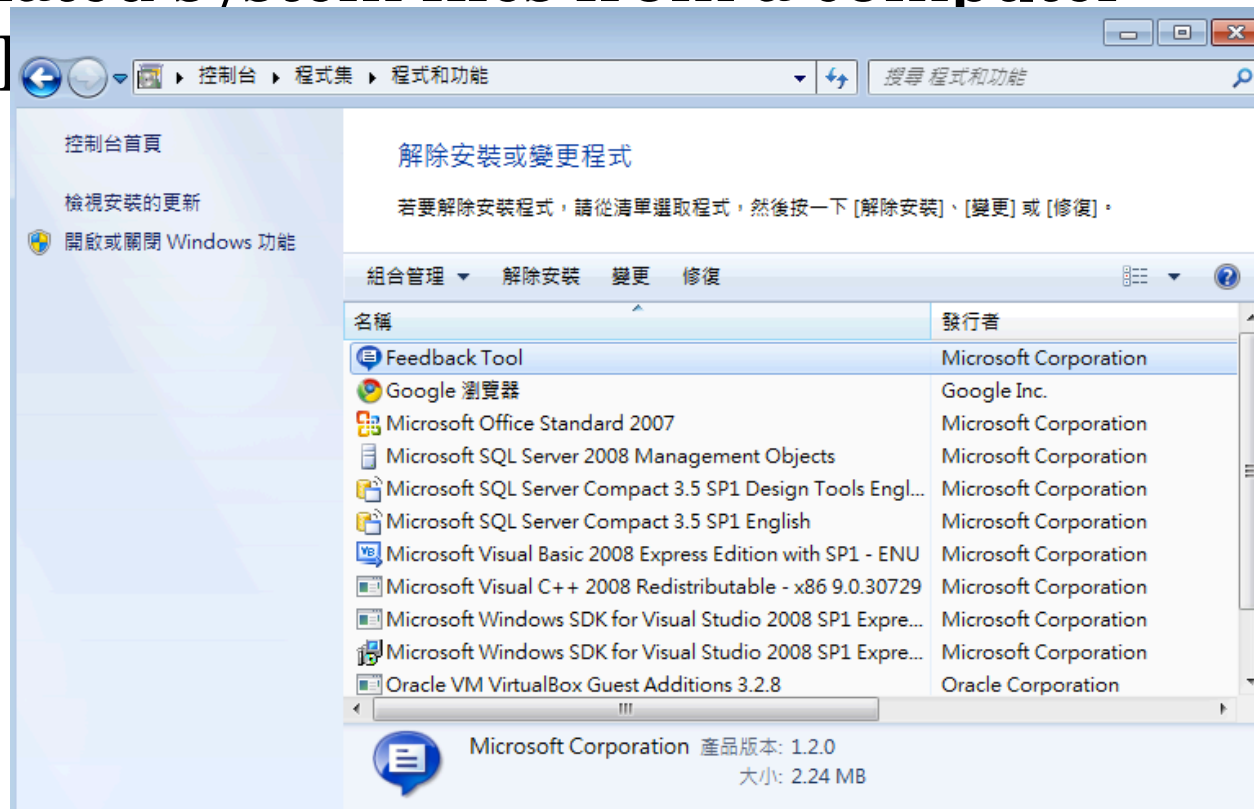
- **Anti-virus software: detects and removes viruses from computer system (AVG Anti-Virus / Norton 360)**
- **Firewall: a device or a software designed to permit or deny network transmissions based upon a set of rules and is frequently used to prevent access from unauthorized access**





# Program Uninstaller

- To remove an application and all entries of associated system files from a computer completely



# System Monitor

- Tools for tuning and monitoring the system performance and resources activities of CPU, disks

The screenshot shows the Windows Task Manager interface. The top window displays the 'Processes' tab with a list of running applications:

影像名稱	使用者...	C...	記憶體 (...)	描述
csrss.exe		00	1,252 K	
dwm.exe	Chris	00	316 K	桌面視窗...
explorer.exe	Chris	00	24,556 K	Windows ...
taskhost.exe	Chris	00		
taskmgr.exe	Chris	00		
VBoxTray.exe	Chris	00		
winlogon.exe		00		

The bottom window shows the 'Performance' tab with various system metrics:

- CPU 使用率:** 0%
- 記憶體:** 432 MB
- 系統:** 控制代碼 8903, 執行緒 396, 處理程序 30, 存留時間 0:01:53:44, 認可 (MB) 497 / 4096
- 實體記憶體 (MB):** 總共 2048, 快取的 681, 可用 1615, 未使用 1009
- 核心記憶體 (MB):** 已分頁 76, 非分頁 17

The screenshot shows the macOS Activity Monitor interface. The top window displays a list of processes:

PID	Process Name	User	% CPU	Threads	Real Mem	Kind
887	VirtualBox VM	Chris	5.3	22	2.19 GB	Intel
677	Skype	Chris	1.2	21	169.1 MB	Intel
638	Microsoft PowerPoint	Chris	0.3	11	150.3 MB	Intel
182	Finder	Chris	0.0	16	126.4 MB	Intel (64 bit)
912	ColorSync Utility	Chris	0.0	2	116.7 MB	Intel (64 bit)
219	Google Chrome	Chris	0.0	23	110.9 MB	Intel
332	Mail	Chris	0.0	7	104.9 MB	Intel (64 bit)
637	Google Chrome Renderer	Chris	0.0	4	70.7 MB	Intel
1541	Shockwave Flash (Chrome Plug-In Host)	Chris	1.4	16	65.0 MB	Intel
1535	Google Chrome Renderer	Chris	0.0	4	51.2 MB	Intel
588	Preview	Chris	0.0	3	49.0 MB	Intel (64 bit)
648	Google Chrome Renderer	Chris	0.0	4	47.2 MB	Intel
502	iCal	Chris	0.0	3	43.2 MB	Intel (64 bit)
1602	Google Chrome Renderer	Chris	0.0	4	42.4 MB	Intel
1395	Google Chrome Renderer	Chris	0.0	4	41.0 MB	Intel
939	Google Chrome Renderer	Chris	3.1	5	39.9 MB	Intel
484	Evernote	Chris	0.0	9	39.7 MB	Intel
879	VirtualBox	Chris	0.0	6	38.8 MB	Intel

The bottom window shows system resource usage:

- CPU:** Free: 2.09 GB, Wired: 2.78 GB, Active: 2.10 GB, Inactive: 1.04 GB, Used: 5.91 GB
- System Memory:** VM size: 191.45 GB, Page ins: 2.13 GB, Page outs: 88 KB, Swap used: 2.0 MB
- Disk Activity:** 7.75 GB

# Driver Program

- **OR Device Driver**
- **A small program that allows a specific peripheral device to communicate with a computer system.**
- **Some driver programs come with an operating system or by the manufacturer of the device.**
- **OS (type, version), machine dependent**

# Application Software

- **Productivity Software**



- **Communication Software**



- **Multimedia Software**

