

Discovering Computers 2016






Tools, Apps, Devices, and the Impact of Technology

Chapter 4

Programs and Apps



課前練習

- 請分別說明 **Shareware** 、 **Freeware** 、 **Open source software** 、 **Public-domain software** 
- Identify the purpose of **spyware remover** 、 **adware remover** and **firewall**  
- If your computer or mobile device is infected with a virus or malware, how will you know ? 
- How will you find instructions for removing a virus?
- What Is The Purpose of A Screen Saver? 

Role of the Operating System

- **SYSTEM SOFTWARE**

serves as the interface between the user, the application , and the computer's hardware

系統軟體 是使用者、應用軟體和電腦硬體之間的介面

- **Operating Systems 作業系統**

- 每次開機時會從硬碟載入(load)到記憶體中
- 協調電腦的所有活動，協調開啓應用軟體，在輸入 / 輸出設備與記憶體間傳送資料
- 當電腦執行時，作業系統常駐在記記憶體中

- **Utility programs 公用程式 (tools)**

- 協助使用者控制或維護電腦，設備，軟體的運作

Obtaining Software

Retail software 零售軟體

- 量產並具版權的零售軟體
- 符合廣大使用者的需求

Trial Version

Custom software 客製化軟體

- 執行某一特定產業所需的功能
- tailor-made custom software
- 通常比套裝軟體來得昂貴

Obtaining Software

Web application Web應用程式

- 網站提供程式
- 使用者使用任何裝置連上網站存取網站上的軟體或與網站上的軟體互動
- Online or offline使用
- 有些免費有些收費

Mobile app

- is an application you download from a mobile device's app store, sometimes called a **marketplace**, or other location on the Internet to a smartphone or other mobile device.

A mobile web app

- is a web app that is optimized for display in a browser on a mobile device.
- Many web apps use a **responsive design**, which means the app displays properly on any computer or device.

Obtaining Software

Shareware 共享軟體

- 具著作權的軟體，試用期內免費流通
- 試用期之後欲使用時，需付費，付費則讓使用者可以使用產品的完整版本

Freeware 免費軟體

- 具著作權的軟體
- 軟體所有者願免費提供軟體給他人使用

Open source software 開放原始碼軟體

- 提供使用、更改和流通的軟體
- 著作權所有人沒有限制他人更改此類軟體的內部結構，也沒有禁止其他人散布此軟體
- 可以從網際網路下載，有時免費

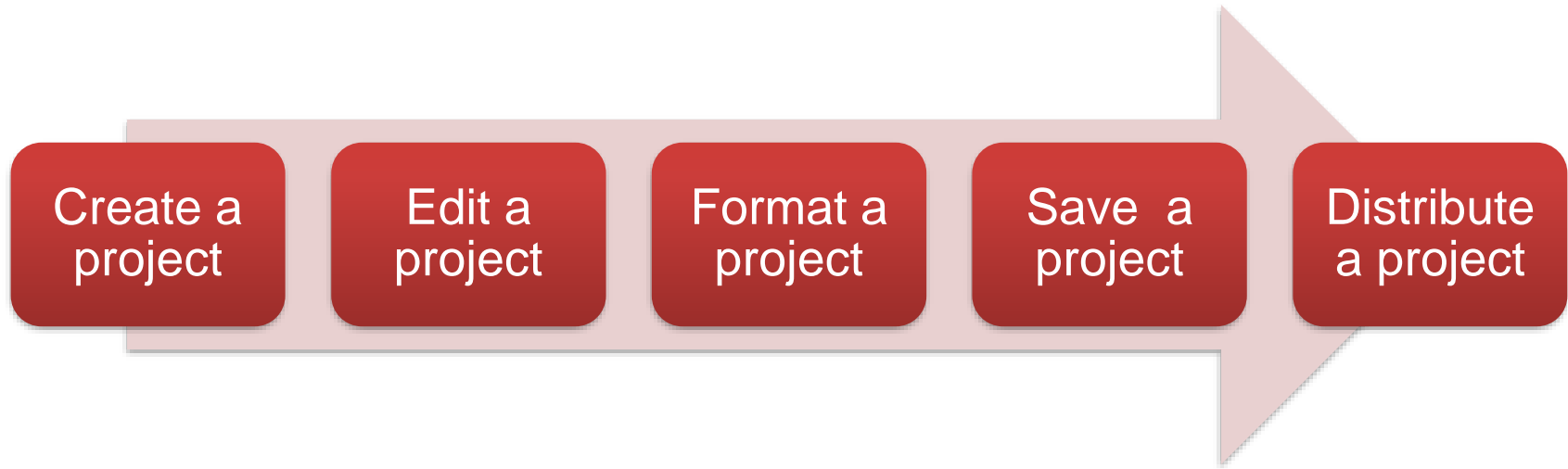
Public-domain software 公共領域軟體

- 捐給大眾使用，沒有著作權的限制
- 任何人可免費複製或供公用軟體給其他人

Productivity Applications

Development project

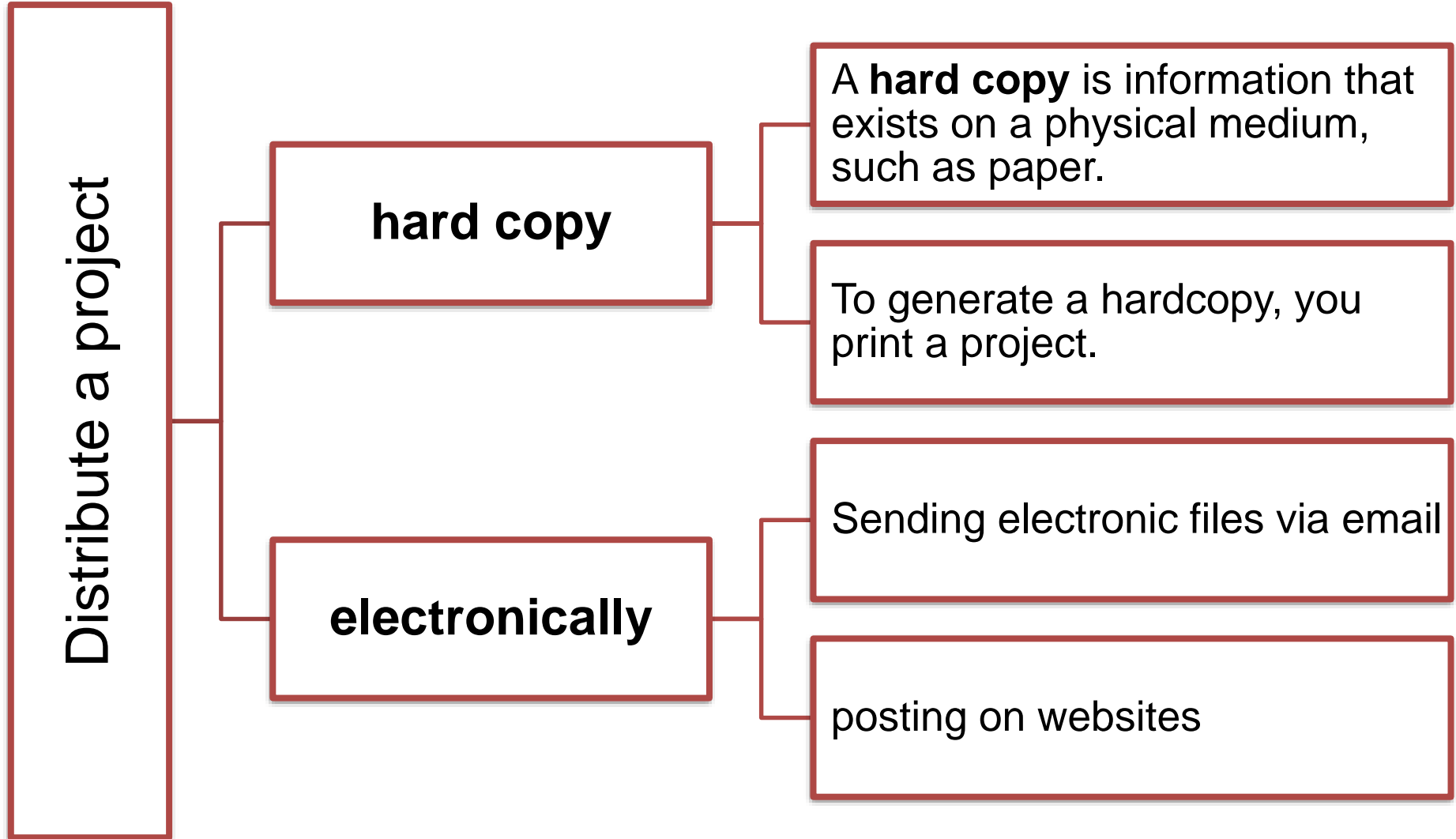
- With productivity applications, users often:



- Projects include documents, presentations, spreadsheets, notes, calendars, and more.
- During the process of developing a project, you likely will switch back and forth among these activities.

Productivity Applications

Development project





What are the guidelines for writing business letters?

Search for: business letter writing

Three business letter styles 三種商業書信格式

❶ 齊頭式 (block style) :
廣受歡迎

❷ 改良齊頭式 (modified
block style) : 亦常見

❸ 縮排式 (indented
style) : 逐漸式微

- Block form
- Indented form

Catherine Davies
15 Qinglong Rd., 2012
Pudong New District,
Shanghai, PRC 201208

November 1, 2012

Ms. Nina Lin
Double Design
Room 205, Building 3
Lane 2498, Pudong Avenue
Shanghai, PRC

Dear Ms. Lin:

Thank you for your attention. I am writing to request an interview regarding Double Design's opening for a graphic designer.

I am a recent graduate of the Academy of Art University with a degree in Graphic Design. For the past six months I have interned with Studio Design in Shanghai, learning to apply the skills I gained in school. I would be very happy to have an opportunity to learn more about the position and the possibility of working together.

I have enclosed my resume for your reference. Please feel free to contact me for any reason at (021) 5184-3155 or over email at cath.davies@yahoo.com. Thank you again for your attention. I look forward to hearing from you.

Best regards,
Catherine Davies

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Enc (1)
cc: Flora Lopez

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Productivity Applications

- **Presentation software** allows users to create visual aids for presentations to communicate ideas, messages, and other information to a group.
- The **presentations** can be viewed as slides, sometimes called a **slide show**, that are displayed on a large monitor or on a projection screen from a computer or mobile device.



Productivity Applications

- **Spreadsheet software** allows users to organize data in rows and columns and perform calculations
能讓使用者將資料組織成直欄和橫列，並且對資料進行計算
- These rows and columns collectively are called a **worksheet**.
- A **cell** is the intersection of a column and row.
- The spreadsheet software identifies cells by the column and row in which they are located.

Productivity Applications

Spreadsheet software

Row, column

Cell

Worksheet

function assigned to active cell

rows 3, 4, 5, and 6

columns J, K, L

worksheet

function assigned to active cell

rows 3, 4, 5, and 6

columns J, K, L

worksheet

cell B4

cell B17 is active

Personal Budget Worksheet

Monthly Estimates

	Income	January	February	March	April	May	June	July	August	September	October	November	December	Total
Wages		\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$12,003.48
Dividends		4,000.75		0.00	0.00	0.00	0.00	0.00	0.00	4,000.75	0.00	0.00	0.00	8,001.50
Total		\$5,001.04	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$1,000.29	\$5,001.04	\$1,000.29	\$1,000.29	\$1,000.29	\$20,004.98
	Expenses	January	February	March	April	May	June	July	August	September	October	November	December	Total
Rent		\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$400.89	\$4,810.68
Food		300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	3,600.00
Tuition		1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	3,000.00
Books		500.00	0.00	0.00	0.00	0.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	1,000.00
Entertainment		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1,200.00
Car Payment		154.79	154.79	154.79	154.79	154.79	154.79	154.79	154.79	154.79	154.79	154.79	154.79	1,857.48
Gas		100.00	100.00	100.00	100.00	150.00	150.00	150.00	100.00	100.00	100.00	100.00	100.00	1,350.00
Miscellaneous		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1,200.00
Total		\$3,155.68	\$1,155.68	\$1,155.68	\$1,155.68	\$1,205.68	\$1,205.68	\$1,205.68	\$3,155.68	\$1,155.68	\$1,155.68	\$1,155.68	\$1,155.68	\$18,018.16
Net		\$1,845.36	(\$155.39)	(\$155.39)	(\$155.39)	(\$205.39)	(\$205.39)	(\$205.39)	(\$2,155.39)	\$3,845.36	(\$155.39)	(\$155.39)	(\$155.39)	\$1,986.82

Productivity Applications

Spreadsheet software

- A **function** is a **predefined formula** that performs common calculations
- 公式的前面由 = 開始

FV

NPV

PMT

PV

RATE

DATE

NOW

TIME

ABS

INT

LN

LOG

ROUND

SQRT

SUM

AVERAGE

COUNT

MAX

MIN

STDEV

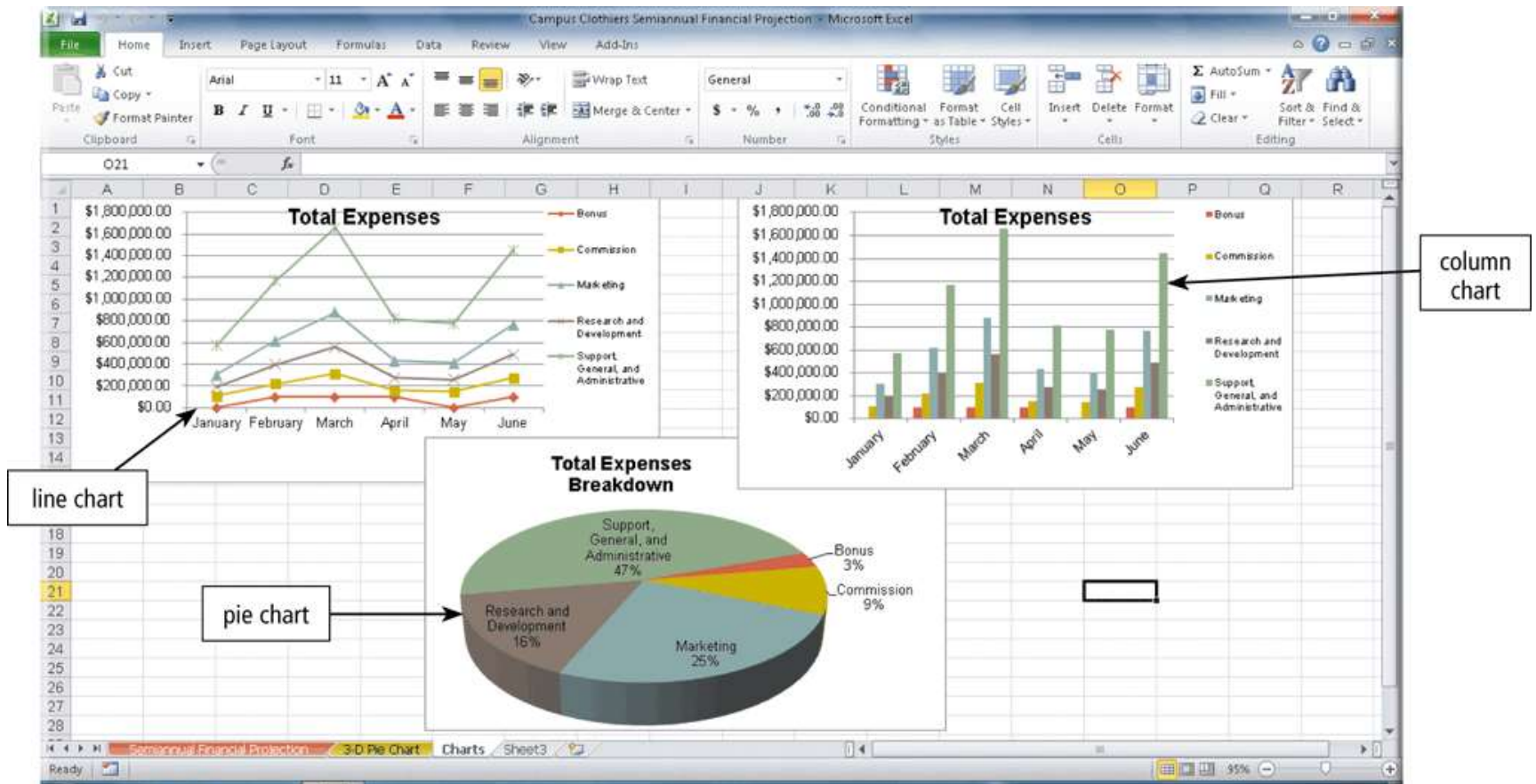
IF

Productivity Applications

Spreadsheet software

- **Charting** depicts data in a spreadsheet in graphical form

圖表製作功能也就是以圖形格式來描述試算表中的資料



Productivity Applications

- A **database** is a collection of data organized in a manner that allows access, retrieval, and use of that data

資料庫 (database) 是指將一群資料經過組織，使得方便存取、檢索和使用的資料集合

- **Database software** allows users to create, access, and manage a database

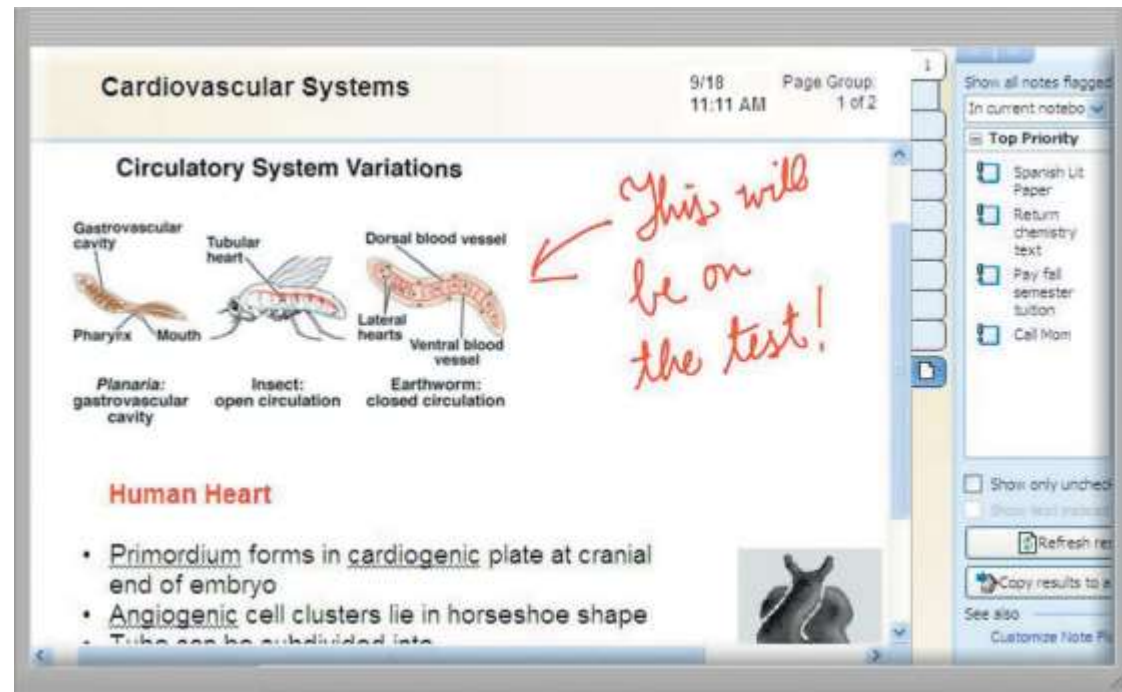
資料庫軟體是讓使用者可以建立、存取和管理資料庫的應用軟體

The screenshot shows the Microsoft Access interface with two tables displayed in a grid view. The 'Customer table' is at the top, and the 'Book Rep table' is below it. Both tables have a column labeled 'ID' which is highlighted in blue. A label with an arrow points to this 'ID' column in the Book Rep table, stating 'common ID field relates the Customer table to the Book Rep table'. Other columns in the Customer table include Name, Address, City, State, Zip, Phone, and Email. The Book Rep table has similar columns. The interface includes a ribbon at the top with options like 'Table', 'Queries', 'Forms', and 'Reports'.

Productivity Applications

- **Note taking software** is an application that enables users to enter typed text, handwritten comments, drawings, or sketches anywhere on a page

筆記軟體 (note taking software) 是一種應用軟體，讓使用者可以在頁面上任何位置輸入文字、手寫註解、繪圖或畫草稿



Productivity Applications

- A **software suite** is a collection of individual programs available together as a unit.
軟體套件是將一組各自獨立的程式包裝成一個單位
- Productivity software suites typically include, at a minimum, word processing, presentation, spreadsheet, and email applications.

Why Would You Use A Software Suite Instead of A Stand-Alone Application?

Software suites offer three major advantages

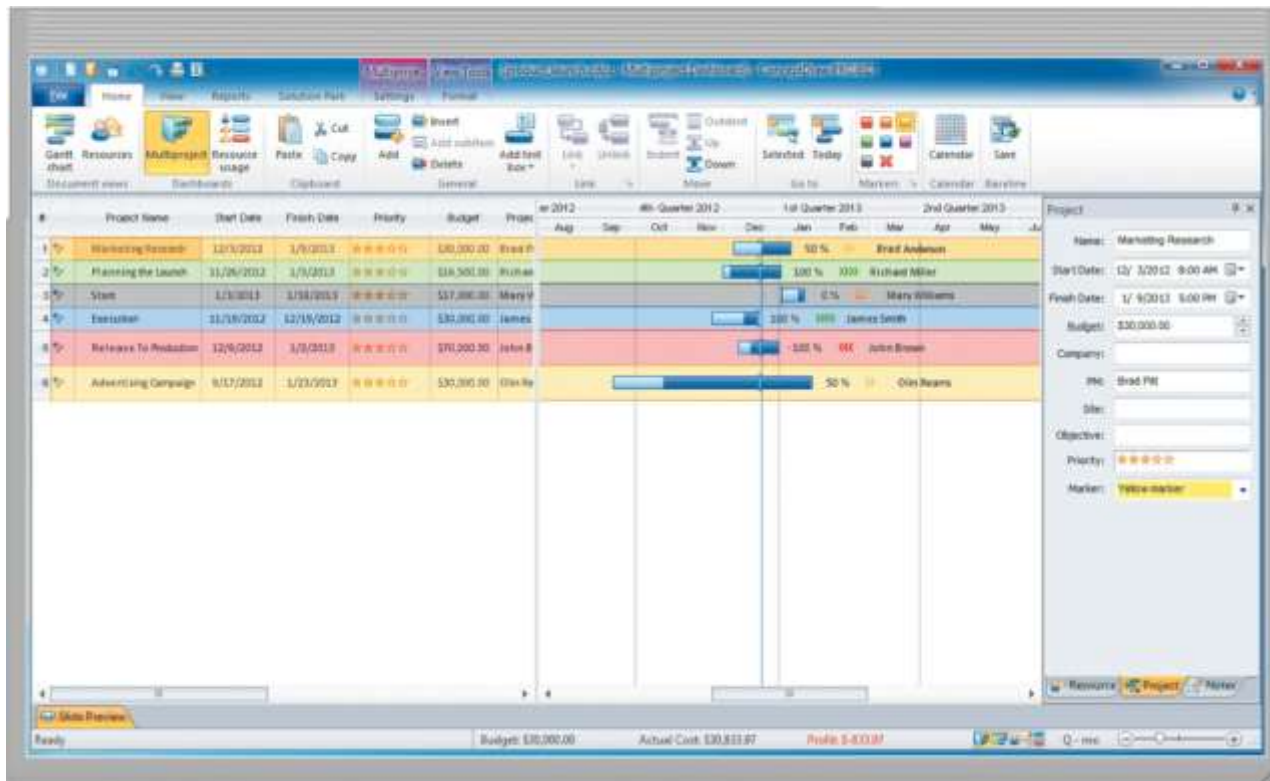
- lower cost
 - 比購買單一應用軟體便宜
- ease of use
 - 使用相同的使用者介面
- integration
 - 分享資料享
 - For example, your email program can access your contact list to find recipients' email addresses.



Productivity Applications

- **Project management software** is an application that allows a user to plan, schedule, track, and analyze the events, resources, and costs of a project

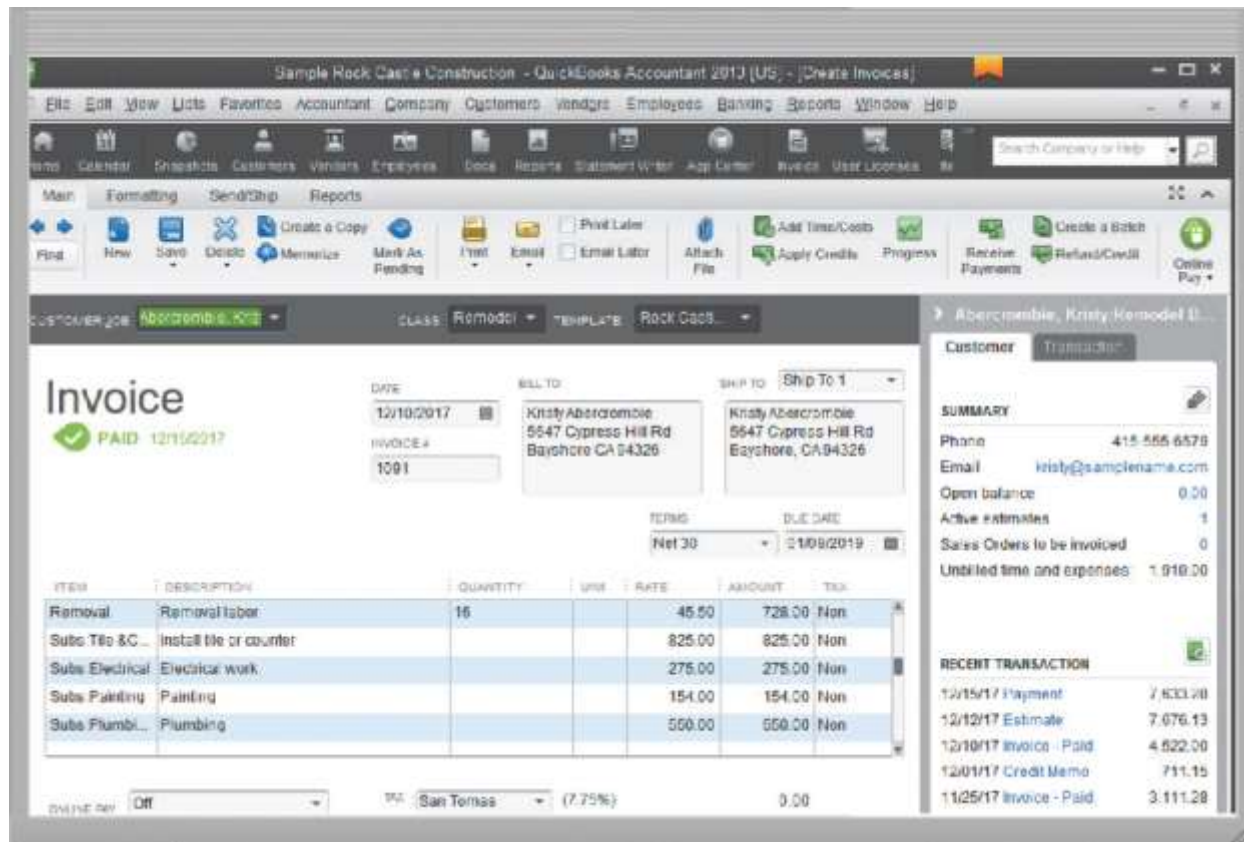
專案管理軟體讓使用者可以計畫、排程、追蹤和分析專案中的事件、資源和成本



Productivity Applications

- **Accounting software** is an application that helps businesses of all sizes record and report their financial transactions

會計軟體協助公司行號記錄並整理報告他們的財務交易狀況



Productivity Applications

- **Document management software** is an application that provides a means for sharing, distributing, and searching through documents by converting them into a format that can be viewed by any user

文件管理軟體可將文件轉換成任何使用者都能看到內容的格式，方便人們分享、發佈和搜尋

- PDF
- ODF



- ODF開放文檔格式 (Open Document Format)是一種基於 XML的檔案格式規範，因應試算表、圖表、簡報和文書處理文件等電子文件而設置。其目的為保證使用者能長期存取資料，且不受技術及法律上的障礙。
- ODF優點有：**免費下載、格式開放、跨平台、跨應用程式**的特性、可與國際間交換、適於長久保存並可避免版本升級衝突，目前全球有許多政府單位及企業公開宣誓改用**ODF**做為正式文件交換與儲存標準，以避免重要資訊遺失
- 為配合政府資訊公開政策，便利民眾下載與開啟政府公告訊息，行政院擬訂計畫推動相容性高、且有利長久保存的開放性檔案格式。規畫三年實施期程，其中要求 105 年時達成各機關係統間、政府與企業之資料交換，需以 **ODF-CNS15251** 文書格式為主。

ODF

- ODF 可利用開放式文件軟體編輯器編輯 **ODF** 文件檔案
 - LibreOffice
 - OpenOffice

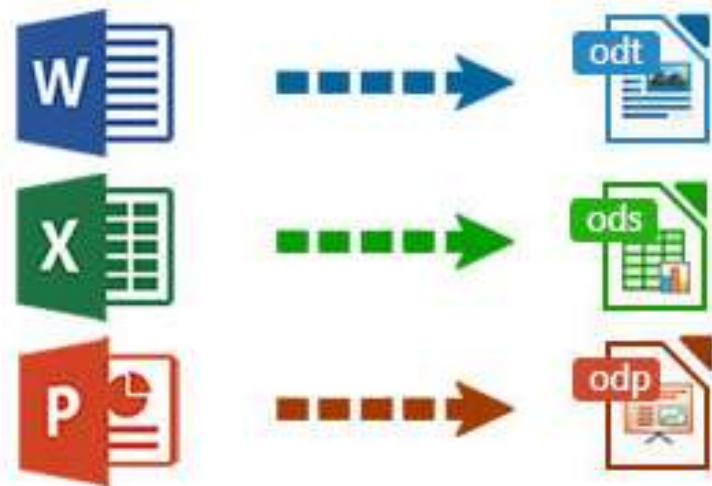
軟體名稱	支援作業平台	中文化介面	軟體下載
	Windows, Mac, Linux, FreeBSD, Solaris	有	官網下載
	Windows, Mac, Linux	有	官網下載

- MsOffice 也支援ODF
 - Open Document 文字 、 Open Document 簡報 、 Open Document 試算表

ODF

- 如果您想把之前保存的文件檔案，如 .docx 或 .pptx 等檔案轉為 ODF 開放性文件格式，可以啟動 OpenOffice 或 LibreOffice 等文件軟體編輯器後，利用開啟舊檔的方式開啟 .doc(x)、.ppt(x) 或 .xls(x) 等檔案，在您檢視或編輯好檔案之後，以另存新檔的方式將檔案存成 ODF 開放性文件格式，對應的文件副檔名稱為：

- .odt, .odp 或 .ods。



Security Tools

- A **personal firewall** is a security tool that detects and protects a personal computer and its data from unauthorized intrusions

個人防火牆可偵測並保護個人電腦避免被非法入侵





What is a hardware firewall?

- A **hardware firewall** is a device intended to stop network intrusions before they attempt to affect your computer or network maliciously.
- Many **routers** also can function as a hardware firewall.



Viruses and Malware

- A computer **virus** describes a potentially damaging computer program that affects a computer negatively
電腦病毒是一種會負面影響或感染電腦的潛在危險電腦程式
- The **Payload** is the destructive event or prank the program is intended to deliver.
在當你開啟文件，執行被感染的程式時發生，或用已感染的磁片開機

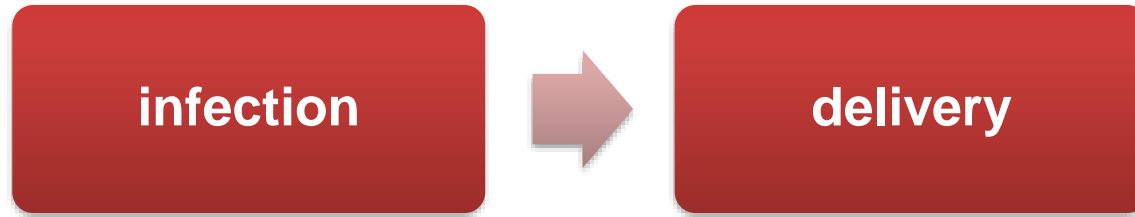
Payload

- **Payload (酬載)**

- 承載資料的封包、訊息或程式碼部分。在資訊安全性中，酬載通常是指執行破壞性作業的惡意程式碼部分。
- 描述惡意程式碼執行的除複製以外的其他活動。這可以是任意類型的行為，如企圖降低網路服務效能或在螢幕上顯示圖形。

Viruses and Malware

- Most variations of viruses have two phases involved in their execution: **infection** and **delivery**.



- The first step in **the infection phase**, the virus must be **activated**.
 - The most common way **viruses spread** is by users **running infected programs or apps**.

Viruses and Malware

- During the **infection phase**, viruses typically perform one or more of the following actions:
 1. **First**, a virus **replicates** by **attaching itself to program files**.
 - A **macro virus** hides in a macro, which is a standard feature of many productivity applications such as word processing and spreadsheet apps.
 - A **boot sector** virus targets the computer's **start-up files**.
A file virus attaches itself to program files.
 - The next time an infected program or app is run, the virus executes and infects the computer.

Viruses and Malware

2. Viruses also **conceal themselves** to avoid detection.

- A **stealth virus** disguises itself by hiding in fake code sections, which it inserts within working code in a file.

隱形病毒 這是一種會嘗試躲避偵測的病毒，該病毒發作後，會立即將自身病毒體刪除，然後將病毒碼插入到正常的系統文件中以躲避防毒軟體的偵測，讓電腦以為沒有中毒，卻由已遭受感染的區域散佈病毒。

- A **polymorphic virus** actually changes its code as it infects computers.

千面人病毒 每當它們繁殖一次，就會以不同的病毒碼傳染到別的地方去。每一個中毒的檔案中，所含的病毒碼都不一樣。

Viruses and Malware

3. Finally, viruses watch for a **certain condition or event** and activate when that condition or event occurs.

- A **logic bomb** activates when it detects a **specific condition** (say, a name deleted from the employee list).

邏輯炸彈一種惡意程式碼，插入程式後一直潛伏，直到發生特定事件，這時，邏輯炸彈便會觸發。

- A **time bomb** is a logic bomb that activates on a particular date or time.

如符合特定日期或時間條件便會觸發

- If the triggering condition does not exist, the virus simply replicates.

Viruses and Malware

- During the **delivery** phase, the virus unleashes its payload, which might be a harmless prank that displays a meaningless message — or it might be destructive, corrupting or deleting data and files.
- The most dangerous viruses do not have an obvious payload; instead they quietly modify files.
- One way antivirus software detects computer viruses is by monitoring files for unknown changes.

Viruses and Malware

In addition to viruses, other malware includes worms, trojan horse programs, and rootkits.

Worm

- A worm copies itself repeatedly in memory or over a network

蠕蟲程式會在記憶體或透過網路重複的自我複製

Trojan horse

- A Trojan horse hides within or looks like a legitimate program

木馬程式通常隱藏在看起來合法的程式中

rootkit

- A rootkit is a program that easily can hide and allow someone to take full control of your computer from a remote location, often for nefarious purposes.

Rootkit是隱藏在電腦中的一種程式，允許某人從遠方全面監控



- If your computer or mobile device is infected with a virus or malware, how will you know ?
- How will you find instructions for removing a virus?

Antivirus program

- **Antivirus program**

- Identifies and removes viruses in memory, storage media, and incoming files

- A **quarantine** is a separate area of a hard disk that holds the infected file until the infection can be removed. 隔離區

- Must be updated frequently

- Most also protect against worms and Trojan horses

大部份也預防蠕蟲和特洛伊木馬。





How do antivirus programs detect
viruses?

How do antivirus programs detect viruses?

- One technique that antivirus programs use to identify a virus is to look for virus signatures.
- virus signature 病毒特徵碼，病毒碼
 - Specific pattern of virus code 病毒碼的具體模式
 - Also called virus definition(病毒定義)
 - Antivirus programs look for virus signatures 防毒程式尋找病毒特徵。
- Should **update** their antivirus program's signature files **regularly**.
- Most antivirus programs contain an **automatic update** feature that regularly prompts users to download the updated virus signatures.

How do antivirus programs detect viruses?

- Another technique that antivirus program use to detect viruses is to **inoculate** existing program files.
- How does an antivirus program **inoculate** a program file? 防毒軟體怎麼給程式檔案做**預防措施**(防毒軟體如何保護程式檔)
 - Records information about program such as file size and creation date
紀錄程式的資訊如檔案大小、建立日期
 - Uses information to detect if virus tampers with file
使用資訊去偵測病毒竄改檔案
 - Attempts to remove any detected virus
嘗試移除偵測到的病毒
 - **Quarantines** infected files that it cannot remove
隔離無法移除的感染檔案
 - Keeps file in separate area of hard disk
把檔案放在硬碟一個分開的區域

Security Tools

間諜軟體

是一種在使用者不知情的情況下，安裝在電腦中秘密蒐集有關使用者資訊的程式，當使用者上線時將收集到的資訊向外送

- A **spyware remover** detects and deletes spyware and other similar programs

廣告軟體

是以橫幅或彈出視窗或電子郵件或其他網路服務顯示網路廣告的程式

- An **adware remover** is a program that detects and deletes adware

Are Cookies Spyware?

- A cookie is a small text file that a web server stores on your computer.
- Cookie files typically contain data about you, such as your user name, viewing preferences, or shopping cart contents.
- Cookies are not considered spyware because website programmers do not attempt to conceal the cookies.



Security Tools

Internet Filters

- **Filters** are programs that remove or block certain items from being displayed

過濾程式是移除或防堵特定項目被顯示的程式

Web filtering software
網站過濾程式

- A program that restricts access to certain material on the web.

Anti-spam programs
垃圾郵件防堵程式

- A filtering program that attempts to remove spam before it reaches your inbox.

Phishing filters
網路釣魚過濾程式

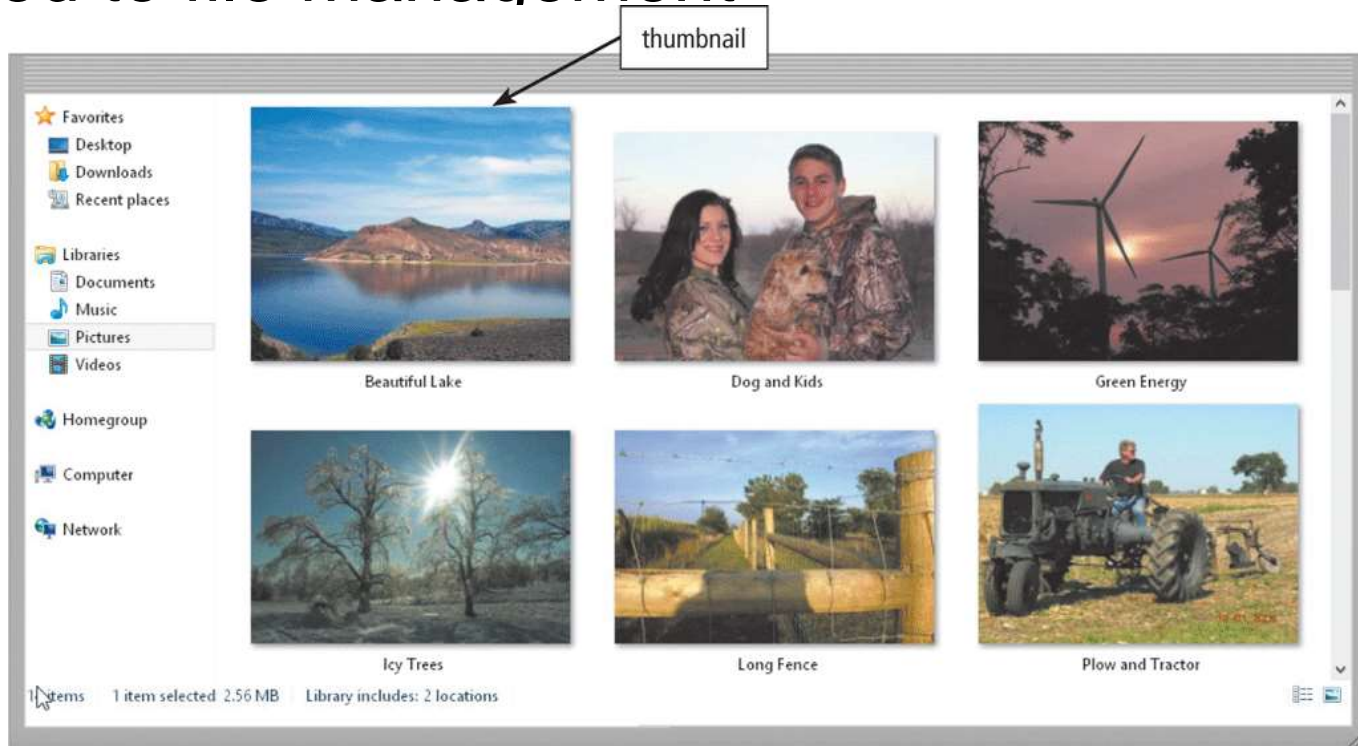
- A program that warns or blocks you from potentially fraudulent or suspicious

Pop-up blockers
彈出廣告阻攔程式

- A filtering program that stop pop-up ads from display on Web pages.

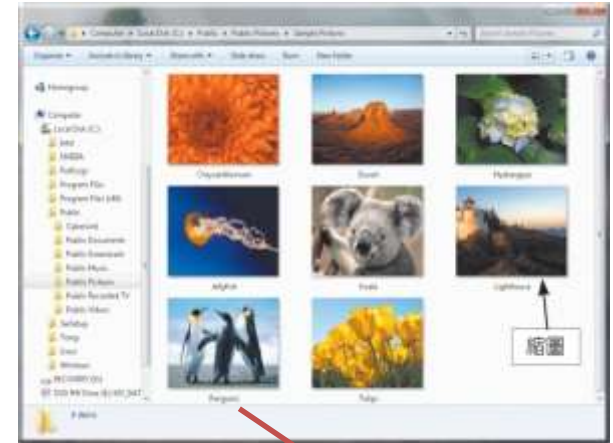
File and Disk Management Tools

- A **file manager** is a tool that performs functions related to file management



Utility Programs

- **A file manager 檔案管理員**
 - is a utility that performs functions related to file management
是一種執行檔案管理相關功能的公用程式
 - Displaying a list of files
顯示檔案清單
 - Organizing files in folders
將檔案組成資料夾
 - Copying, renaming, deleting, moving, and sorting files and **folders**
複製、重新命名、刪除、搬移和排序檔案和**資料夾**
 - Creating **shortcuts** 建立**捷徑**



Windows
Explorer

File and Disk Management Tools

- A **search tool** is a program, usually included with an operating system, that attempts to locate a file on your computer or mobile device based on criteria you specify

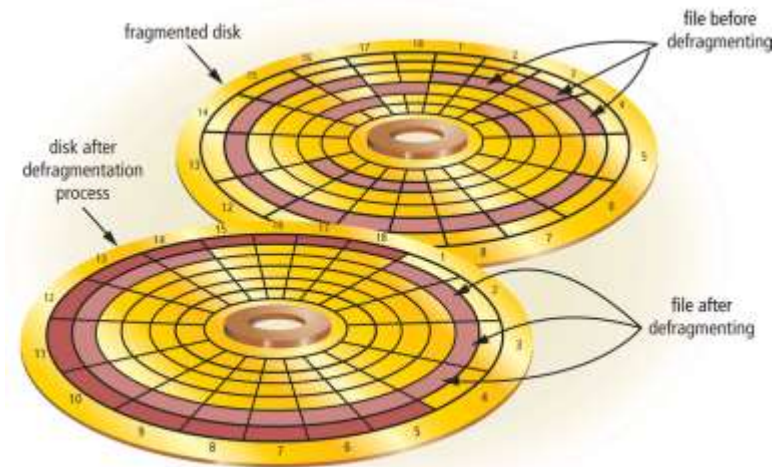


File and Disk Management Tools

- A **disk defragmenter** is a tool that reorganizes the files and unused space on a computer's hard disk so that the operating system accesses data more quickly and programs run faster

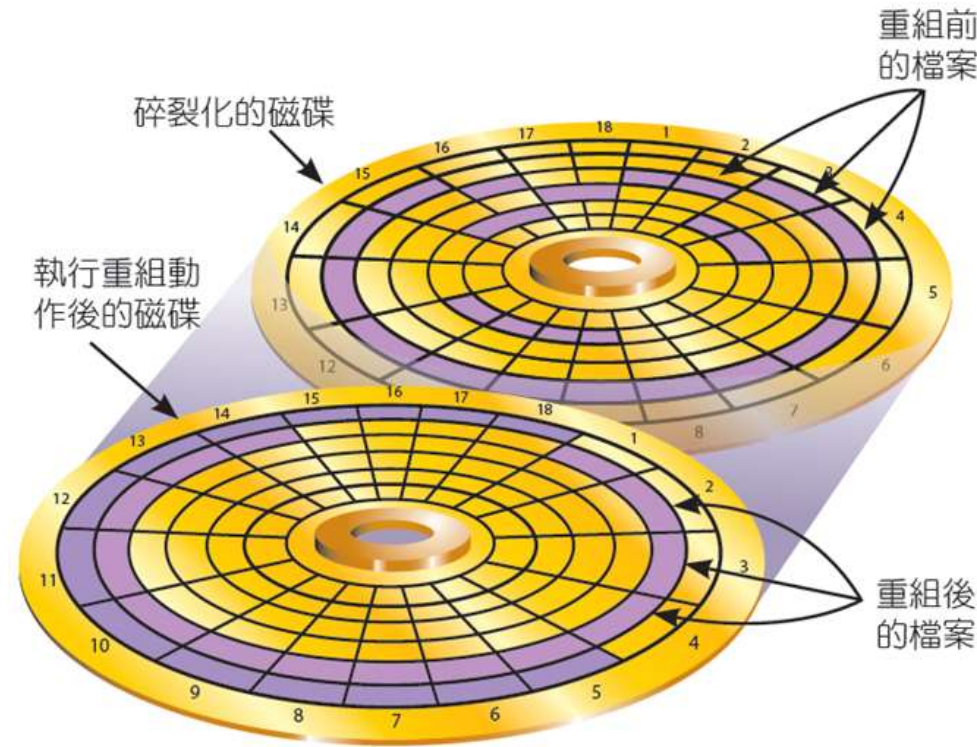
是一種會重新組織硬碟上的檔案和未使用空間，讓作業系統能更快速存取資料、程式執行速度更快的公用程式

– Defragmenting 重組動作



File and Disk Management Tools

- **Fragmentation** slows down file access and thus the performance of the entire computer.
- A fragmented disk has many files stored in **noncontiguous sectors**.
- **Defragmenting** reorganizes the files so that they are located in **contiguous sectors**, which speeds access time.



file compression tool

- A **file compression utility** shrinks the size of a file(s)

檔案壓縮公用程式能縮小檔案大小

- Compressing files frees up room on the storage media

將檔案壓縮能讓儲存媒體釋出更多空間

- Two types of compression

壓縮技術分成兩種

- **Lossy** 有失真壓縮
- **Lossless** 非失真壓縮

- Compressed files sometimes are called **zipped files**

壓縮檔有時又稱為zipped檔，
已壓縮檔案通常它的副檔名為 **.zip**

- Can be **uncompressed**

必須**解壓縮**才能使用

- Two popular utilities

- PKZIP
- WinZip

File, Disk, and System Management Tools

- A **backup tool** allows users to copy, or back up, **selected files** or the contents of **an entire** storage medium to another storage location
備份公用程式能讓使用者複製一個儲存媒體的部份檔案或所有的檔案到其他儲存媒體中
- 許多備份程式於備份過程中會壓縮檔案

- A **restore tool** reverses the process and returns backed up files to their original form

還原公用程式可還原整個過程，並將備份的檔案回復為原本的格式



參考資料與延伸閱讀

- [資安網站-入侵/攻擊類-隱匿技術Rootkit](#)
- [Sony DRM Rootkit的威脅與發現 - Microsoft](#)
- [RUN!PC | 精選文章 | 網管資安 | Anti-rootkit工具介紹](#)
- [\[資安鑑識工具\]Rootkit 殺手GMER 掃描移除程式](#)