

Software and Licences

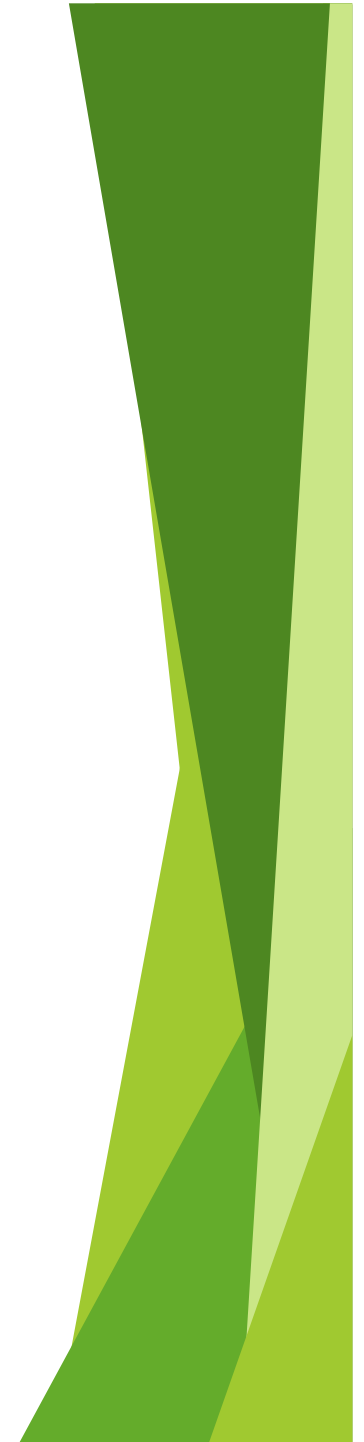
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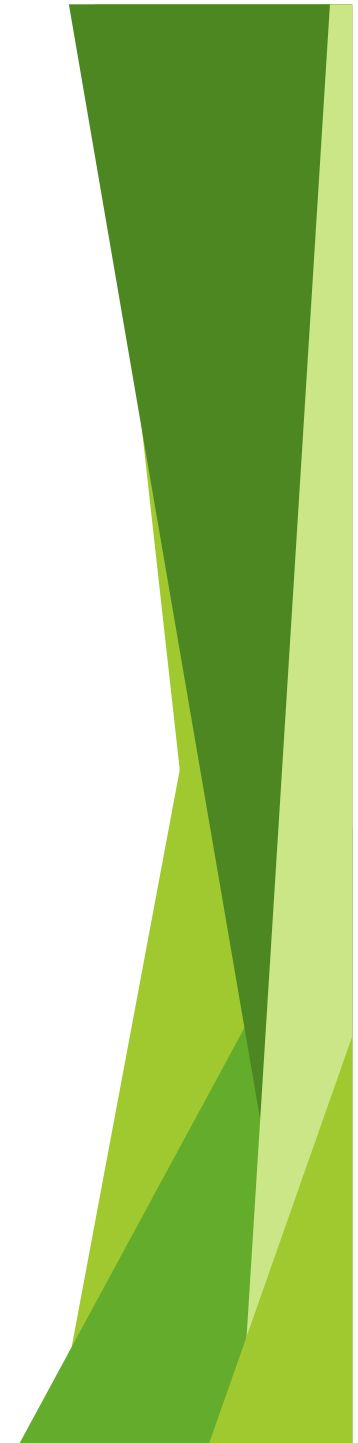
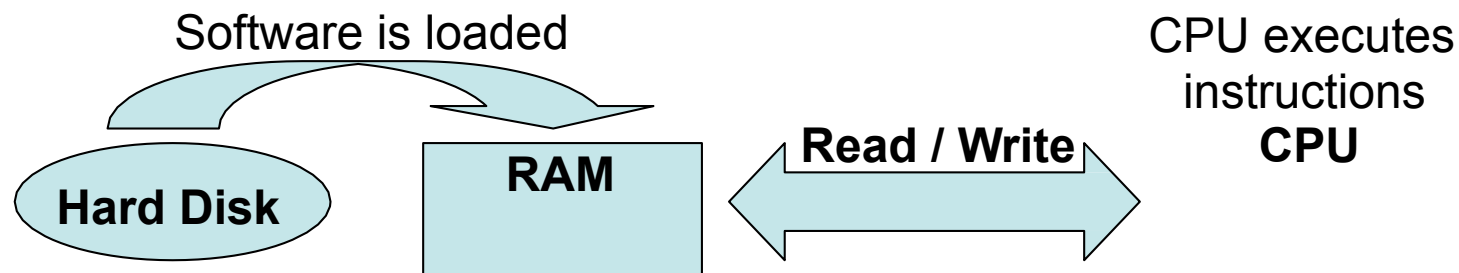
Today's lecture

- ▶ Describe what software is
- ▶ Understand the legal protections for software
- ▶ Learn about the different software licences
- ▶ Identify different kinds of software



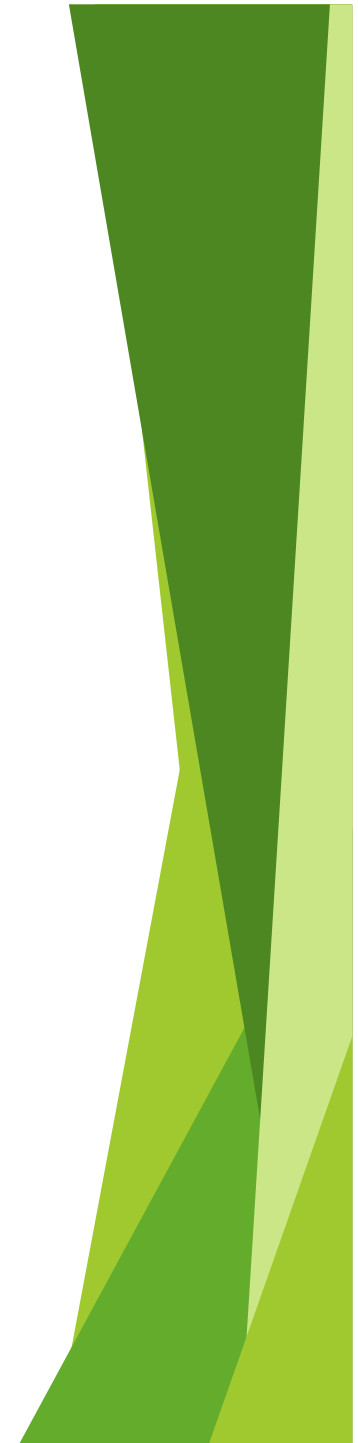
What is software?

- ▶ Aka 'programs' or 'apps'. Instructions and other data used by the computer
- ▶ User can perform tasks and interact with the hardware through software
- ▶ Loaded from secondary memory into primary memory, where it is executed by the CPU



Kinds of software

- ▶ System software:
 - ▶ Operating system (eg. Windows, Mac OS X)
 - ▶ Device drivers
 - ▶ Diagnostic and maintenance tools (eg. Disk Cleanup)
- ▶ Application software:
 - ▶ Used by users to perform tasks on the computer



File formats

- ▶ All data on a computer is stored in binary
- ▶ However, a program encodes files in its own way; this is the file format
- ▶ A program will be unable to open a file if it does not understand the file format

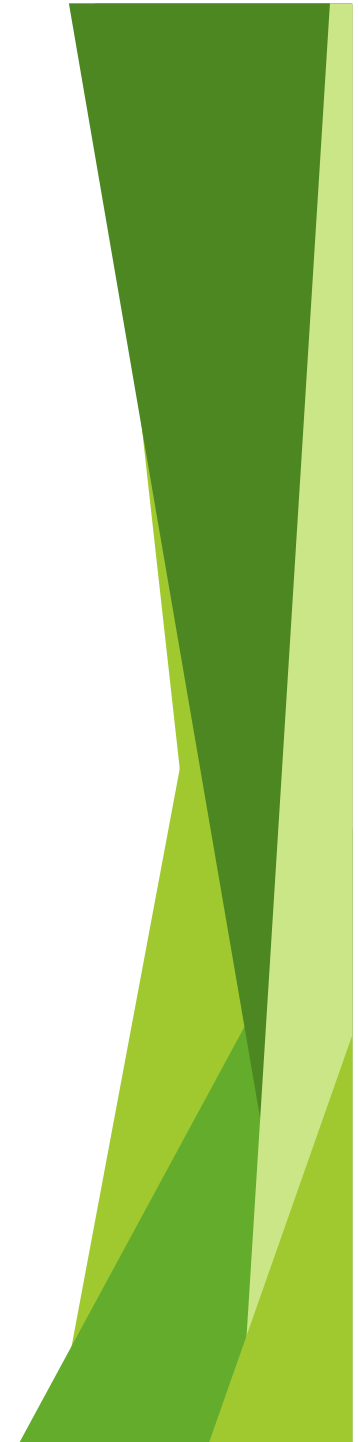
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1 %PDF-1.5
2 %DÔÅØ
3 5 0 obj <<
4 /Length 972
5 /Filter /FlateDecode
6 >>
7 stream
8 xÚ-WKÛ6DLE%úW8VEM" ES%ÚKnÓtf;M+SOzHsDLEli@DLEÉr,EMESCÿúSOUSÚøeG+QSOACKÿó
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DC4c@nSUB ;9xÄùCfù"ÜP1fDC2@Oé..
```

The beginning of a file using the PDF format



Standards

- ▶ File formats sometimes follow a standard; an agreed way of encoding data (eg. webpages use the HTML5 standard)
- ▶ Standards can be:
 - ▶ Open
 - ▶ Published openly
 - ▶ Free to use
 - ▶ Eg. HTML, PDF
 - ▶ Proprietary
 - ▶ Owned by a company
 - ▶ Others can use the standard if they pay for a licence
 - ▶ Eg. MP3



File extension

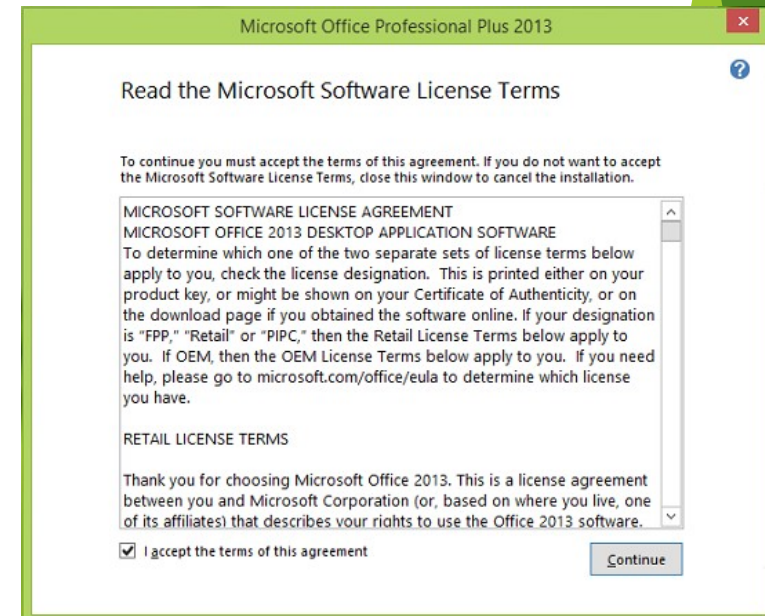
- ▶ Used by the operating system to determine a file's format
- ▶ Eg. the .docx file format opens by default with Microsoft Word

Graphics	.jpg , .png , .gif	Video	.mpg , .avi , .divx
Sound	.mp3 , .wma , .ogg	Programs	.exe , .com , .bat
Text	.txt , .doc	Program Code	.c , .java , .cs , .py



Copyright

- ▶ Software is protected by a range of IP rights
- ▶ Copyright:
 - ▶ Protects the expression of an idea
 - ▶ Copyright Act 1994: literary works (includes software) is protected by copyright



Kinds of software

Proprietary software

- Owned by an individual or company
- Types:
 - Commercial
 - Shareware
 - Freeware
 - Semi-free (for non-profits)

Open source software

- Freely available
- Anyone can use or edit the software's source code



Proprietary software - commercial

- ▶ Software that a user must purchase to use
- ▶ Examples: Microsoft Office, Adobe Acrobat, SPSS



Proprietary software - shareware

- ▶ User has a trial period in which to evaluate the software, and purchase it if they want
- ▶ **Nagware:** software keeps reminding the user to purchase the full version
- ▶ **Crippleware:** software that works with limited functionality until the user purchases it
- ▶ **Freemium:** software with a free tier and paid tier



Proprietary software - freeware

- ▶ Software is free to use but source code is not publically available
- ▶ Freeware can be a **loss leader** or **adware**
- ▶ Some freeware is known as **abandonware**; software no longer maintained but still available



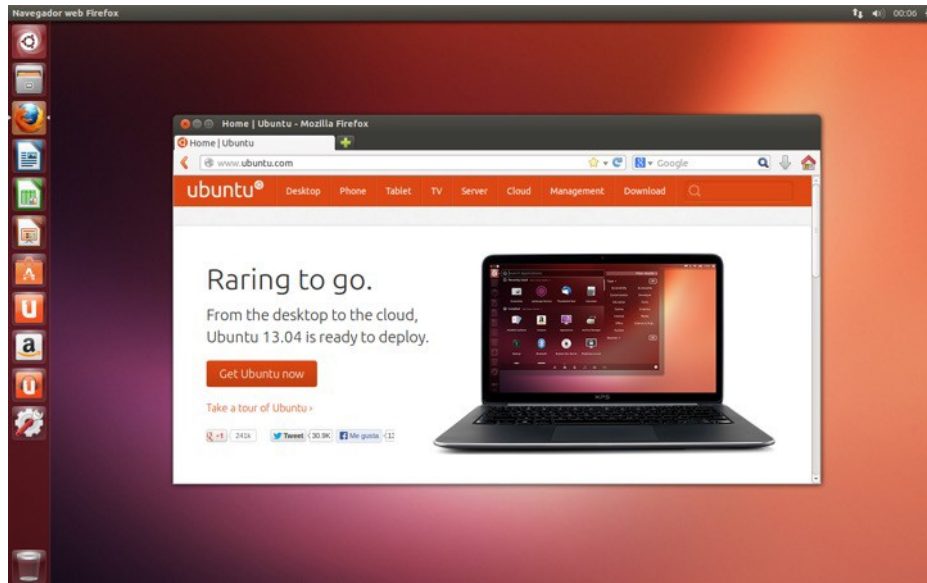
Open source software

- ▶ Software that is free to use and whose source code is public
 - ▶ Anyone can use or modify the source code
 - ▶ Anyone can create a **derivative work** from the source code
- ▶ Open source movement started in the late 1980's and outlined in the **Open Source Definition**
- ▶ Open source software licences (eg. Apache, GNU) are not as restrictive as commercial software licences



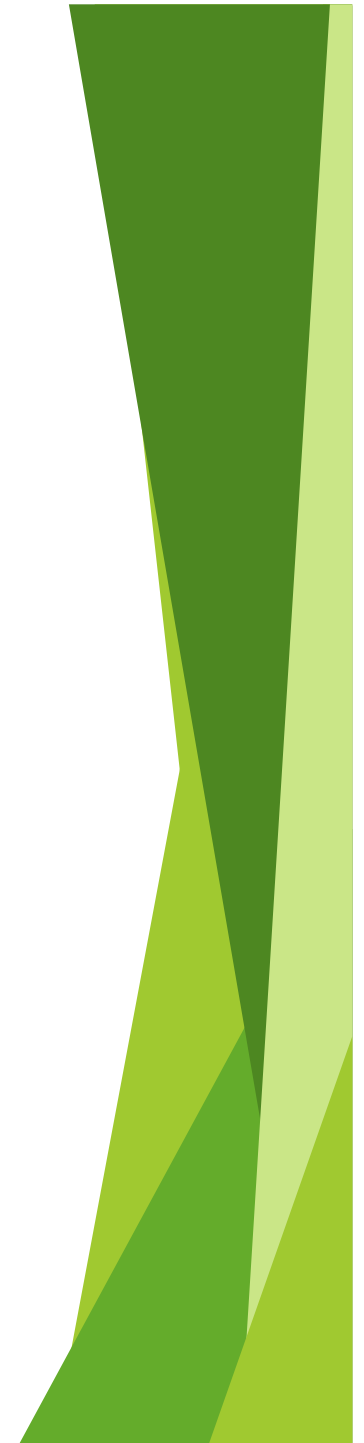
Open source software

- ▶ Examples of open source software



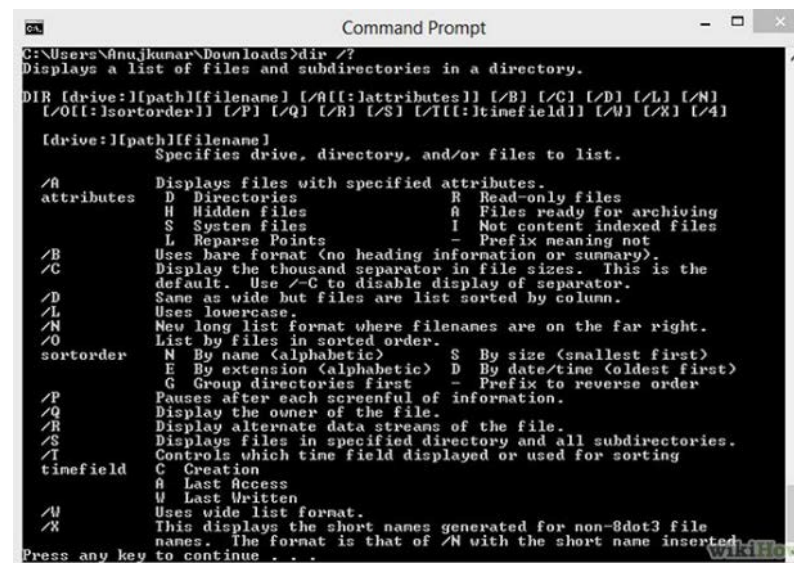
User interfaces

- ▶ Two kinds of user interface
 - ▶ Command line interface (CLI)
 - ▶ Graphical user interface (GUI)
- ▶ Key difference is that a CLI is text-based while a GUI graphically-based



Command line interface

- ▶ User enters text commands to perform tasks
- ▶ Can complete tasks very quickly by combining commands
- ▶ Can be difficult to use the text commands if you don't know or understand them



```
Command Prompt
C:\Users\AnuJkumar\Downloads>dir /?
Displays a list of files and subdirectories in a directory.

DIR [drive:][path][filename] [/A[:attributes]] [/B] [/C] [/D] [/L] [/N]
[/O[:!sortorder]] [/P] [/Q] [/R] [/S] [/T[:timefield]] [/W] [/X] [/4]

[drive:][path][filename]
    Specifies drive, directory, and/or files to list.

/A
    Displays files with specified attributes.
attributes  D Directories          R Read-only files
            H Hidden files       A Files ready for archiving
            S System files       I Not content indexed files
            L Reparse Points     - Prefix meaning not

/B
    Uses bare format (no heading information or summary).
/C
    Display the thousand separator in file sizes. This is the
    default. Use /-C to disable display of separator.
/D
    Same as /B but files are list sorted by column.
/L
    Uses lowercase.
/N
    New long list format where filenames are on the far right.
/O
    List by files in sorted order.
sortorder  N By name (alphabetic)      S By size (smallest first)
            E By extension (alphabetic)  D By date/time (oldest first)
            G Group directories first  - Prefix to reverse order

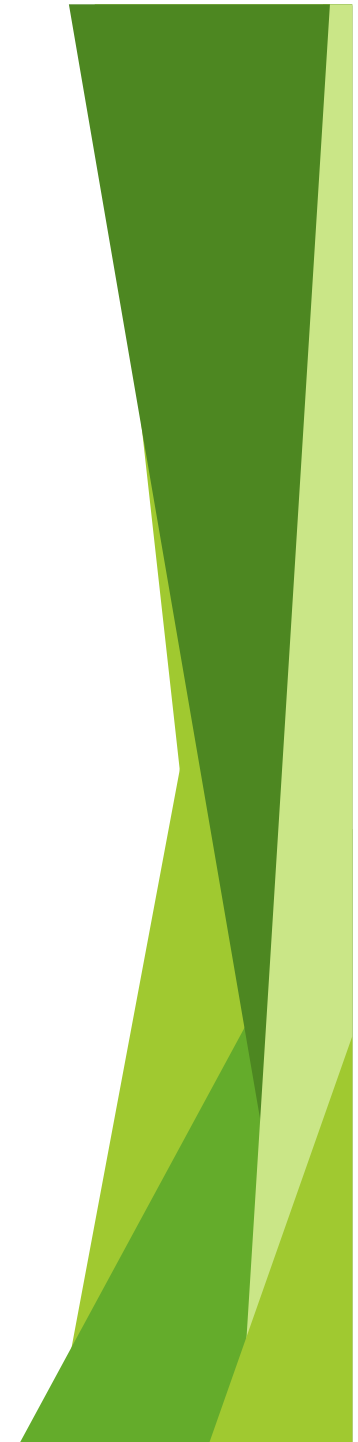
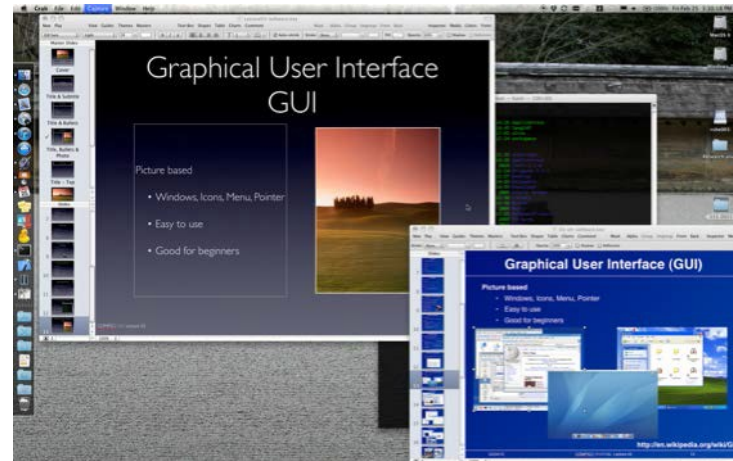
/P
    Pauses after each screenful of information.
/Q
    Display the owner of the file.
/R
    Display alternate data streams of the file.
/S
    Displays files in specified directory and all subdirectories.
/T
    Controls which time field displayed or used for sorting
timefield  C Creation
            A Last Access
            W Last Written

/W
    Uses wide list format.
/X
    This displays the short names generated for non-8dot3 file
    names. The format is that of /N with the short name inserted.

Press any key to continue . . .
```

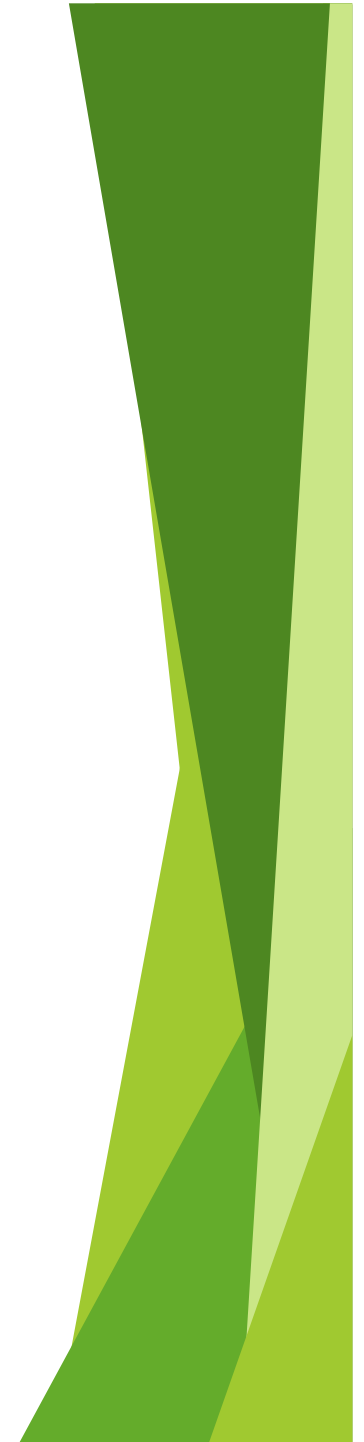

Graphical user interface

- ▶ User performs tasks using the software's graphical elements (eg. windows, pointers, icons, menus)
- ▶ Generally easy to use, especially for new users
- ▶ Can be inefficient for experienced users, but keyboard shortcuts help to make GUIs more efficient

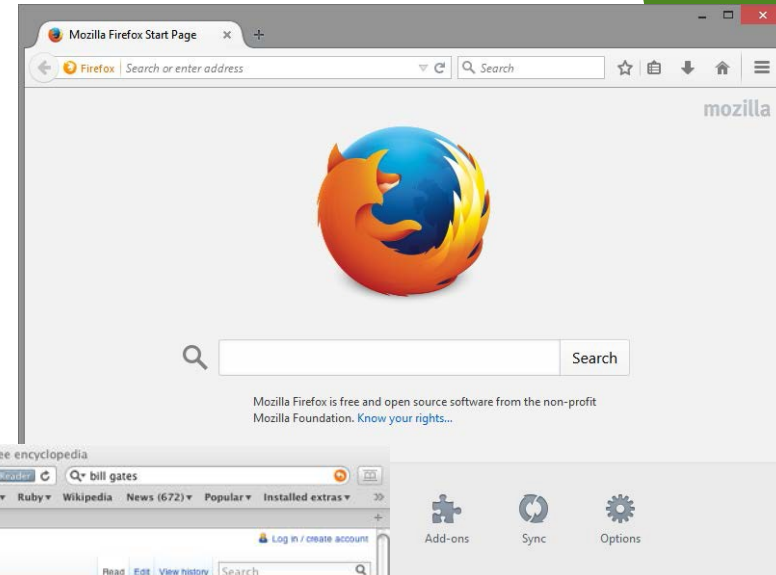
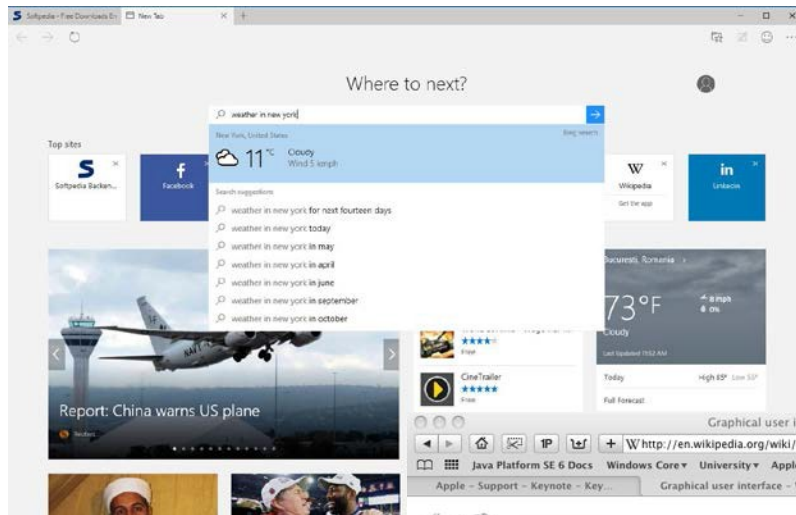


Application software

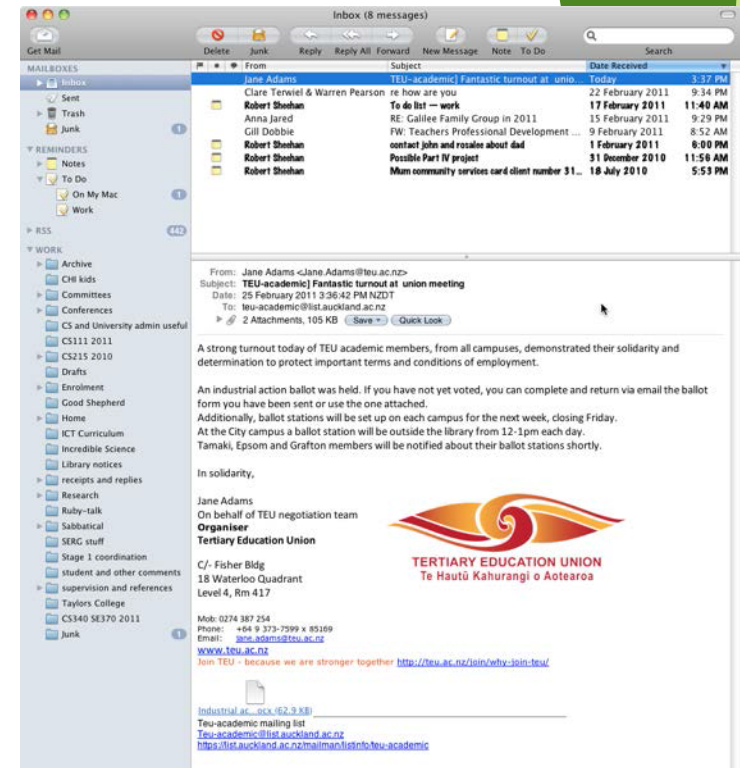
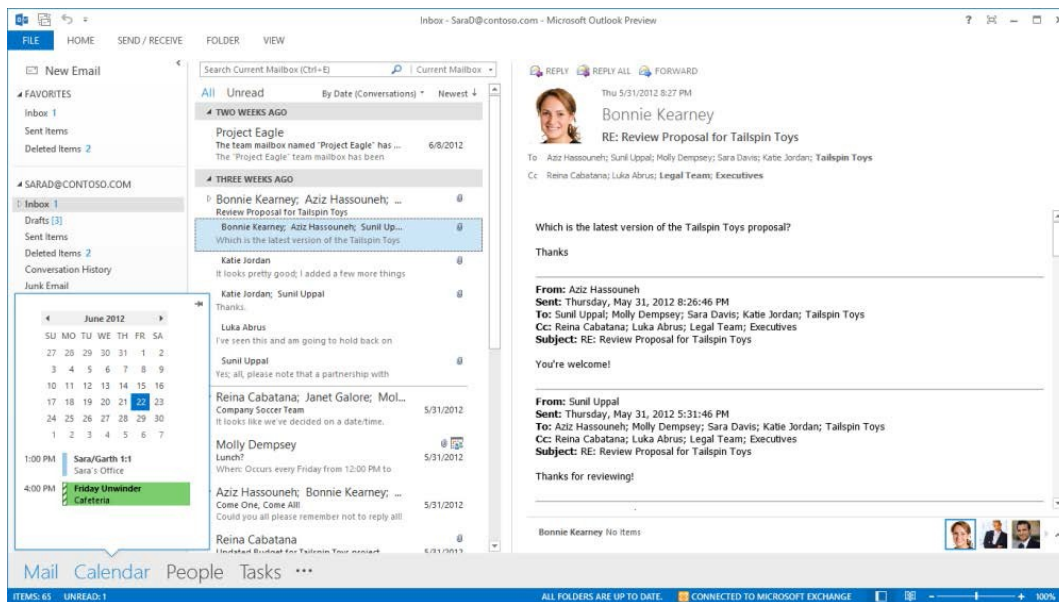
- ▶ Two kinds of software: system and application
- ▶ Very wide range of application software



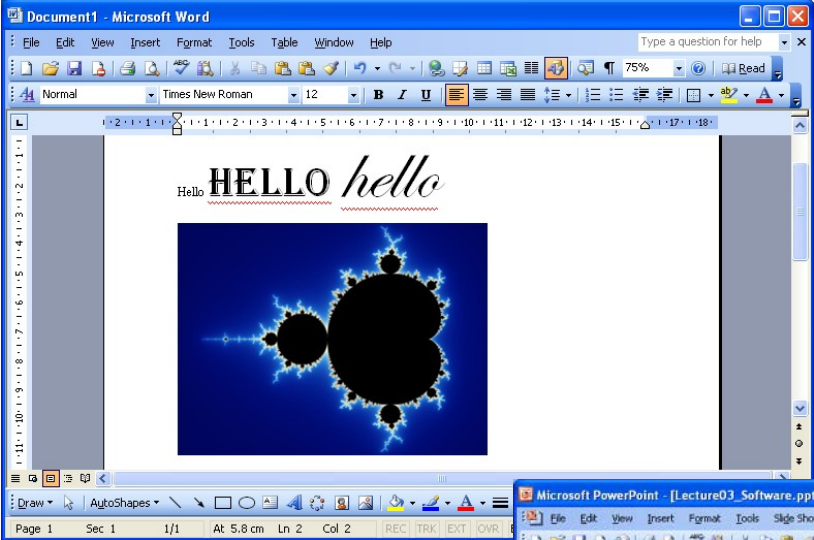
Web browsers



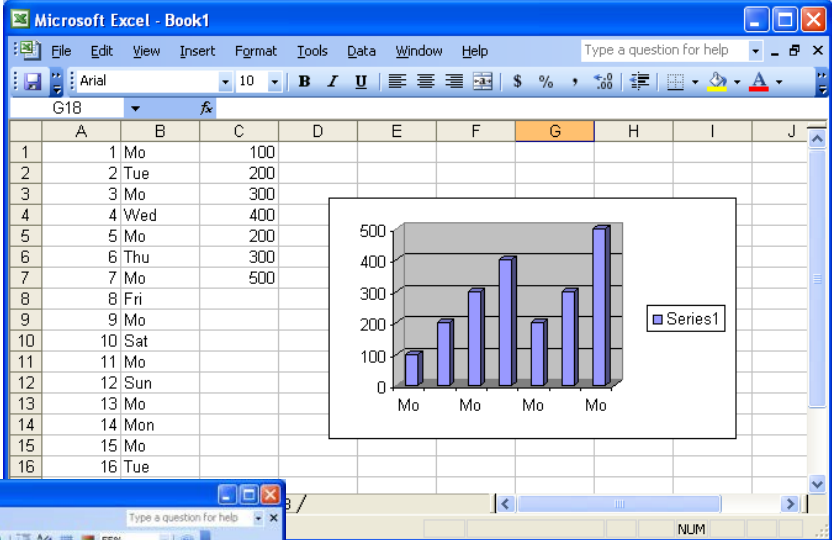
Email clients



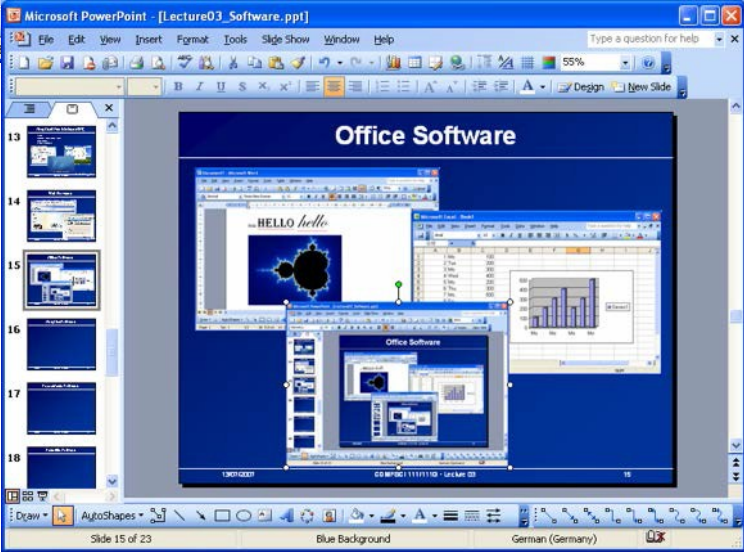
Office software



Word

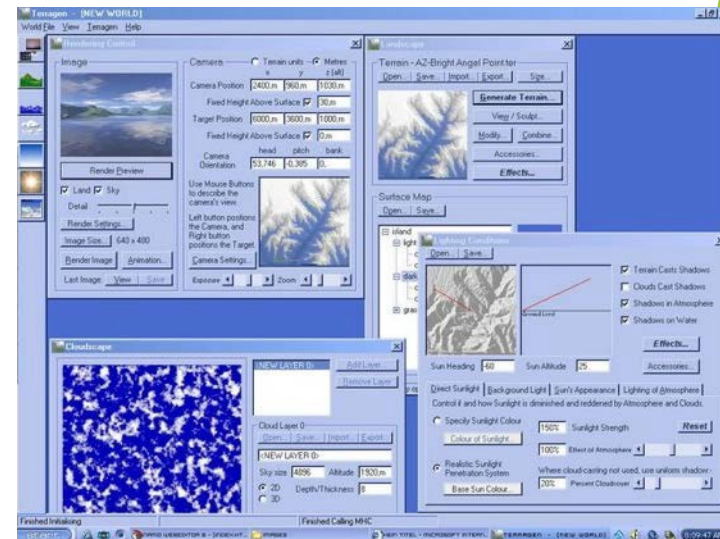
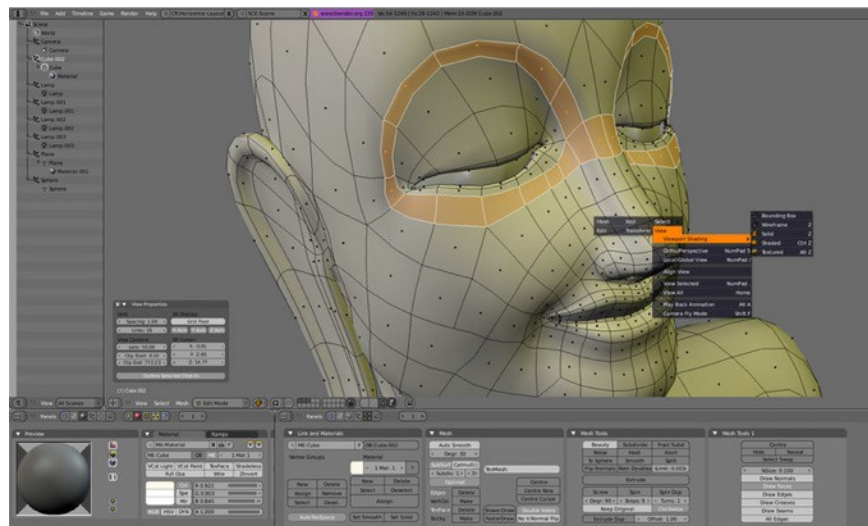
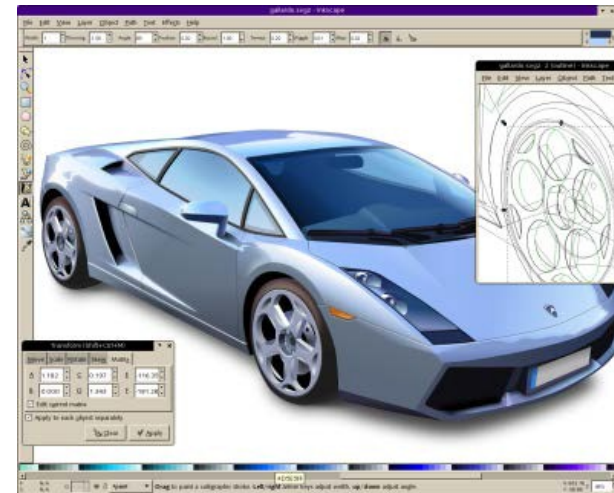
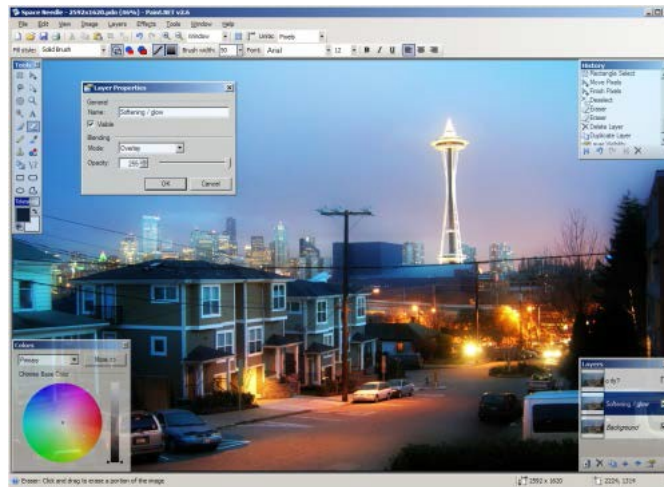


Excel

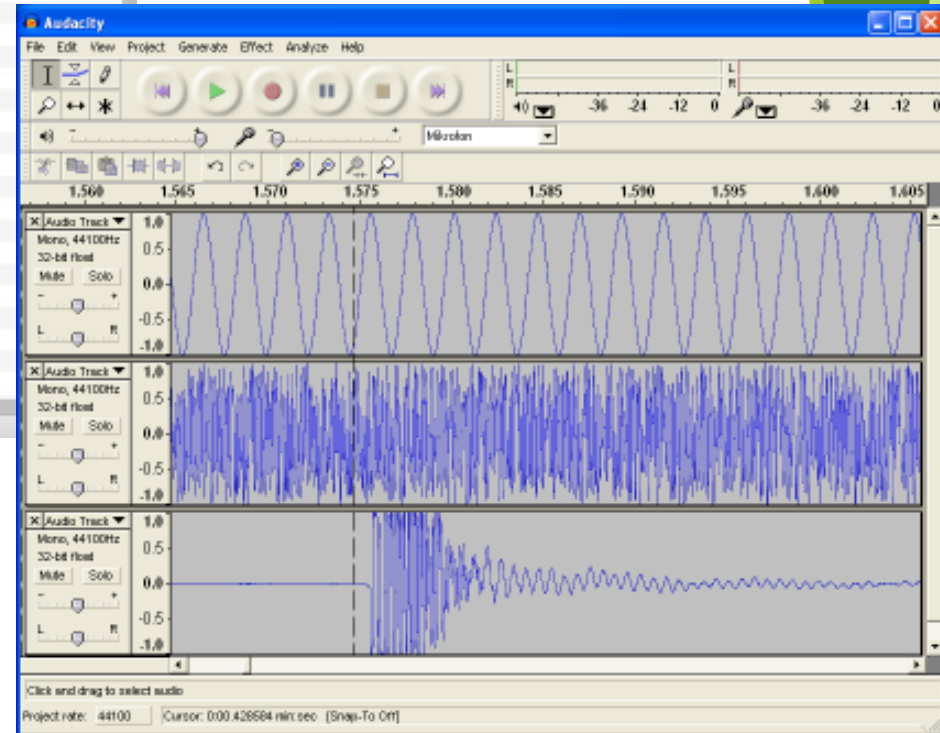
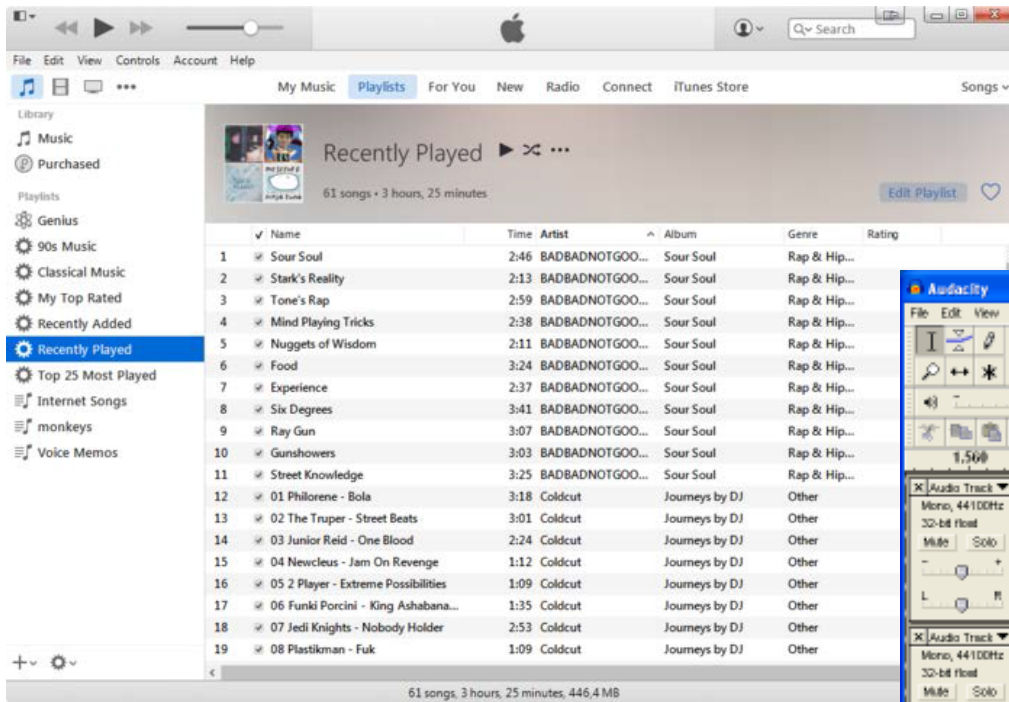


PowerPoint

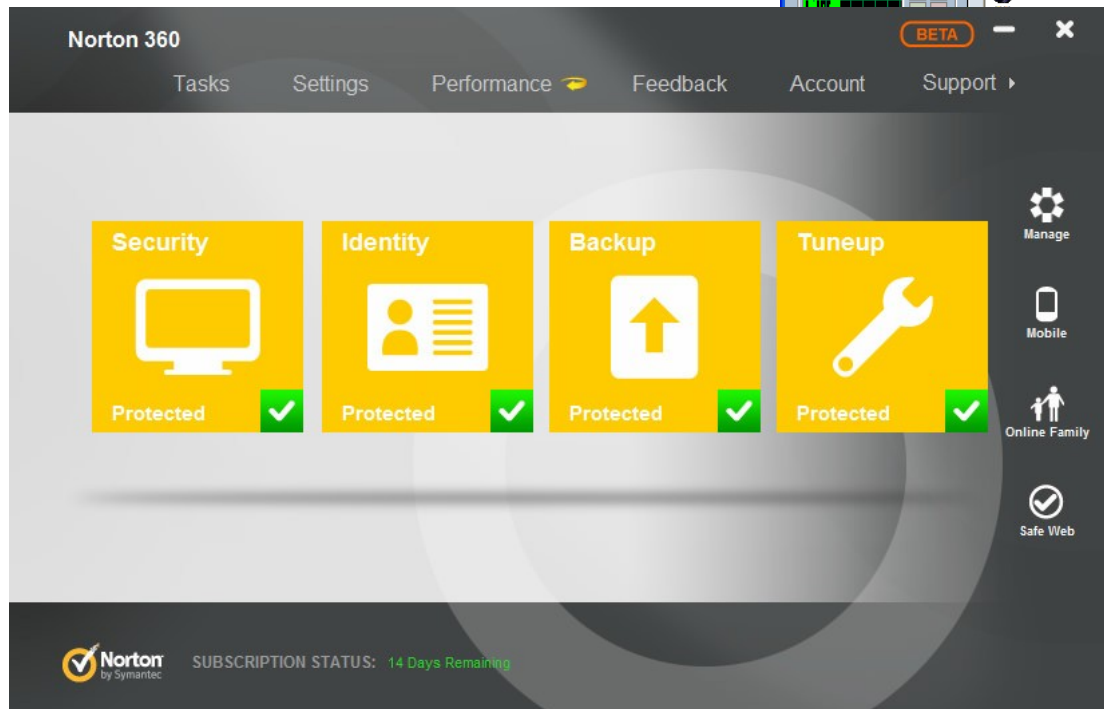
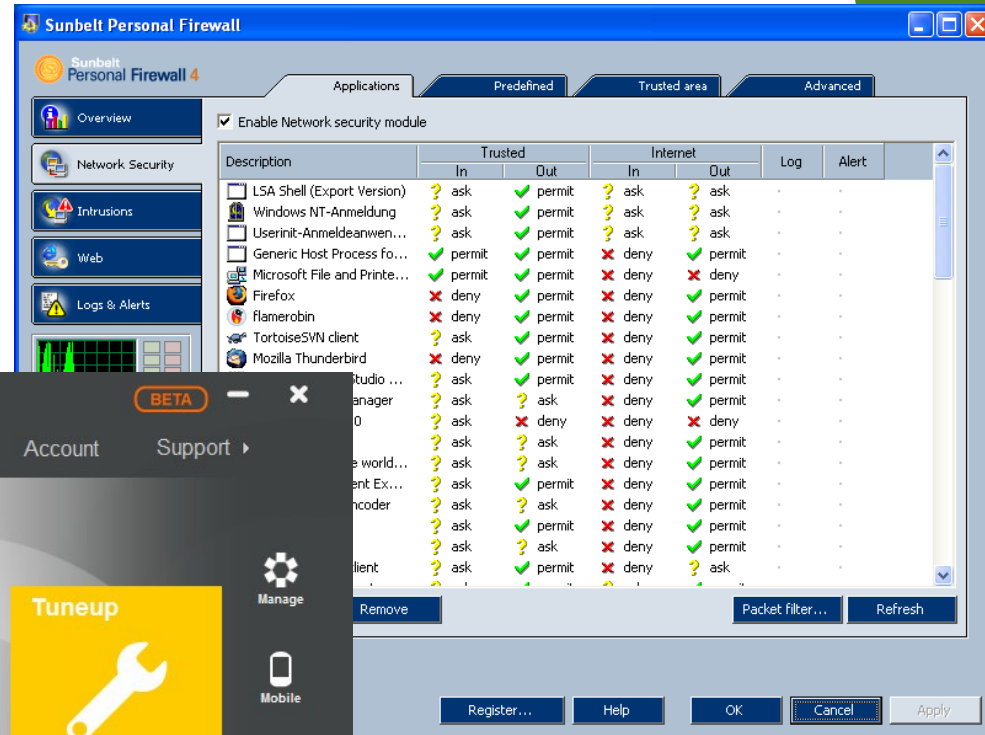
Graphics software



Music software

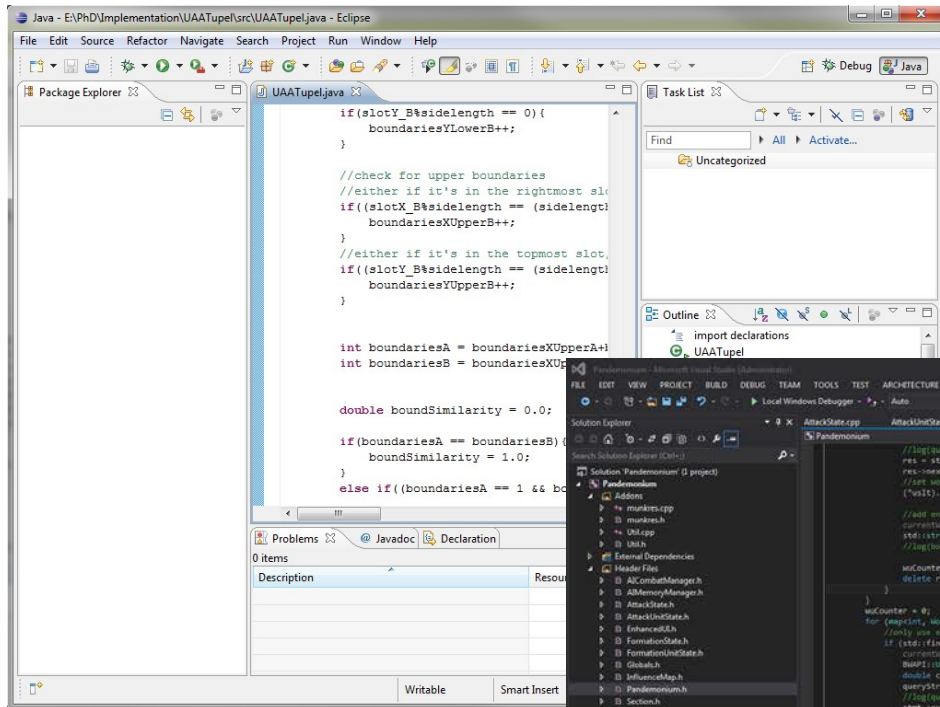


Security software

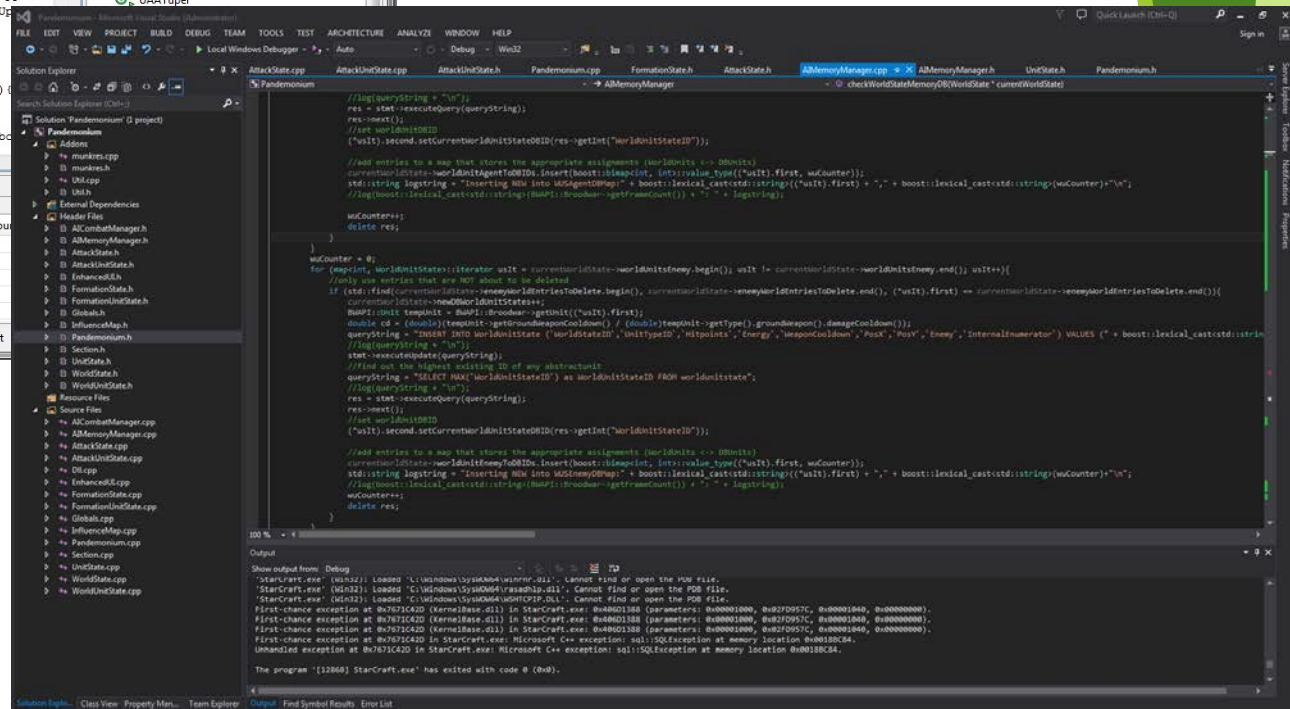


Software development tools

Visual Studio

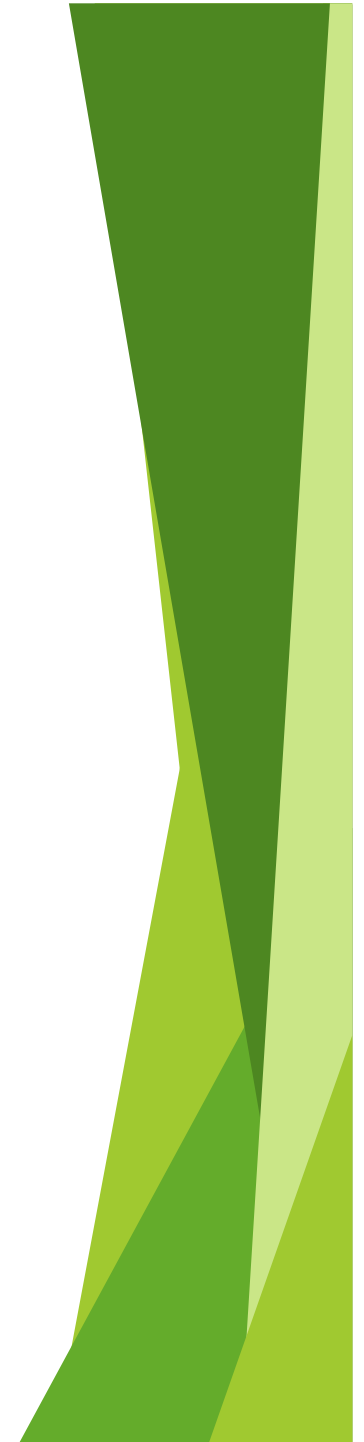


Eclipse



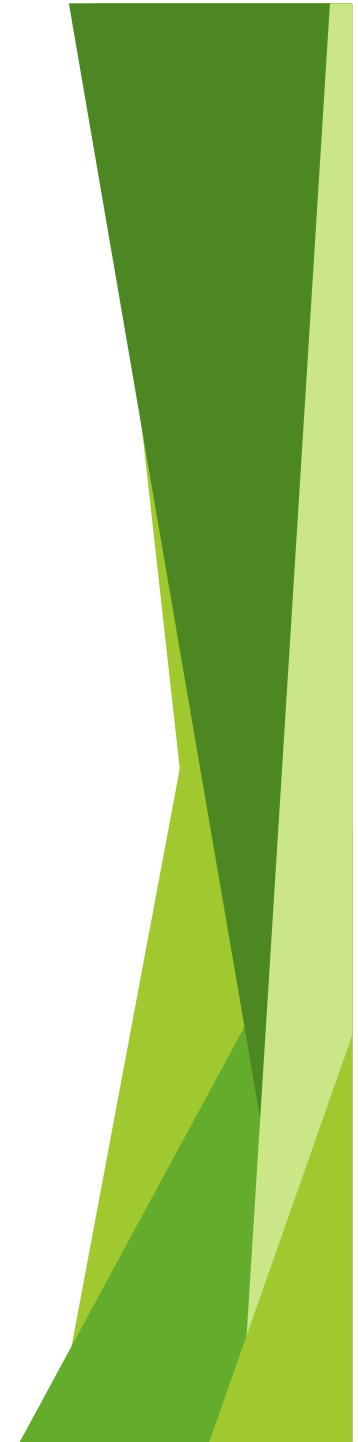
Questions

- ▶ What kind of licence is best for software you want to give away for free?
- ▶ What is one advantage of the CLI and one disadvantage of the GUI?



Answers

- ▶ What kind of licence is best for software you want to give away for free?
 - ▶ Freeware (no access to source code)
 - ▶ Open source software (access to source code)
- ▶ What is one advantage of the CLI and one disadvantage of the GUI?
 - ▶ CLI: faster for experienced users
 - ▶ GUI: can be cumbersome for experienced users



Summary

- ▶ Software allows users to perform tasks with their computer
- ▶ Software is protected by copyright. Users receive a licence to use software
- ▶ Proprietary software vs open source software
- ▶ CLI vs GUI
- ▶ Different kinds of software can be used to perform different tasks

