

# Software and Licences

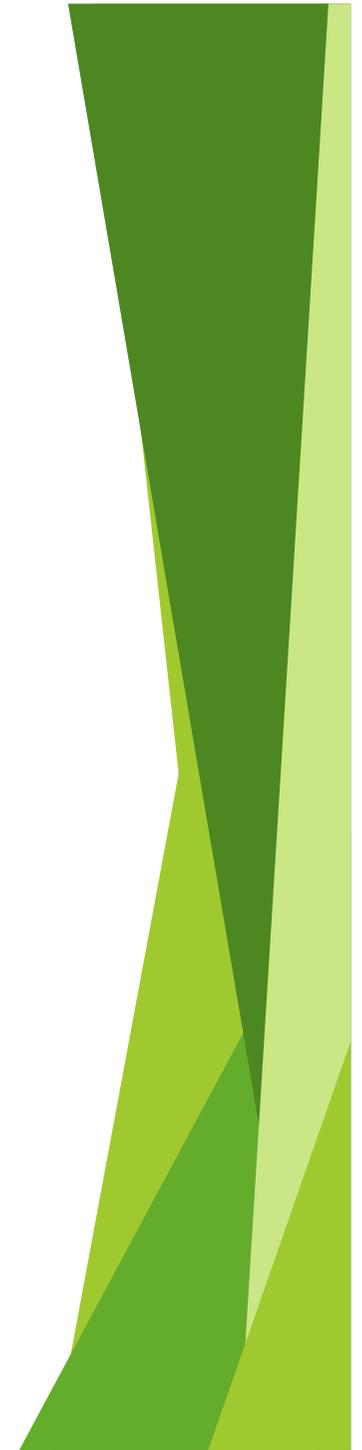
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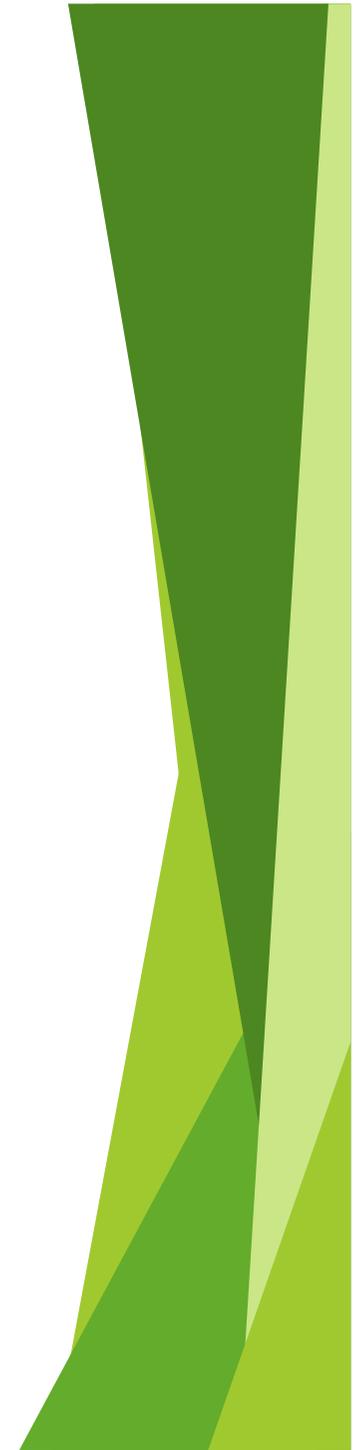
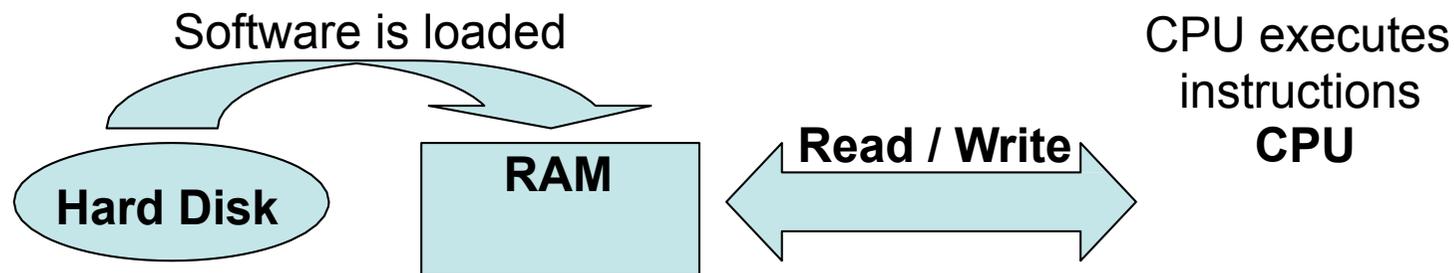
# Today's lecture

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



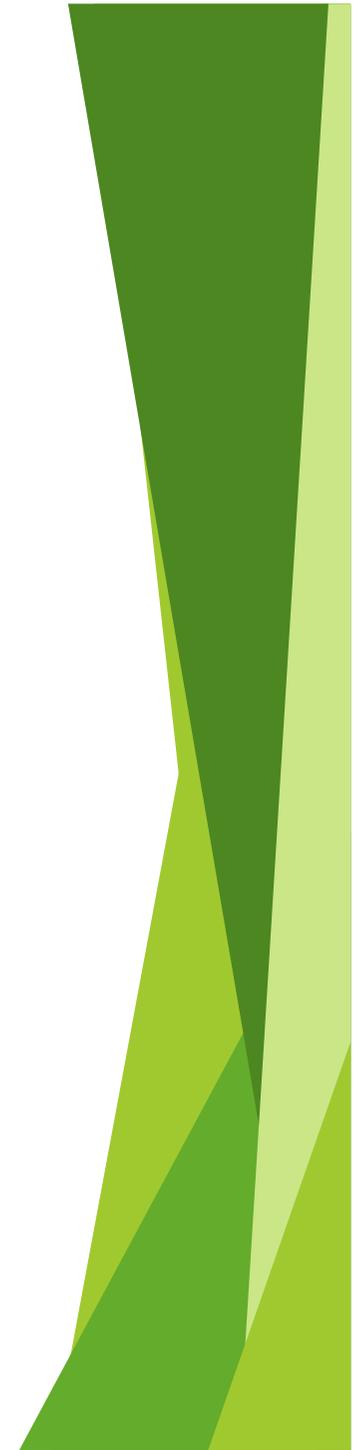
# What is software?

- ▶ 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

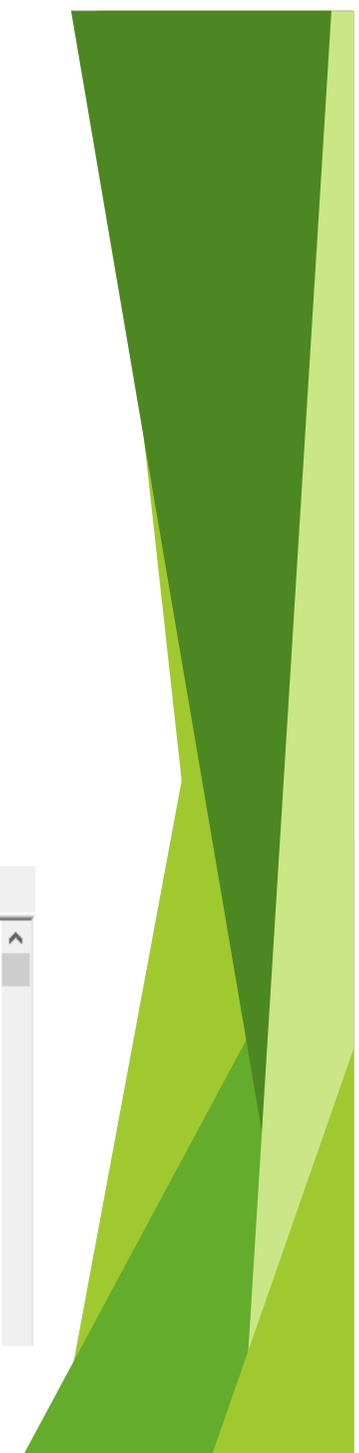


# File formats

- ▶ 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

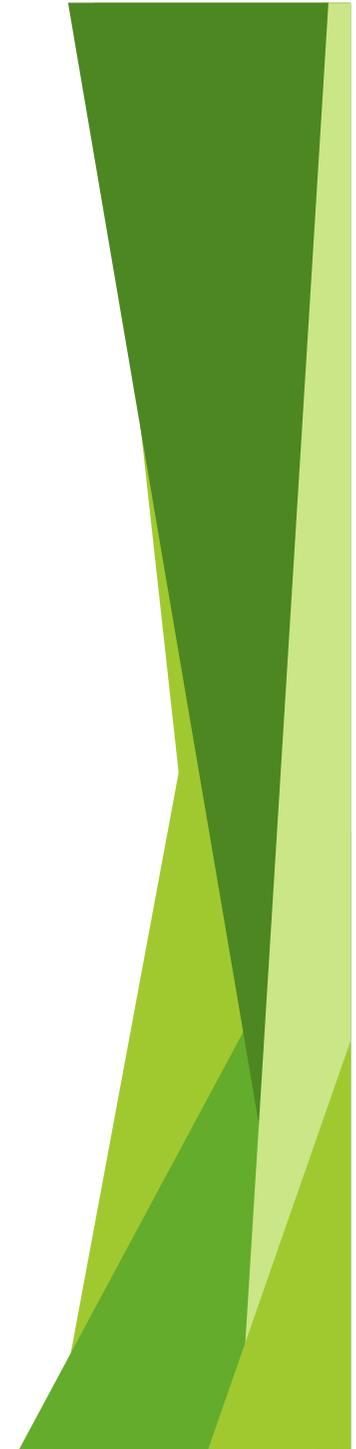
```
L1 exercises.pdf x
1 %PDF-1.5
2 %DÔÅØ
3 5 0 obj <<
4 /Length 972
5 /Filter /FlateDecode
6 >>
7 stream
8 xÚ-WKÛ6DLE%úW8VEM" ES%ÚKnÓtf;M+SOzHsDLEli@DLEÉr,EMESCÿúSOUSÚøeG+QSOACKÿó
9 '3B7#š`{ÀÈéÉ/óÉÖoÅDC1K"v+Ïi^U"... DLE18 óèùP\ÿööÿiðíitE-NULà
10 [SUSçø^pE
@DLE+nü>Ü, USS ŠrãÄú,,ás^í'ÿ'ε]fEXC•ää8G"EOI" h&US>2*Äp7EOIáe$qqC#NUL*µÀ~Mn'[]
USbCANSOÄ (M5"-0CAN'ør!
ðèF+4+çó2,,äŠSTX+†ÄpZâ5ESµ-]aD(<Ïf^!0CûEOIhø*+CANÍ@6:NUL~žPi@QqÄ^7.†qDLEc
DC4c@nSUB ;9xÄùCfù"ÜP1fDC2@Oé..
```

The beginning of a file using the PDF format



# Standards

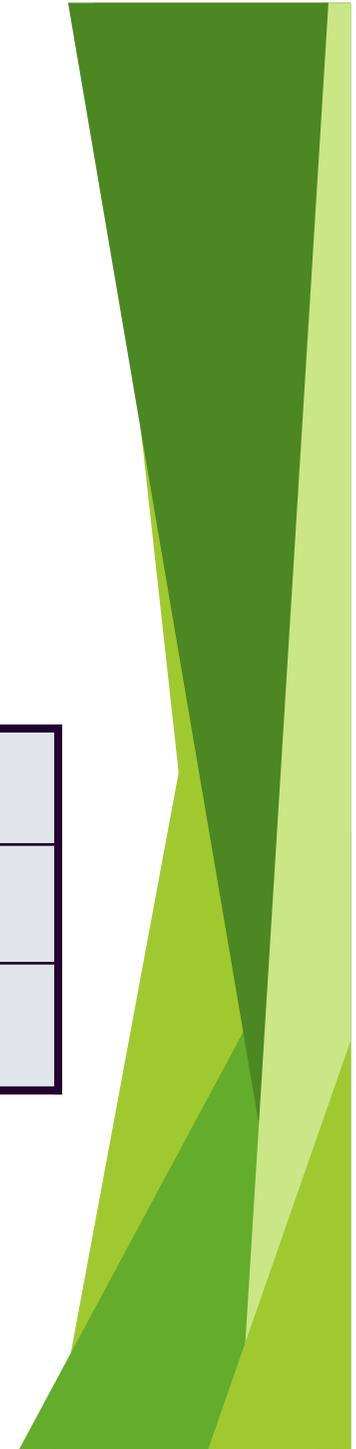
- ▶ File formats sometimes follow a standard; an agreed way of encoding data (eg. webpages use the HTML5 standard)
- ▶ Standards can be:
  - ▶ Open
    - ▶ Published openly
    - ▶ Free to use
    - ▶ Eg. HTML, PDF
  - ▶ Proprietary
    - ▶ Owned by a company
    - ▶ Others can use the standard if they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



# File extension

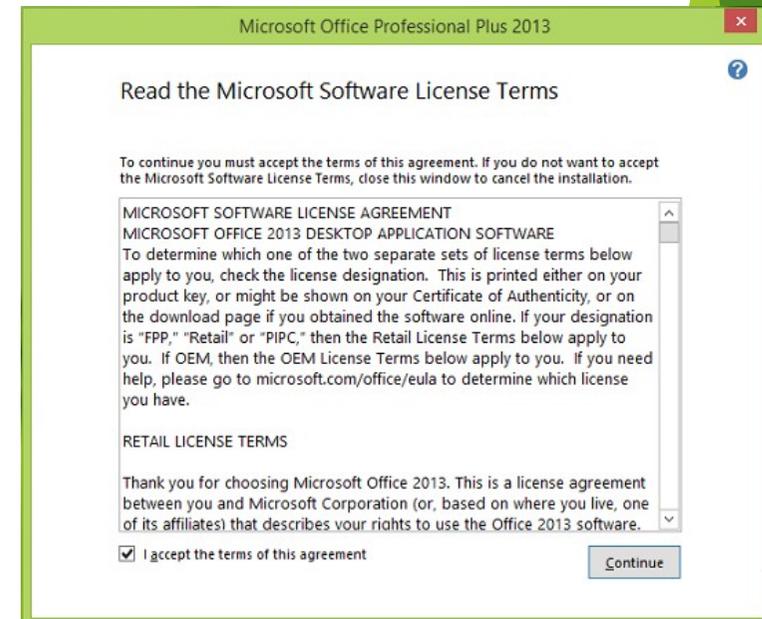
- ▶ Used by the operating system to determine a file's format
- ▶ Eg. the .docx file format opens by default with Microsoft Word

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



# 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)

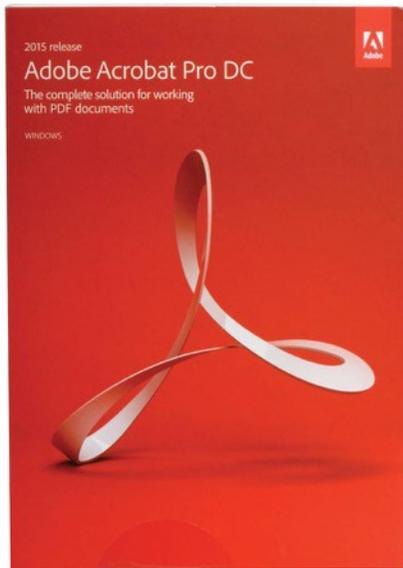
## Open source software

- 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



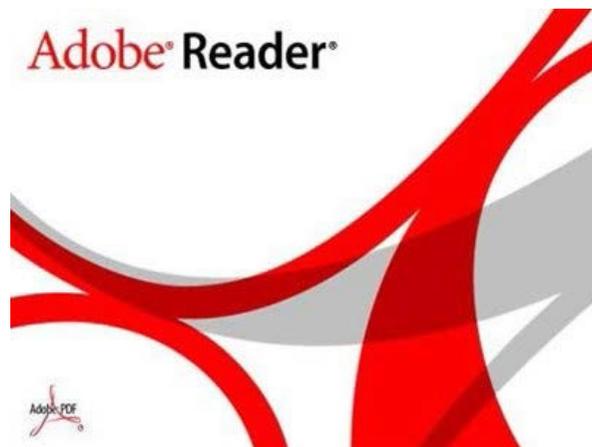
## Proprietary software - shareware

- ▶ 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



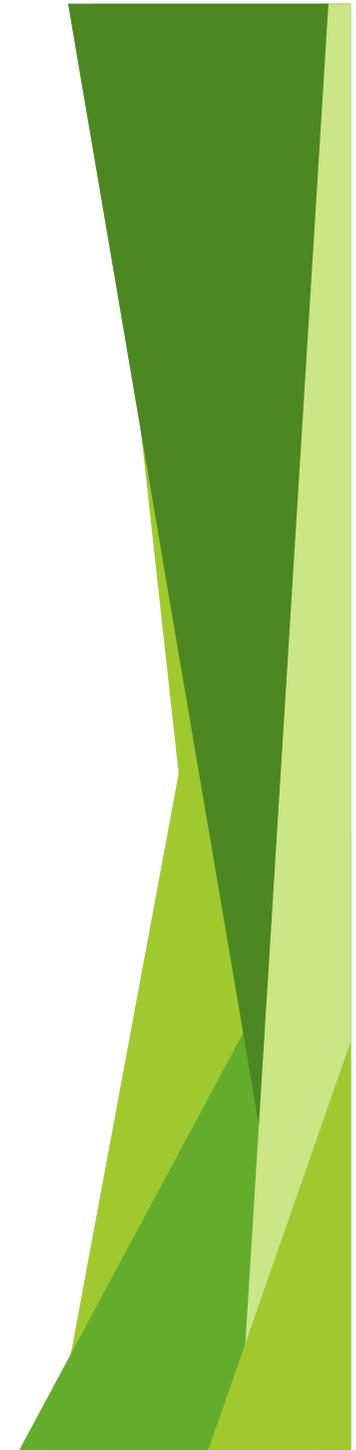
# Proprietary software - freeware

- ▶ 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



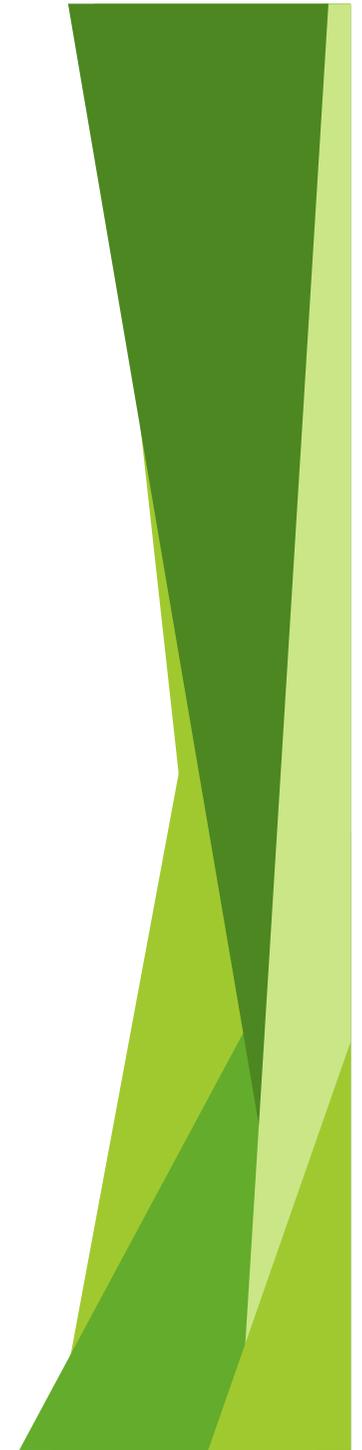
# Open source software

- ▶ Examples of open source software



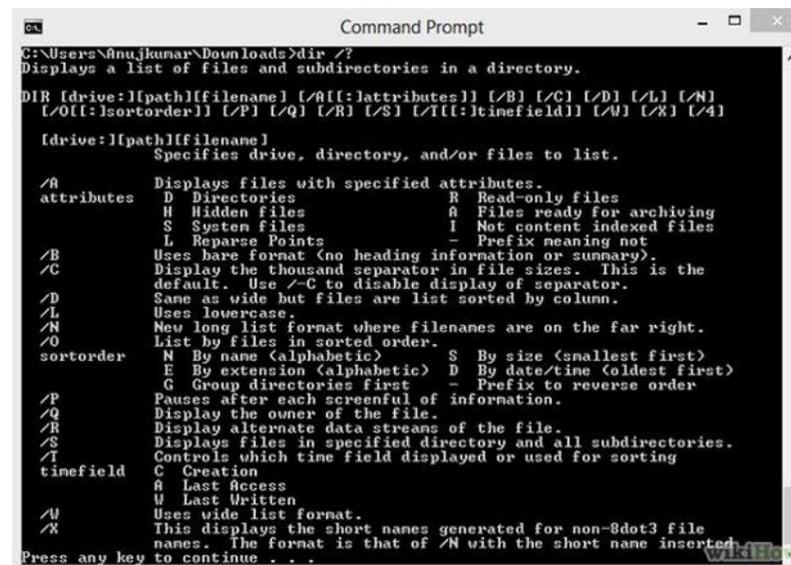
# User interfaces

- ▶ 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

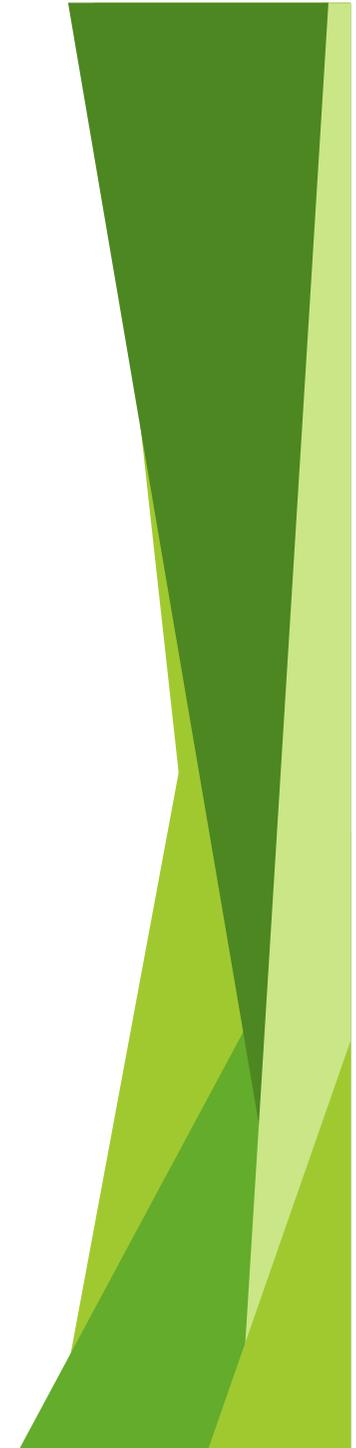
/P          Pauses after each screenful of information.
/Q          Display the owner of the file.
/R          Display alternate data streams of the file.
/S          Displays files in specified directory and all subdirectories.
/T          Controls which time field displayed or used for sorting
timefield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

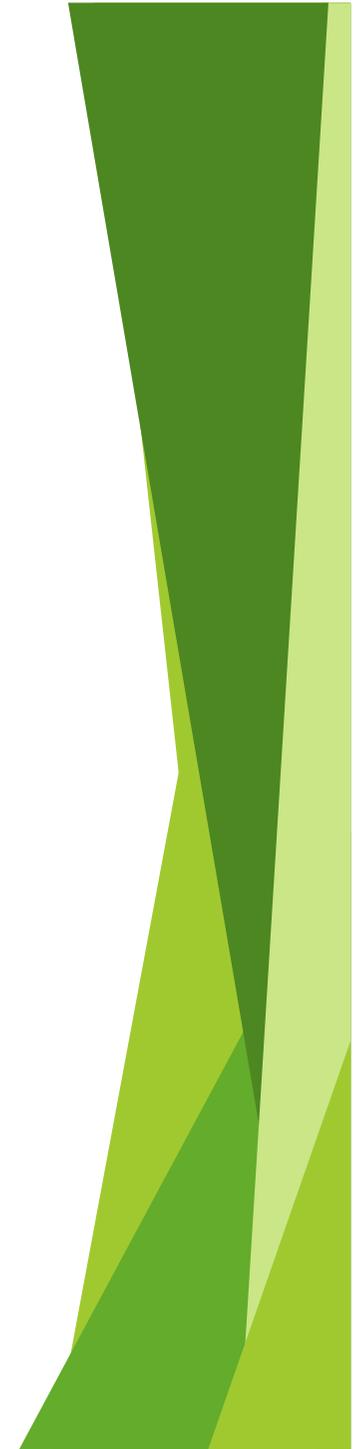
# Graphical user interface

- ▶ 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

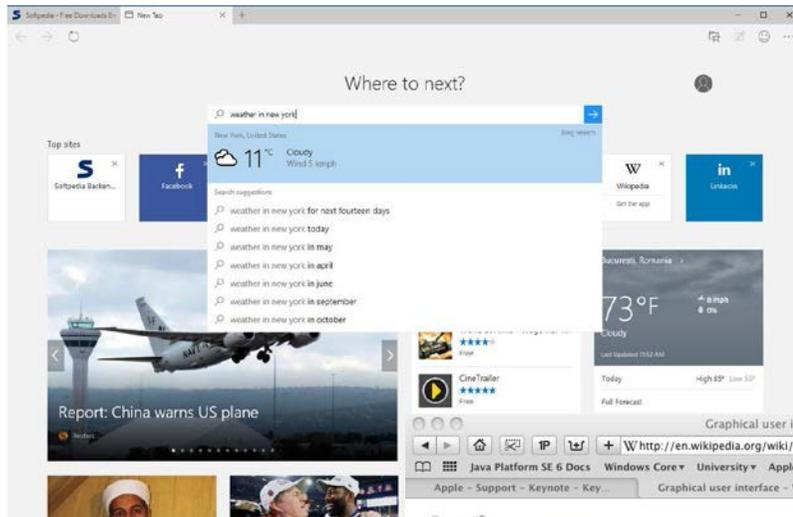


# Application software

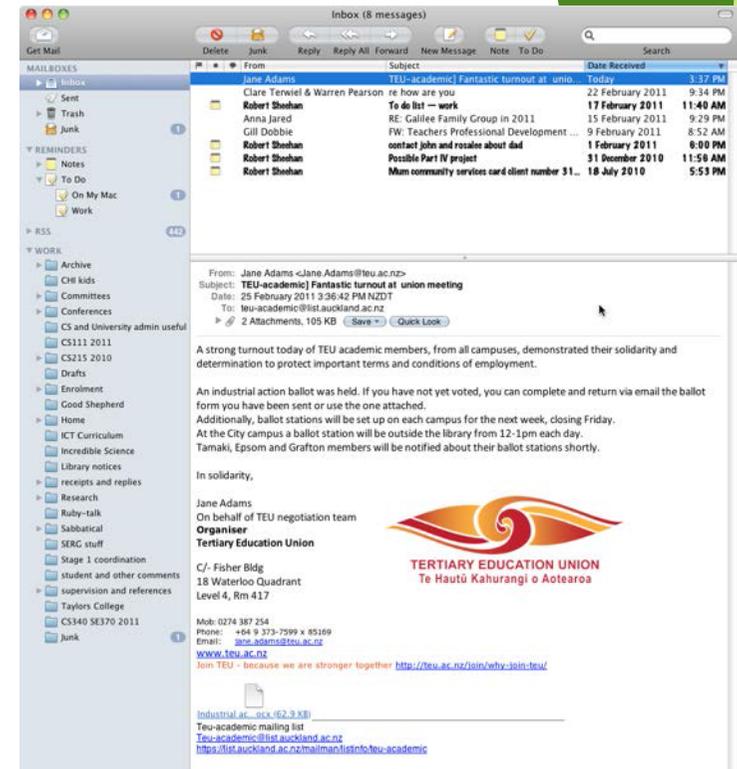
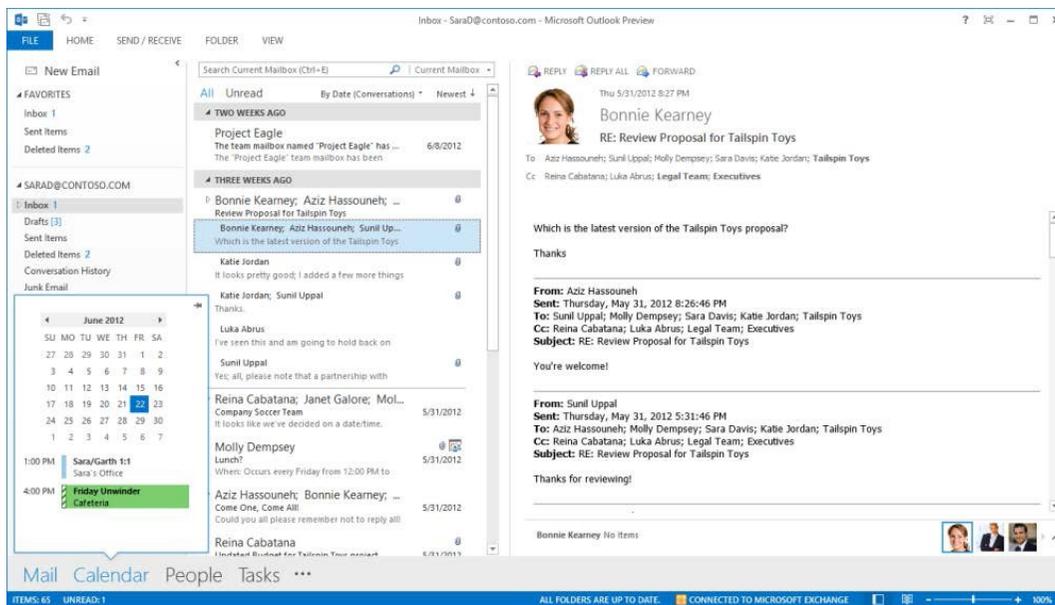
- ▶ Two kinds of software: system and application
- ▶ Very wide range of application software



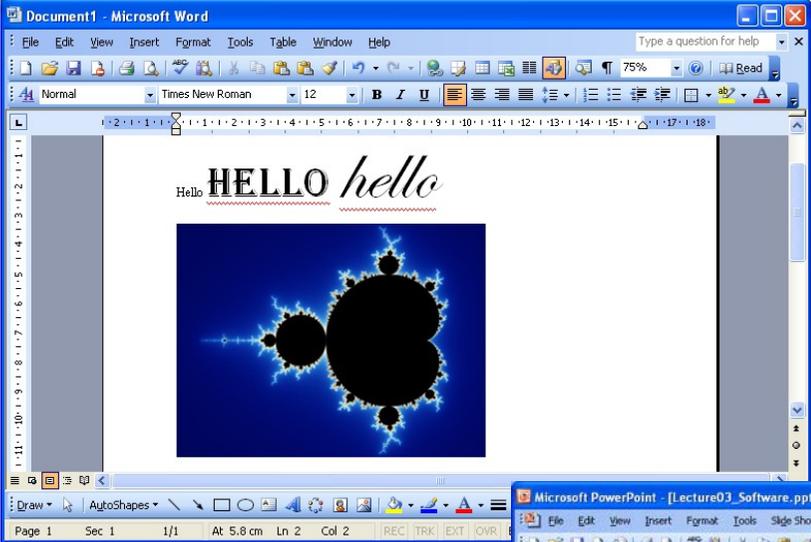
# Web browsers



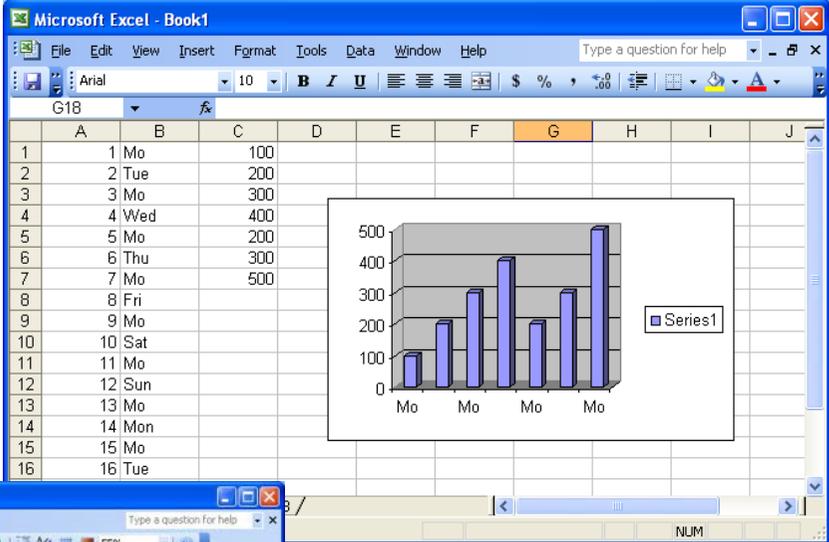
# Email clients



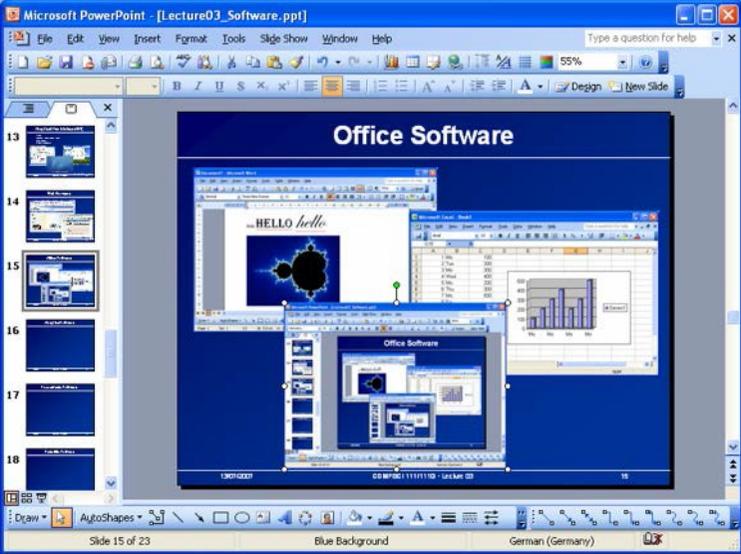
# Office software



Word

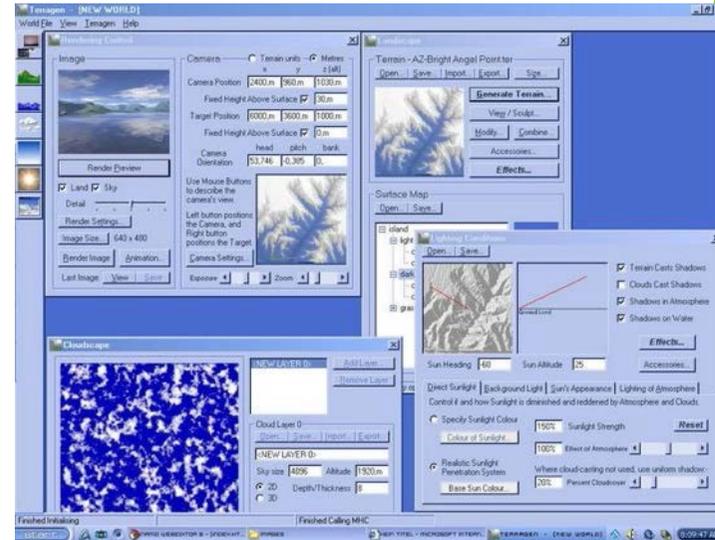
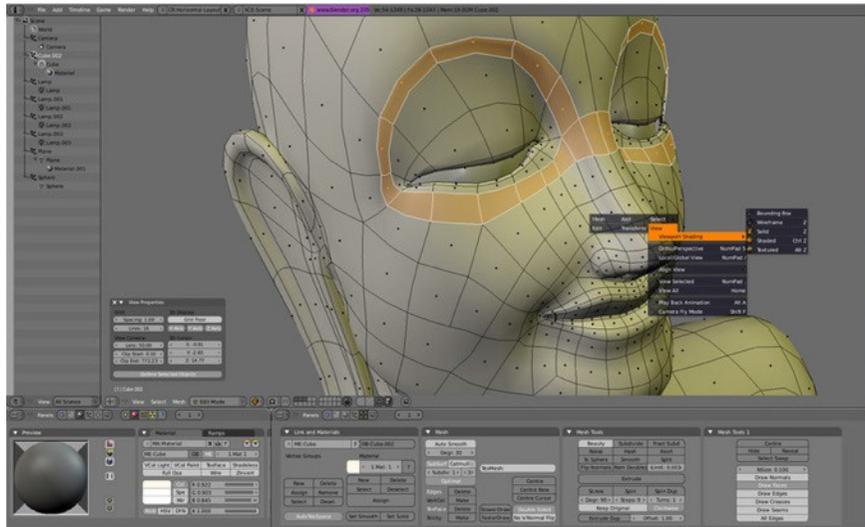
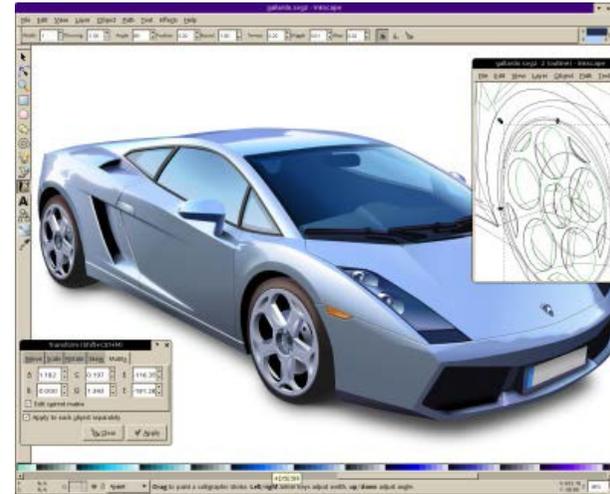


Excel

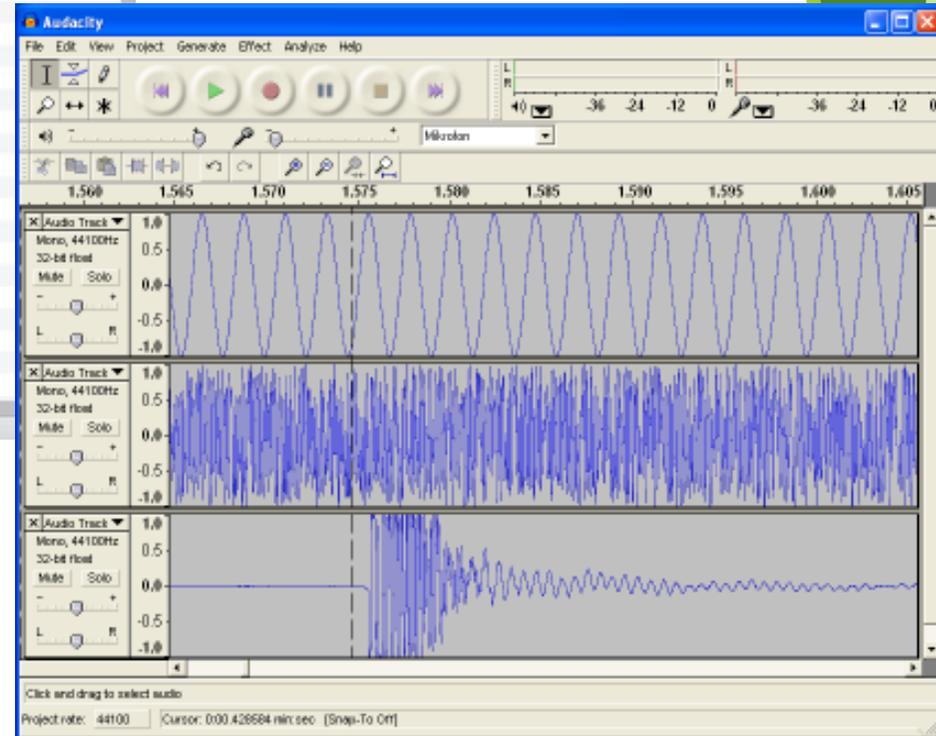
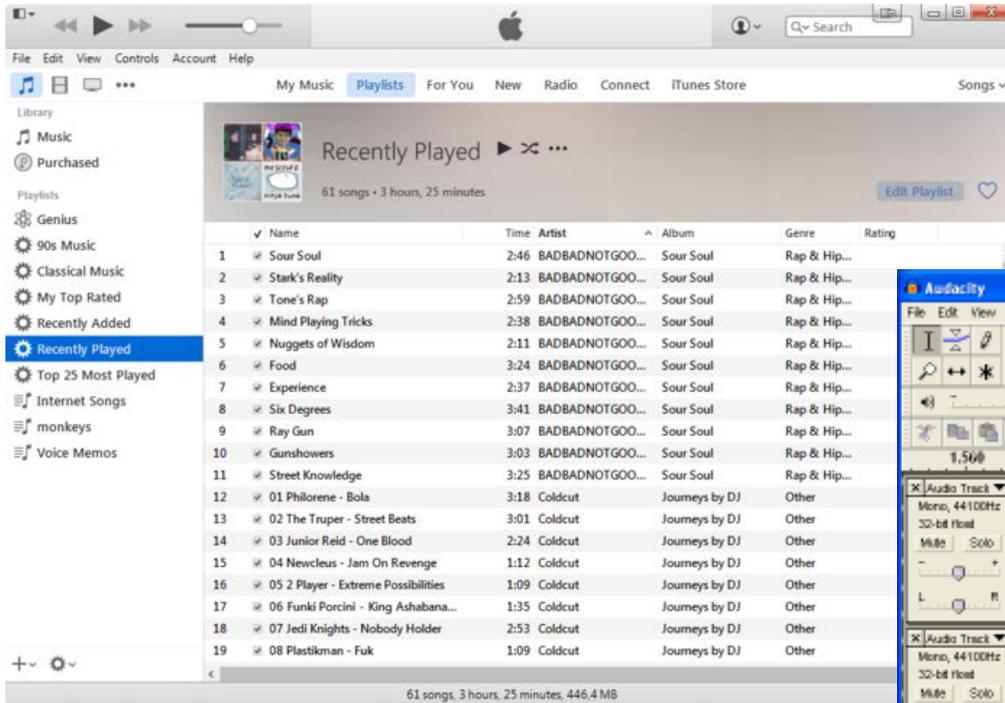


PowerPoint

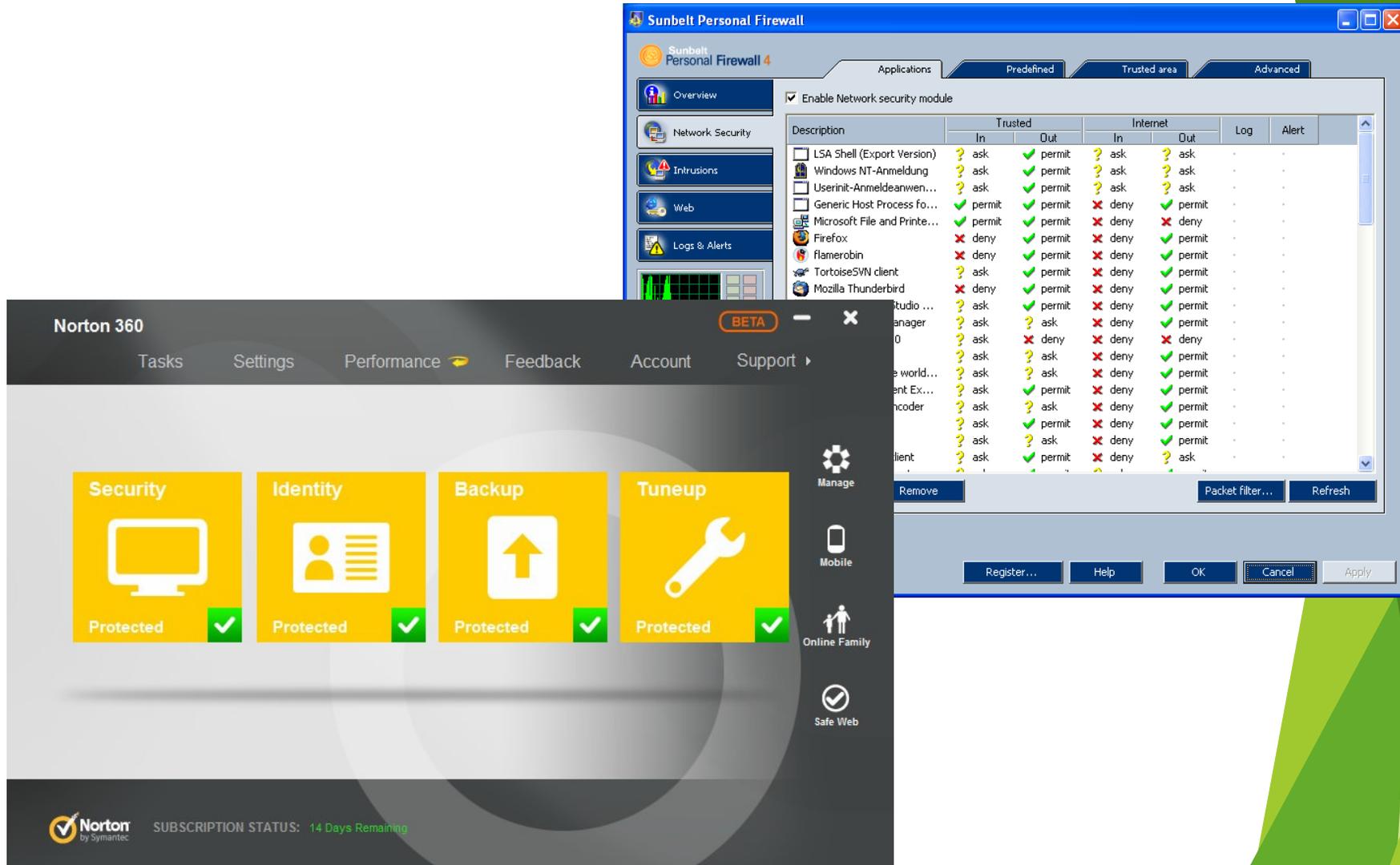
# Graphics software



# Music software

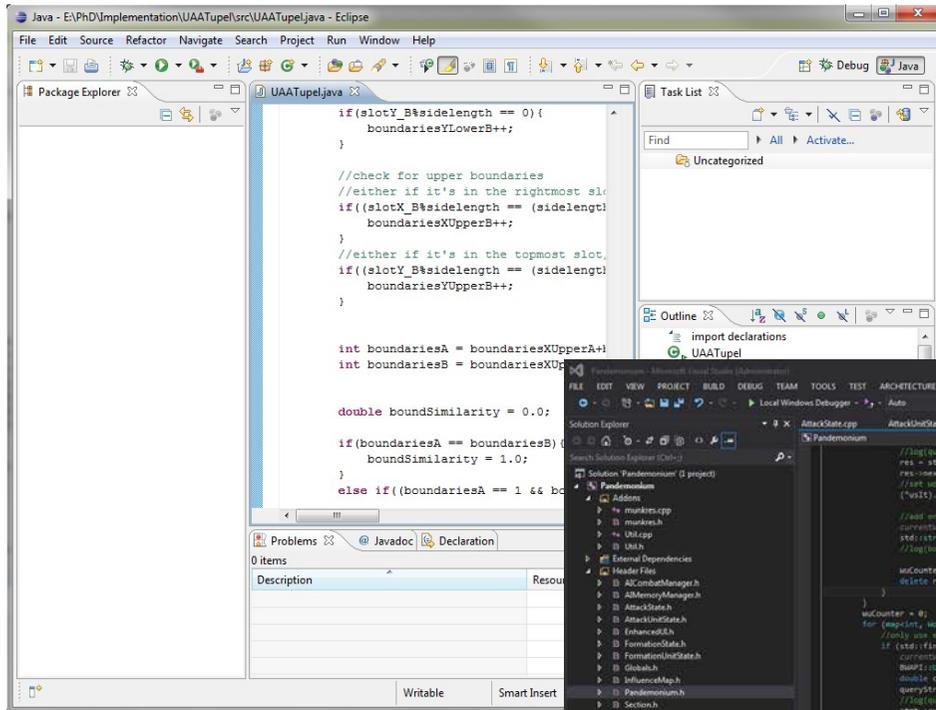


# Security software

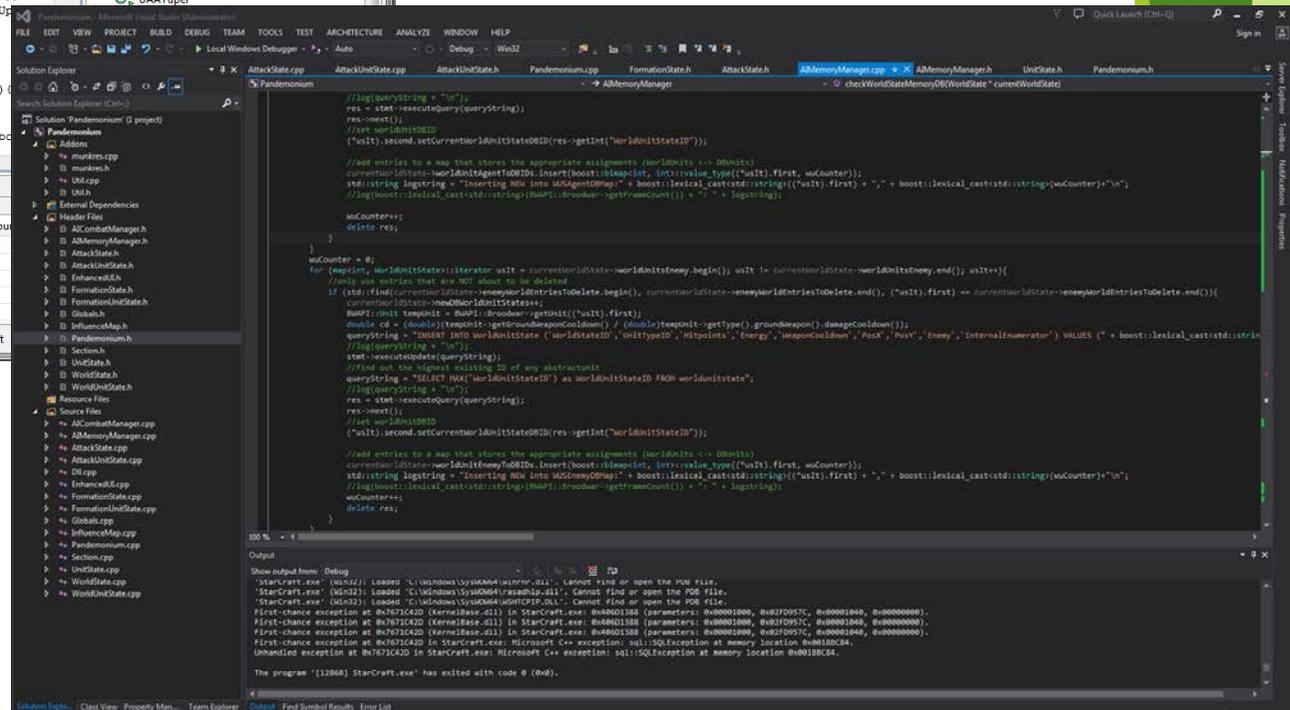


# Software development tools

Visual Studio

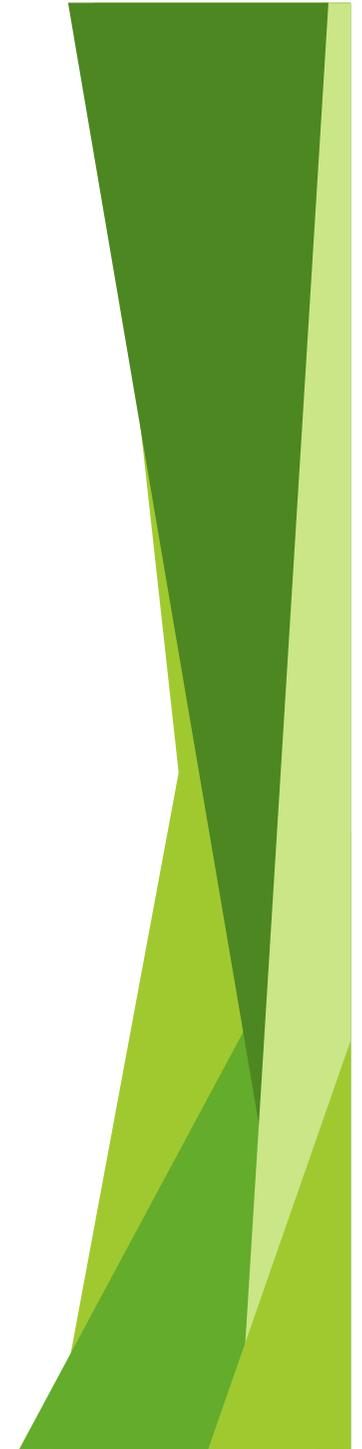


Eclipse



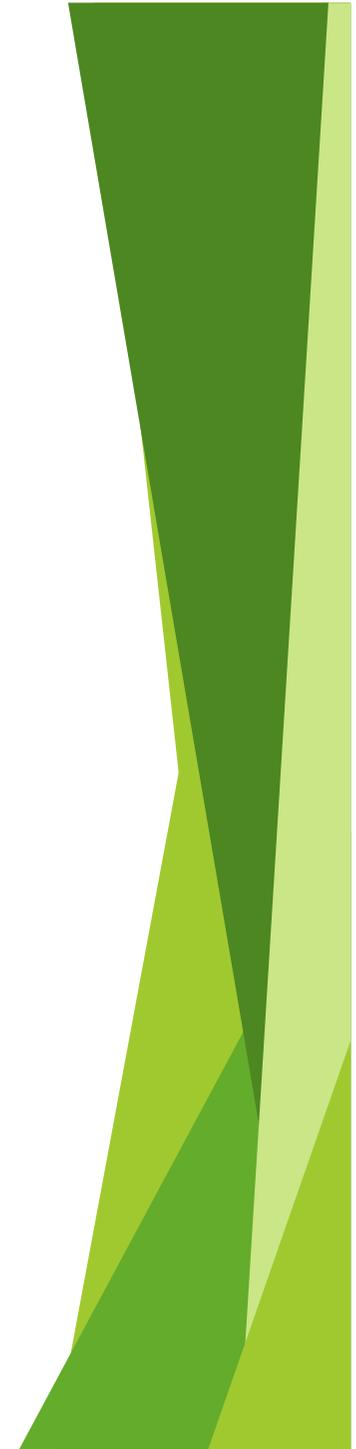
# Questions

- ▶ 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

