

Software and Licences

Lecture 3 - COMPSCI111/111G

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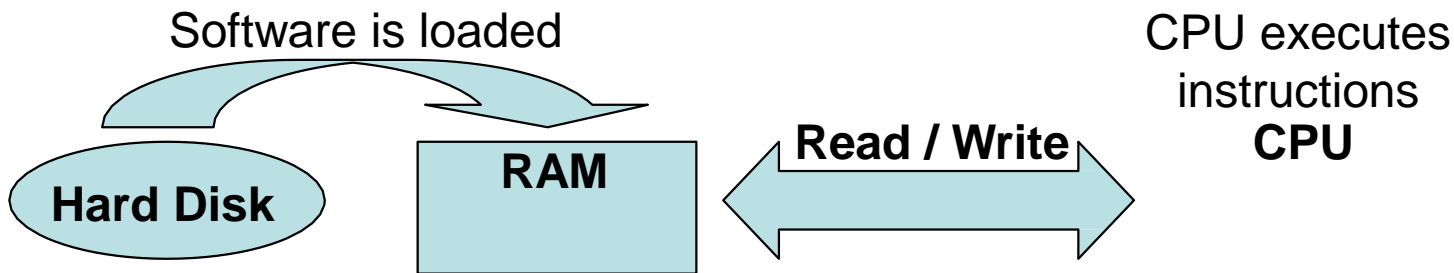


Today's lecture

- ▶ 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`{ÅÈéÉ/óÉÖoÅDC1K%v+îi^U"... DLET8 óèùP\ÿöóÿiöítE-NULà
10 [SUSçopE
@DLE+nü>Û,USŠ ŠrãÄú,,ás^í'ÿ'è]fEXC•ää8G™EOT*�&US>2*Äu7EOTáæèqgC#NUL*µÀ~Mn'[]
USbCANSOHÄ(M5³-0CAN`œr!
ðèF+†eò2,,äšSTX†#ÄpZâ5ESµ-]aD(<If^!0CùEOTnè*†CANÍ@6:NUL~žPiEQqÄ^7.†qDLEc
DC1c@nSUB ;¶xÄùCfù"ÛB1fDC2@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



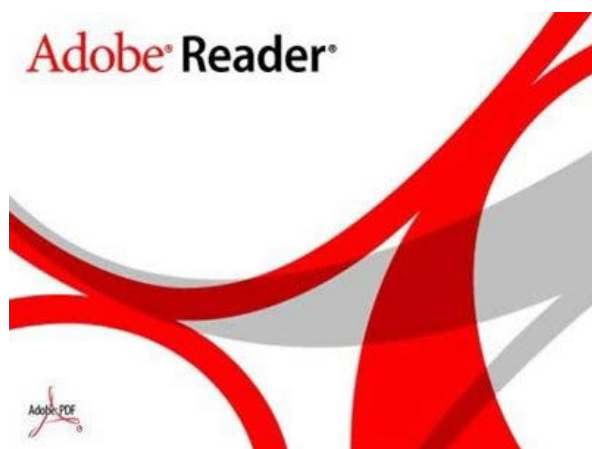
Proprietary software - shareware

- ▶ 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

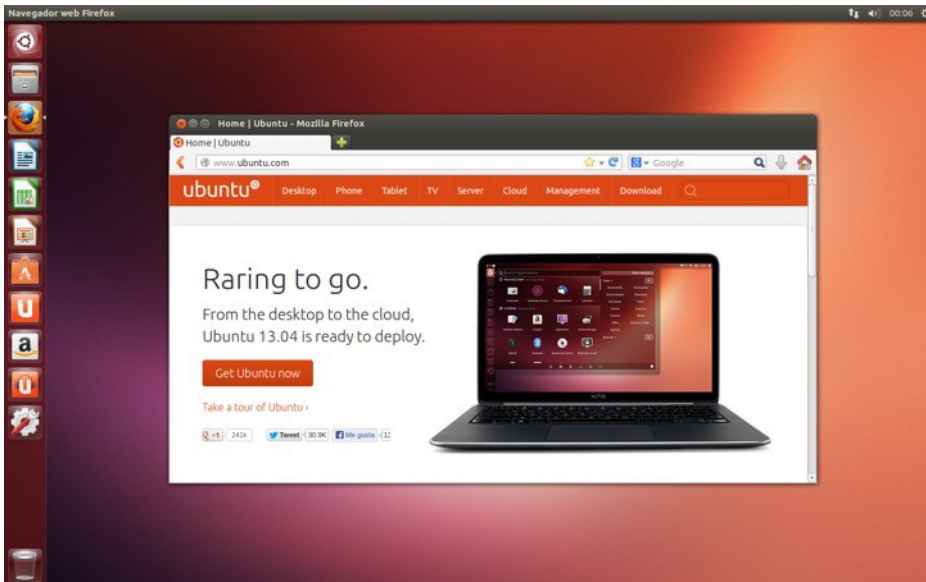


Open source software

- ▶ 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

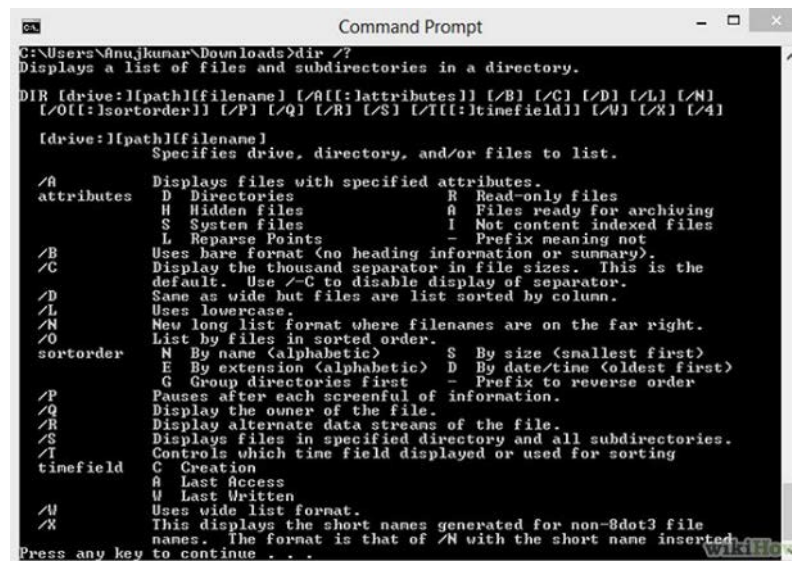


User interfaces

- ▶ 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
attributes    Displays files with specified 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
/C
              Uses bare format (no heading information or summary).
              Display the thousand separator in file sizes. This is the
              default. Use /C to disable display of separator.
/D
/L
/N
/O
              New long list format where filenames are on the far right.
              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
/Q
/R
/S
/T
timefield     C Creation
              A Last Access
              W Last Written
/W
/X
              Uses wide list format.
              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

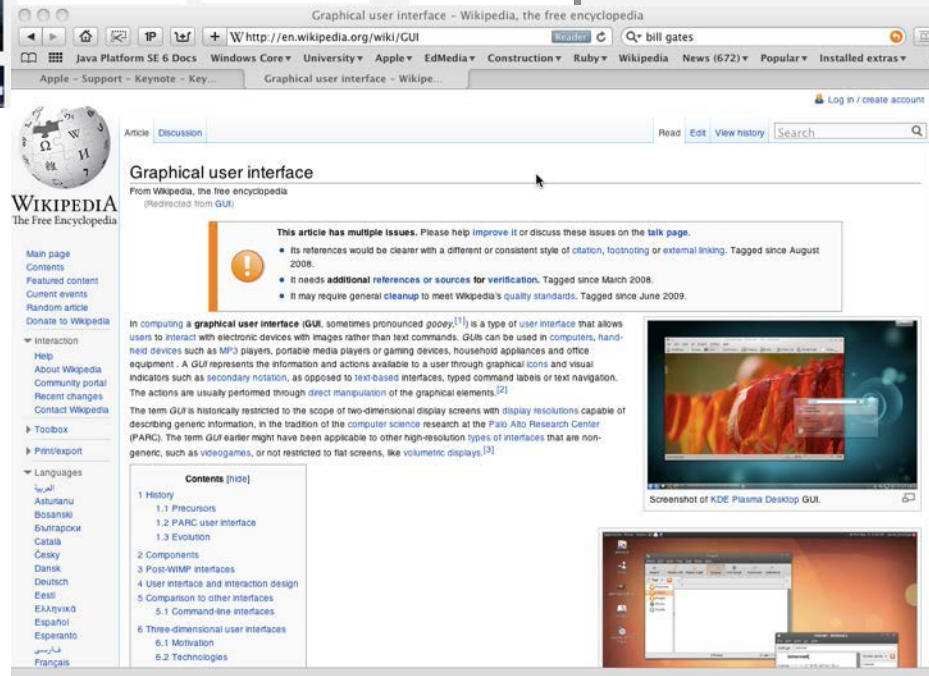
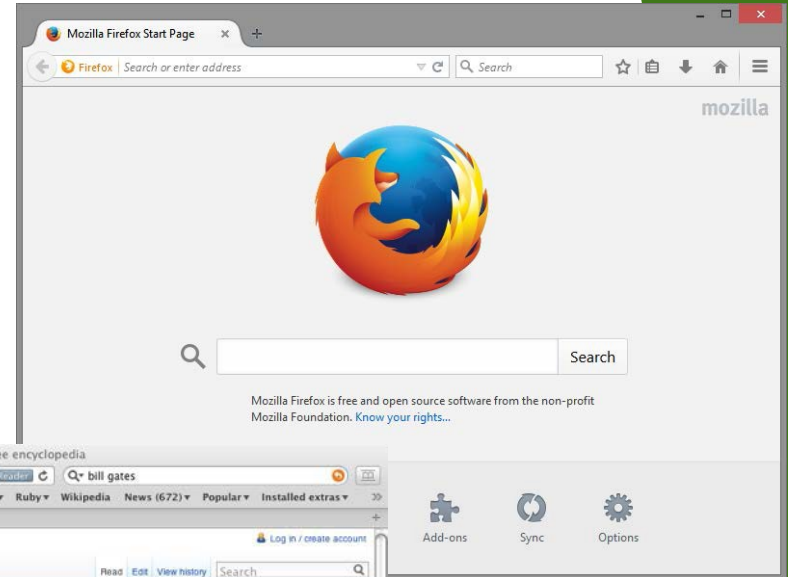
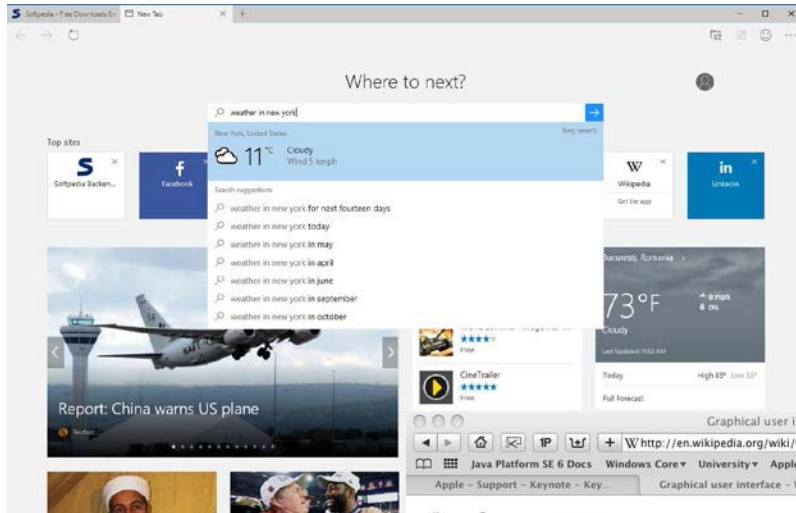
- ▶ User performs tasks using the software's graphical elements (eg. windows, pointers, icons, menus)
- ▶ Generally easy to use, especially for new users
- ▶ Can be inefficient for experienced users, but keyboard shortcuts help to make GUIs more efficient



Application software

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

Web browsers



Email clients

Microsoft Outlook Preview
Inbox - SaraD@contoso.com - Microsoft Outlook Preview

MAILBOXES
Inbox 1
Sent Items
Deleted Items 2
SARAD@CONTOSO.COM
Inbox 1
Drafts [3]
Sent Items
Deleted Items 2
Conversation History
Junk Email

SEARCH
Search Current Mailbox (Ctrl-E) | Current Mailbox

ALL UNREAD
By Date (Conversations) | Newest

TWO WEEKS AGO
Project Eagle
The team mailbox named 'Project Eagle' has ...
The 'Project Eagle' team mailbox has been ...
6/8/2012

THREE WEEKS AGO
Bonnie Kearney; Aziz Hassouneh; ...
Review Proposal for Tailspin Toys
Bonnie Kearney; Aziz Hassouneh; Sunil Up...
Which is the latest version of the Tailspin Toys
Katie Jordan
It looks pretty good; I added a few more things
Katie Jordan; Sunil Uppal
Thanks
Luka Abrus
I've seen this and am going to hold back on
Sunil Uppal
Yes, all, please note that a partnership with
Reina Cabatana; Janet Galore; Mol...
Company Soccer Team
It looks like we've decided on a date/time.
5/31/2012
Molly Dempsey
Lunch?
When: Occurs every Friday from 12:00 PM to
Aziz Hassouneh; Bonnie Kearney; ...
Come One, Come All
Could you all please remember not to reply all
5/31/2012
Reina Cabatana
Updated Budget for Tailspin Toys ...
6/31/2012

REPLY **REPLY ALL** **FORWARD**
Thu 5/31/2012 9:27 PM
Bonnie Kearney
RE: Review Proposal for Tailspin Toys
To: Aziz Hassouneh; Sunil Uppal; Molly Dempsey; Sara Davis; Katie Jordan; Tailspin Toys
Cc: Reina Cabatana; Luka Abrus; Legal Team; Executives

Which is the latest version of the Tailspin Toys proposal?
Thanks

From: Aziz Hassouneh
Sent: Thursday, May 31, 2012 8:26:46 PM
To: Sunil Uppal; Molly Dempsey; Sara Davis; Katie Jordan; Tailspin Toys
Cc: Reina Cabatana; Luka Abrus; Legal Team; Executives
Subject: RE: Review Proposal for Tailspin Toys

You're welcome!

From: Sunil Uppal
Sent: Thursday, May 31, 2012 5:31:46 PM
To: Aziz Hassouneh; Molly Dempsey; Sara Davis; Katie Jordan; Tailspin Toys
Cc: Reina Cabatana; Luka Abrus; Legal Team; Executives
Subject: RE: Review Proposal for Tailspin Toys

Thanks for reviewing!

Bonnie Kearney No Items

MAIL CALENDAR **PEOPLE** **TASKS** ...

ITEMS: 65 UNREAD: 1

ALL FOLDERS ARE UP TO DATE. CONNECTED TO MICROSOFT EXCHANGE 100%

Apple Mail
Inbox (8 messages)

MAILBOXES
Inbox
Sent
Trash
Junk
REMEMINDERS
Notes
To Do
On My Mac
Work
RSS
WORK
Archive
Civ kids
Committees
Conferences
CS and University admin useful
CS111 2011
CS215 2010
Drafts
Enrolment
Good Shepherd
Home
ICT Curriculum
Incredible Science
Library notices
receipts and replies
Research
Ruby-talk
Sabbatical
SERG stuff
Stage 1 coordination
student and other comments
supervision and references
Taylors College
CS340 SE370 2011
Junk

From: Jane Adams
Subject: TEU-academic! Fantastic turnout at union meeting
Date: 25 February 2011 9:36:42 PM NZDT
To: teu-academic@list.auckland.ac.nz
2 Attachments, 105 KB [Save] [Quick Look]

From: Clare Terwiel & Warren Pearson
Subject: re: how are you
Date: 22 February 2011 9:34 PM
From: Robert Shohan
Subject: To do list - work
Date: 17 February 2011 11:40 AM
From: Anna Jared
Subject: RE: Calfee Family Group in 2011
Date: 15 February 2011 9:29 PM
From: Gill Dobbie
Subject: FW: Teachers Professional Development ...
Date: 9 February 2011 8:52 AM
From: Robert Shohan
Subject: contact John and rosalee about dad
Date: 1 February 2011 8:00 PM
From: Robert Shohan
Subject: Possible Part IV project
Date: 31 December 2010 11:50 AM
From: Robert Shohan
Subject: Mum community services card client number 31...
Date: 18 July 2010 5:53 PM

A strong turnout today of TEU academic members, from all campuses, demonstrated their solidarity and determination to protect important terms and conditions of employment.

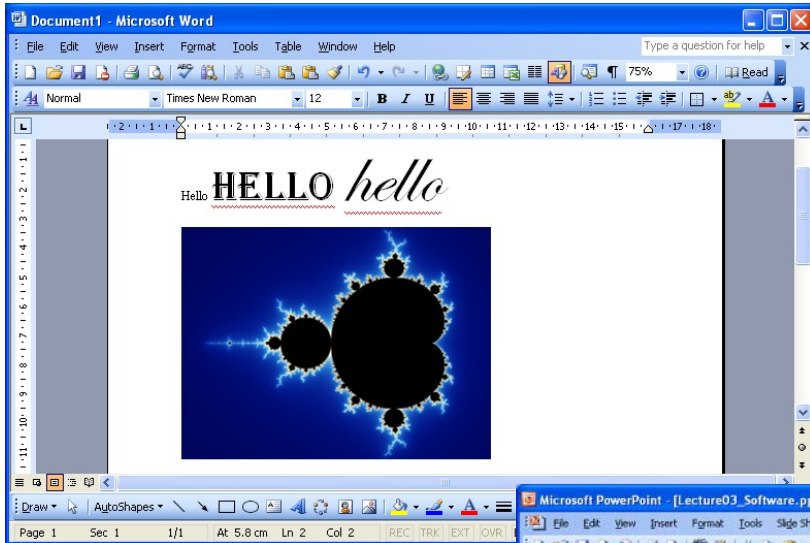
An industrial action ballot was held. If you have not yet voted, you can complete and return via email the ballot form you have been sent or use the one attached. Additionally, ballot stations will be set up on each campus for the next week, closing Friday. At the City campus a ballot station will be outside the library from 12-1pm each day. Tamaki, Epsom and Grafton members will be notified about their ballot stations shortly.

In solidarity,
Jane Adams
On behalf of TEU negotiation team
Organiser
Tertiary Education Union
C/- Fisher Bldg
18 Waterloo Quadrant
Level 4, Rm 417
Mob: 0274 387 254
Phone: +64 9 373-7599 x 85169
Email: jane.adams@teu.ac.nz
www.teu.ac.nz
Join TEU - because we are stronger together <http://teu.ac.nz/joinwhy-join-teu/>

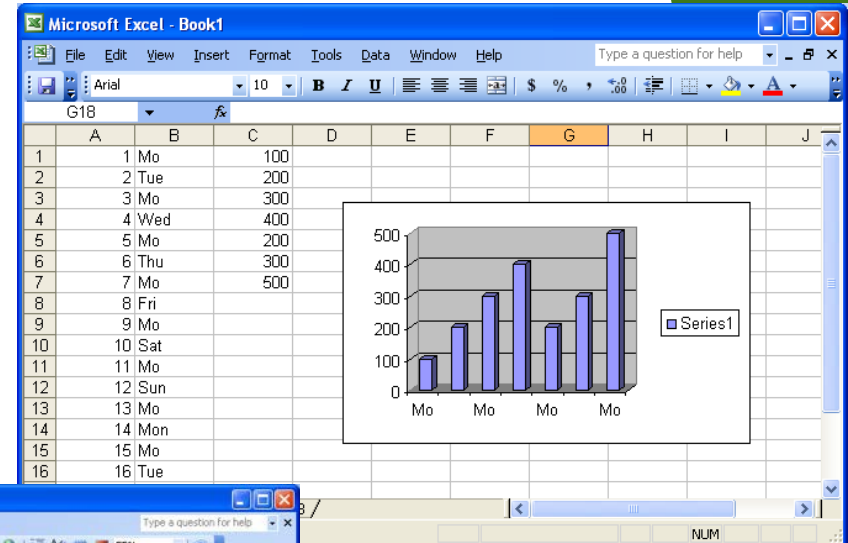
TERTIARY EDUCATION UNION
Te Hautū Kahurangi o Aotearoa

jane.adams@teu.ac.nz
Industrial.ac.nz (x62.9.83)
Teu-academic mailing list
Teu-academic@list.auckland.ac.nz
<https://list.auckland.ac.nz/mailman/listinfo/teu-academic>

Office software



Word

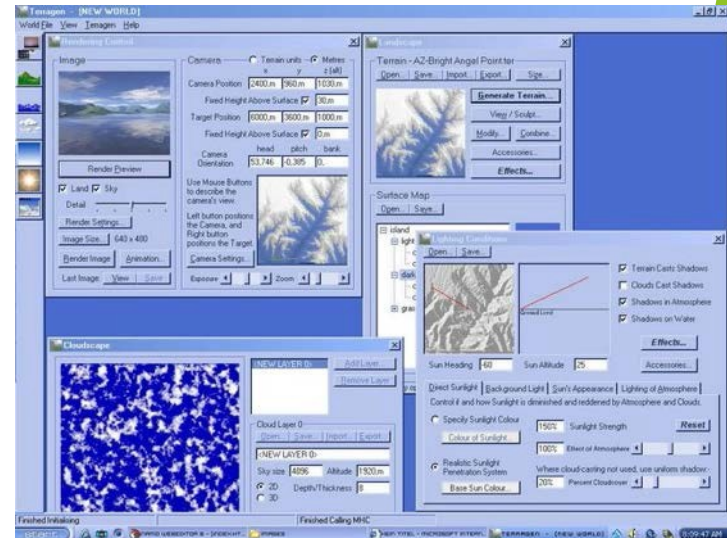
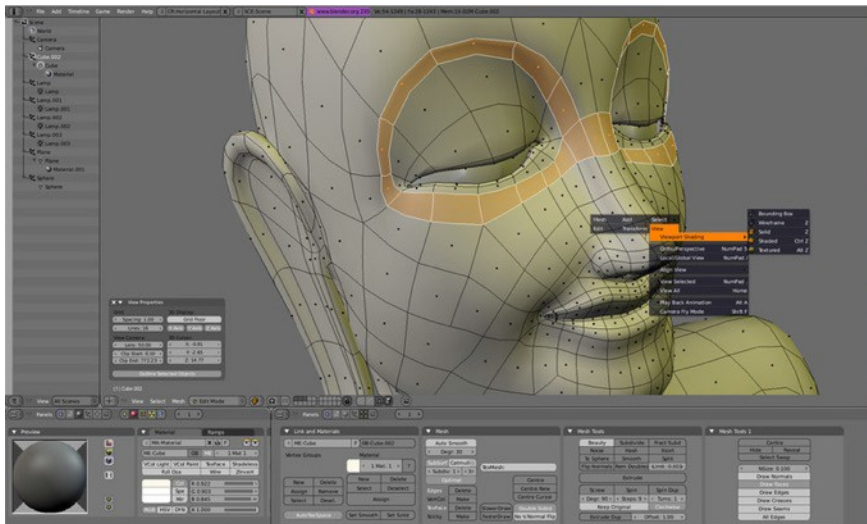
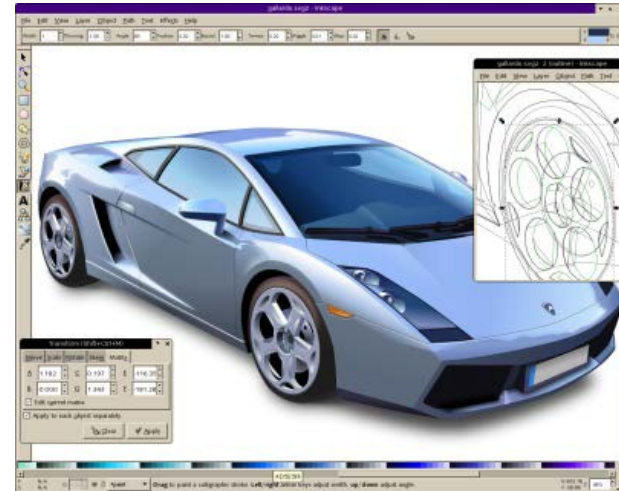


Excel

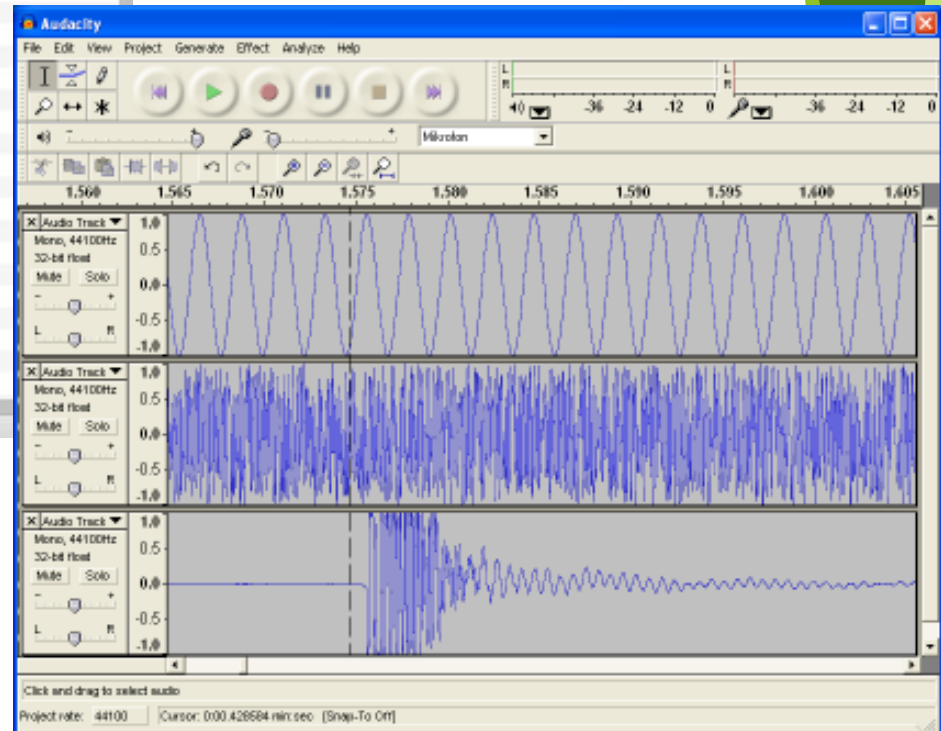
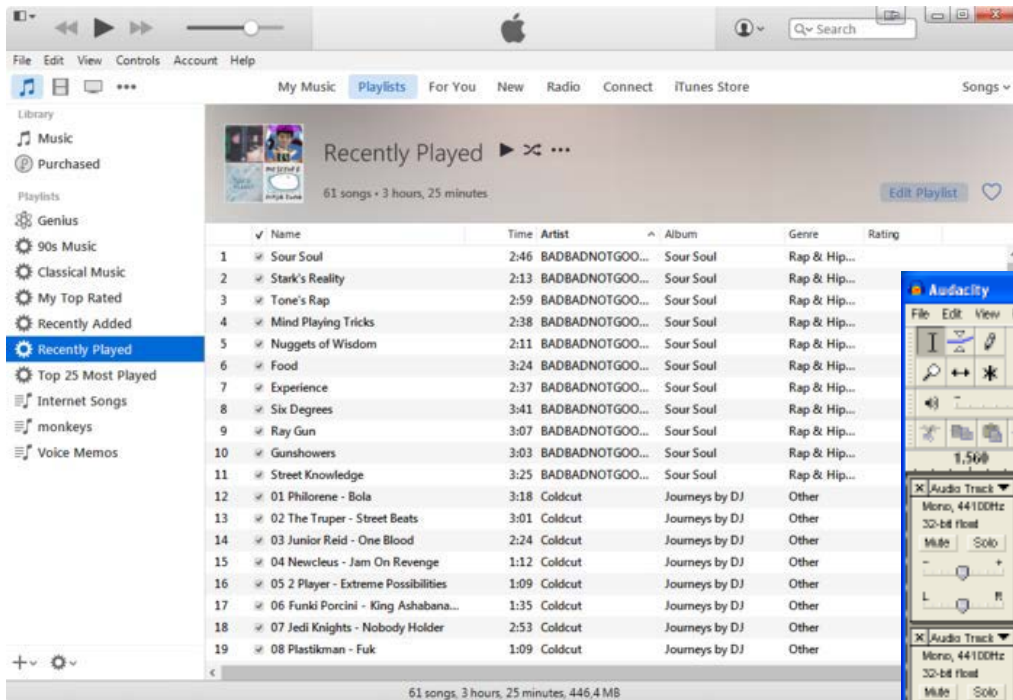


PowerPoint

Graphics software



Music software



Security software

The image displays two windows related to security software. The foreground window is Norton 360, showing a dashboard with four main sections: Security, Identity, Backup, and Tuneup, all marked as 'Protected' with green checkmarks. The background window is Sunbelt Personal Firewall 4, showing a list of applications and their firewall rules.

Norton 360 Dashboard:

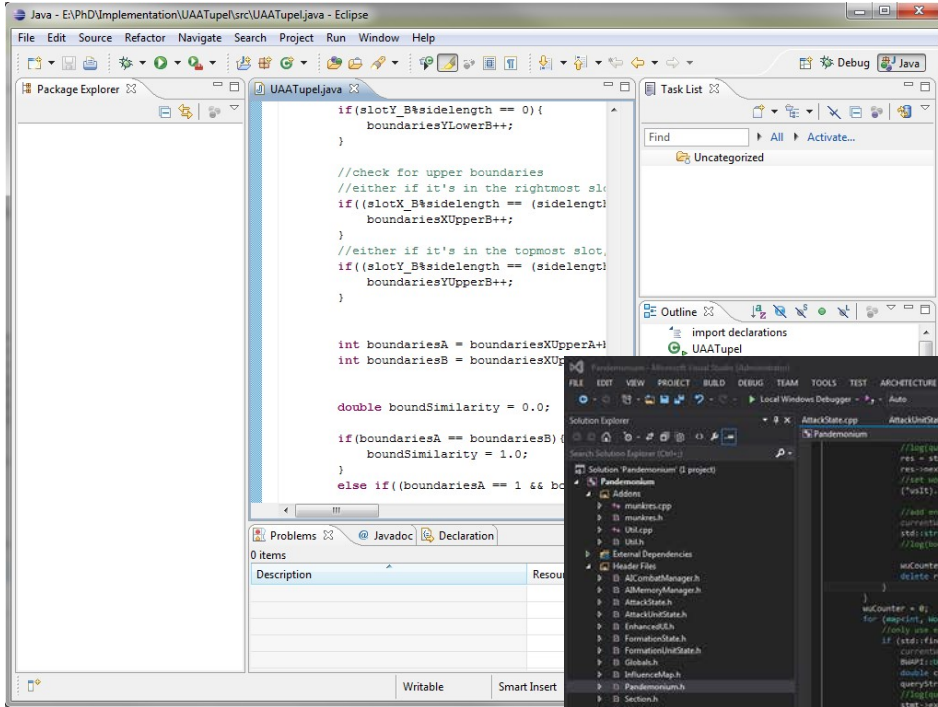
- Tasks
- Settings
- Performance
- Feedback
- Account
- Support
- Security: Protected ✓
- Identity: Protected ✓
- Backup: Protected ✓
- Tuneup: Protected ✓
- Manage
- Mobile
- Online Family
- Safe Web
- Subscription Status: 14 Days Remaining

Sunbelt Personal Firewall 4:

Enable Network security module:

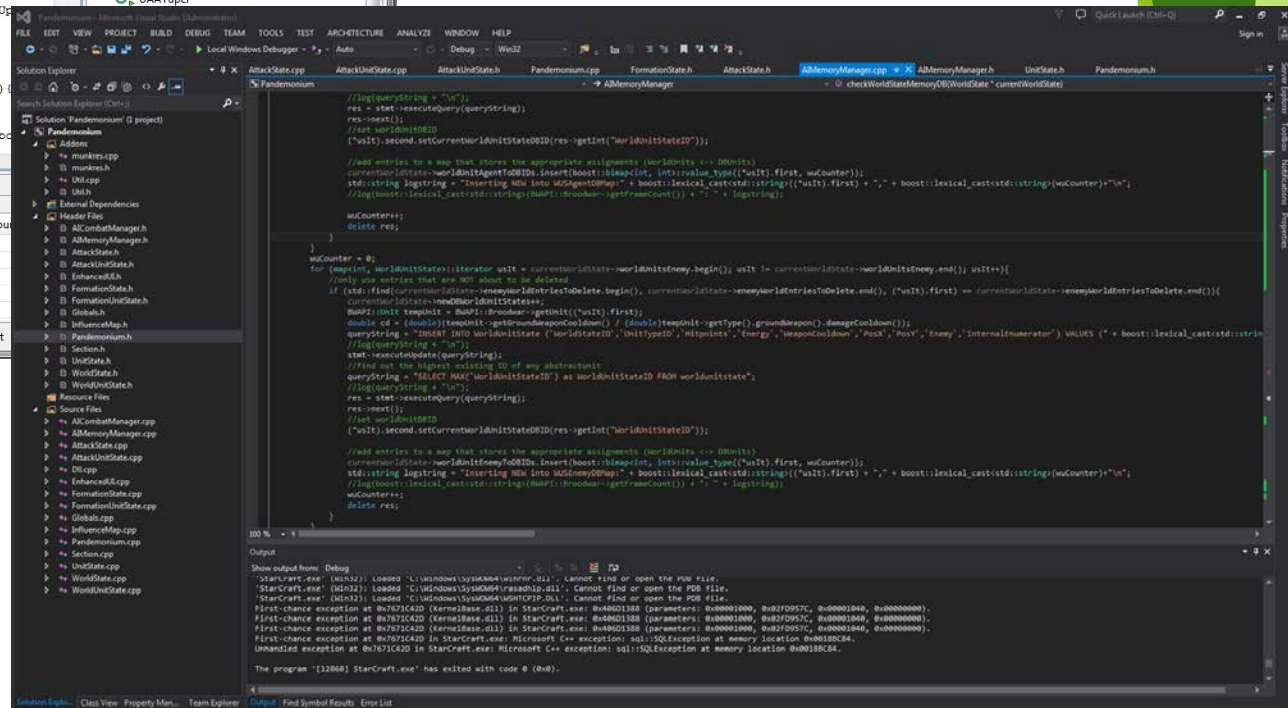
Description	Trusted		Internet		Log	Alert
	In	Out	In	Out		
LSA Shell (Export Version)	ask	✓ permit	? ask	? ask		
Windows NT-Anmeldung	ask	✓ permit	? ask	? ask		
Userinit-Anmeldeanwen...	ask	✓ permit	? ask	? ask		
Generic Host Process fo...	✓ permit	✓ permit	✗ deny	✓ permit		
Microsoft File and Printe...	✓ permit	✓ permit	✗ deny	✗ deny		
Firefox	✗ deny	✓ permit	✗ deny	✓ permit		
flamerobin	✗ deny	✓ permit	✗ deny	✓ permit		
TortoiseSVN client	? ask	✓ permit	✗ deny	✓ permit		
Mozilla Thunderbird	✗ deny	✓ permit	✗ deny	✓ permit		
Studio ...	? ask	✓ permit	✗ deny	✓ permit		
anager	? ask	? ask	✗ deny	✓ permit		
0	? ask	✗ deny	✗ deny	✗ deny		
e world...	? ask	? ask	✗ deny	✓ permit		
ent Ex...	? ask	✓ permit	✗ deny	✓ permit		
ncoder	? ask	? ask	✗ deny	✓ permit		
	? ask	✓ permit	✗ deny	✓ permit		
lient	? ask	? ask	✗ deny	✓ permit		
	? ask	✓ permit	✗ deny	? ask		

Software development tools



Eclipse

Visual Studio



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