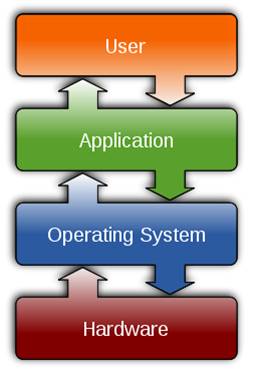
**Operating systems**

**What is an operating system?**

The operating system (OS) is the first thing loaded onto the computer. Without the operating system, a computer is useless as the operating system is the most important [program](http://www.webopedia.com/TERM/P/program.htm) that [runs](http://www.webopedia.com/TERM/R/run.htm) on a [computer](http://www.webopedia.com/TERM/C/computer.htm). It is the software that supports a computer's basic functions, such as scheduling tasks, controlling peripherals, managing files, providing peripherals etc. The operating system is also responsible for [security](http://www.webopedia.com/TERM/S/security.htm), ensuring that unauthorized users do not [access](http://www.webopedia.com/TERM/A/access.htm) the system. All desktop computers have operating systems. The most common are the Windows family of operating systems developed by [Microsoft](http://computer.howstuffworks.com/microsoft.htm), the Mac OS operating systems developed by Apple and the free alternative linux. The table is best explained by using the scenario of a user opening up a word document which is the application. The operating system will find the application and load it into ram using hardware such as cpu, the harddrive and graphics card.

**Examples of computer operating systems?**

**Microsoft Windows 7**

Microsoft Windows is the most commonly found and used operating system.

**Apple Mac OS**

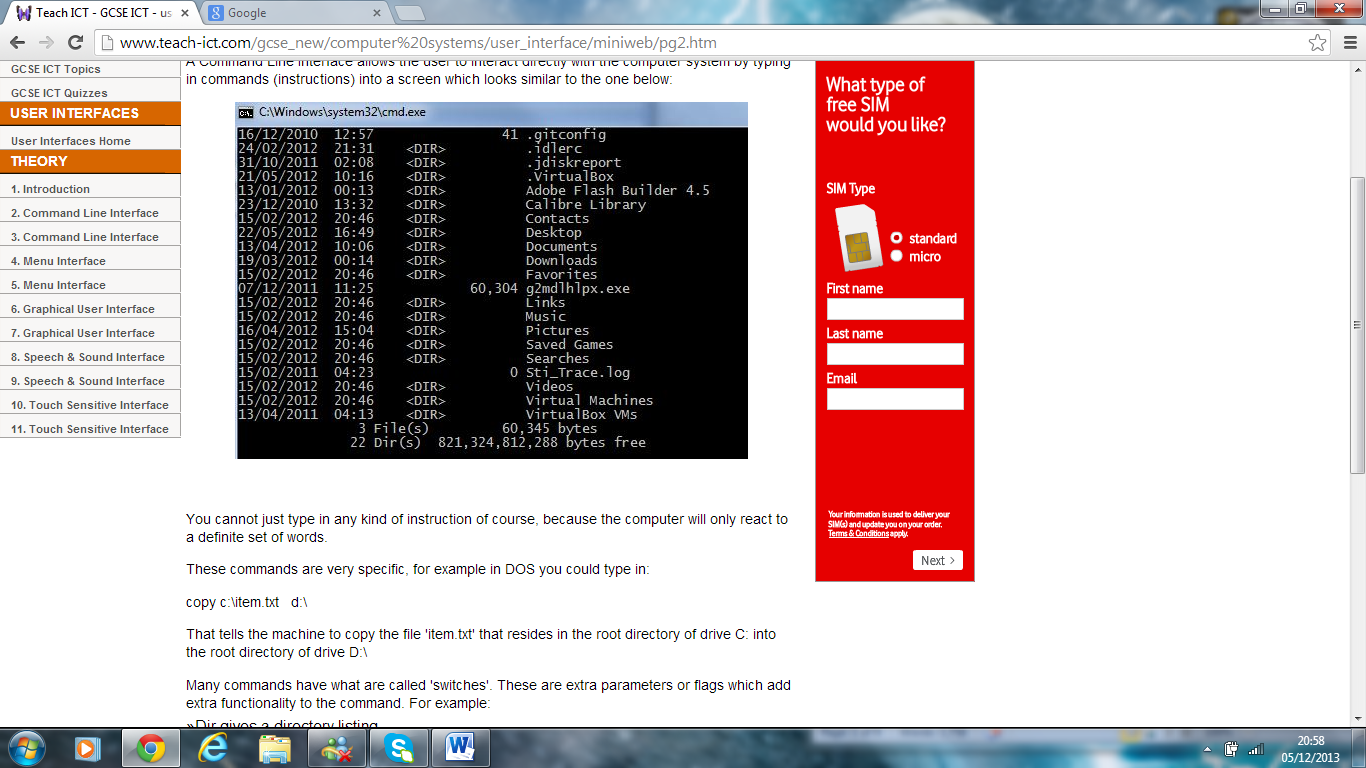
Is the only Apple computer operating system.

**Ubuntu Linux**

A popular variant of [Linux](http://www.computerhope.com/jargon/l/linux.htm) used with PC and IBM compatible computers.  
**Google Android**

Operating system used with [Android](http://www.computerhope.com/jargon/a/android.htm) compatible phones.  
**iOS**

Operating system used with the Apple [iPhone](http://www.computerhope.com/jargon/i/iphone.htm).



**Command line interface**

A command line interface allows the user to interact directly with the computer system by typing in commands. Each command is very particular and the computer will react specifically to the set of words of the command being typed in.

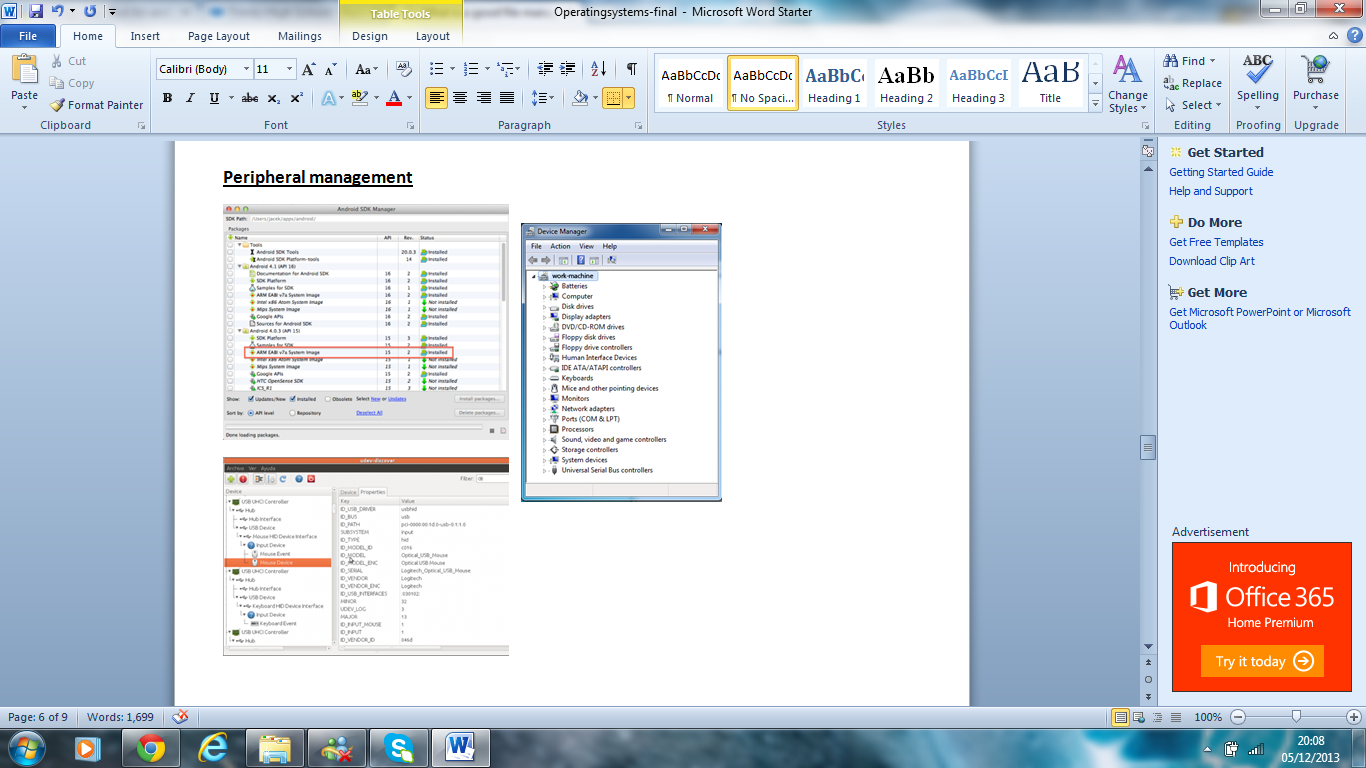
A command line interface is very fast in comparison to other user interface given the user knows the correct commands. This type of interface also needs much less memory (ram) and does not use as much CPU processing time. Another advantage is that a cheap low resolution, cheaper monitor can be used with this type of interface. The disadvantages of this type of interface are that to someone who has never used a CLI, it can be very confusing and difficult to use as commands have to be typed precisely else the command will fail. There are also a large amount commands to be learned in order to carry out everyday tasks.

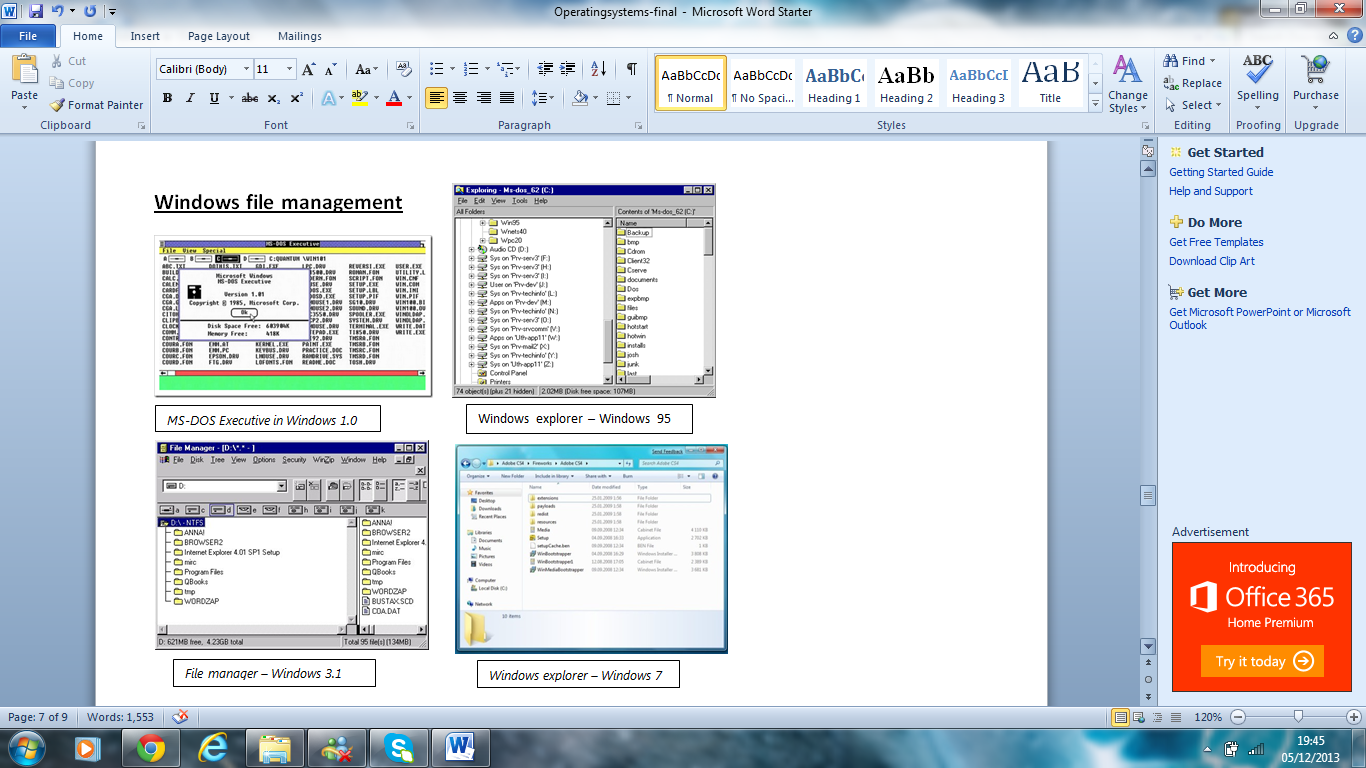
**Graphical User Interface**

A graphical user interface is the most common type of interface as it is very user friendly in comparison to CLI. It is an easy way for the user to interact with the computer because it makes use of graphics and icons.

An advantage of GUI is that this type of interface is easy to use as it is easy to navigate, explore and find your way around the computer system. It is especially for a beginner as you don’t have to learn commands. It also lets you exchange different data between different software applications. The disadvantages however are that it takes up a large amount of hard disk space than other interfaces, and it requires alot more RAM and CPU processing power.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Microsoft Windows** | **Apple Mac OS** | **Linux** |
| Peripheral management | He device manager allows users to view and control the hardware attached to the computer. When a piece of hardware isn’t working the task manager highlights the hardware for the use to resolve the problem for instance by updating drivers. For each device the user can enable or disable drivers, view technical properties, tell windows to ignore malfunctioning devices and supply drivers through downloading from windows or manufacturer website. | Device Manager is an [OS](http://www.webopedia.com/TERM/O/operating_system.htm) feature that lets you view and change the properties of all [devices](http://www.webopedia.com/TERM/D/device.htm) attached to your [computer](http://www.webopedia.com/TERM/C/computer.htm). It works in the same way as windows and highlights any conflicting software that may need driver updates or reinstalling. | Modern Linux systems are capable of identifying a hardware component which is plugged into an already-running system. Hot plugging (process of inserting devices into a running system) is achieved in a Linux distribution by a combination of three components:¬†**Udev, HAL, and Dbus.**  Udev is the device manager for the Linux 2.6 kernel that creates/removes device nodes. Udev runs in user space and the user can change device names using Udev rules. |
| security | **Microsoft Security Essentials** helps defend your computer against spyware, viruses, worms, Trojans, and other malicious software.  Microsoft Security Essentials includes:  Windows Firewall integration, Network inspection system, New improved protective engine  Windows has Different user accounts to allow several people to share a single computer to allow privacy as it restricts which files and programs users can access and what types of changes users can make to the computer. | Password Generator in Safari suggests strong passwords for your online accounts to make it impossible/harder for hackers to guess passwords and access private important information.  The anti-phishing technology in Safari can protect you from scams by detecting and highlighting these fraudulent websites to help the user to keep off them and provide awareness.  U can also control access to your Mac as the screen will lock after a period of inactivity.  Mac OS X Securely deletes outdated sensitive files with the Secure Empty Trash command.  Firewalls also prevent other machines from accessing services running on your Mac making your pc more secure. | Security has more flaws in comparison to windows and mac OS so recommends other security such as Norton antivirus to be installed but the security still allows different user accounts and has a built in firewall. |
| file management | Windows explorer is a file manager application and a navigation tool which provides a graphical user interface used for accessing files. It was first included with [Windows 95](http://en.wikipedia.org/wiki/Windows_95) as a replacement for [File Manager](http://en.wikipedia.org/wiki/File_Manager_(Windows)) which introduced new features and capabilities and progressed from being a simple file system navigation tool into a task-based file management system. Overtime file management has changed in appearance (as shown in screenshots) and in functionality. New adjustments have been added overtime to new window explorer updates to make it more engaging and user friendly.  Advancements from previous operating system include:  Windows 95  Single-click activation of icons in Windows Explorer, new virtual folders for Scheduled Tasks and Web Folders. folder  Windows 2000  Search capabilities were added, offering full-text searches of documents, and the option to search by date, size, and file type.  Windows XP  Microsoft introduced animated "Search Companions", gained the ability to burn CDs and DVD-RAM discs. Image viewing improvements include "Back" and "Previous" buttons to navigation through the pictures, and a pair of "Rotate" buttons also there is a 'Thumbnails' mode, which displays images in the folder.  Windows vista  allows users to find and organize their files in new ways, such as Stacks. Also improved filtering, sorting and grouping. The new Details pane, which displays information relating to the currently selected file or folder.  Windows 7  Certain folders in the navigation pane can be hidden to reduce clutter. Search Filter Suggestions such as recent documents, The "Documents", "Pictures" and "Music" buttons now link to the Libraries of the same name and links can be added to start up menu.  Windows 8  Renamed File Explorer, and introduces new features such as a redesigned interface incorporating a ribbon toolbar. | The Finder is the default file manager used on Mac OS and OS X operating systems. The finder allows you to virtually access everything on your mac , including applications, files, folders, documents and hard disks.  The file management also allows you to find files fast for instance by using the search field in the finder window. This field uses the Spotlight technology to scour the disk volume you select. Spotlight dynamically displays results in the Finder window and search suggestions will pop-up below the search field that match your criteria as you type.  **Developments in Finder**  Early versions of finder would not allow folders to be placed inside of folders and frustrated users due to slow speed of file copying. The finder would also shut down whenever another program was launched up until the finder 5.x due to single taking nature of mac os. Finder 6.0 and the new [MultiFinder](http://en.wikipedia.org/wiki/MultiFinder), which allowed [cooperative multitasking](http://en.wikipedia.org/wiki/Cooperative_multitasking). Finder 10.x was a complete re-write of the file manager due to it being poorly received by Macintosh users. Users witnessed changes such as a customizable toolbar, available updates, a local directory hierarchy and later on slideshow feature, a [Polished Metal](http://en.wikipedia.org/w/index.php?title=Polished_Metal&action=edit&redlink=1) look and the ability to find files via search engine. | One of must-have utilities on Linux desktop is file manager (or file browser). A file manager is software which provides a user interface to assist in the organisation of files. It helps users with their daily work in managing their files on a hard drive or other storage device.  If the user is not happy with the default file manager that comes with the Linux desktop, there are plenty of other file managers to choose from.  **Dolphin**  Transparent access to files, web sites and other resources via KIO (KDE Input/Output).  Support for undo/redo operations.  Tabbed user interface for different folders.  **Double Commander**  Support for unicode encoding.  Tabbed user interface for different folders.  Built-in file viewer for content in text and binary format.  Support for full text search in files.  **Xfe**  MS-Explorer like interface.  Built-in text viewer and editor, and image viewer.  Multi language support (17 languages).  Trash can for file removal  **Thunar**  Support for mouse gestures.  Customizable keyboard shortcuts.  Custom actions for removable media. |
| device drivers | Drivers come with windows in most cases or you can find them by going to windows update in control panel and checking for updates. Windows also provide updates if the device isn’t working. You can download specific drivers for specific peripherals if the driver does not install with the peripheral from the [Windows 7 Compatibility Centre](http://go.microsoft.com/fwlink/?LinkId=160679) website, which lists thousands of devices, and has direct links to driver downloads. | OS X users can find device drivers for their USB and FireWire to allow them to use peripheral devices. e.g. The [USB WebCam driver](http://www.ioexperts.com/usbwebcam.html) supports many WebCams from Logitech, Philips, AME, and others.  [Apple](http://en.wikipedia.org/wiki/Apple_Inc.) has an open-source framework for developing drivers on [Mac OS X](http://en.wikipedia.org/wiki/Mac_OS_X) called the [I/O Kit](http://en.wikipedia.org/wiki/I/O_Kit). | Contain loadable device drivers. The advantage of loadable device drivers is that they can be loaded only when necessary and then unloaded, thus saving memory. For instance most drivers will be installed only specific to the device inserting into the pc. |
| Customising | Display and readability:  Change screen resolution, enlarge parts of screen with magnifier, turn on high contrast and make the computer easier to see.  Personalise my changing wallpaper, task bar and mouse pointer. Also allows you to add gadgets such as slideshow, calendar, and clock ect to your home screen. | Comparatively speaking, OS X users can’t customize the interface of OS X as much as Windows. The general appearance of Mac os. remained mostly the same but you can personalize through changing the wallpaper. | You can customize linux through coding, and customize it specific to your needs. This however can be much more difficult than customizing on windows as it takes skill to learn remember and understand coding, however if you can use coding it may be the quicker option. |
| support for media | Windows media player allows you to watch videos and listen to music. Windows media player is software which comes with windows plays video or music, allows you to rip music from an audio CD and stream media to other devices and computers. Windows Media Player replaced an earlier application called [Media Player](http://en.wikipedia.org/wiki/Media_Player_(Microsoft)), adding features beyond simple video or audio playback and created a new user interface, visualizations and increased functionality.  **Support**  Video  .wm and .asf  .wmv  .avi  .dvr-ms  Picture  .jpeg and .jpeg  .tif and .tiff  .gif  .bmp  .wmf  .png  Music  .cda  .asx, .wm, .wma, and .wmx  .wav  .mp3 and .m3u | QuickTime technology makes it possible to watch video from your digital camera or mobile phone mobile phone on your Mac or PC. A media clip on a website on your Mac or PC.  **Video**  QuickTime Movie (.mov)  MPEG-4 (.mp4, .m4v)  MPEG-2 (OS X Lion or later)  MPEG-1  3GPP  3GPP2  AVCHD (OS X Mountain Lion or later)  AVI (Motion JPEG only)  DV  **Audio**  iTunes Audio (.m4a, .m4b, .m4p)  MP3  Core Audio (.caf)  AIFF  AU  SD2  WAV  SND  AMR | |  |  | | --- | --- | |  |  | |
| cost and support | cost for windows 7 - £129.95  cost for windows 8.1 pro - £189.99  There is a help and support section in windows which allows you to browse frequently asked questions and ask your own on Microsoft answers website or contact technical support for technical assistance. You can use windows remote assistance to let a friend access your computer and help you fix a problem. | Apple Mac OS X v10.6 Snow Leopard Operating System - £30  <http://support.apple.com/kb/ph6651>  support online | Linux is free |





File manager – Windows 3.1