This booklet is intended for use by students who are starting Information Software and Technology (IST) in year 9.

**Getting to know your computer**

In the computer room you will be using Macintosh eMac or iMac personal computers. These computers use the Unix-based Mac OS X operating system which is a little different to Windows XP which you may have used elsewhere.

You start up the eMac by pressing a round button on the right hand side, which takes you to the login screen.

You can not use a school computer unless you have been issued with a **username** and **password** by your teacher.

**Once you get your password you must not share it with other students.**

Enter both in the spaces on the login screen.
Once you have logged in you will be presented with a screen like this below.

Fig 3 The Macintosh Desktop showing the Dock at the bottom.

The bar at the bottom is called the **Dock** and contains icons which are shortcuts to programs which will run on your computer.

In Windows you call this software **Programs** and access it from the **Start** button.

Fig 4 Cascading programs menu in Windows.
On the Macintosh *Programs* are called *Applications* and if they are not showing in the Dock can be found in the Applications folder on the hard drive (Macintosh HD).

Fig 5 The folders inside the hard disk icon.

The left most icon in the Dock 📡 is called the **Finder**. This is the program that controls how your screen looks. It is similar to *Windows Explorer* in the way it helps you to manage your files. When you want to open your documents folder you must make the Finder active by clicking its icon.

This icon 🌐 opens Safari, Apple’s *web browser*. This icon 🌐 opens Firefox, another *web browser*. You will have to use Firefox to surf the Internet on the DET web services.

**Word Processing, Spreadsheet and Presentation**

*Appleworks* 🖹️ is Apple’s longstanding program which has a word processor, spreadsheet, database and excellent drawing and painting tools built in to the one package. The equivalent program in Windows is *Microsoft Works*.

*Microsoft Office* is a suite of programs designed specifically for Mac OS X and includes *Word* 🖨️ (word processor), *Excel* 📊 (spreadsheet), and *PowerPoint* 🎨 (presentation).

Most of these programs should be visible in your dock.

You can access your web mail using Firefox. (Hotmail has experienced difficulties in the past).

When you need to finish using an Application you must Quit it from the Application menu. Here is the quit command for AppleWorks. In Windows you just click the close box but on a Mac you must actually quit the application using this menu.

Fig 6 Quitting an application
A major difference between Windows and the Macintosh, apart from the number of buttons on the mouse, is where the menus are located. On a Mac they are almost always fixed at the top of the screen in the menu bar. In Windows they are usually located at the top of a window and move with the window.

The image below shows the Windows XP desktop with Word (in the background) and Internet Explorer (active) showing how the menus are attached to the actual windows. There is no menu bar at the top of the screen.

Fig 7 Menus are fixed at the top of each window on Windows.

Below is an image of a Macintosh desktop with similar Applications running. Notice how the menus for Safari are fixed at the top of the screen.

Fig 8 Menus are fixed at the top of the screen on a Mac
**Finishing your session.**

When your lesson finishes you **must** log out to protect your work. First make sure all you files have been saved and quit each application using the application menu and quit. If you don't quit the application, Log Out could fail, leaving your account open for other students to interfere with.

![Fig 9 Quitting Word](image)

Then use the Apple menu and Log Out. You can log out of your account, or, at the end of the day, shut down.

![Fig 10 The Apple Menu ... Log Out...or Shut Down](image)
Exercise 1.1 Starting up and shutting down

Starting up
A computer system consists of hardware and software. The hardware is the physical equipment such as the system box, monitor or mouse. Software (applications or programs) is the detailed instructions used to direct the hardware to perform a particular task. When starting up the computer the hardware needs to be turned on and special software called the operating system started.

Operating systems such as Mac OS X and Windows XP supervise and control the hardware. They are usually stored on a hard disk inside the system box and start automatically when the computer is turned on. Starting up the computer and the operating system is called booting the system.

Mouse operations
The mouse has become an essential tool for using the computer. It is moved over a flat surface and may have one or more buttons and a scrolling wheel. There are four basic mouse operations:

- **Point** - move the mouse pointer to the item of choice.
- **Click** - position the mouse over an item, and then press and release the mouse button.
- **Double-click** - position the mouse over an item, and press the mouse button twice in rapid succession.
- **Drag** - select an item and then press and hold down the mouse button while moving the mouse.

If you double-click a word in a text document it will be selected. Triple click results in the paragraph being selected. Holding the option or Alt key and triple clicking results in everything to the left of the cursor being selected. Holding the shift key and clicking once, then moving the cursor and clicking again selects everything between the mouse clicks. Holding the Command key ⌘ down and clicking allows you to make multiple, separate selections.

Shutting down and Standby mode
Shutting down is just as important as starting up. Do not simply turn the computer off at the power point. Save all your work and close all applications by using the Exit or Quit command. Second, close the operating system by selecting the Shut Down command.

Always close all the applications and log off when you are finished with the computer. This also protect files on the hard disk from being damaged.

<table>
<thead>
<tr>
<th>Literacy Activity</th>
<th>Computer Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Complete the following sentences</td>
<td>1. What operating system does your computer system use?</td>
</tr>
<tr>
<td>(a) Software is the detailed instructions used to direct the _________ to perform a particular task.</td>
<td>2. Tick the outcome box on completion</td>
</tr>
<tr>
<td>(b) the system involves starting up the computer and loading the operating system.</td>
<td>□ Locate the on/off switch</td>
</tr>
<tr>
<td>(c) Moving the mouse pointer to the item of choice is called _________.</td>
<td>□ Point to the start menu</td>
</tr>
<tr>
<td>2. Explain the difference between:</td>
<td>□ Start up the computer system</td>
</tr>
<tr>
<td>(a) Hardware and software</td>
<td>□ Click the start menu</td>
</tr>
<tr>
<td>(b) Clicking and dragging</td>
<td>□ Drag an icon on the desktop</td>
</tr>
<tr>
<td>3. Answer these questions</td>
<td>□ Double click an icon on the desktop</td>
</tr>
<tr>
<td>(a) What is an operating system?</td>
<td>□ Start a software application</td>
</tr>
<tr>
<td>(b) Which basic mouse operation involves moving an item?</td>
<td>□ Close all applications</td>
</tr>
<tr>
<td>(c) why would it be appropriate for a user to log off instead of turning off the computer?</td>
<td>□ Correctly shut down your computer.</td>
</tr>
</tbody>
</table>

**ICT Fact**
In 1984 Apple Macintosh introduced the first Personal Computer to use a Graphical User Interface (GUI). It provided users with a mouse.

©G. K. Powers Blueprint Education
Exercise 1.2

Find-A-Word Puzzle

Instructions: Find each word from the wordlist in the puzzle below. (Hint: 2 directions)

WORDLIST

COMPUTER  SYSTEM  HARDWARE  SOFTWARE
PHYSICAL  BOX  MONITOR  MOUSE
APPLICATIONS  PROGRAMS  OPERATING  MAC
SUPervise  tool  buttons  wheel
point  click  double  drag
triple  paragraph  command  key
cursor  standby

Crossword Wizard V4 © Rush Software

To be completed by: ..........................................................
Locating and Saving Files

When you save your work it is saved to your Documents folder on the **Locker file server**.

**Locker** is located in the library; so your files are transferred over the school's network.

Your files are located in your **Home** folder. You can open this from the **Go** menu.

![Fig 11 XServe file server](image)

**Your Home Folder contains:**

**Desktop Folder:** Any file placed in this folder will appear on your desktop.

**Documents Folder:** This is where you store all of the documents you create -- your personal files, i.e. email attachments, Word documents, etc.

**Library Folder:** This folder contains your computer preference files and other various system files, i.e. bookmarks, etc.

**Movies Folder:** This is where you can store any movies you create.

**Music Folder:** This is where you can store any music you download. iTunes will create a folder here.

**Pictures Folder:** This is where you can store any pictures you download. iPhoto will create a folder here.

**Public Folder:** Put files in here if you want to share them with others. Within this folder is another folder called Drop Box. Only you can see the contents of the Drop Box. Others can leave files for you here.

**Sites Folder:** This is where you can place files to create your own web site. It will only be visible within the school's **Intranet**... not over the outside Internet. You can see your files by typing the following into a browser.

```
http://www.wshs.lan/~username/
```
and substitute *username* with your own user name. The ~ symbol is called the **Tilde**.

From Wikipedia, the free encyclopedia.
The **tilde** (~) is a grapheme which has several uses, described below. The name of the character comes from Spanish, from the Latin titulus meaning a title or superscription, and is pronounced "TILL-duh" (IPA /ˈtɪldə/) or "TILL-day".

In **Unix**, the tilde indicates the current user's **home directory** (e.g., /home/username). When prepended to a particular username, it indicates that user's home directory (e.g., ~janedoe for the home directory of user janedoe, typically /home/janedoe).

Used in **URLs** on the **World Wide Web**, it often denotes a personal website on a Unix-based server. For example, http://www.widgets.com/~johndoe/ might be the personal web site of John Doe.

When you wish to save a file use **Save As...** from the File menu.

![Fig 15 The Save As... dialog box](image)

Click on the downwards triangle beside Desktop and the view will be expanded so you can find the folder you wish to save to. Always save your files in your Home folder. If it is a word processing document save it in Documents. Images can be saved in Pictures if you want to.

**Opening Files on the Server**

Your teachers may have files saved already on the Locker server. To get to these you need to open the Staff folder which should be showing on your desktop.

![Fig 16 The Staff Folder](image)

Double click on StaffFolder and then type f-o-r quickly to take you to the ForStudents folder.

![Fig 17 The ForStudents Folder](image)

Then type c-o-m to take you to the computingstudents folder.
Inside the *computingstudents* folder are lots of files. For example, in the IST Yr 9 folder is a Folder called Introduction which has a file called Proof Reading which is one of the exercises that follows.

**Views of the Files**

You can view the files as a list like this...

![Fig 19 Inside the computingstudents Folder](image1.png)

![Fig 20 The computingstudents Folder in a list or column view](image2.png)
or as **icons** like this ...

![Image of icon view]

**Fig 21** The computingstudents Folder in icon view

or as a **directory** or **columns** like this ...

![Image of directory view]

**Fig 22** The computingstudents Folder in directory view

This palette at the top of the window controls how your files appear.

![Diagram of Views palette]

**Fig 23** The Views palette.
Using the Mouse

The Apple mouse has only the one button.
So if you are used to a Windows mouse what can you do?

Fig 24 The Apple mouse.

The mouse used in Windows has more than one button.
This mouse has 4 buttons and a scroll wheel.
Button 1 is the usual click button. On the Apple mouse pressing down on the top of the mouse does the same thing.

Button 2 is the right click button and usually pop up contextual menus, like Properties in Windows.
On the Apple mouse, holding down the Control key whilst clicking achieves the same purpose in

Exercise 1.3

Use your internet browser, Safari or Firefox to go to Wikipedia http://en.wikipedia.org and enter computer mouse in the search field. Answer the following questions, typing up your answers in a word processor like AppleWorks or Microsoft Word.

1. Who invented the first mouse?
2. What is another name for a mouse?
3. What is a rodent?
4. What feature of this device resembles a mouse.
5. How did the Ball mouse differ to the early mouse?
6. The ball mouse was invented at Alto PARC. What else was invented there.
   Make up a table with 7 rows to summarise the inventions.
7. What does an optical mouse use to detect movement of the mouse?
8. List three advantages of an optical mouse over a conventional balled mouse.

To be completed by: ........................................................................................................................................
Crossword Puzzle

Instructions: Fill in each answer by answering the clues below.

Across Clues
1. What you see is what you get. (7)
2. The button which when clicked causes the active window to close. (8)
3. A series of coded software instructions to control the operation of a computer or other machine. (8)
4. An act of logging in to a computer system. (5)
5. A menu appearing below a menu title only while selected. (3)
6. When prepended to a particular username, it is a symbol that indicates that user's home directory. (5)
7. A button which serves as the central launching point for applications. (5)
8. A pointing device which enables the user to position the cursor on the screen. (5)
9. A computer operating system with a graphical user interface developed by Microsoft. (7)
10. A hypertext system that operates over the Internet. (3)

Down Clues
1. Any of the small, labeled, button-shaped areas upon which the user can click, as with a mouse, to choose an option. (8)
Crossword Puzzle

Instructions: Fill in each answer by answering the clues below. (Page 2)

Across Clues
14. The name of the server at Westfields which holds students files. (6)
17. The name of a product line and operating system platform manufactured by Apple Computer, Inc. (9)
22. An identification used by a person with access to a computer network. (8)
24. A web browser developed by Apple Computer. (6)
25. A collection of data, programs, etc., stored in a computer's memory or on a storage device under a single identifying name. (5)
26. The programs and other operating information used by a computer (8)
27. The default application program used on the Mac that is responsible for user-management of files, disks, network volumes and the launching of other applications. (6)
30. A place to hold any program or file in the operating system for quick access from the GUI. (4)
31. A word processor developed by Microsoft. (4)
33. A widely used multiuser operating system (4)
34. Information Technology. (2)

Down Clues
12. Choices and commands that are displayed on the screen and can be selected by the user. (4)
15. A secondary menu that appears while you are holding the cursor over an item on the primary menu. (9)
16. Central Processing Unit. (3)
18. An electronic device for storing and processing data (8)
19. The application of scientific knowledge for practical purposes (10)
20. Computing data which has been processed, stored, or transmitted by a computer (11)
21. A secret word or phrase that must be used to gain admission to something. (8)
23. The portion of a terminal or monitor upon which information is displayed (6)
28. An image, picture, or representation on the monitor used to signify a command. (4)
29. Department of Education and Training. (3)
31. Windows, icons, mouse and pulldown menus. (4)
32. To discontinue or put an end to a state or an activity. (4)

To be completed by: ..................................................................................................................
Exercise 1.5 Windows

Organising Windows
A Window is a rectangular frame that displays the contents of files, folders and programs. More than one window can be opened at the same time. Each window is stacked on top of the other. The active window is the highlighted window and all commands are performed on the active window. The title bar is the horizontal bar at the top of the window. The left side of the title bar contains the name of the file.

Special buttons in top-right corner of the title bar are used to rearrange windows.
- Minimise (\_\_\_) - reduces the window to a button on the taskbar. Click the button to reopen the window.
- Maximise (\_\_) - increases the window so that it can be viewed using the entire screen.
- Restore (\_\_\_) - returns the window to its previous size after it has been maximised.
- Close (\_\_\_) - closes a window or exits a program.

Windows that have not been maximized can be resized and moved on the screen.
- Resize - point to the border of the window until it turns into a double-headed arrow. Drag the borders to the required size.
- Move - drag the title bar to its new position.

Scrolling
Scrolling is the method of moving within a window if the contents do not fit the window. The document can be scrolled up, down, or sideways using the scroll bars. Scroll bars are located at the bottom and side of the window. Pressing the scroll bars provides the user with a scroll tip. It may show the current page or any information to help the user move through the document.

Literacy Activity
1. What am I?
   (a) Horizontal bar at the top of the window.
   (b) Button to exit a program
   (c) Located at the bottom and side of a window to allow movement within a window

2. Explain the difference between:
   (a) Minimise and maximise
   (b) Resizing and moving a window

3. Answer these questions
   (a) Where would you find the name of a file in a window?
   (b) What is the purpose of the restore button?
   (c) How to you resize a window?
   (d) What is scrolling?

Computer Activity
Tick the outcome box on completion.
- Start any application.
- Maximise the window.
- Restore the window to its original size.
- Minimise the window to the taskbar.
- Restore the window
- Resize the window so that it is smaller
- Move the window to a new position
- Start another two applications
- Restore down each application window
- Stack the three applications so that part of each window is visible.
- Change the active application.
- Start a Help window (Start menu)
- Restore the window until scroll bars appear.
- Scroll through the window
- Close all windows.

ICT Fact
The word ‘scrolling’ comes from the Anglo-French word escrowe meaning ‘to roll’.

© G. K. Powers Blueprint Education.

To be completed by: .................................................................
Storing your files
While people normally keep most of their work on their hard disk (at home), they will often want to save the same information onto another storage medium.

Have a good look at both the floppy disks and hard disks in the computer room.

**Why Save to a medium other than the hard disk?**

1. For a backup copy of our important work - in case the hard drive breaks down. This sometimes raises the issue of “which of my work is not important?”.

2. For confidential files - we can wipe them off the hard drive if lots of people use the computer.

3. For portability - we may want to work on several different computers, but print somewhere else, etc.

**Backing up** - is a very important part of computing - by Murphy’s Law, the only time the floppy disk is going to play up is when your only copy is on it, and you need it desperately now! Floppy disks are notoriously unreliable.

For this reason the Computing Faculty will no longer accept **ANY** projects or assignments on floppy disks. EVER.

Alternatives to floppy disks.
1. Recordable optical media ... CD-ROM and DVD-ROM
2. USB solid state memory drives ... thumb drives or flash drives.
3. Small files can be emailed to yourself and then opened at school

---

**Fig 26** 5 ¼ in, 3 ½ in floppy disks and a Zip disk
Exercise 1.6 Files and folders

File
A file is a collection of data that is recognised by a file name. It can be work you create on the computer, data file or an application. Files are opened, changed, deleted, saved, or sent to an output device such as a printer. File names consist of unique name followed by a period and file name extension. The file name extension indicates the type of information stored in a file. For example, the file name Story.doc, the file name extension is .doc, this indicates that the file is a word processing file.

Folders
Files are stored and organised into folders or directories. It is specified using an icon that looks like a paper folder. Windows creates special folders for a particular purpose such as My Computer to display information about your computer. A folder can hold both files and additional folders. An additional folder may contain another folder at another level. This structure of organisation using different levels is similar to a tree and its branches. It is called an hierarchical filing system.

Finding a file
Finding a file locates a file on your computer. There are thousands of files on the hard disk and it is useful to be able find a particular file. To find a file, right-click the Start button and press Search or Find. You are requested to enter information about the file. First make sure you are looking in the correct drive or folder. You can search using all or part of the file name or a word or phrase in the file.

Literacy Activity
1. Complete the following sentences
   (a) The file name _______ indicates the type of information stored in a file.
   (b) Files are stored and organised into _________
   (c) To find a file _______ the start button and press Search or Find.
2. Draw your family tree using the same structure as a hierarchical filing system.
3. Answer these questions.
   (a) What is a file?
   (b) Why is it important to search in the correct folder?
   (c) Describe the icon used for a folder.

ICT Tip
Windows Explorer provides a two-pane window, a folder list on the left and a file list on the right. Files and folders can be copied and moved by dragging them from one pane to another.

Computer Activity
1. Tick the outcome box on completion
   - Open My Computer folder
   - Double click the Local Disk (C):
   - Create a new folder and name it using your name. (File menu→New→Folder)
   - Copy this new folder (Select the folder→Edit menu→Copy)
   - Paste this new folder (Edit menu→Paste)
   - Copy any file into this folder.
   - Delete both folders (Select both folders→File menu→Delete)
   - View the properties of Local Drive (C:)
      (Select C: Drive→File menu→Properties)
2. What is the size of the local drive? How much of it has been used? How much is available?
3. Examine the structure of the local hard drive. How many folders are there? Is there a program file folder?

© G. K. Powers Blueprint Education.
Storage
Macintosh’s have not had floppy disk drives for many years and PC manufacturers are moving away from floppy disks as well.

The best storage solution for students is to buy one of the many different types of USB storage devices. Some even have music players built in to them, but beware of using music players in the class room.
Of course, it is your responsibility to look after your own work and your own property.

When you save your work at school it is saved to a hard disk on the Locker server, not on the actual computer that you are using. This means you can access your files from any computer in the school.

Disks and Memory
The smallest unit of measurement on a computer is a bit.

From Wikipedia, the free encyclopedia.
A bit refers to a digit in the binary numeral system (base 2). For example, the number 1001011 is 7 bits long. The unit is sometimes abbreviated to b.
Binary digits are almost always used as the basic unit of information storage and communication in digital computing and digital information theory.

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td>kilobit</td>
<td>kbit</td>
<td>$10^3$</td>
</tr>
<tr>
<td>megabit</td>
<td>Mbit</td>
<td>$10^6$</td>
</tr>
<tr>
<td>gigabit</td>
<td>Gbit</td>
<td>$10^9$</td>
</tr>
<tr>
<td>terabit</td>
<td>Tbit</td>
<td>$10^{12}$</td>
</tr>
<tr>
<td>petabit</td>
<td>Pbit</td>
<td>$10^{15}$</td>
</tr>
<tr>
<td>exabit</td>
<td>Ebit</td>
<td>$10^{18}$</td>
</tr>
<tr>
<td>zettabit</td>
<td>Zbit</td>
<td>$10^{21}$</td>
</tr>
<tr>
<td>yottabit</td>
<td>Ybit</td>
<td>$10^{24}$</td>
</tr>
</tbody>
</table>

Fig 28 Multiples of bits
A **byte** is a collection of bits of eight bits. Eight-bit bytes can represent 256 values (2^8 values, 0–255).

From Wikipedia, the free encyclopedia.

<table>
<thead>
<tr>
<th>Multiples of bytes</th>
<th>Decimal prefixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Symbol</td>
</tr>
<tr>
<td>kilobyte</td>
<td>kB</td>
</tr>
<tr>
<td>megabyte</td>
<td>MB</td>
</tr>
<tr>
<td>gigabyte</td>
<td>GB</td>
</tr>
<tr>
<td>terabyte</td>
<td>TB</td>
</tr>
<tr>
<td>petabyte</td>
<td>PB</td>
</tr>
<tr>
<td>exabyte</td>
<td>EB</td>
</tr>
<tr>
<td>zettabyte</td>
<td>ZB</td>
</tr>
<tr>
<td>yottabyte</td>
<td>YB</td>
</tr>
</tbody>
</table>

Fig 29 Multiples of bytes

Files are normally much bigger than bits in size so we use the byte or kilobyte to measure sizes.

The **byte** is the amount of memory it takes to represent one character on a disk. Since the byte is such a small unit of measurement (like the gram), we use a number of larger units -

- a kilobyte - is 1024 bytes and is abbreviated to k
- a megabyte - is 1024 kilobytes and is abbreviated to MB
- a gigabyte - is 1024 megabytes and is abbreviated to GB

A convenient rule of thumb is that a full page of writing in a text processor takes up from 4k to 12k.

**Byte** magazine was an influential microcomputer magazine in the late 1970s and throughout the 1980s, because of its wide-ranging editorial coverage. ....

**Byte** covered developments in the entire field of "small computers and software", and sometimes included in-depth features on other computing fields as well, such as supercomputers and high-reliability computing.

http://en.wikipedia.org/wiki/BYTE
Exercise 1.7

1. open the ForStudents and computingstudents folder on the staffFolder.

2. copy the file Proof Reading to your desktop and complete the exercise then Save it.

3. open Safari and go to Google.com.au and Images and search for a party hat about 400 by 400 pixels a bit like this one.

   4. Drag it to your desktop and then into your Proof Reading document.
   5. make sure the tools palette is showing in Appleworks. (See Fig 31) or Word.
   6. select the image and do ⌘ + x which will cut the image.
   7. select the arrow tool and then ⌘ + v which will paste the image back as a floating graphic.
   8. choose text wrap from the Options menu and select Regular.
   9. move the party hat into the middle of the text, Save when you get the best result.

To be completed by - ..............................................................

The arrow tool (highlighted) allows you to select and move images.

Fig 30 Below: The Text wrap dialog box.

Fig 31 The AppleWorks tool palette.
Exercise 1.8 - Trying out the Tools

1. Open AppleWorks or Word.
   (Click on the word processor in Appleworks.)
2. Click on the rectangle tool in the Tools palette
3. Draw a house - like the house –
4. You will need to use some of the other tool types to finish your house.
5. Group, Copy and Paste may be very useful to make the house - ask your teacher to demonstrate how to use them.
6. Filling objects with patterns or colours will also improve your house.

What's on the Desktop and How We See It

When we open the Hard Drive (or a folder or file), the window appears as it was left at its last use.
This means the window may be
- small to full screen,
- show all or little of what it contains,
- the contents may be shown in a number of forms, etc.

- so we must be able to adjust the window and what it should show us.

1. Adjustments for the Window - these include -

(a) Title Bar - along the top of the window
   - click and drag moves the window (left, right, up or down).

Fig 32 The Title Bar.

(b) The close button (red) closes the window but leaves the Application still running.
(c) the zoom Button (yellow) - window zooms into the dock. You must then click on its dock icon to bring it back again.
(d) the minimise/maximise button (green) resizes the window to fill the entire screen when clicked or reduces to the last size.
(e) Size handle - click and drag resizes the window from the lower right corner.

To be completed by - ........................................................
Files and Folders
Once you begin to produce documents, the number generally increases at quite a rate - and unless some organisation takes place, the location of a particular document soon becomes a real problem.

Tips for Organisation -

1. make the file names meaningful and not too long  e.g. History Year 9
2. avoid reserved characters like ~,. anywhere in your file name
3. combine similar documents into folders with meaningful folder names like
   - IST Topic 1
     - Images
   - Science stuff
4. Note - folders can go inside folders inside folders, etc.

Printing Out Your Documents

Once you have completed your documents, you will want to print some of them out - or produce a ‘hard copy’. Your teacher will want to mark these and you should retain the marked copies in a display folder.

Go to Page Setup … and check that A4 paper size is selected and that the Orientation is Portrait.

Check that your room’s printer is the one selected.

Your work should almost always be on a single page so set the page range from page 1 to page 1.
Exercise 1.9 Proof reading

Proof reading is the checking of one's written work - preferably before printing it out. There are several parts to proofreading, involving spell checking, tense and grammar checking as well as checking for correct meaning. To practise this complete BOTH of the following parts -

Part 1 - correct all errors in the following passage by underlining each error and writing it correctly in the space below the error -

Peter Jamieson had dreamed about spacecraft for years. He'd reading all sorts of books, watched films and checked on as many sightings of spacecraft as possible, but he'd never even been close to seeing one himself. Each evening he climbed the hill at the back of his house. There was a cleared space at the top which were used for spotting bushfries. He used sit there and dream about sighting a UFO.

Suddenly he felt rather sleepy and without meaning too he drifted into a comfortable doze. A loud whirring sound woke him. Looking up, he saw a row of bright lights which were constant flashing and changing colour. They came closer and he saw a long, silver object which was slowly revolting. It seemed to come closer and closer untill it was almost directly about him. He could feel its hot and some type of presence which he could not explain.

Part 2 - find the file named Proofreading in Computingstudents and -

• firstly use the spell checker to find all spelling errors
• carefully read through the passage and fix all tense and grammar errors
• carefully read the passage out loud to yourself to hear any errors, then save the corrected version, print it out and hand it in to your teacher

To be completed by - ..............................................................
Exercise 1.10

Complete the following for 10 sensible rules for the computer room by filling in the missing words -

1. Computers and keyboards should ............... be moved, as the cables will fall out.
2. School bags are to be left .............................................................., never on the desks.
3. Students are to sit on ......................... on all ............. legs at all times.
4. No F....................... or D........................ to be out or consumed in the computer room.
5. No S......................................... to be in the room without a T......................
6. Chairs are to be pushed under the ......................... at the time of leaving.
7. Inform the ........................................ if any problems arise.
8. Any desks or chairs moved during the period to be ......................... at the end.
9. All scrap paper to be put into the ..............................................................
10. When finished with the computer you select ........................ ..........................

Write down 2 other possible rules for our computer rooms -

1. ...........................................................................................................................
   ..................................................................................................................
2. ...........................................................................................................................
   ..................................................................................................................

To be completed by - ..............................................................

Word Processing

A word processor is software dedicated to storing, manipulating, and formatting text entered from a keyboard and providing a printout.

That is, the user is able to write letters, reports, assignments, articles, books, and do so quickly and efficiently. Software is a set of instructions that control the flow of data through a computer system - that is a program or application.

Advantages Of Word Processors

1. Ease of editing text
   (a) Mistakes can be corrected on screen before printing
   (b) Text can be easily moved
   (c) Commonly used text can be copied as needed
   (d) Text can be searched and replaced.
2. Variety or Print styles including
   (a) Normal print
(b) Italics  
(c) Enlarged print  
(d) Boldface print  
(e) Superscripts and subscripts.  
(f) Underlined print  
(g) Specialised fonts

3. Text can be stored on a disk  
   (a) Text can be retrieved as required  
   (b) Storage space is minimal  
   (c) Stored text can be transmitted to other word processors  
   (d) Stored text can be used to create mailing lists

**Programs for Word Processing**

The main software programs we use for word processing are - AppleWorks and Microsoft Word. AppleWorks has parts to allow the user to do word processing, databases, spreadsheets and graphics. MS Word has tools which integrate into MS Excel spreadsheet and MS PowerPoint presentations

**Exercises** - complete each of the following, using the instructions with each one -

**EXERCISE 1.11**

1. Start up a word processor.  
2. Copy the document 'Fixing Up' from Computingstudents into your folder  
3. Open the document  
4. Make all necessary corrections and tidy up the message contained in this document - then Save it with the name FIXED.  

To be completed by - ..............................................................

Word processors use *What You See Is What You Get - WYSIWYG* (pronounced wis-i-wig) so what is seen on the screen is exactly what you will get printed out.

**EXERCISE 1.12**

1. Obtain some newspapers and/or magazines (from home) which have examples of the following print styles -

<table>
<thead>
<tr>
<th>Italics</th>
<th>Enlarged print</th>
<th>Superscripts</th>
<th>Subscripts</th>
<th>Specialised fonts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>H₂O</td>
<td>$11.95</td>
<td>15° C</td>
</tr>
</tbody>
</table>

Paste them onto a sheet of cardboard or thick paper and label each one.  
2. Carefully examine the format of different newspapers and magazines, list any features they have in common.  
3. Explain the purpose in having different print styles.  
Hand in your answers on paper.

To be completed by - ..............................................................
Exercise 1.13 Aligning text

Alignment refers to the way text lines up. Alignment is either horizontal or vertical.

**Horizontal alignment**

*Horizontal alignment* is the way the text lines up between the left and right margin. There are four types of horizontal alignment: left-aligned, right-aligned, justified or centred.

- **Left-aligned** (or left-justified): text is perfectly aligned with the left margin. The left margin is straight and the right margin is uneven or ragged.

- **Right-aligned** (or right-justified): text is perfectly aligned with the right margin. The right margin is straight and the left margin is ragged.

- **Justified** (or fully-justified): text is aligned with both the left and right margins. Space is automatically added between words so that both margins are straight.

- **Centred**: text is aligned with an imaginary line down the middle of the page. Both the left and right margins are ragged. Centred text is often used for headings.

In general, it is easier to read documents that are aligned on the left-hand side, so left-aligned or justified should be used for body text. Headings are often left-aligned or centred.

**Vertical alignment**

*Vertical alignment* is the way the text lines up between the top and bottom margins. It may be aligned to the top, centre, justified or bottom. To change vertical alignment, select Page Setup from the File menu. Top alignment is the default setting.

**Literacy Activity**

1. Match the button on the formatting toolbar to the correct horizontal alignment.
2. Complete the following sentences.
   (a) Alignment refers to the way text ________
   (b) ________ text is perfectly aligned with the right margin.
   (c) Centred text is aligned with an ________ down the middle of the page.
3. What am I?
   (a) The way text lines up between the top and bottom margins.
   (b) Text that is aligned with both the left and right margins.
4. Answer these questions.
   (a) List four types of vertical alignment.
   (b) Which type of horizontal alignment adds space between the words?
   (c) Describe some of the basic design principles for horizontal alignment.

**Computer Activity**

Tick the outcome box on completion.
- Start a word processing program.
- Type the text in the screen dump.
- Align the first paragraph left.
- Align the second paragraph right.
- Justify the third paragraph.
- Centre the fourth paragraph.
- Save the file by naming it ‘alignment’.
- Make four copies of this file.
- Vertically align the first copy to the top.
- Vertically align the second copy to the bottom.
- Vertically align the third copy to centre.
- Vertically align the fourth copy to justified.

**ICT Fact**

The word ‘alignment’ comes from the French word aligner meaning ‘into line’.

© G. K. Powers Blueprint Education.

To be completed by - .........................................................
Exercise 1.14

The following seven activities are to be done in a word processor like Microsoft Word. You should complete all 7 activities unless your teacher specifies another choice, say complete any three activities.

Word List.
publishing, dictionary, drop cap, edit, find, find and replace, font, footer, format, grammar checker, hard return, header, highlight, hyphenation, insertion, insertion point, italics, justification, leading, line, lower case, mail merge, margins, mono spaced, orphans, page, page break, section break, pagination, paging, paragraph, paste, proportional, ruler, sans serif, screen display, scroll bars, scrolling, search, sentence case, serif, soft return, spell check, string, stroke weight, styles, tab, table, text editor, text insertion, text deletion, thesaurus, title case, toggle case, tool palette, toolbars, typeface, typeover, underline, undo, upper case, white space, widows, window word, word processor, WYSIWYG.

Complete the following tasks.

1. Find-a-word

On the left is a Find-a-word. It was created using a mono-spaced font such as Courier. A mono-spaced font uses the same amount of space for each character. If you do not use such a font the letters will not form neat columns.

Use words from the box above to create your own find-a-word. Remember to use a mono-spaced font and to put a space between each letter. Put in extra letters to separate your words.

In real find-a-words, words can run vertically too!

Put your name in the header, and print out one copy and give it to someone else in the class to solve.

Collect it back and submit it to your teacher for marking.
2. **Shape poem.**

A shape poem is written to take on a particular shape.

Create your own shape poem or a piece of prose (creative writing).

Start by writing a passage in a word processor. Format it into shape by centring the text and inserting *paragraph breaks* where appropriate.

Place your name in the header and save it. Print it out for marking.

A shape poem is written to take on a particular shape.

Create your own shape poem or a piece of prose (creative writing).

Start by writing a passage in a word processor. Format it into shape by centring the text and inserting *paragraph breaks* where appropriate.

Place your name in the header and save it. Print it out for marking.

```
Trees
I think that I
shall never see
A poem lovely as a tree.
A tree whose hungry mouth is prest
Against the earth’s sweet flowing breast;
A tree that looks at God all day, And lifts
her leafy arms to pray; A tree that may in Summer wear
A nest of robins in her hair; Upon whose bosom snow has lain;
Who intimately lives with rain. Poems are made by fools like me
But only
God can
make a tree.
Alfred Joyce Kilmer, American Poet 1886-1918
```

3. **Scene from a play.**

Create an original scene for a play using your word processor.

Notice the way the CHARACTERS are indented. These are called *hanging indents* and can be set in the paragraph properties (Format, Paragraph... in Microsoft Word).

Do not use the space bar to create the alignment of words.

```
Macbeth
by William Shakespeare

ACT I - SCENE I
A desert place. Thunder and lightning.

Enter three Witches.
FIRST WITCH: When shall we three meet again?
SECOND WITCH: In thunder, lightning, or in rain?
THIRD WITCH: When the hurlyburly’s done,
FIRST WITCH: When the battle’s lost and won.
SECOND WITCH: That will be ere the set of sun.
FIRST WITCH: Where the place?
SECOND WITCH: Upon the heath.
THIRD WITCH: There to meet with Macbeth.
FIRST WITCH: There, Grizel, and, Alaric.
SECOND WITCH: Paddock calls.
THIRD WITCH: Anon!
ALL: Fair is foul, and foul is fair.
Exeunt.
```

Fig 34 Alternatively Insert a two column table.

Do not use the space bar to create the alignment of words.
4. **Create a CLOZE passage.**

Complete the following sentences.

1. ________________ is defined as the creation, editing, formatting, storing and printing of a text-based document.

2. A word processing system includes the ________ and ________ used for the purpose of word processing.

3. ________ word processing systems could do only word processing and nothing else.

4. A feature of graphical user interfaces called __________ allows the user to see exactly how the document will be printed.

5. The computer screen acts as a __________ on the document.

A Cloze passage is like normal text with some words deleted and replaced by underscore characters. Underline characters are obtained with Shift dash the character between the number zero and the equals sign on the keyboard.

Create a cloze passage where the user must insert words from a list like the one on the first page. Your theme could be “using a word processor to do interesting things”.

5. **Create an Eye chart.**

The eye chart on the left is used to test people’s vision, especially when going for a car drivers licence.

Create your own chart. You will need to test out different font faces and font sizes.

Should you use a serif or a sans serif font?

---

**Fig 35 Eye chart**

The familiar eye chart, reproduced here at one fifth its actual size, was devised by Dutch ophthalmologist Herman Snellen in 1862 and is still the most common means of testing distance acuity. The subject stands 20 feet from the chart and reads as many letters as he can. If he can correctly read all the letters in the first eight lines, his distance acuity is considered normal; or 20/20. If he can read more than eight lines, he has exceptional acuity, less than eight may indicate a need for eyeglasses. For an informal acuity test, prop this page and measure off 20 feet. From that distance, a person with 20/20 vision should be able to read the two letters of line 2.
6. Favourite Fonts

Create a sheet of your favourite fonts like the one below. In any one document you should not use more than two or three different fonts. Headers should be done with a sans serif font. Body text should be done with a serif font.

7. Recipe format

Find out for Homework what is involved in the format of recipes. Each book, from Women’s Weekly to Stephanie Alexander or Jamie Oliver “The Naked Chef”, use particular formats to entice the reader into trying out the recipe.

Find out the recipe for your favourite dish, or one of these …

- Moussaka (Greek)
- Lasagne (Italian)
- Kebabs (Lebanese)
- Peking Duck (Chinese)
- Pavlova (Australian)
- Pancakes or Flat jacks (American)
- Clam Chowder (American)
- Sang Choy Bow (Hong Kong)
- Chilli Con Carne (Mexican)
- Paella (Spain)
- White Bread - all over the world
- Pizza (Italian)
- Christmas Pudding (England)
- Icky Sticky Pudding … yum, yum

Ideas from Consuming Passions ABC TV. Ian Parmeter. 1994 …
Ergonomics

Ergonomics is the relationship between humans and their working environment. When a computer is being used, consideration should be given to these areas -

1. The body posture in the seat
2. The position of the hands over the keyboard.
3. The height of the screen relative to the eye level.
4. The background lighting.
5. Rest breaks to prevent hand and forearm injury.

Attention to each of the above can make your work on the computer more pleasant and less tiring. The computer user should sit up straight, with the elbows close to the body and the forearms horizontal, while feet are flat on the floor. The monitor should be slightly lower than horizontal and be able to be tilted upwards. Hands should be flexed occasionally and breaks taken away from the computer every hour.

Go to Yale University's website to learn more about computer workstation ergonomics.

Fig 36 Computer workstation ergonomics.

Fig 37 Word Processor
Exercise 1.15 Ergonomics

Ergonomics refers to the relationship between people and their work environment. The incorrect use of computers can cause health problems such as eyestrain, headaches, backaches, fatigue, muscle pain and repetitive strain injury (RSI)

- **Desk height** must be between 660 mm and 680 mm for a fixed desk. The depth of the desk should be 900 mm with at least 30 mm for the wrists between the front edge of the desk and the keyboard. This reduces the strain on the forearms when typing.
- **Chairs** must have an adjustable seat height that ranges from 370 to 520 mm from the floor. An adjustable backrest must be between 170 to 250 mm above the seat and fit snugly into the small of the back. The seat should be flat, well padded, and slanted slightly backwards. This forces the user to lean against the backrest and maintain good posture.
- **Screen** should be about an arm's length away with the user looking down on the screen. It should also be between 15 and 30 degrees below the eye level and adjusted so that it is at right angles to the line of sight. Adjustments of angle, brightness, and contrast should be possible, to cater for individual differences.
- **Keyboard** must be detachable and positioned so that the forearms are parallel to the floor. The angle of the keyboard relative to the desk should be between 5 and 18 degrees.
- **Mouse** must fit the hand and be easily moved. The button should require a minimum of pressure.

1. The top edge of the screen should be between 15 and 30 degrees below eye level.
2. Keep your elbows level with the keyboard and ensure your wrists remain straight at all times.
3. Do not lean forward or slouch in your chair. Shift positions often and stand up to stretch at least once an hour.
4. Use a fully adjustable chair that provides support for your lower back. Contoured chair seats relieve pressure on the legs.
5. To reduce eye strain focus on a distant object, then focus on a close object.
6. Make sure your feet are flat on the floor or use a foot rest

Literacy Activity
1. True or false
   (a) The incorrect use of computers causes health problems.
   (b) A screen should be less than an arm’s length away from the user.
2. What are the advantages to the computer user?
   (a) Adjustable chair.
   (b) Flat and well padded seat is slanted slightly backwards.
   (c) Detachable keyboard.
3. Draw a rough sketch of your computer to illustrate the relationship between the desk, chair, screen, keyboard and mouse. Is it providing the most ergonomic environment?
4. How does your computer rate on ergonomic requirements? Rate the desk, chair, screen, keyboard and mouse (scale of 1 to 5).

Computer Activity
1. Tick the outcome box on completion
   - Access the screen controls.
   - Change the brightness, contrast and colour.
   - Ensure the screen is correctly positioned.
   - Ensure the screen is between 15 and 30 degrees below the eye level.
2. List the changes to the mouse that can be made using the control panel. How can these changes benefit the user?
3. List the ergonomic features of your keyboard? Make any adjustments to your keyboard to ensure its correct use.

ICT Research
Carpal tunnel syndrome (CTS) and tenosynovitis are two common forms of repetitive strain injury (RSI). Describe their symptoms and possible causes.

© G. K. Powers Blueprint Education.
Exercise 1.16  Creating A Document

Word processing
A word processor is an application that allows the user to enter characters and create documents. It is used to write letters, reports, assignments, articles or books. They carry out these tasks quickly and efficiently. Word processors have the following advantages over other methods of writing:

- Editing – making changes to the words in the document such as deleting text and checking the spelling.
- Formatting – making changes to the appearance of a document such as choosing a different font.
- Ease of storage – text is stored and retrieved as required.

Word wrap is an important feature of a word processor. It automatically moves text to the next line when a line is full. There is no need to press the ‘Enter’ key at the end of every line. This is very useful if the document is edited or reformatted. For example, if you change the margins in a document, word wrap will automatically ‘reflow’ the text to the new line length. The ‘Enter’ or ‘Return’ key should be used at the end of a paragraph. When the ‘Enter’ key is pressed, a special non-printing symbol such as the ¶ character appears, and the cursor moves to the start of the next line. The ¶ character is called a paragraph marker.

Viewing a document
Most word processors allow different views of a page.

- Normal view – recommended for entering and editing text. It hides complex page formatting, headers, footers, graphics and backgrounds. Normal view uses the least amount of memory.
- Web layout view – displays a document as it would appear in a web browser. It displays backgrounds and the text is wrapped to fit the window.
- Print layout view – displays the document as it would be printed. It displays headers, footers, graphics, margins and drawn objects.
- Outline view – allows the user to organise the document by moving text.
- Page view (100%) - displays a document as a percentage of its size.

Word-processing
A word processor offers a range of features to make writing easier, better and more enjoyable. Some of the more common features are described below.

Literacy Activity
1. Complete the following sentences.
   (a) _______ makes changes to the appearance of a document.
   (b) The _______ character is called a paragraph marker.
   (c) Outline view allows the user to organise the document by _______.

2. True or false.
   (a) Wordwrap automatically moves text to the next line when a line is full.
   (b) Web layout view uses the least amount of memory.

3. Fill the lettered gaps with words.
   The (a) key should be used at the end of a (b). When pressed a special (c) symbol appears.

4. Answer these questions.
   (a) Outline the advantages of a word processor.
   (b) The ‘Enter’ key should not be pressed at the end of every line. Explain this statement.

Computer Activity
Tick the outcome box on completion.

- Start a word processing program.
- Type the text in the text entry window.
- Complete the document by describing some of the features of a word processor.
- Save the file by naming it ‘Features’.
- Show and hide the paragraph marker.
- View the document in outline view.
- View the document in web layout view.
- View the document in print layout view.
- Select a paragraph.
- Increase a paragraph’s type size.
- Examine the changes made by wordwrap.

ICT Tip
To display all the document on the screen without the toolbars and scroll bars, click Full screen from the View menu.

© G. K. Powers Blueprint Education.
Exercise 1.17  Basic Editing

Editing or amending an existing document is completed in many different ways. Some of the basic editing tools found in most applications include undo, inserting and deleting.

Undo and redo
Mistakes are easily corrected using the ‘Undo’ and ‘Redo’ commands from the standard toolbar or Edit menu. The undo or restore command reverses the last action such as changing a font style. If the user decided that they wanted the change after all, select the redo or undelete command. Some applications allow multiple actions for the undo or redo commands. The user can restore the document based on the number of actions.

Inserting
Inserting adds an item to a document. Inserting text is a common task in many applications. To insert text, the cursor is placed exactly where the new text is to be inserted. When the new text is typed, the existing characters to the right of the insertion point are moved further to the right. When inserting text, the new characters are simply added to the existing text. Some applications have an overwrite feature. If overwriting is selected, the new text overwrites or replaces the existing text to the right of the cursor position.

Deleting
Deleting removes an item from a document. To delete text on most keyboards, you press the ‘backspace’ key or ‘delete’ key. The ‘backspace’ key erases the character to the left of the cursor and moves the text to the left to fill this gap. The ‘delete’ key erases the characters to the right of the cursor. If a word or paragraph has to be deleted it is easier to highlight the word or paragraph and press the ‘delete’ key.

Applications let you recover from the mistake. The undo command is a button with an arrow on it.

Literacy Activity
1. Fill the lettered gaps with words.
   The Undo command is located on the (a) toolbar. It deletes the (b) action. However the user can (c) a number of actions.
2. Explain the difference between
   (a) Undo and redo commands.
   (b) Inserting and overwriting text.
3. What am I?
   (a) A key that erases characters to the right of the cursor.
   (b) A key that erases characters to the left of the cursor.
4. Answer these questions.
   (a) What is the purpose of the Redo command?
   (b) How can the user undo multiple actions?
   (c) Describe a simple method of deleting a word or a paragraph.
   (d) What menu is the Undo command?

Computer Activity
Tick the outcome box on completion
- Start a word processing program.
- Type the text in the above screen dump.
- Use the Undo command to delete your last action.
- Redo your last action.
- Insert the word ‘occasional’ before the word ‘mistake’.
- Insert the word ‘anticlockwise’ before the word ‘arrow’.
- Delete the word ‘applications’ and insert the word ‘programs’.

ICT Fact
AutoCorrect is a feature that automatically detects and corrects typing errors, misspelled words, grammatical errors and incorrect capitalisations.

© G. K. Powers Blueprint Education.

To be completed by: .........................................................
People and Computers
The people associated with computers and computing can be broadly classified into 2 groups -
1. Computer personnel
2. Computer users

Computer personnel are the people who design, manufacture and maintain the technology involved in computer systems. Some of the job titles include - computer operator, computer scientist, consultant, data controller, data-entry operator, design engineer, programmer, technician, system analyst, software developer and manager.

Computer users are people who are involved in the use of computers in everyday life, either in their job or at home for leisure purposes. In addition we are surrounded by numerous devices which contain computer microprocessors, including many of the devices in our homes.

Computer Hardware
The term computer hardware refers to the various electronic components that are required for you to use a computer along with the hardware components inside the computer case. As you know your computer equipment is made of several common components. These include:

- The main computer box.
- A monitor - Looks like a television screen.
- A keyboard.
- A mouse.
- Speakers.
- An optional printer

The main computer box is the main component of the computer. It has computer hardware parts inside that perform the following functions:
- Temporary storage of information (known as data in more technical terms) - This function is done by memory.
• Permanent storage of information - This function is done by a hard disk, floppy disk, or CD ROM.
• Manipulation or processing of data - Used to determine where data is stored and perform calculations which support operations that the user is doing.
• Interfacing to the outside components or to the outside world - This supports the ability for the user to communicate with the computer and know how the computer is responding to commands which are done primarily through the monitor, keyboard, and mouse along with their interface components in the main computer box.
• A power supply which provides the electrical power to the components in the computer box.

The Main Computer Box

The main computer box is made of several computer hardware components and subcomponents which include:

• **The case** - The outside component which provides protection for the parts inside and provides a fan and power supply which are used to both cool the working parts inside and provide power to them.
• **The motherboard** - Hold the following computer hardware subcomponents:
  • **Memory** - Used to provide temporary storage of information as discussed earlier.
  • **Microprocessor** - Used to provide the processing of data function as discussed earlier.
  • **Video interface card** which is also called the video card - This card is an interface between the computer monitor and the motherboard and its subcomponents such as the microprocessor and memory. This card may be included as part of the motherboard or it may plug into a card slot on the motherboard.
  • **Sound card** is an interface between the computer speakers and the motherboard and its subcomponents such as the microprocessor and memory. This card may be included as part of the motherboard or it may plug into a card slot on the motherboard.

One or more permanent storage devices some of which may be optional:

• **Hard disk** - Most computers today have a hard disk (sometimes called hard drives) which is the component most commonly used to provide permanent storage of data. Hard disks are usually permanently installed in a computer.
• **CD ROM drive or DVD drive** - Used to provide permanent storage of data but this type of drive is used to bring information into the computer more commonly than it is used to store information from the computer. Sometimes this type of drive is used to back up data from the hard drive so data is not lost if a hard drive breaks. A DVD drive holds more data than a CD ROM drive and DVDs have enough storage capacity that they may be used to play or store movies. The storage media, the CD ROM or DVD may be removed from the computer.
• **Floppy Drive** - A low capacity storage device which can be written to as easily as it is read. The floppy disk may be easily removed from the computer. It is called a floppy because the part of the media that holds the data is on a material that is not rigid but it is enclosed in a more rigid case to give it durability.
• There are also other minor computer hardware components inside the case which include cables which may be used to hook other internal parts together along with connecting an interface to the case for printers and other devices such as a high speed serial bus called USB. (A serial bus simply refers to the fact that data is sent in a stream which is like sending one bit at a time.
The Case
The drawing below shows a typical case. It may help you understand where your connections for your monitor, keyboard, mouse, and other devices are if you should need to hook them up. For more specific information you should refer to your computer owner's manual.

A Typical Computer with Tower Case

Fig 39 A typical personal computer (PC)

Fig 40 The ports on the rear of a PC Case

The drawing below shows a typical layout of the components inside your computer case.

**Inside the Case**

![Diagram of computer components](image)

**Fig 41 Inside the case**

- **Expansion Card slots**: Cards inside the systems box have their own particular task to do. Typically, a PC would have a graphics or video card, a sound card, and perhaps a network or modem card. Empty expansion slots are available to insert extra cards as required.
- **Power Supply**: The CPU is often called the brains of the computer. Most of the devices connected to the computer communicate with the CPU in order to carry out their task.
- **Memory Sockets**: ROM is memory which cannot have new data written to it. It contains permanent instructions, such as how to start up the computer.
- **Floppy and Hard drive connectors**: The floppy disk offers a cheap and quick method of transferring documents to another computer. The data is stored magnetically.
- **Memory Drive Bay**: The hard drive is a series of thin disks which store programs and documents while you are not working on them. It also stores the system files which the computer needs to make everything work. Data is stored magnetically on the hard disks.

**Fig 42 Inside the systems box of a desktop PC**

Exercise 1.18
Complete the cloze puzzle below using the words in the box.

a, and, are, as, brains, computer, connectors, CPU, current, data, devices, drives,
external, for, instructions, is, is, light, make, many, memory, metal, motherboard,
network, offers, on, other, own, PC, permanent, programs, read, series, slots, start,
suitable, system, that, the, their, this, top, transformer, transport, video, when, working,
written

Cards inside the systems box have their {1}______________ particular task to do. Typically, {2}______________ PC would have a graphics or {3}______________ card, a sound card, and perhaps a {4}______________ or modem card. Empty expansion {5}______________ are available to insert extra cards {6}______________ required.

A port is where {7}______________ devices are attached to the systems box. {8}______________ are different in size and shape {9}______________ different types of devices.

All your {10}______________'s electrical needs are supplied from {11}______________ shielded metal box. A {12}______________ converts the mains {13}______________ to make it {14}______________ to pass to the {15}______________ and disk {16}______________.

The {17}______________ is often called the {18}______________ of the computer. Most of the {19}______________ connected to the computer communicate with {20}______________ CPU in order to carry out {21}______________ task.

CDs and DVDs offer high-capacity {22}______________ storage. The discs are written and {23}______________ by laser {24}______________.

The floppy disk {25}______________ a cheap and quick method of transferring documents to another computer.

The data is {26}______________ magnetically.

The hard drive is a {27}______________ of thin {28}______________ disks which store {29}______________ and documents while you are not {30}______________ on them. It also stores the {31}______________ which the computer needs to {32}______________ everything work.

{33}______________ is stored magnetically {34}______________ the hard disks.

The bus lines {35}______________ data between the processors, {36}______________ and {37}______________ components inside the systems box. They {38}______________ tiny electrical pathways printed on the {39}______________ and bottom of the circuit boards.

{40}______________ the computer is switched on, programs {41}______________ instructions are loaded into RAM so {42}______________ the CPU can process them.

ROM {43}______________ memory which cannot have new data {44}______________ to it. It contains permanent {45}______________, such as how to {46}______________ up the computer.

Most of the components in a {47}______________ are mounted on printed circuit boards. The motherboard {48}______________ {49}______________ largest and houses {50}______________ types of chips.
How does a Mac differ from a PC?

Macs have always included a mouse, sound card, and graphics card inside the case. From 1998 Macs have done without a floppy disk drive, Apple’s reasoning being that they offer insufficient storage and are unreliable. iMacs and eMacs have all the components including the monitor built in to the case which is different to PC cases.

Fig 43 Different iMac case designs

Exercise 1.19
You have seen the “Hi I’m a Mac; and I’m a PC” advertisements on TV.

Write a short script which describes the differences that you have experienced between your classroom Mac and your home PC.

To be completed by:

.................................
Exercise 1.20: Match the pictures to the labels below.

Display, bus lines, random access memory (RAM), coprocessor chip, central processing unit (CPU), motherboard, hard disk, controller card, power supply, input/output ports, expansion slots, graphics adapter card, read only memory (ROM or BIOS)

Use a text book, dictionary, or the internet ([howstuffworks](https://www.howstuffworks.com), [Wikipedia](https://en.wikipedia.org), [webopedia](https://www.webopedia.com)) to write the function of each hardware component.

To be completed by: ..............................................................

<table>
<thead>
<tr>
<th>Hardware Component</th>
<th>Name and function.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Motherboard" /></td>
<td>..........................................................</td>
</tr>
<tr>
<td><img src="image2.png" alt="Coprocessor Chip" /></td>
<td>..........................................................</td>
</tr>
<tr>
<td><img src="image3.png" alt="Memory Module" /></td>
<td>..........................................................</td>
</tr>
</tbody>
</table>

PSL 15/11/06
Functions that hardware performs.

Hardware devices work together to perform functions for the user. Quite simply users want to get stuff into their computer ….INPUT. Users then want to do things to this stuff….PROCESSING. Finally users want to get stuff out of their computer … OUTPUT.

As well computer users need to store their stuff for later use ….STORAGE, and they need something that will coordinate all the other functions ….CONTROL.

This can be shown in a diagram.

---

Fig 45 IPO diagram
Input - processing - output - storage – control

The basic operation of any system can be explained by just three steps — input, processing and output. All computer systems (and all computer software) must include these three steps.

1. The input step takes in data from outside the system. Examples of input data are keyboard characters typed into a word processor, or joy-stick movements supplied to a computer game.

2. The processing step performs tasks using the data. Processing may change the data, create new data or simply move the input data to a new location. Examples of processing include placing typed characters into pages, or calculating your score in a computer game.

3. The output step passes the results of the processing out of the system. Output can be used by something outside the system (such as human users) or it may be stored for future use by the system. Examples of output are printed documents produced by a word processor, or changing the graphics produced by a game.

What if one step is missing? With no input data to work on, there will be no output. With no processing, the input and output will be exactly the same. And with no output, the system does nothing useful.

Computer systems include two more steps storage and control. Storage is a basic part of a computer system because computers need to store data. Control is just as important to the operation of a computer system as any of the other steps. The processor must be able to control the input devices to accept data, the storage devices to store and fetch the data when needed and the output devices to display the results. The control operation coordinates input, output, storage and processing.

A non-computer system does not have to include storage and control as part of its operation.

IPO Chart

An IPO chart shows, in table form, the inputs, processing and outputs in a system.

**IPO Chart for a word processor.**

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Processing</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keys</td>
<td>Commands are executed</td>
<td>Disk files</td>
</tr>
<tr>
<td>Mouse clicks and movement</td>
<td>Characters are stored</td>
<td>Printed documents</td>
</tr>
<tr>
<td>Files from disk</td>
<td></td>
<td>Screen changes</td>
</tr>
</tbody>
</table>

**Exercise 1.21 IPO**

1. What are the three steps found in all processing systems?
2. What are the extra steps found in all computer systems?
3. List two examples of outputs which will leave a computer system and two examples of outputs which will be stored by a computer system for future use.
4. Create an IPO chart for a computer game you have played.
Input Devices.

Hardware devices which get stuff into a computer are called input devices and are things like a keyboard, mouse and microphone.

Exercise 1.22 Input devices

Pick three input devices and, using a text book, dictionary, or the internet (howstuffworks, Wikipedia, webopedia) describe how they are used and how they work.

To be completed by: .................................................................

Processing and control….The CPU

**Definition:** CPU is short for Central Processing Unit. The CPU can be thought of as the brains of the computer system. Often people mistake the case or chassis of their computer as the CPU. The CPU is actually an internal component of the computer that can not be seen from the outside of the system, or the inside without removing the CPU heat sink and fan. A CPU is commonly the most expensive component of a computer and is very sensitive to static electricity.

Computer term glossary [http://peripherals.about.com/od/computertermglossary/g/whatisacpu.htm](http://peripherals.about.com/od/computertermglossary/g/whatisacpu.htm)

The CPU is contained in a silicon chip called a microprocessor. In the world of personal computers, the terms microprocessor and CPU are used interchangeably. At the heart of all personal computers and most workstations sits a microprocessor. Microprocessors also control the logic of almost all digital devices, from clock radios to fuel-injection systems for automobiles.

Three basic characteristics differentiate microprocessors:

- **Instruction set:** The set of instructions that the microprocessor can execute.
- **Bandwidth:** The number of bits processed in a single instruction.
- **Clock speed:** Given in megahertz (MHz), the clock speed determines how many instructions per second the processor can execute.

In both cases, the higher the value, the more powerful the CPU. For example, a 64-bit microprocessor that runs at 200MHz is more powerful than a 32-bit microprocessor that runs at 200MHz.

In addition to bandwidth and clock speed, microprocessors are classified as being either RISC (reduced instruction set computer) or CISC (complex instruction set computer).

Microprocessors are used in more and more devices these days.

- Cameras
- Digital watches
- Monitoring devices.
Monitoring devices are used in the health industry to keep track of a patient’s health, and in science to keep track of physical effects like light, temperature, and sound. Security systems use them to check for the presence of intruders.

**Exercise 1.23 Microprocessors**

Use a text book, dictionary, or the internet ([howstuffworks](http://howstuffworks.com), [Wikipedia](http://en.wikipedia.org), [webopedia](http://webopedia.com)) to identify and describe microprocessors used in a camera, or watch and at least one monitoring device.

To be completed by: .................................................................

**Output Devices**

Hardware devices which get stuff out of a computer are called output devices and are things like a monitor, printer, and speaker.

**Exercise 1.24 Output devices**

Pick three output devices and, using a text book, dictionary, or the internet ([howstuffworks](http://howstuffworks.com), [Wikipedia](http://en.wikipedia.org), [webopedia](http://webopedia.com)) describe how they are used and how they work.

To be completed by: ........................................................................

**Storage Devices**

Hardware devices which store stuff for later use are called storage devices and are things like a floppy disk, hard disk, solid state USB devices, and writeable CD’s and DVD’s.

**Exercise 1.25 Storage devices**

Pick three storage devices and, using a text book, dictionary, or the internet ([howstuffworks](http://howstuffworks.com), [Wikipedia](http://en.wikipedia.org), [webopedia](http://webopedia.com)) describe how they are used and how they work.

To be completed by: ........................................................................