Hardware & Software

Output Devices

Laser Printers

Laser Printers are based on the same technology as photocopiers – lasers produce an image on an electrically charged drum. Dry ink or toner sticks to the electrical charge and is fixed by heat. They have a high resolution of 1200+ dpi, and reproduce complex graphics very clearly. They are very quiet and operate at reasonably high speeds of between 8 and 30+ ppm. Some laser printers work only in black and white – those operating in colour and the faster speeds are the most expensive.

Ink-jet printers

Ink-Jet printers use liquid ink to spray characters onto a page. They also offer a high resolution of up to 1200 dpi and it can be difficult to tell the difference between a print produced on a good

quality ink-jet and a standard laser printer. However, they operate at much slower speeds of between 6 and 10 ppm for black and white copies and half the speed if printing colour. They, too, are quiet to operate and generally cheaper in price than a laser printer, but when used with inexpensive copier paper the ink has a tendency to smudge.

Central Processing Unit

The Central Processing Unit (CPU) or processor is the part of a computer that controls all the other parts. It is often thought of as the computers brain.

The key role of the central processing unit is to:

- ***Carry out instructions within the software***
- ***Handle control signals***
- ***Perform arithmetic and logic operations***

The CPU is a microprocessor – a chip of silicon – composed of tiny electrical switches. The speed at which the processor carries out its operations is measured in megahertz (MH_z) or millions of cycles or pulses per second. Intel is the world's largest PC chip manufacturer and the Intel Pentium is probably the best known processor. The Intel Celeron is a cheaper chip and is often used in home computers. The world's second largest manufacturer is Athlon and the Athlon chip provides another cheaper alternative which is said to be more powerful than the Pentium. The higher the number of MH_z, the faster the computer can process information. In 1965, Gordon Moore, the founder of Intel,

accurately predicted that the capacity of memory chips would double every 18-24 months. Late in 2000, the first-ever 1GH$_z$ (Gigahertz) processors was introduced, and in 2002, the 2.2 GH$_z$ processor was appeared. However, for most people with average processing requirements, a processor running at about 1 GH$_z$ should be adequate

Storage Devices

Floppy disk drive

The floppy disk drive enables you to save files onto a floppy disk so that you can take files between home, school and college and also make back-up copies of your data files as a security measure in case your hard drive gets damaged or your files become corrupt. Floppy disks are round, flat and made of a flexible material called Mylar. The disk has a magnetic surface upon which data is recorded and it is covered with a hard, protective plastic case. The disk turns in the drive allowing the read/write head to access the disk which can store up to 1.44 MB of

data. This is equal to about 300A4 pages of plain text. The size of a data file containing graphic images and complex formatting will be much larger and, as a result, will reduce the number of pages that can be stored on disk.

A floppy disk must be formatted before data can be written to it. Formatting establishes tracks and sectors into which data files are stored. The write-protect tab protects the data on the disk from accidental deletion. A write-protected disk can only be “read from” and not “written to”. This means that the files stored on the disk can be retrieved, but they cannot be accidentally overwritten or deleted. It also protects the disk from infection from a computer virus from another computer. Care should be taken when handling disks to protect the data stored on them. If you are carrying disks to and from home and school or college, store them in a protective case to keep them clean and away from dust and moisture. The surface of the disk should not be touched (which is one reason for the hard plastic casing) and it should be kept away from extreme temperatures. To avoid accidentally erasing the data from a disk from a disk keep it away from magnetic fields – so don’t store it close to a telephone or television.

Zip Disk

The Zip drive is similar to a floppy drive but can store 100MB of data, at least 70 times more than a floppy. Most new Zip disks can store as much as 250MB. The Zip disk is slightly thicker than a floppy disk and needs a separate drive. Data is compressed, which means the size of a file, which may be too large to fit on a floppy disk, is reduced. In this way large data files can be backed up or transferred from one machine to another. Zip drives were particularly useful before it was possible to store data optically.

CD AND DVD

Cd-rom (compact disk read-only memory) this uses the same technology as cd musis disc and cd players where a laser beam reads data from an optical drive. ‘read’ is the key word here as you can only read information from a cd-rom - you cannot store additional data on it. A typical cd holds around 650mb of data which is equal to 450 floppy disks.

Nowadays, most computer software comes stored on a CD-Rom. The entire contents of a text based encyclopaedia take up only 25

percent of a standard size CD-ROM! The remainder is filled up with video sequences, animation, photographs, sound and interative programs. The result – An interactive multimedia encyclopaedia.

CDR

The recordable CD can store about 650 MB very cheaply. Data is written to the CD-R using a CDRW drive it is permantly burned on to the disk. If you record music using a CDR there isn't no loss of sound quality.

CD-RW

CD-RW means Compact disk rewriteable and also stores about 650mb data. This means you can record, erase and rerecord data very cheaply. More and more new pcs come with a CD-RW drive installed this is used to back up or transporting large files.

DVD

The digital versatile disk is probably famailiar to you in the format used for storing videos. It offers a much shaper image than videotape and the quality of the soundtrack is far better.

DVD-ROM

This I the same diameter as a CD but holds nearly ten times the data – between 4.7gb and 17gb – making it ideal for long length movies. If the computer has a DVD-ROM drive but no CD-ROM, don't worry because you can still play CDS on the DVD ROM

DVD+RW and DVD-RAM

These re-writeable DVDs are currently being developed. As this chapter is being written, they are in competition with each other. The DVD+RW is being sponsored by Hewlett-packard, Phillips

and Sony. It can stored 3 GB per side which is a higher capacity than the dvd-ram is being developed by the the DVD consortium.

Ports

Ports are the "sockets" at the back of the main processor casing and are used to attach peripheral devices such as the printer, monitor, keyboard, mouse, scanner, and so on. Cables from each peripheral plug into the ports allowing data to be sent and received between the peripherals and the microprocessor.

Serial Port

The serial port has traditionally been used for connecting monitors, mice and keyboards to computers and, nowadays, is the means of transferring data from a handheld computer to a PC. Data transfer is very slow – approximately 3 hours to transmit 1 GB data.

Parallel port

The parallel port transmits data in or out in parallel and is a common external port that is used to connect printers, scanners and external storage devices. PC's can be linked directly together using parallel ports but the transfer of data is slow – taking up to 30 minutes to transfer 1 GB data. This is fast enough for printers but very slow for scanners.

Universal Serial Bus

The Universal Serial Bus (USB) is the current preferred port and is known as a Plug and Play connection. Plug and Play is a windows system that allows peripherals to be plugged in or unplugged without having to reboot the PC. Windows has a selection of device drivers stored within it's own memory and these can be installed automatically. The USB provides a much faster transfer of data than the traditional serial and parallel connection ports and it has become the standard fitting on new computers since 1997. One GB of data can be transferred in approximately 11 minutes. With an up-to-date computer system, you would probably use USB connections for a printer, scanner, digital camera and/or webcam.

The USB2 port is new technology that will transfer 1 GB data in approximately 17 seconds. It has been designed for use with digital cameras, external hard disks and other devices that need to move large amounts of data quickly.

MS-DOS

MS-DOS was developed by Microsoft and introduced as a standard operating system in all IBM-compatible computers from the early 1980's. For many years, it was the most popular system in use. MS-DOS stands for Microsoft Disk Operating System. It controls many internal computer functions such as how to process information, how to manage files and how to interpret commands. For this reason it is described as a "Command led" system. DOS is difficult to work with because commands have to be typed in an exact way and there are too many different codes for the ordinary everyday user to remember.

The MS-DOS Prompt is listed in the accessories menu. Many computer users don't know what it means or what it does. Click on it and you will find yourself in the command. When the command prompt C :\> is displayed the command processor is waiting for a command. For example, typing "dir" at the command prompt and pressing Enter will display the contents of the current drive/directory. For most people, what is shown on-screen may look confusing and generally only experienced programmers and technicians work with DOS.

Software

A computer cannot do anything on its own. It needs software to make it work. While it is easy to recognize computer hardware, (keyboard, mouse, and so on) because you can see it, because you can neither see nor touch computer software. Some software comes pre-installed on the computer like the start up programme and some come on CD-rom like operating systems and application software that the user or computer supplier must load onto the hard drive before the computer can be used.

Keyboards

The keyboard is the most recognisable input device. It is used to enter data or commands into the computer. Touching or pressing a key send an electronic signal to the computers processing unit and is interpreted as a character or function.

The computer keyboard is simaler to an ordinary typewriter keyboard, but with extra key for specialised functions.

The first six keys on the top row of the alphabetic characters spell QWERTY and this is the name used to describe the standard layout of most typewriters and keyboards. In the early days of manual typewriters, the hammer that swung up to strike the print ribbon tended to get stuck together if the typist went too quickly. The original design was therefore based on mechanical

considerations designed to slow the typist down, rather than on efficiency, and the letters most frequently used were put as far apart as possible. Over the years, suggestions to modify the design have been unpopular and so it remains very close to its original form.
Some keyboards come with added keys for using the internet and others have an integrated wrist support. Ergonomic keyboards have been developed to reduce the risk of repetitive strain injury to works who use keyboards for long periods of time. Keys rely on finger movement rather than hand movement and the keyboard have been into two sections so that users wrists are in a more natural and comfortable position.

Mouse

A mouse is a device that enables you to interact with the computer screen. The standard mouse comprises casing, buttons and a base. The casing is designed to fit between the fingers and thumb of one hand with the bottom of the palm resting on a mat or other surface. The bottom is flat and has a "Multidirectional detection device", usually a rubber ball. The top generally has two buttons and, nowadays, most also have a wheel for scrolling or zooming.

You control the movement and position of the on-screen cursor or (or mouse pointer) by moving the mouse around on the desk. To select an item, you position the mouse pointer and press one of the mouse buttons. This produces a "mouse click". You might have heard the terms "double click", "click and drag" and "drag and drop". These describe actions you perform with the mouse such as picking up an icon by clicking the left button and holding the button down while you drag the icon elsewhere on the desktop (or screen).

Dust and dirt on the rubber ball can cause the mouse to stick or hang. If this happens, clean the ball by wiping gently with a cotton bud dampened with water.

In recent years, the design of the mouse has developed and today you will find several alternative, more technologically advanced designs of mouse readily available, including the following:

- ***In the optical mouse the rubber ball has been replaced with an optical sensor that detects motion on the desktop. A tiny digital camera takes pictures of the surface beneath the mousse (at a rate of 1,500 pictures per second) and these pictures are translated into movement of the cursor on the screen. The sensor works on most non-reflective surfaces – even your lap – and as there are no moving parts the mouse moves smoothly.***
- ***The cordless mouse relies on digital radio technology to send signals to a digital receiver. Radio waves enable communication with the CPU from a distance of up to 2 metres regardless of anything which might be in the way***

Computer For under £500

- Intel Celeron D 330 Processor
- 2.66 Ghz Clock speed
- 533MHz Front Side Bus
- 256K Cache
- XP Home Operating System
- 256 Mb Ram, 40 Gb Hard Drive
- 64 Mb Integrated Graphics
- DVD ROM /CDRW combo Drive
- 14" TFT
- One Years Free Onsite Warranty

This computer is good if you want to pay under £500 the 256mb ram is pretty good. 2.66 GHz is a good processor. It comes with a 14" TFT and one year onsite warranty. It is a good first PC. If you want a high spec computer I wouldn't recommend this because of the 40g hard drive and the 64mb graphics card.

A Computer For Under £1000

Processor
Intel® Pentium® 4 Processor 540 with HT Technology (3.20GHz, 1MB L2 cache, 800MHz FSB)
Operating system
Microsoft® Windows® XP Home Edition
Memory
512MB Dual Channel DDR2 RAM
Monitor
17" Analogue Flat Panel Monitor (17.0" v.i.s)
Hard Drive
250GB Serial ATA Hard Drive (Was 160GB)

Optical
16x DVD+/-RW and 16x DVD-ROM Drives
Graphics
128 MB PCI Express™ x16 ATI Radeon™ X300 SE inc DVI/VGA-TV out via S-video port
Service
1 Year Collect and Return (CAR) service

This PC is good because it has a good 3.2ghz processor and good 512mb memory, 17" flat panel screen, 250gb hard drive, DVD+/-RW and DVD-ROM drives and a very good graphics card.

Computer under £2000

3.4GHz EXTREME Intel Pentium® 4 CPU "Gallatin" (800FSB) 2M Cache
Corsair Value Select 1Gb (paired memory)
160Gb Maxtor Diamondmax Plus 9 (7200rpm,8MB)
Pioneer DVR-108 Black x16 Dual Layer DVD Writer
256MB XFX GeForce 6800 GT DDR3 TV + DVI
Sapphire 128MB ATI All In Wonder Radeon 9800 PRO
Creative Labs Sound Blaster Audigy ZS 71 THX
Microsoft Windows XP Home Edition Inc.
15" BenQ FP557S v2 Flat Panel Monitor
Logitech X-220 2.1 Speaker System 32W RMS

This computer is really good it has 3.4ghz, 1GB memory, 160GB hard drive, DVD+RW, 256MB Geforce graphic card, 128MB Radeon, 15” Flat Panel Monitor and Speakers. This computer is a very powerful.