

Computing for the Bewildered

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A course for newcomers to the world of computers

Seventh General Edition

I

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A BRIEF HISTORY OF COMPUTING

Computing really began a little over three hundred and fifty years ago with the introduction in 1642 of the first mechanical addition/subtraction machine. The designer and maker of this machine was Blaise Pascal, after whom a modern computing language has been named. In 1843, Charles Babbage introduced the 'Analytical Engine', a complex mechanical system which in its design anticipated every section of the modern digital computer. The first electronic computer was introduced in 1941 by Konrad Zuse and in 1944, the IBM Mk I electromechanical computer appeared on the market. This computer was a mass of gears and electronic relays, was slow in operation, measured 51 feet long, 8 feet wide and weighed 5 tons!

In 1945, the first fully electronic computer arrived. This was known as ENIAC (Electronic Numerical Integrator And Computer) and it was contained in a room the size of a small house. It used literally hundreds of control switches, had more than 18,000 electronic valves and weighed 30 tons! In 1952 alone this machine suffered 19,000 valve failures. The power requirement was 200,000 watts (200 kW) and the machine was finally retired in 1958.

The arrival of transistors changed the situation considerably as far as computers were concerned. These replaced valves, were much smaller in size, offered greater reliability with a smaller power requirement and were cheaper. The early 1960's saw the arrival of integrated circuits (IC's). These were small and contained the equivalent of a dozen or so transistors etched on the surface of a small chip of silicon. (Today's equivalent to these early 'chips' contain hundreds of transistor equivalents and are multi-layered.)

The first 'Mini' computer was produced in 1965 by the Digital Equipment Corporation and was known as the PDP-8. It was the size of a small filing cabinet and cost about £10,000. Many more mini's followed this machine.

1971 saw the discovery and introduction of the first microprocessor. The microprocessor is the complete operating system for a microcomputer on a silicon chip much smaller than the key of a pocket calculator. The microprocessor was, in fact, invented for calculator use. The Intel Corporation were trying to design a single IC that would add, subtract, multiply and divide. They came up with something considerably more versatile, the microprocessor. Microprocessors can be programmed to function as calculators, to control traffic lights, time ovens and many other useful functions. If the microprocessor is used as the central operating system and if a memory capability is incorporated with the microprocessor then we have the basis of the microcomputer. Microprocessors originally cost several hundred pounds each, now they may be bought for less than ten pounds. They are small, versatile and were first used in microcomputers in 1975.

In the early 1980s, small computers such as the Sinclair Spectrum and The Commodore 64 were in use in many homes, playing games written in the BASIC programming language. These were not capable of serious business use. In schools, the BBC Micro, a truly astonishing machine for its age, was being used to carry out simple IT tasks. Parallel to this, and almost unnoticed, IBM launched their Personal Computer which was to have such a profound effect on the computing world. By 1985 this had been improved to the IBM XT, which had both floppy and hard disks.

The PC became the de-facto standard home and office computer, its only serious rival being the Apple-Mac which has satisfied a niche market mainly for the publishing world. It is the PC which is what people think of when asked to describe a computer, and it is the PC on which we will concentrate.

IBM have not had a major influence on the direction and design of PCs for many years. Instead, a standard, mainly defined by Intel and Microsoft although including input from many other leaders in the industry, is published and computers built to that standard by many thousands of companies, large and small. Indeed, it is perfectly

feasible for the knowledgeable enthusiast to build their own computer from components easily obtained.

The generations of PCs have generally been defined by their processor – 80286, 80386, 80486, Pentium, Pentium2, Pentium3 and Pentium 4. Historically, Intel have had a virtual monopoly on PC processors, but a rival, AMD, has been gaining ground and many PCs now have AMD Athlon or Duron processors at their heart.

The story today is different from that of even five years ago, when the last UK edition of this book was written. Computing is advancing at a startling rate and each year sees the introduction of new ideas and equipment. The range of personal computers and the uses to which they are put is now very extensive and their price bears no relation to that of even a few years ago. For both home and business computing the PC system sets an industry standard which should sustain for some time yet, as well as becoming the choice for many as their home machine. Intel Pentium 4 or AMD Duron / Athlon chips which offer fast multitasking facilities are becoming the standard. Operating speed appears to be the factor which most manufacturers are concerned with and faster processors have changed the face of personal computing to the extent that many people now own home computer systems many thousands of times more powerful than the early minicomputers. The following are the main components of a micro-computer, or PC.

HARDWARE

The CPU or Central Processing Unit - The circuitry in this section accesses data from memory, works on it and transfers it back to memory again. It also controls all other system components including input/output and mass-storage. The heart of the CPU is a microprocessor 'chip', sometimes called a microprocessor unit or MPU. Nowadays, the CPU will be either an Intel Pentium, usually a P3 or P4, or an AMD Athlon or Duron.

RAM or Random Access Memory - This is where the programs and data which we feed the computer are stored. All information is stored in a binary form, a series of 0's and 1's. Each 0 or 1 is known as a 'BIT'. Inside the microcomputer the binary bits of information are usually organised in groups of eight bits. Eight bits is known as 1 'BYTE'. RAM memory size varies from one computer to another and it is not uncommon to have RAM memories of between 16 and 512 Megabytes. 'A megabyte is 1048576 bytes.

In order to picture what 1048576 bytes means, assume that each character stored, for example the letter A, requires one byte. This is not strictly true particularly for number storage range but it does provide some guide as to memory capacity. Random Access Memory is termed as such because of the computer's ability to go directly to any byte or position in this memory to either 'read' its contents or to 'write' or store new information at that point. The computer can rapidly access bytes of information at random, there is no need to start at the beginning of the memory and to sequentially search all the way through for some item of information or location. RAM is generally 'volatile', this means that when the computer is switched off the contents of memory are lost. It is also erasable: memory content can be wiped out to enable new programs or data to be stored. Together with this, the contents of memory can also be modified or overwritten as required.

ROM or Read Only Memory - Individual bytes of data in this section of computer memory may be 'read' but no 'writing' is permitted. ROM is used to store programs or data that will never be changed. It is 'non-volatile', meaning that the information stored therein is permanent and will not be lost on power-down. ROM is used in computers to store programs used by the CPU to control system components. In certain non-PC computers, mainly now obsolete, certain applications such as word processors were also stored in ROM. The term has been hijacked for the CD-ROM, a compact disk read-only unit.

Some ROM's can be erased and these are known as EPROM's, Erasable Programmable Read Only Memory. EPROM's can be erased by ultraviolet light and

then reprogrammed as necessary. An EPROM in a computer system will allow a special program or set of programs to be utilised by the system, these generally being intended for very specific operations such as equipment control or data logging. In everyday life EPROMs are used to control traffic lights, ovens and vehicle electrical systems amongst numerous other applications.

Modern computers have no resident operating system, which must be 'loaded' each time the system is turned on. In this instance, the operating system usually occupies an area of ROM memory which is protected against erasure while the computer is on.

VDM or Video Display Module - This converts the electronic signals from the computer into 'dot patterns' which show up on the VDU or Video Display Unit. These dot patterns form letters, numbers, symbols or graphic shapes. All computers now have dedicated VDU's supplied with the computer system itself. The resolution obtained from a TV display is not as good as that produced by a dedicated VDU, which is why a dedicated monitor is used. High resolution versions of dedicated VDU's provide an extremely readable display which is often required when graphic work is being undertaken, or computer games being played. In the past, the computer system and VDM were only capable of providing a monochrome display but all modern-day computer systems offer true colour and high resolutions.

INPUT-OUTPUT COMPONENTS

These are often called input/output devices. An input device is used to transmit both programs and data to be manipulated by such programs, into the computer.

The most common microcomputer device is the **keyboard**. This looks very much like a typewriter keyboard but generally has a larger number of keys, some with special functions. The equivalent to the carriage return on a typewriter is provided by a key generally marked 'RETURN' or 'ENTER'. A TAB is also provided and this works in very much the same way as the conventional typewriter TAB. Most keyboards have a set of cursor control keys, these being used to position the cursor correctly on the screen and in some cases in conjunction with other control keys for the purposes of editing text on the screen.

When a key is depressed on the keyboard, a unique binary code is generated. For example, when you press the A key, the code 01000001 is sent to the computer. This code can be sent in either of two ways depending upon the system. If each bit is sent simultaneously on a separate wire then the connection or transfer is known as parallel and when the bits are sent sequentially one after the other on a single wire the connection or transfer is known as serial.

Computer peripherals such as printers and scanners are also designed for use with either serial or parallel or connection and this has to be considered when purchasing accessories for your computer. There are three standards commonly in use, for serial connection the old standard is known as RS232, and is no longer used for printers or scanners, and for parallel, Centronics. The most modern connection is the Universal Serial Bus, or USB. This was originally mainly used for scanners, but now some printers and whole array of modern peripherals such as digital cameras are using USB.

BINARY: THE COMPUTERS'S OWN LANGUAGE

In a computer, bits are represented by two different voltages, usually called 'high' for a 1 bit or 'low' for the 0 bit. The 1 and the 0 are also referred to as 'bit on' and 'bit off'. One bit gives only two possible codes, 1 and 0 (2^1). With eight bits, there are 2^8 or 256 different possible codes. A number of these codes are used to account for the alphabet (lower and UPPER case), numbers, special symbols and the codes required for control functions such as carriage return and cursor movement.

Most computers use the same basic codes as far as alphanumeric and standard control functions are concerned. However, different computers often utilise the remaining codes in different ways to provide for example, graphic characters, reverse field characters and various other functions.

The standard code system is known as the American Standard Code for Information Interchange (ASCII) and on the next page is a table of some of the codes for the upper case alphabet showing the binary code, the character represented or produced and the decimal equivalent to the binary code.

<u>BINARY CODE</u>	<u>CHARACTER</u>	<u>DECIMAL VALUE</u>
0100001	A	65
0100010	B	66
0100011	C	67
0100100	D	68
0100101	E	69
.....		
01011010	Z	90
00100000	SPACE	32
00001101	RETURN (CR)	13

In practice, you will not need to know anything about binary codes as this is taken care of by the electronic circuitry and components which comprise the computer system. It is sometimes useful to know the decimal value for different characters as there are characters available (such as ») which cannot be generated directly from the keyboard. The decimal value for any character can be found from the ASCII table usually supplied in the computer systems' manual.

Conversion of binary to decimal is quite simple and some examples are shown below for an 8 bit code:-

<u>128</u>	<u>64</u>	<u>32</u>	<u>16</u>	<u>8</u>	<u>4</u>	<u>2</u>	<u>1</u>		
0	0	0	0	1	0	0	0	0 = 8 decimal	Simply add together the numbers at the head of each column containing a '1'.
1	0	0	0	0	0	1	0	0 = 130 decimal	
0	1	0	0	0	0	0	1	1 = 65 decimal	
1	0	1	1	0	0	0	0	0 = 176 decimal	
1	1	1	1	1	1	1	1	1 = 255 decimal	

Other input devices are the mouse, joystick, touchpad and scanner. The **mouse**, a hand held device whose movements on a flat surface are echoed to the screen, has become universally used both as a simple to understand tool by newcomers to computers and as an easy and efficient way to input information into the computer. The **joystick** is much used by computer games players. The main use of **touchpads** is with laptop computers where there isn't room for a traditional mouse. The **scanner** is similar to a photocopier, but producing a computer image instead of a hard copy, which can then be modified or imported into a document using a desktop publishing program, or copied with a printer. In the case of text, special programs can perform Optical Character Recognition, and convert the image into an ASCII text file, and in connection with photographs, high quality digital images can be obtained, which can then be sent by e-mail or published on the Internet.

PERIPHERALS

Printers and plotters are both output devices and the necessary code conversion circuitry needed to convert the electronic signals from the computer system is built in to both of these devices. As previously mentioned, these may be connected to the computer via either a parallel or USB interface. Printers, or 'line printers' as they are sometimes known provide 'hard-copy' or printed output from the computer, most often when using a word processing program to write letters etc. Older daisy wheel and dot matrix printers have now been replaced almost completely by ink jet printers, which produce reasonable quality for both black and white and colour output, and are cheap to buy, and laser printers, usually black and white only, which are more expensive to buy, but are generally more rugged and cost less per page in running costs than ink jets. The quality of the output from a laser printer is extremely high and this type of printer is gradually replacing the others in many situations, although the running costs are high. However, compared with the ink jet, the initial cost of a laser printer is high, especially for colour lasers, which remain mainly the preserve of the professional. Plotters were used for very high quality graphic output, often employing multicoloured pens to provide attractive and clear presentations. High resolution work was possible

with the better quality plotters and many were capable of directly producing transparencies for overhead projection. However, nowadays, high quality laser printers are generally used for this purpose.

A '**modem**' or modulator-demodulator may be used to transfer to or receive data as a serial transfer from another computer by means of the public telephone system. The modem generally contains the necessary circuitry to convert the signals from the sending computer into audible tones which can be sent down the telephone line and conversely, to convert the incoming audible tones received from another computer systems into signals which will be understood by the receiving computer. Modern modems plug directly into the standard telephone socket and then to the computer, leaving the telephone still available for normal use. Another type of modem is common on PCs - the internal modem, which is placed directly into a spare slot inside the computer, and has a lead to connect into a telephone socket.

Compared with five years ago, this is the aspect of computing which has seen the most rapid progress. The, modems were a minority interest. Now, every computer has one, and there are very few computer users who don't use their machines for e-mail or "surfing" the World Wide Web. In addition to the analogue modem described above, there is also the digital ISDN (known as RDSI) modem, which gives a steady 64k (or 128k) connection, as well as the permanent ADSL connection which is becoming available in more and more areas.

NETWORKS

Networks are another way of connecting computer systems. A local area network (**LAN**) can be used to connect a series of systems so that software, data and peripheral equipment can be shared. Many PCs come with an inbuilt network card; if not, basic cards are very cheap and easy to fix. A typical domestic or small office setup, such as the author's, consist of a few computers connected together with cables through a central hub able to take, typically, 4 or 8 computers. Each computer has a unique identity, and can "talk" to the others. A network such as this, where all the computers have equal importance, is called a peer-to-peer network. Where one computer feeds the Internet and maybe software to the others, this is called a server and client network. The client computers are often called Workstations.

MASS STORAGE COMPONENTS (Disks)

Another name for this is OFF-LINE storage. Any programs or data in RAM memory will be lost when the computer is turned off, unless the system has a built-in battery back-up. Mass storage avoids such a loss and the need to retype a program when next required or to recreate any data lost on power-down by providing a medium on which such programs or data may be saved or stored for later use. The three most popular forms of mass storage are floppy disk, hard disk and CD-ROM, although there are others such as DVD and Iomega ZIP. The names floppy and hard, for the two disk types, are misleading. It is better to think of floppy disks as removable disks and hard disks as fixed.

Both hard and floppy disks employ magnetic recording techniques such as that used for audio recordings of music and speech. Floppy disk systems are still often used for home computers since they offer a cheap and readily obtainable way of providing this storage facility, despite their slow speed and very limited capacity. They are also very cheap, and universal – every PC will have a floppy disk drive.

Floppy disks as purchased may have to be prepared before use. During this operation which is known as 'formatting', a series of invisible circular tracks where files will be stored are written on the disk and a directory is prepared at the same time. Depending upon the computer system, there may be 40 tracks or 80 tracks, each being divided into sectors, and either one or both sides of the disk may be used. Together with this, storage on the disk may be in either single or double density, this meaning that twice as much may be stored in the same space. An 80 track disk, double-sided and double-density will store 720 Kbytes and high-density disk, which are now almost universal, will store 1.44 Mbytes (million bytes) of data or

information. Program and data files may be stored on disk as one contiguous unit or may be split into several parts if the space situation requires it. This situation is totally invisible to the operator and is dealt with by the disk operating system (DOS, Windows or Linux.)

Floppy disks are loaded into a disk drive when required and removed at the end of the operating session before the computer is switched off. They comprise a protective casing inside which the disk itself is free to rotate, this being driven by the disk drive motor at about 300 revolutions per minute. A drive spindle clamps onto the central hole in the disk and the 'read-write' head contacts the disk surface through a slot in the casing. This head actually rests on the surface of the disk and may be likened to the pick-up of a record player, the disk is rotating and the head can move from the inside track to the outside track of the disk so that any particular area of the disk can be covered. The directory normally occupies the central track and all other tracks are used for data storage. Because of the fact that floppy disks are removable from the disk drive, they can be damaged easily and must therefore be treated with care. Bending, leaving near a magnetic field or allowing dirt or liquids onto the disk surface can cause data loss and they should always be stored carefully in sturdy storage boxes. Together with this, the fact that the read-write head actually contacts the disk surface means that they will eventually wear out and copies (backups) should be frequently made so that duplicate files are always available when the inevitable happens. Floppy disks used to come in two common sizes, 5.25" and 3.5", but now only the higher capacity 3.5" disks are still in common use.

Despite their (in computing terms) extreme age and very limited capacity, nothing has yet come close to rivalling the 3.5" HD floppy as a universal removable data system. Attempts have been made – IBM marketed a 2.88Mb floppy, Sony and others tried with the LS-120, which would take special optical disks of 120Mb in addition to normal floppy disks, and Iomega market the ZIP drive, which takes disks of 100Mb capacity. Only the last of these has had any sort of success, finding for itself a niche market due to the comparatively cheap price of the media. However, it is not compatible with floppy disks, and a ZIP drive can only work in addition to, instead of replacing, a floppy disk drive.

Hard disks are a permanent part of the computer system and are mounted in a dust proof enclosure. Their capacity is much greater than that of a floppy disk or even a DVD, a common capacity being 10Gb, (Gigabytes, or 1024 Megabytes), although capacities of 50Gb or more are becoming increasingly common. The read-write head floats on a cushion of air just above the disk surface and they are therefore much more reliable than floppy disks. Access and transfer speeds are much faster than for floppy disk systems or CD. Like all electronic systems, they can fail and data stored on these disks should also be periodically backed up. A device known as a tape streamer is often used for such an operation, although with the ever reducing price of hard disks it is perfectly sensible to use a second hard disk as a backup to the first.

A hard disk system generally comprises two or more disks mounted one above the other on a common drive spindle and there are multiple read-write heads. The more disks used to make up the system, the greater the overall capacity of the system as a whole.

A **CD-ROM** uses a compact disk, identical to those used in audio systems, and a special player. A single CD-ROM can store up to 600Mb. The CD-ROM has mainly replaced the floppy disk as the storage media for commercially available software. This is the main use of the original, read only, CD-ROM standard. However, there are also two read-write standards. The first, and cheaper, system involves disks which can only be written to once, but, obviously, the data can be read back many times. The second uses media which can be re-written to hundreds of times, but it is expensive, and not all CD-ROM players can read the disks. CD-ROM is slowly being replaced by DVD-ROM, which is very similar – the disks look identical and a DVD player can also read CD-ROMs – but which carries up to 4.7Gb of data. DVD writers are slowly (July 2002) coming onto the market, but the media is very expensive, and it will be some time before the DVD-ROM overtakes the CD-ROM as the main physical

software distribution media. Both CD and DVD suffer from the drawback, compared with hard disk, of a lower capacity and much slower operation.

SOFTWARE

Just as a television is useless without a broadcast to receive, so a computer will need software. The range of software available for popular computers is mind-boggling - games, word processors, Internet browsers and e-mail clients are the applications that always spring to mind, but equally software has been written for all sorts of specialist purposes. As only one example, a software package is available to clergy to help them plan their sermons! Software is marketed in various ways, and it pays to know the difference between them.

(1) **Licensed.**

This is most familiar way for most people. You go into the shop and buy the product. You are then the owner of the media on which the software is stored, and may use the software without restriction, but generally only on one computer. You are NOT allowed to copy it to give to a friend, although you may often legally make a backup copy for yourself to use in case of damage to the original. Although less frequent nowadays, it used to be common practice for licensed software to be copy protected, to prevent illicit duplication.

(2) **Shareware.**

This is a "try before you buy" system. You most likely download the software from the Internet. If you like the product, you register it for a fee with the author or their agent, which will often entitle you to technical support, free updates, etc. If you do not like it you are honour bound to delete it from your system, usually after a month. Increasingly, such trial software will cease functioning after a month in any case. You are often actively encouraged to copy and distribute the shareware version.

(3) **Freeware.**

This is distributed over the Internet like shareware, but there is no registration fee- you can use it for free, and copy and distribute it as you wish. Copyright remains with the author, and you may not distribute the programs if they have been altered in any way. Some freeware authors still encourage you to register with them – it gives them an idea of how successful their software is, as well as giving them satisfaction of a job well done. A few packages are released as free for non-commercial use. If you intend to use these in a business setting, you are supposed to pay a fee.

(4) **Public Domain**

This is distributed in the same way as shareware. Unlike freeware, the author does not claim copyright, and you can alter and copy it as you wish. The only restriction is that you cannot issue your improved version as anything other than public domain: Once PD, always PD. The PD world has become increasingly complex with the release of the Linux operating system, a complete, public domain, alternative to Windows. Various types of licence have been developed, all true to the PD concept, but ensuring that PD software does not get used in commercial products. You may well come across the GPL and GNU licences. Unless you are a software developer, and intend to use the source code (which is made available as a condition of the GPL) in your own software, you can safely ignore the dire legal warnings in these licences!

COMPUTER APPLICATIONS

The modern computer is capable of operating in many totally different ways. Examples of computer applications (i.e. the uses to which they can be put) are as follows:

(1) **Games**

Probably the most widely known of the abilities of computers is their capability of playing games of many different sorts, from chess and bridge to Space Invaders. There is nothing wrong in playing computer games; I do it myself, and the more intelligent games can aid the understanding of how computers work.

(2) **Word Processing**

The computer has the advantage over a typewriter in that the text is viewed on an electronic screen which can be written and over-written until the piece is totally correct. The text can then be printed, as many copies as required, word perfect, on a printer. As a matter of interest, what you are reading now was produced on a home built AMD 1600+ PC compatible using a free word processing package called Star Office.

(3) **Spreadsheet**

Everybody knows that the computer has the ability to calculate. The spreadsheet expands on this capability. At its simplest, it is a grid of positions, or cells where information can be placed. The information will consist of some text, or a number or a formula. The formula will act on the numbers stored in certain cells and display the result.

(4) **Database**

A database is a collection of records, which can, to some extent, be likened to a card index with the advantage that any particular "card" or record is quickly retrieved and viewed.

(5) **Communications**

In the 1995 edition of this book, I wrote:

Computers can talk to each other via the ordinary telephone lines using a MODEM. Users can send Electronic mail to each other. Prestel is a well-known database accessible by users with a suitable computer who have paid the fee. A less well known facility is FidoNet, by which computer users all over the world can leave messages (E-Mail) for each other. To leave someone in the USA the equivalent of a five page letter will only cost, in addition to the 12 pounds per annum fee, the equivalent of a five minute local telephone call!

Nothing has changed more rapidly or more radically in the computer world than communications.

In 1995, communications were a minority interest, mainly limited to those who ran and subscribed to bulletin boards. Your author ran such a BBS. There was a world wide network connecting BBSs, called Fidonet, which was used for the exchange of e-mail and discussion groups, but it was comparatively slow. Individual BBSs often offered a certain amount of software, but there was no way that you could call one BBS and access data on another. What changed things was the phenomenon called the Internet, now probably the number one reason why people buy a computer.

With the Internet, you can still, of course, send and receive e-mail and indulge in discussion groups. Although the volume of such traffic is probably millions of times greater than that carried through Fidonet, the basic principals are much the same. However, the greatest difference is the World Wide Web. This gives you, from your computer at home, direct access to millions of web sites world wide, and the information they contain. You can also obtain most software electronically, by

"downloading" or copying it from a remote system to yours, saving you a trip to the shops and saving the author distributions costs.

Modems are still by far the most common means of accessing the Internet, either analogue or the more efficient ISDN (RDSI in Spain), but increasingly, so-called broad band links, usually ADSL, are becoming available to the domestic user and offer a permanent fast Internet connection.

Word Processing, Spreadsheets, Databases and Communications are often given the collective name of Information Technology.

(6) Programming

Computers would be no use without software, and someone has to write the software!. The art of writing computer software is called programming. Whilst it is unrealistic to think that the average computer user can write software to compete with the large commercial undertakings, a great deal of satisfaction can be obtained from running a program which is all your own work. Programming is a great help in learning how a computer works. Most serious software is written in a language called C or C++, but easier languages, such as BASIC and its modern graphical successor Visual BASIC provide an easy way for you to learn about simple programming.

(7) Other applications

Include CAD (Computer Aided Design), Desktop Publishing (including publishing for the Internet), Education, and the so-called vertical applications, where a basic application is developed for a particular activity or industry.

With the advent of digital cameras, software for handling digital images is becoming more common, as is software to create (burn) CDs.

THE INTERNET

WHAT IS THE INTERNET?

The Internet is an interconnected network of computers worldwide. The computers exchange information and data with each other. It is often simply called "The Net".

Could you explain a bit further?

The Internet has evolved from a project called ArpaNet, as long ago as 1973, designed to share information between computers in the US Defence Department. In 1986, the US National Science Foundation instigated NFSNet as a backbone communication service for the Internet. When the technology to access this network started becoming affordable by the ordinary home enthusiast in the early 1990s, commercial providers started springing up to make such access possible and thus transformed the Internet into the network of today.

There are hundreds of thousands of powerful computers (servers) permanently connected to the Internet by means of a fixed line. They are able to send and receive many thousands of e-mails or web pages per second. Many of these do not have public access, and are outside our remit. But others belong to Internet Service Providers. At one end, they are connected to the Internet. At the other they have the means to be connected to many users by means of dial-up connections, using modems, or, increasingly, ADSL routers. They act as the interface between the user's computer and the Internet. An Internet Service Provider will need to make their money one way or another, either through telephone charges or a monthly or annual fee.

HOW CAN I ACCESS THE INTERNET?

We'll stick to the three most likely to be relevant to you.

- 1. The commonest way is to use your own computer and telephone line to connect into the computer system of an ISP, an Internet Service Provider.**

What do we mean by this?

You will have a personal home computer, which will have suitable hardware and software. The only special piece of hardware you will need is the MODEM. This is a device which connects into the telephone system and enables your computer to exchange information with another by means of an ordinary telephone call. Almost any home computer you buy nowadays will come with a modem. Even if you don't have one, they are not expensive and are available to suit almost any computer. You do NOT need the latest, most powerful computer to access the Internet. A modest or even second-hand one will do just as well.

For the enthusiast, there are other, more expensive ways of using the telephone system, such as RDSI and ADSL, but these are not necessary for the occasional user, and form no part of this basic introduction..

The software you need will almost certainly be included in that supplied when you buy the computer. Any special software required will be supplied by the ISP you choose. The software will include an e-mail reader and composer, and the same for newsgroups, as well as a "browser", the software used to access the World Wide Web (WWW), and the technical programs needed to use the modem. The hardest part is configuring your own software to connect to your ISP and connect (log on) with your own unique user identity and password. Many ISPs will supply a CD-ROM which will make this as easy as possible, needing you only to supply personal details and doing the rest for you.

Because buying a computer (although they have many other uses) is a considerable investment both financially and in terms of commitment, before you take the plunge you may well wish to test the water first.

- 2. Another way, particularly suitable for a novice or occasional user, is to use the services of an "Internet Cafe".**

An Internet Cafe is somewhere, not necessarily a bar or cafe, where there are computers connected to the Internet and available for hire, usually by the half-hour.

You pay your fee and you are then free to use the computer to "browse the web". You will normally be able to take a hard (printed) copy of anything that you wish to bring away with you. You will not normally be allowed to download files, but you may be able to access, read and reply to e-mail if your ISP provides a web based mail reading facility (many do), and to read but not necessarily post to newsgroups. You may well find that the cafe staff will be more than willing to help you to get started, especially if you visit at a quieter time. You can expect to pay around 3 Euros for a half hour session.

3. Use Web TV or other non-computer Internet Access Technology.

A recent development is the addition of basic Internet facilities to other technology, such as web phones and e-mail and the WWW through your TV. These devices have a simple, single purpose computer built in, together with any additional hardware necessary to get on line. In my opinion, Web TV is not worth the money for what are only very basic facilities, and can be safely ignored. Another possibility is a Web Phone, such as the Alcatel model being offered by Telefonica. This will give you basic e-mail and web browsing facilities, without the need to buy a computer, and for a lesser price, but still very basic.

METHOD	ADVANTAGES	DISADVANTAGES
Your Own Computer	Flexible, always available, completely user configurable, will perform all functions	Initial expense, requires time and some skill to set up.
Internet Cafe	No initial outlay required, no setting up, assistance possible	Expensive for anyone but the most occasional user, remote.
Web Phone, Web TV	Easy set up, comparatively cheap	Very limited functionality.

WHAT WILL IT COST?

Let's look at the three methods of access we've just discussed

The commonest way is to use your own computer and telephone line to connect into the computer system of an ISP, an Internet Service Provider.

The computer can (almost) cost you as much or as little as you want. You do not need the latest or most powerful machine if all you wish to do is to access the net. Indeed, a secondhand model will be perfectly adequate, and you could pick a suitable machine up for less than 300 Euros. An average new computer would cost 700 to 1000 Euros, including printer.

Your machine will need a modem. All modern machines have these as standard, but even if not, a modem won't cost more than 50 Euros.

You will need a telephone line. Your computer can plug into the same socket as your ordinary telephone – you may need a 2 to 1 adapter for a Euro or so.

ISPs have various charge schemes depending on how heavy a user you are, but the simplest and most suitable for newcomers is a "free" account. The ISP won't charge you, but you will access your ISP through a special, local rate number. All the time you are on line, Telefonica will be charging you for a local rate call. Some of this money will be passed on to your ISP – that's how they get their cut! Local rate is much more expensive between 0800 and 1800, so most people with these accounts try to avoid trying to go on-line at these times, which is why things can get pretty congested in the evenings.

Another way, particularly suitable for a novice or occasional user, is to use the services of an "Internet Cafe".

You can expect to pay around 3 Euros for a half hour session, plus extra for any printouts (hard copy) you may want, plus, of course, the cost of any food and drink consumed!

Use a Web Phone or other dedicated Internet Access Technology.

I'm not sure of the price of the Alcatel phone, but I expect it to be in the order of 500 to 600 Euros. There may be an extra installation charge.

The internet connection is on the same "free" basis as that offered by ISPs, so you pay for a local call all the time you are on line.

Web TV, as offered by Quiero, was even cheaper. You rent the box, which gives you access to digital terrestrial TV, as well as e-mail and the Internet, so there is very little initial outlay. Once again, the internet connection is through a local phone call. Unfortunately, Quiero is currently (July 2002) in liquidation and I don't know what, if any, service the new owners will offer.

What Can I Do On The Internet.

Let's look at some of the FAQs (Frequently Asked Questions) about the four main uses of the Internet.

1. E-Mail.

(a) One of your e-mail address is billnot@newsguy.com. Why, and what do the various bits mean?

My ISP is named Newsguy. They own the Internet name, or domain, newsguy.com. Like all Internet domains, this is registered centrally. My user name with them is billnot. When somebody sends me an e-mail, it is routed to newsguy.com, a known, listed destination. When it gets there, the local (Newsguy) system places it in the mailbox named billnot. When I call in to collect my mail, I must give my user name and password before I am allowed access. Once I have collected my mail, it is removed from my mailbox so that there is room to receive some more.

(b) How can I be sure nobody else can read the e-mail I sent you.

In absolute terms, you can't. Just as you have to take it on trust that mail sent through the ordinary post ("snailmail") won't be tampered with, so it is with the Internet. With the many millions of e-mails sent each day, the administrators have better things to do than to examine your e-mail arranging a meeting next Friday!!

(c) What can I send by e-mail?

As well as text messages, you can send pictures, program files or proprietary format files (PFF) such as Microsoft Word Documents. These are called "attachments".

(d) Can I send the same message to several people?

Yes. All e-mail software has the facility to send a "carbon copy" to as many people as you wish, simply by specifying their e-mail address. If you don't want them to know they aren't the only recipient, you can even send "blind carbon copies". The unjustified sending of multiple copies of a message to unsolicited recipients is called "spamming", but a legitimate use of a "mail shot" would be to advise all your friends of your new e-mail address! A very common, and legitimate use of multiple mailing is the mailing list, an electronic round table discussion, similar to Usenet (below). If you join (subscribe) to a mailing list, you receive all posts made to the list, and if you send a message to the list it will be received by all the subscribers. I run several mailing lists, one of them aimed at novice computer users such as yourself.

(e) How do I remember all these e-mail addresses.

You don't have to. If you reply to an email you receive, the software will automatically address it to the original sender. You can also tell the software to add the sender's details to your "address book" to make it easier next time.

(f) How can I avoid receiving "spam"

Once again, in absolute terms, you can't, anymore than you can avoid receiving junk mail in your normal post. Most spam is best simply ignored. However, if it becomes persistent or offensive, there are ways of complaining to the sender's ISP.

(g) How can I avoid receiving viruses?

We'll talk about this whole issue later.

2. Newsgroups.

(a) I've never heard of these.

That's not surprising. They're one of the oldest uses of the Internet around. They even have their own network name – Usenet. Because they are, in the main, simple text

forums, they don't have the glitz and "street cred" of the more glamorous uses of the Net. But they are invaluable in enabling those interested in a particular topic, wherever they may be in the world, to ask questions, discuss and enjoy their hobby or whatever. I find the support group for my particular medical disorder invaluable in keeping me in touch with latest products and ideas.

(b) How many Newsgroups are there?

Over 60.000 and growing daily. Something for everybody.

(c) How can I access Newsgroups?

Your ISP will have a News Server, which you can access with the news reading software built into your e-mail system, or a dedicated (free) news reading program.

3. FTP.

(File Transfer Protocol. A way of moving files from one computer to another)

(a) Why would I need FTP?

To download a piece of software, or some other file. Most browsers have FTP facilities built-in, but if you find yourself downloading a lot, you will probably make use of a specialist FTP program. This will be particularly true if you need to upload anything to the Internet, for example your own web page!!

4. HTTP. "The World Wide Web".

(a) I keep hearing about this. What is it?

The World Wide Web is an ever expanding, interconnected set of information and other displays, or "pages", written in a computer language known as HTML (HyperText Markup Language), and located by means of a URL, (Universal Resource Locator), using HTTP, (HyperText Transfer Protocol). You have absolutely no need to know how any of this works in order to view the pages ("surf the web"). It is very seldom you will even have to type in a web address in order to find the page you want. When you first start a browser, it will automatically be set up to load your starting, or "home" page. This is usually the address of a web database site, or "search engine". You will type in the sort of information you wish to know, and the search engine will display a list of what it thinks are the most likely sites to be of interest to you. You simply point with the mouse to the site you want to look at and click. The software automatically loads that page. If it's the starting page of a large site, it will have links of its own to its subpages, which you can select with the mouse. If you find a site that interests you, and you may wish to visit again, you can add it to a list, usually called "Favorites" or "Bookmarks", so that you can go straight to it another time. At no time do you have to remember its URL.

Many websites include links to others, so you can find yourself looking at, and discovering many new sites from visiting just one. These new sites will have links of their own, and so it goes on. That's why it's called the Web. Everything is linked to everything else!

From websites, you can usually save the information on your own computer, or print out anything you might like to keep for further study.

Many websites are "interactive". They ask you for information and act on it. A search engine is an obvious example, open to all and with little security risk. An on-line bank account is at the other end of the scale, the bank taking all possible precautions to ensure only the authorised account holder can access their account.

Web browsing can become addictive. "Just a few more sites" is a common cry.

(b) What can I find on the web?

Almost anything. It is, of course, a vast electronic reference library, but it's much more than that. Millions of people, including me, have posted their own pages, with their personal details and much else. These will probably only be of interest to their immediate families, but are there if you want them.

All major, and most minor, companies have websites to promote their products and, increasingly, as the centre of their support operations. Support staff are often asked the same questions over and over again. These are put on the site as FAQs (Frequently Asked Questions).

All hobbies and pastimes have devotees with websites dedicated to them.

(c) *What can I do on the web?*

Just a few examples:

- Read the Daily Telegraph
- Bet with Ladbrokes
- Find out about the Costa Blanca Expats Internet Group
- Discover Bill Hayles' other hobby
- Run your bank account with Banco Popular
- Buy a book from Amazon
- Access adult material with Tasha Addams

(d) *Glad you mentioned those*

(d1) *Isn't buying on-line dangerous?*

No. It's considerably safer than buying something in a shop. I buy on-line frequently, and the worst that's happened is that the goods I ordered never turned up, nor was I charged.

(d2) *So you admit the web is riddled with porn!*

Like the top shelf of the newsagent, it's there if you want it, and are prepared to pay for it. If you don't, you can easily ignore it.

I CAN'T USE THE INTERNET BECAUSE:

I'm too old

Many people in their seventies and older have taken to the Internet. They even have a name – the "Silver Surfers". Older people are very likely to have relatives living far away. E-mail is a perfect way to keep in touch.

I can't type

You don't need to be an ace touch typist to be able to use the Internet. Most web browsing is done with the use of a mouse. It takes only a few minutes to work out how to use it. You'll need the keyboard to compose an e-mail, but you can take as long as you like, and any mistakes can be corrected and recorrected so the final version will always be correct.

I'm no good with technology. I can't even program the video.

Using the Internet is much easier than programming the video, and far more rewarding.

I can't afford it.

It needn't be as expensive as you think, and you can always use an Internet cafe. And just think of all those long distance phone calls and letters you will no longer be needing to send.

I'm worried about viruses

Let's debunk a couple of myths about these.

"Virus" is just a term. They have absolutely nothing to do with the world outside your computer. YOU cannot catch a computer virus.

They CANNOT physically destroy your computer. The worst case scenario is that all the information stored on your computer will be lost and you will have to start again from scratch.

A virus is nothing more than a computer file designed to do something unplanned and sometimes nasty to your computer. You can only acquire a virus by inadvertently copying it onto your computer from the outside world. This includes from a floppy disk or CD-ROM when installing software, or through a network, such as the Internet. The other way, which is what concerns us, is as an attachment to an e-mail. It is, in practical terms, impossible to guarantee against receiving a virus in this way. But a virus can only do you harm if it is activated or "opened". It is very easy to avoid this happening. Firstly, use anti-virus and /or firewall software. Experts argue as to which is the best, but basically they all work, and any is many, many times better than none. Secondly, and most importantly, do not allow your e-mail reader to open any attachment without your permission. Set your software to read only "plain text". Plain text CANNOT contain a virus. Be very suspicious of any unsolicited e-mails with attachments. If you delete them before opening them, they cannot harm you. Finally,

the fear of viruses causes much more anxiety than the beasts themselves, so don't worry!!!

GETTING CONNECTED

SPANISH ISPs

The two main Spanish ISPs are Terra (aka Teleline)
<http://www.terra.es>
owned by the Spanish telephone company Telefonica,

and Wanadoo,
<http://www.wanadoo.es>
owned by its French parent of the same name,
and it is on these that we will concentrate.

Other large ISPs are:

Eresmas <http://www.eresmas.com>

Arrakis <http://www.arrakis.es>

Retevisión <http://redestb.es>

and a newcomer:

Telepolis <http://www.telepolis.com>

Telefonica also have their own ISP, <http://www.telefonica.net>

ACCOUNTS

All the ISPs offer "free" accounts. With these, you pay the ISP nothing, but connect through a phone call charged at local rates. They also offer various flat rate (Tarifa Plana) and set hours (Bonos) schemes. Offers vary from month to month - you will need to check the websites of the ISPs.

In a later session, we will set up an account with Wanadoo

TECHNICAL SUPPORT

Both Terra and Wanadoo advertise telephone and e-mail support in English 24 hrs a day 7 days a week. Feedback I've received is that this facility is indeed available, although you may need to wait.

WHAT DO I GET WITH MY ACCOUNT?

You get a name, password and phone number to use to dial-up into your connection.

With that, the main thing you will be able to do, of course, is to use the World Wide Web - browse or "surf".

With all accounts you will get at least one (and sometimes more) e-mail address - somebody@terra.es, etc, which you can use to send and receive e-mail and attachments.

You will also get access to the Usenet newsgroups. We are fortunate in that all the major Spanish ISPs have perfectly adequate news servers, unlike their British counterparts.

With most accounts you will be given a small amount of free webspace, maybe 5 or 10 megabytes; enough to publish something like a personal page or similar if you have (or learn) web publishing skills.

All these activities (with the exception of publishing your own page) will be explored in later sessions

"SURFING", or BROWSING THE NET

We will use various features of the Internet to achieve specific goals. We will make use of search engines to point us to the information, which we will then access and, where appropriate, download it. These notes are not going to reveal what the results

will be - if you wish, you can make your own notes, and I will make further comment in our "matters arising".

- (1) Asking a simple question: What is the population of Guatemala?
- (2) Research: What does a giant millipede look like?
- (2) Internet related: Finding out details of the Freeserve UK ISP (I'm using Freeserve to keep English as the language)
- (3) Internet related (again). Finding out about Hotmail
- (4) Exploring on line banking (using BankonLine)
- (5) Real time information: What is the state of play regarding arrivals at Alicante Airport
- (6) Software: downloading an alternative (free) news reader to Outlook Express
- (7) Discussion Groups: The Costa Blanca Expats.

To use search engines effectively, it helps to understand "Boolean Algebra, the system used for advanced web searches. I hope the examples below make it clear.

a AND b
means that BOTH a and b must be present for the site to be a "hit"

a OR b
means the EITHER, or BOTH a and b must be present

a XOR b
means either, but NOT both

NOT a
means that a must NOT be present.

NEAR is used by AltaVista and some others to mean "within ten words"

The logic of the search can be clarified by the use of brackets, such as:
(a AND b) OR (c AND d)

Search terms with spaces in them are best used in quotes to avoid ambiguity, as some engines consider a space to be the same as AND, i.e
"Bill Hayles" AND "Clive Read"

SETTING UP AND CONFIGURING AN INTERNET CONNECTION

Before you can make any use of the Internet from your computer, you need to connect!! The connection itself is often known as a "socket", into which applications (clients) such as e-mail readers and web browsers "plug" themselves in order to gain access.

SIGNING UP FOR AN ACCOUNT

This couldn't be easier, provided you have a basic understanding of Spanish or have somebody with you who does. We will demonstrate the procedure for signing up for an account with Wanadoo. The process is very similar for the other major ISPs.

Go to the web page of your chosen ISP, and follow the instructions.

For example, for Wanadoo, click on "Acceso Internet" from the home page, pick your account type, and on "Quiero Darde de Alta. Fill in the forms, and that's that. Make sure you make a note of the information given (listed below) which you will need to establish your connection.

We will be assuming that you are using Windows 95 or Windows 98, and that you have just obtained an account with one of the major Spanish ISPs. We will also assume that your modem is correctly set up and working.

The ISP will have supplied you with the following information (items marked with * you give to them!)

Your user name to make the connection (and password *)

Your local access node (the number you need to dial to connect)

Your IP address

(Perhaps) their DNS (name server) addresses.

Although you don't need them just to connect and browse the web, you will also be given details of:

Your user name to access your e-mail (and password *)

Your e-mail address

Their POP3 server

Their SMTP server

Their news server

HOW DO WE CONFIGURE OUR CONNECTION?

Open "My Computer", then "Dial-up Networking".

Click on the "Make New Connection" icon.

In the "Type a name for the computer you are dialing", put whatever you like - this will be the icon description when the connection configuration is completed.

The "Select a device" box should already be filled in. Unless you have more than one modem, there will be no reason (or easy way) of changing this.

There is no need to click the "configure" box, unless you know what you're doing. The default settings are reliable rather than lightning fast.

Click "next"

You will be asked to type in the number of your local connection. Put all nine digits in the "telephone number" box, and nothing in the area code - this makes life easier later! Make sure the country or region code is showing "Spain (34)". If not, your computer is incorrectly set up!

Click "next" and you will be told you have successfully created a new connection - but your work's only just starting!!

CONFIGURATION - SECOND STAGE

Go back to the "Dial-up Networking" folder. Your new connection should be shown there.

Right click on the icon and select "Properties"

On the first page, "General", make sure no digits are displayed in the area code box, and make sure "Use area code and dialing properties" is unchecked (it's checked by default)

On the next page, "Server Types", the server type can be various things (if it's greyed out, it's unchangeable and right!), but should refer to some sort of PPP connection. If not, continue anyway and if you have no luck call for help.

The boxes underneath are where Windows gets it wrong!

Only "Enable Software Compression" and "TCP/IP" should be checked. Uncheck all others.

Now click on the TCP/IP settings box. This is where the fun starts!

The "addresses" you are being asked to input consist of a set of four numbers, between 0 and 255. Your ISP will have given you these.

Unless you have an ADSL connection, you will be using a dynamic IP. Check the "server assigned IP" box, and that's all you will need to do for that.

Although, increasingly, servers are configured so that you can use server assigned DNS, defined DNS is quicker. The WINS settings will always be 0.0.0.0

For Wanadoo, the Primary DNS is 62.37.228.20 and the secondary DNS 62.36.220.75

For Terra, the Primary DNS is 195.235.113.3 and the secondary DNS 195.235.96.90

For Eresmas, the Primary DNS is 62.81.16.197 and the secondary DNS 62.81.0.1

"Use IP compression header" and "Use default gateway" should both be checked.

Click on "OK". Don't touch the scripting and multilink pages.

Go back to the "General" page and click OK.

CONNECTING!

Double click the icon for your connection.

You will be confronted by a dialog box with some fields filled in. The user name will (probably) be wrong.

You need to change it to the user name for logging on to your account. This is NOT the same as your e-mail or pop3 name. I can't tell you what it will be - you will have been told when you signed up for your account, and I hope you made a note of it, but it's probably something like

myusername@wanadoo

MYUSERNAME@telelineb (Terra)

myusername@eresmas.com or

myusername@alehop (both Eresmas)

MYUSERNAME\$telefonica.net (Telefonica)

The password is whatever you chose.

If you have followed these instructions correctly, the number to call should be filled in correctly, but if not, correct it.

Click on the "connect" button and you should be connected. You will know you've successfully connected by the dialog box disappearing, and a little icon of two connected screens appearing in your System Tray. No news is good news - if the connection fails, you will be told.

Also, most (but not all) modems make noises as they connect.

I HAVEN'T CONNECTED. WHY?

If you've heard no noise from your modem, then it probably isn't connected to your phone line! Check all connections, and that somebody else isn't using your phone.

If you're told "wrong user name or password", check both for errors of spelling and case. The Internet is, in general, case sensitive.

If you hear "¡Digame!" coming from the modem, you've dialled the wrong number and have a real person at the other end!!

Another possible reason is simply that all lines at your server are busy!!

In all cases, check everything and try again.

When successfully connected, you can start browsing .

OUTLOOK EXPRESS

 <file:///F:/office/docs/websites/oasis/grab20010521-151624.jpg>

Outlook Express is a multi-purpose mail, news and directory service client that comes as part of most Microsoft operating systems.

There is a lot wrong with OE; very few experienced Internet users employ it. However, it is the most commonly used client, and for this reason we must assume it to be the client used on most people's computers.

We can forget "directory services". I know of nobody who uses them. News we will talk about in another session. Today, we will concentrate on setting up accounts and sending and receiving e-mails.

SETTING UP AN ACCOUNT

Start Outlook Express. Click on "Tools" then "Accounts"

There should be a pop-up box something like:

 <file:///F:/office/docs/websites/oasis/grab20010521-1>

Click on "Mail", then "Add", then "Mail"

First insert your name, as you want it to appear in outgoing e-mail messages, then click next.

Now check "I have an existing e-mail address I'd like to use", and enter the e-mail address (your "public" address that was given when you obtained your ISP account (my.name@wanadoo.es, for example)

Click next. Unless you have a most unusual account, your incoming mail server will be POP3., and your outgoing mail server SMTP. Enter the addresses of these servers, i.e. pop.wanadoo.es and smtp.wanadoo.es.

Click next. Now enter the user name and password given you to access your e-mail. Depending on your ISP, these may be different from the user name and password needed to connect to the Internet (your socket).

You will now get a "congratulations" message. When you click "Finish", your new account should have been added



SENDING AND RECEIVING YOUR E-MAIL

Connect to your ISP ("log on"). Start Outlook Express and click on "Tools", "Send and Receive", "Send and receive all" (there are other ways to do it).

If everything has been configured correctly, any e-mails waiting for you at your ISP should now be downloaded onto your computer for later perusal, and any outgoing messages sent.

HOW TO READ E-MAIL

Outlook Express is very insecure. We'll discuss this later. E-Mails received in plain text are safe, but anything written in HTML or with an attachment could contain a virus, even if it is from someone you know well. Take what precautions you can. You will receive junk e-mail (Spam). Most is harmless, if irritating, but it is best to delete unsolicited mail without reading it. That way it cannot harm you. If you want to open an attachment (and very often you will), check its extension first. Above all, invest in antivirus software.

HOW TO COMPOSE AND REPLY TO AN E-MAIL

Unless you have a special reason not to, you should always send your e-mail using plain text. Since attachments are what cause a lot of the virus problems with OE, it is polite to explain in your e-mail exactly what the attachment is, and invite the recipient to check with you first if they're not sure.

There are accepted ways to reply to an e-mail. Of course, between friends it doesn't matter, but in public forums, and in business or other formal correspondence, it is courtesy to use the correct form. There are two golden rules.

DO NOT TOP POST!

When replying, do not put your reply at the top of the e-mail and quote the whole original message underneath. This is the way Outlook Express does it by default, but even Microsoft, in their documentation, agree it is wrong

SNIP IRRELEVANT MATERIAL

Put your reply **underneath** the part of the original message to which it refers, and delete (i.e. Don't include) any parts of the original that are unnecessary. In other words, don't be a bandwidth hog. are an original message and reply.

Here's an example. Note the use of the quote symbol (>).

Original

Hi, Bill

Can you make it to the Oasis Centre on 26th May to give another of your sleep inducing talks?

Is your laptop available, and will you need the projector?

Regards

Clive

Reply

Hi, Clive

On 22nd May 2001 at 12:13 +0200 you said:

> Can you make it to the Oasis Centre on 26th May to give another of your sleep inducing talks?

Sure. Make sure everybody has comfortable beds this time.

>Is your laptop available

Henrietta is free

> will you need the projector?

If anybody wants to see what I'm doing, then yes please!

Hasta sabado

Bill

bill@billnot.com

CONFIGURING OUTLOOK EXPRESS

The default configuration of Outlook Express is far from satisfactory, and there is a lot that can be done to improve things:

In View - Layout, delete all unnecessary options:

A screenshot of a file path displayed in a software interface. The path is "file:///F:/office/docs/websites/oasis/grab20010522-". The text is in a dark red font. To the left of the path is a small icon representing a file or folder.

file:///F:/office/docs/websites/oasis/grab20010522-

All you need checked is "folders list". Whatever you do, do NOT have a preview pane. This opens attachments without being asked ; a major cause of virus and trojan infection.

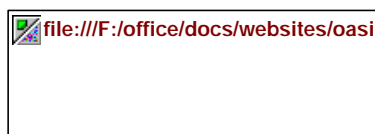
The main tool for configuration is Tools - Options. We'll discuss this in depth during the session. You may wish to watch and take notes.

A screenshot of a file path displayed in a software interface. The path is "file:///F:/office/docs/websites/oasis/grab20010522-123627.j". The text is in a dark red font. To the left of the path is a small icon representing a file or folder.

file:///F:/office/docs/websites/oasis/grab20010522-123627.j

Of course, you may prefer to use a better e-mail reader than Outlook Express. Well regarded clients include Eudora, Pegasus, Turnpike and my own favourite, Becky.

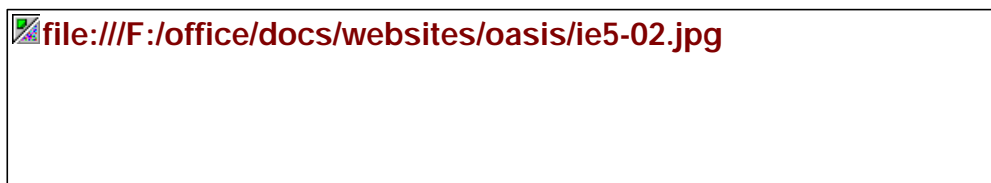
INTERNET EXPLORER



Internet Explorer is a Web Browser. A browser enables you to move through the Internet looking at material (pages) that others have placed there. It is estimated that nearly two thirds of all "surfers" use are some form of Internet Explorer. This dominant position is all the more surprising when you consider that only four years ago, nine out of ten browsers were using Netscape Navigator, for which they had to pay. The reason that IE dominates is not just because it is bundled with Windows. So does Outlook Express, but this holds a much less exalted position in the e-mail client stakes. The difference is that IE is a competent product. You will not be subjected to any anti-Microsoft rants in this section!

Most web browsers can do a lot more than just display pages, and IE is no exception. Therefore, I'm going to divide the demonstration into two parts - configuring and understanding the browser, and its use in practice.

CONFIGURING AND UNDERSTANDING INTERNET EXPLORER.



Different versions of Internet Explorer have slightly different menus. The graphic above is captured from the screen of Internet Explorer 5.0

Let's take the menus one by one. If a particular option is of no interest, I will ignore it.

The FILE menu.

The first option under File is **New**, which has the option "Window". This is very useful, as it enables us to have more than one browser window open at a time. The new window opens displaying the same content as the other one, but from then on, the two (or more) may be used independently, showing totally unrelated content. This is particularly useful if you have a page that you want to keep coming back to whilst browsing others.

Open is used when browsing off-line, to view HTML documents that you may have on your own hard disk, probably that you have saved earlier.

Save and **Save As** save the web page you are viewing onto your own hard disk. However, the save may not be complete. In particular, items, such as graphics, that are linked from another page, will not be saved. However, it's a very useful way to keep text content of a page locally.

Page setup defines how pages print on your printer, and Print means print! However, again, pages do not necessarily print how you expect them to. Web pages are set up for viewing, not printing. One reason why these notes are less than perfect both on the screen and on paper is that I've had to compromise to make them acceptable in both formats.

A little bit of trial and error is needed.

Send makes the sending of a page or link by e-mail easier. You can also put a link on your desktop.

Properties will give you information about the page you are viewing

Work offline enables you to view stored material without being nagged to connect to the Internet.

Close closes the current window - the opposite of Open.

Edit

This is where you can **copy** bits from a website into another application, such as a document or e-mail. You can only normally **cut** or **paste** when working off line, just copy. **Select all** is a quick way of copying a whole page.

Find is a useful tool for finding a specific piece of text in a long page.

View

Toolbars enables you to choose which toolbars are visible on your browser. The Status bar is the small bar at the bottom of the screen, which you can hide if you wish. The Explorer bar is a column which appears on the left hand side of the screen displaying whatever you selected.

Go to lets you move back and forth amongst the pages you have already visited, or to your home page.

Stop stops the download of the current page. **Refresh** reloads it from the remote server; useful if, for example, it contains information which rapidly changes.

Source is an extremely useful option, especially for budding web designers, as it enables you to view the raw HTML code that produces the display you see on the screen.

Full screen removes most of the toolbars, leaving you with a wider viewing area (press F11 to get them back).

Favorites (note the US spelling) is where all the web pages you visit regularly are stored. We will discuss them in the second part of the session.

Tools

Tools is where you configure IE to your personal requirements.

We can forget everything except **Internet Options**, but opening this brings up a whole Aladdin's cave of choices.

The first tab is **General**.

Home Page is where you define the page to be loaded when you first start IE (or a blank page if you prefer)

Temporary Internet Files handles your cache. When a page is loaded, it is stored in a special location on the hard disk, so that if you need it again soon after it can be recalled from that location rather than be redownloaded. Occasionally, if things seem slow or stuck with your browsing, it can be a good idea to delete these files and force them to be reloaded. With settings, you can modify the behaviour of the cache and, in particular, how it is used. You can also browse the content of your cache folder, or even move it if you wish.

Don't worry about **Security** or **Contents** - these are irrelevant in the real world.

Connections is a link back to your dial-up networking folder. You can modify your connection settings from here.

Programs defines what other clients IE should load for functions it doesn't perform itself, to send e-mails etc.

Many of the **advanced** settings are beyond our scope. However, some are easy to understand, and useful; in particular the **multimedia** settings where you can turn off the automatic loading of such things as sounds and videos.

Help

Takes you to what is really a comprehensive help facility, which it is worth investigating if you want to get the most out of IE

The Standard Buttons

There is nothing that can be done with the standard buttons that cannot be done another way, but they control the commonest functions and thus make life easier. They can be customised if you wish, but the standard ones are:

Back - takes you back to the previously loaded page

Forward - takes you to next previously loaded page (assuming you've used Back!)

Stop - stops loading of the current page

Refresh - refreshes the current page (previously discussed)

Home - takes you to the home page defined in Internet Options

Search - opens an explorer bar linking to a search engine (there are better ways of doing this)

Favorites - opens an explorer bar linking to your favourites. In the explorer bar, you can not only click on and thus open them, but organise them into logical folders, delete the ones you no longer require, and customise them to your heart's content. Favorites get added while you're browsing - we'll show you how to do that later.

History - opens an explorer bar listing all the sites you've recently visited, in chronological order. This is very useful if you find you want to revisit somewhere that you haven't added to your Favorites.

Mail links to Outlook Express, or your preferred mail client

Print prints the current page.

BROWSING WITH INTERNET EXPLORER.

The Basics

In the address bar of Internet Explorer, the URL (address) of the page you are viewing or loading will be displayed. It will normally start `http://` or `https://`. Note that the Internet works to Unix standards, and thus the separators are forward slashes (/), not backward (\). You don't often have to type a URL in here, but when you do, you have to get it right. After you have typed it in, click on the "Go" button (or just press return) to start the load. If you have a "Links" tab after "Go", I suggest right clicking and deleting it as it isn't much use!

After a page is loaded, as you move the mouse pointer across it, it will normally show an arrow. If you pass it over normal text, it will show a text bar (I), inviting you to make a selection for copying. If the pointer changes to an arrow, you are on a HYPERLINK, the basis upon which the whole World Wide Web works. A hyperlink is a block of text (or an image) that contains a link directing you to something else, such as another web page, a picture, a file to download or even a drop down menu. Double (left) click a hyperlink, and the link will be executed. Another form of hyperlink is the table, where you will be invited to select an option from a selection offered to you by clicking on a downward arrow.

Useful pages for novices to practice on are:

<http://www.microsoft.com> (for hyperlinks) and

<http://www.microsoft.com/downloads/search.asp> for hyperlink tables

Right Clicking

A surprising amount of quite clever work can be done simply by right clicking your mouse in the right place.

Right clicking when a pointer or text bar is displayed will bring up the following options, some of which will be greyed out as not being applicable, and many of which we have already covered

Back

Forward

Save Background As - an option to pinch a pretty background for your own computer!

Set as wallpaper - make the website background your own computer wallpaper

Copy background - so you can paste it into your own designs

Set as desktop item - make the displayed page your desktop (if you have active desktop enabled)

Select all

Paste

Create shortcut - create a link to the current page in your start menu or on your desktop

Add to favourites. This is where you add the current page to your list of favourites so that you won't have to remember it's URL again. If you have more than one favorites folder, you will be invited to "Create in" as well as change the name to something you'll recognise. "Make available offline" is only worth checking if you have saved the page first.

View source - will open up Notepad with the HTML source of the page loaded for you to inspect, save, or hack.

Encoding

Print

Refresh

Properties

Right clicking on a hyperlink brings up a different set of options.

Open - open the link; the same as left clicking the link

Open in new window - just as it says, opens the link in a separate window

Save target as - saves the object the link refers to on your hard disk. Particularly useful when the link points to a software download. You will be asked to specify where on your hard disk you want to save the object.

Print target - does what it says, but you might like to examine it first!

Cut, Copy and Paste all as before.

Copy shortcut - copies the hyperlink onto your start menu or desktop

Add to favorites (the target, that is)

Properties (of the target - useful if you don't know what it is)

SEARCH ENGINES

The main way to find web sites is to make use of a search engine. There are literally thousands of these (I was invited to have <http://billnot.com> submitted to over 15.000 search engines for a suitable fee), but there are only a few main ones. All have their strengths and weaknesses, and the one you use most will be a matter of personal preference.

Boolean Algebra

Sounds horrible, doesn't it!! We've mentioned it before. But all it boils down to is an easily understood form of logic used by many search engines to enable specific searches to be made. The operators (as they are called) are:

AND NOT OR NEAR "()

So, a search of

Benidorm AND buses

Would search for all sites which had the words "Benidorm" and "buses" in them (maybe you wanted to find out about the bus services in Benidorm).

A little more complicated

Javea NOT "Clive Read"

Would return all sites with the word "Javea", but not "Clive Read". "Clive Read" has to go in inverted commas, as it has a space and we want it to be treated as a single word.

Now:

(Benidorm AND buses) OR (Javea NOT "Clive Read")

would combine the two searches above (to what end, I cannot think!)

Particularly useful is NEAR, meaning within 10 words. However, only a few search engines recognise it, the most notable of which is <http://www.altavista.com>. Going back to the first search

Benidorm NEAR buses

would be a better search, as it would not return large pages where the two words were a long way apart and not connected.

Error Messages.

Sometimes, the page you want is unavailable for some reason or another. The commonest reasons, with the "error number" which will be displayed are:

403: Forbidden. You have tried to access an area not publicly available

404: Not found. The URL cannot be found. Either the site no longer exists, or you have made a typing error.

500: Internal server error. A fault occurred, either in the remote server or your own IE. Try again.

This is something where it cannot possibly hurt to experiment and "play", either on your own computer if you have one or in an Internet cafe.

NEWSGROUPS

What are Newsgroups?

Newsgroups are round-table discussion forums. They are just about the oldest part of the Internet, and originate from the days when there were many different on-line networks - CompuServe and CIX were two commercial examples; Fidonet was the major hobbyist example. Academic Institutions had their own networks, one of which was (and still is) Usenet - the Users' Network. In 1993, Usenet started to be distributed using the then fledgling Internet, and became open to all, an event still mourned by a few diehard Usenetters. This history means that newsgroups are different from almost anything else available through the Internet - for better or worse, depending on your point of view.

The term "newsgroups" is a misnomer. Newsgroups have nothing to do with News as generally understood. They are discussion groups. Every newsgroup has a topic, as defined in its charter, and usually obvious from its name. Most newsgroups are strictly text only, but there is a set of newsgroups, known as binaries, whose purpose is the distribution of pictures or, less commonly, sounds movies or software. As an example I'll use the group known as [uk.railway](#). The topic in this group is railways in the UK. Somebody will make a post, known as an "article", to the group, which could be anything as long as it's on topic. The post won't be to anybody specific, but to the group as a whole. Hopefully, somebody reading the article will have something to contribute, make a reply (again, to the group as a whole, not an individual), and, from that original article, a *thread* will develop. The thread may veer far from the original question (but still on topic), but due to the way news is transmitted, by NNTP, keeping track of threads is made easy, especially if you use specialist newsreading software. So far, this sounds much like the mailing lists run by Yahoo and others, and which you may subscribe to. The essential difference is that there is no central focal point; nobody running the strings. There is (usually) no moderator, and the group is propagated through many news servers throughout the world. Anybody can subscribe. There is no list of members. You can come and go as you please, and do what you like, provided you don't upset too many others in the group. If you do, they will let you know in no uncertain terms, and if you persist, they may well send an abuse report to your ISP which, in the most severe case, may lose you your account. Most (but not all) ISPs run news servers as a service to their subscribers. There are also many thousands of other news servers, both public (free and commercial) and private. The author subscribes to a commercial news server, [Newsguy](#). Within Spain, the only major ISP that doesn't run a news server is (as far as I know) Eresmas. Terra /Teleline and Wanadoo both run good servers.

There are, probably, something like 60.000 newsgroups. No server carries them all, although Newsguy carries 40.000 and Wanadoo over 30.000. However, even Terra's 20.000 is enough to satisfy all but the most esoteric of tastes. If you want to get a taste of Usenet without resorting to a news client, there are various web based news

services and archives. Probably the best; certainly the best known, are the archives at [Google Usenet Archives](#), an offshoot of the Google web search engines.

It is possible to access Usenet with Outlook Express, but its capabilities as a news client are limited. Once people active in Usenet, they prefer to use a specialist news reader, of which Agent and Free Agent are by far the most popular. If you want to discover more about the world of Usenet, there is only one place to go:

<http://www.usenet.org>

We will be downloading a list of newsgroups from Wanadoo, using Free Agent, but here's a list of a few of the groups I subscribe to, just as a taster.

alt.games.transport-tyc
alt.support.ostomy
uk.railway
soc.subculture.expatriate
alt.os.linux.suse
uk.games.mornington-crescent
es.rec.trenes

How do I get started?

The first thing you will need is a newsreading client. Although Outlook Express is often used as a newsreader, especially by beginners, you may find it worth downloading specialist software. By far the most popular is a program called Free Agent (because it's free!), which you can download from <http://www.forteinc.com>

Having opened your news client, you will need to download your ISP (or other server's) newsgroups list. This will take some time, but only needs to be done once (except for periodic updates). If you download and run Free Agent, it will take you through this step after you have entered your NNTP and SMTP servers. Free Agent needs details of an SMTP server to enable you to make a personal e-mail reply to a Usenet post. Since we are using Free Agent, I'll let you see the process for yourself rather than attempt to describe it. More about Free Agent below.

However, if you've ignored all advice, and are using Outlook Express do this! Go into Tools > Accounts > Add > News. Enter the name that you wish to use in your newsgroups posts. Click "next" and enter your e-mail address. Click next and enter the name of your NNTP server. This will be something like news.myisp.es. Most news servers do not require you to log in, but if yours does, enter your name and password after checking the box. Once you have checked the "finish" box, you will be invited to download a list of newsgroups. Make sure you are connected to the Internet, click "yes", and make yourself a well deserved cup of tea while the download takes place (usually between 10 and 20 minutes). Now you will be invited to subscribe to newsgroups, by typing in a piece of search text. This is a crude way of finding the groups you wish to subscribe to.

You will now find that your news service has been added as a new folder. Most actions to do with news are done by right clicking. You can bring your list of newsgroups up to date, subscribe and unsubscribe from groups, and download new articles (which OE quirkily calls "synchronising"). Unless you have a full time connection, it's worth downloading both headers and articles in one go - being plain text, articles don't take long to download. Select a newsgroup. The article headers will be in the top frame, their contents below. For the time being, content yourself with reading others' contributions.

If you are using Free Agent, the steps are very similar to those above, and most of the default Free Agent settings will be just fine, but as with Outlook Express, the caveat about working offline and downloading headers and bodies in one go applies. It also may well pay to limit the number of headers and bodies retrieved on one go. You do this in Groups - Default Properties - Retrieve.

How do Newsgroups get distributed?

When somebody uploads a newsgroup article to their news server, it is then distributed to all the other news servers that carry that group all over the world. Subscribers will download the article from their chosen server. All servers will only retain the article for a fixed period of time, typically a week. After that, it will be

deleted, known as "expiring". When you subscribe to a group, and choose to download all articles, you will find that nothing is older than a week or, just possibly, two weeks. In the case of binary groups, the expiry time can be as little as 24 hours. Therefore it pays to collect your news regularly. Unlike e-mail, you don't have a personal "mail box"; you download from a central pool. If the article has expired, you're too late.

What are binary groups?

Binary groups are groups that carry articles with attachments, such as pictures, movies, sounds or software. Most of these groups are totally innocuous. Others carry pornography or pirated software and music. The bandwidth (size) of a binary article is typically many hundreds of times larger than that of a mainstream text article. This means that many servers limit the number of binary groups they carry, and give them short expiry times. If you wish to subscribe to binary groups, be aware of the implications. Firstly, downloads will take a considerable time with a normal analogue modem. Secondly, it's very easy to post a virus carrying executable attachment to a binary article, so take the strongest anti-virus measures at your disposal. Finally, make sure your server carries the group you want (Wanadoo seems to carry everything!). Specialist software is available which makes the use of binary groups easier. Outlook Express is hopeless, and Free Agent merely acceptable, if you are downloading many megabytes of software or images, many of which will have been posted in several parts.

Posting to Newsgroups.

OK, so you've been reading a group for a couple of weeks, and think you have the "feel" of it. Somebody has made a post and you find you just **must** reply. You will be fine if you keep to these rules, which I have put in what I think is order of importance.

Post using plain text

Don't post upside-down. Replies go AFTER the text they're referring to
Don't over or under quote. Quote just enough to make your context clear
Try to stay on topic (some groups are stricter on this than others)
Remember that your post becomes public property. You have no control over who reads it or replies.
For this reason, if something starts to become private between individuals, take it to e-mail.

Most newsgroups have at least one self-appointed guardian who will be happy to pounce if the newcomer steps out of line. Ignore them! You will find everybody else does. However, if you are unfortunate to suffer howls of rage (flames) from many subscribers, then try to find out what you are doing wrong.