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COMPUTER APPLICATION 1

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INTRODUCTION TO COMPUTERS

WHAT IS A COMPUTER?

Computer is an electronic device. As mentioned in the introduction it can do arithmetic calculations faster. But as you will see later it does much more than that. It can be compared to a magic box, which serves different purpose to different people. For a common man computer is simply a calculator, which works automatic and quite fast. For a person who knows much about it, computer is a machine capable of solving problems and manipulating data. It accepts data, processes the data by doing some mathematical and logical operations and gives us the desired output.

Therefore, we may define *computer as a device that transforms data*. Data can be anything like marks obtained by you in various subjects. It can also be name, age, sex, weight, height, etc. of all the students in your class or income, savings, investments, etc., of a country. Computer can be defined in terms of its functions. It can;

- i) Accept data
- ii) Store data,
- iii) Process data as desired, and
- iv) Retrieve the stored data as and when required and
- v) Print the result in desired format. You will know more about these functions as you go through the later lessons.

Terminologies

Data- they are raw facts fed into the computer (unprocessed data) i.e. john, Kenya e.t.c

Information- refers to processed data that has useful and meaning information.

Processing- refers to the process of manipulating data to produce information.

Booting- it refers to the process of powering on a computer. There are two types of cold booting namely;

- i) *Cold booting*-refers to powering on a computer by pressing the power on button.
- ii) *Warm booting*-refers to Re-starting of computer by pressing Ctrl + Alt + Del keys on the keyboard.

Fig. Personal Computer



CHARACTERISTICS OF COMPUTER

Speed

As you know computer can work very fast. It takes only few seconds for calculations that we take hours to complete. Suppose you are asked to calculate the average monthly income of one thousand persons in your neighborhood. For this you have to add income from all sources for all persons on a day to day basis and find out the average for each one of them. How long will it take for you to do this? One day, two days or one week

Accuracy

Suppose someone calculates faster but commits a lot of errors in computing. Such result is useless. There is another aspect. Suppose you want to divide 15 by 7. You may work out up to 2 decimal places and say the dividend is 2.14. I may calculate up to 4 decimal places and say that the result is 2.1428. Someone else may go up to 9 decimal places and say the result is 2.142857143. Hence, in addition to speed, the computer should have accuracy or correctness in computing.

Diligence

A computer is free from tiredness, lack of concentration, fatigue, etc. It can work for hours without creating any error. If millions of calculations are to be performed, a computer will perform every calculation with the same accuracy. Due to this capability it overpowers human being in routine type of work.

Versatility

It means the capacity to perform completely different type of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills.

Power of Remembering

Computer has the power of storing any amount of information or data. Any information can be stored and recalled as long as you require it, for any numbers of years. It depends entirely upon you how much data you want to store in a computer and when to lose or retrieve these data.

No IQ

Computer is a dumb machine and it cannot do any work without instruction from the user. It performs the instructions at tremendous speed and with accuracy. It is you to decide what you want to do and in what sequence. So a computer cannot take its own decision as you can. No Feeling

Storage

The Computer has an in-built memory where it can store a large amount of data. You can also store data in secondary storage devices such as floppies, which can be kept outside your computer and can be carried to other computers

Disadvantages of Computers

- They are expensive to purchase.
- Expensive to maintain
- Require skilled personnel to operate.
- They are expensive to maintain since they breakdown easily.
- They are accessible only to electrified areas.
- Changes in technology may render the system obsolete with time.
- They are health hazard since the light from the screen affects the eyes of the user.
- It leads to job unemployment due to the reduced labor force.

Applications Areas of Computers

1. **Banking system**- used to store the details of all bank customers in its all branches countrywide.
2. **Business organization**- they are used to store records and also account information.
3. **Education**- used for training in educational systems.
4. **Factories**- used to control processing machines in a factory so as to be more accurate and quicker than machines operated by human being.
5. **Stock control**- it enables the management of a firm to keep accurate and up to date results.

COMPUTER CLASSIFICATION

Computers are classified based on the following criteria;

- i) *Size*
- ii) *Type of data they process*
- iii) *Purpose*
- iv) *Generation*

I. Size

There are four types of computers according to size.

a) Super computers

They are the fastest and most expensive machines. They have high processing speed compared to other computers. They have also multiprocessing technique. One of the ways in which supercomputers are built is by interconnecting hundreds of microprocessors. Supercomputers are mainly being used for weather forecasting, biomedical research, remote sensing, aircraft design and other areas of science and technology. Examples of supercomputers are CRAY YMP, CRAY2, NEC SX-3, CRAY XMP and PARAM from India.

b) Main frame computers

c) These types of computers are generally **32-bit microprocessors**. They operate at very **high speed**, have very **large storage capacity** and can handle the work load of **many users**. They are generally used in centralized databases. They are also used as controlling nodes in Wide Area Networks (WAN). Example of mainframes are DEC, ICL and IBM 3000 series.

d) Mini-computers

This is designed to support more than **one user** at a time. It possesses **large storage capacity** and operates at a higher speed. The mini computer is used in multi-user system in which various users can work at the same time. This type of computer is generally used for processing large volume of data in an organisation. They are also used as servers in Local Area Networks (LAN).

e) Micro-computers

Microcomputer is at the **lowest** end of the computer range in terms of **speed** and **storage capacity**. Its CPU is a microprocessor. The first microcomputers were built of 8-bit microprocessor chips. The most common application of personal computers (PC) is in this category. The PC supports a number of input and output devices. An improvement of 8-bit chip is 16-bit and 32-bit chips. Examples of microcomputer are IBM PC, PC-AT

2. *Data processing*

We classify computers into three basic categories according to the way they produce data.

a) **Analog computers**

They measure physical magnitudes such as temperature, pressure e.t.c these computers are used for scientific and engineering purposes.

b) **Digital computers**

These types of computers are used for commercial data processing. They function by taking discrete numbers and performing mathematical calculation on them

c) **Hybrid computers**

These types of computers have both characteristics of the analog and the digital computers

3. **Purpose**

Computers can be classified into two;

a) **Special purpose**

These computers are designed to perform particular tasks only to solve problems of restricted nature. I.e. computers designed to control air traffic control.

b) **General purpose**

They are designed to solve a wide variety of problems.

4. *By Generation*

First Generation Computers

First generation computers used *Thermion valves*. These computers were large in size and writing programs on them was difficult. Some of the computers of this generation were:

ENIAC: It was the first electronic computer built in 1946 at University of Pennsylvania, USA by John Eckert and John Mauchly. It was named Electronic Numerical Integrator and Calculator (ENIAC). The ENIAC was 30_ 50 feet long, weighed 30 tons, contained 18,000 vacuum tubes, 70,000 registers, 10,000 capacitors and required 150,000 watts of electricity. Today your favorite computer is many times as powerful as ENIAC, still size is very small.

EDVAC: It stands for Electronic Discrete Variable Automatic Computer and was developed in 1950. The concept of storing data and instructions inside the computer was introduced here. This allowed much faster operation since the computer had rapid access to both data and instructions. The other advantages of storing instruction were that computer could do logical decision internally.

Other Important Computers of First Generation

EDSAC: It stands for Electronic Delay Storage Automatic Computer and was developed by M.V. Wilkes at Cambridge University in 1949.

UNIVAC-1: Ecker and Mauchly produced it in 1951 by Universal Accounting Computer setup.

Limitations of First Generation Computer

Followings are the major drawbacks of First generation computers.

1. The operating speed was quite slow.
2. Power consumption was very high.
3. It required large space for installation.
4. The programming capability was quite low.

Second Generation Computers

Around 1955 a device called *Transistor* replaced the bulky electric tubes in the first generation computer. Transistors are smaller than electric tubes and have higher operating speed. They have no filament and require no heating. Manufacturing cost was also very low. Thus the size of the computer got reduced considerably.

It is in the second generation that the concept of Central Processing Unit (CPU), memory, programming language and input and output units were developed. The programming languages such as COBOL, FORTRAN were developed during this period. Some of the computers of the Second Generation were

Third Generation Computers

The third generation computers were introduced in 1964. They used *Integrated Circuits (ICs)*. These ICs are popularly known as *Chips*. A single IC has many transistors, registers and capacitors built on a single thin slice of silicon. So it is quite obvious that the size of the computer got further reduced. Some of the computers developed during this period were IBM-360, ICL-1900, IBM-370, and VAX-750. Higher level language such as BASIC (Beginners All purpose Symbolic Instruction Code) was developed during this period.

Computers of these generations were small in size, low cost, large memory and processing speed is very high.

Fourth Generation Computers

The present day computers that you see today are the fourth generation computers that started around 1975. It uses *large scale Integrated Circuits (LSIC)* built on a single silicon chip called microprocessors. Due to the

development of microprocessor it is possible to place computer's *central processing unit* (CPU) on single chip. These computers are called microcomputers. Later *very large scale Integrated Circuits* (VLSIC) replaced LSICs.

Thus the computer which was occupying a very large room in earlier days can now be placed on a table. The personal computer (PC) that you see in your school is a Fourth Generation Computer.

Fifth Generation Computer

The computers of 1990s are said to be Fifth Generation computers. The speed is extremely high in fifth generation computer. Apart from this it can perform *parallel processing*. The concept of *Artificial intelligence* has been introduced to allow the computer to take its own decision. It is still in a developmental stage.

TERMINAL QUESTIONS

1. Why is computer known as data processor?
2. Explain in brief the various generations in computer technology?
3. Write a short note on Fifth Generation of computer. What makes it different from Fourth generation computer?
4. Why did the size of computer get reduced in third generation computer?
5. Give short notes on the following
(a) Versatility (b) Storage (c) Slide Rule (d) Babbage's Analytical Engine
6. Distinguish between Microcomputer and Mainframe computer

COMPONENTS OF COMPUTER SYSTEM

System- refers to collection of interrelated components that work together to achieve common goal/objective.

There are three major components of computer system namely;

- Human ware
- Computer Hardware
- Computer Software

Human ware

These refer to people/users that interface with computer. They use computers to carry out various tasks.

Computer Hardware

These refer to physical and tangible parts in computer system. It implies any device that one can touch by His/her hands and see with His/her own eyes.

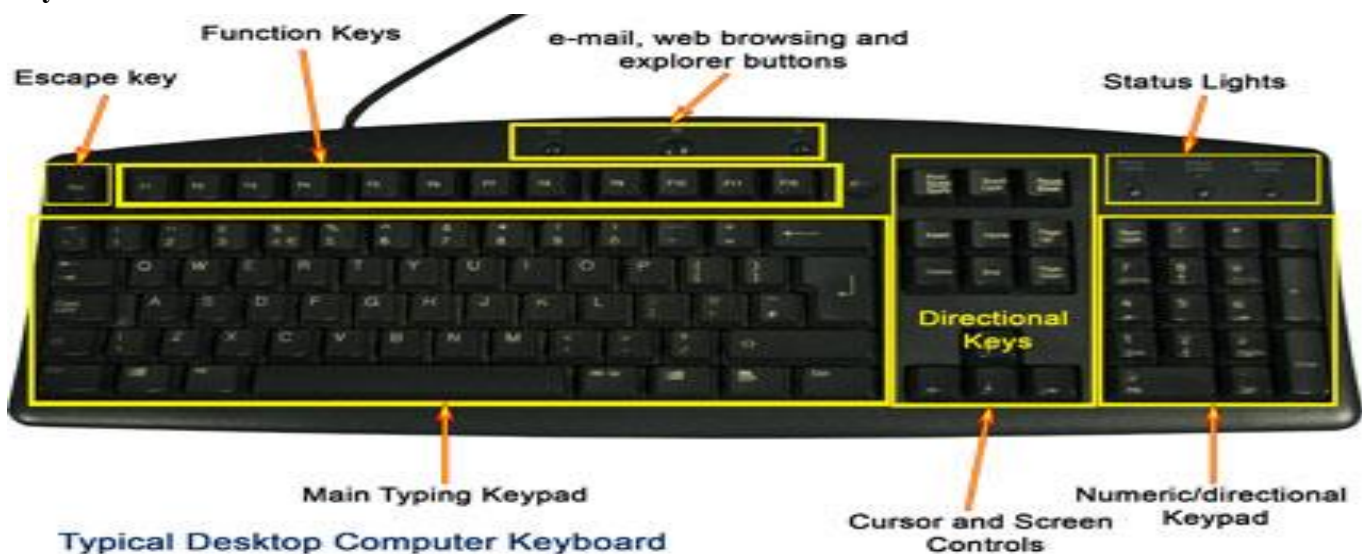
Ways of categorizing computer hardware;

- Input devices
- Processing devices
- Storage devices
- Output devices

1. Input devices:

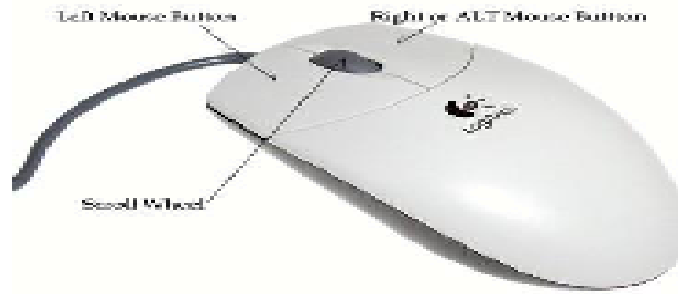
Input devices are necessary to convert our information or data in to a form which can be understood by the computer. A good input device should provide timely, accurate and useful data to the main memory of the computer for processing followings are the most useful input devices

Keyboard: -



This is the standard input device attached to all computers. The layout of keyboard is just like the traditional typewriter of the type QWERTY. It also contains some extra command keys and function keys. It contains a total of 101 to 104 keys. A typical keyboard used in a computer is shown in Fig. 2.6. You have to press correct combination of keys to input data. The computer can recognise the electrical signals corresponding to the correct key combination and processing is done accordingly.

Mouse



Mouse is an input device that is used with your personal computer. It rolls on a small ball and has two or three buttons on the top. When you roll the mouse across a flat surface the screen sensors the mouse in the direction of mouse movement. The cursor moves very fast with mouse giving you more freedom to work in any direction. It is easier and faster to move through a mouse.

Scanner: The keyboard can input only text through keys provided in it. If we want to input a picture the keyboard cannot do that. Scanner is an optical device that can input any graphical matter and display it back. The common optical scanner devices are Magnetic Ink Character Recognition (MICR), Optical Mark Reader (OMR) and Optical Character Reader (OCR).

- **Magnetic Ink Character Recognition (MICR):** - This is widely used by banks to process large volumes of cheques and drafts. Cheques are put inside the MICR. As they enter the reading unit the cheques pass through the magnetic field which causes the read head to recognize the character of the cheques.
- **Optical Mark Reader (OMR):** This technique is used when students have appeared in objective type tests and they had to mark their answer by darkening a square or circular space by pencil. These answer sheets are directly fed to a computer for grading where OMR is used.
- **Optical Character Recognition (OCR):** - This technique unites the direct reading of any printed character. Suppose you have a set of hand written characters on a piece of paper. You put it inside the scanner of the computer. This pattern is compared with a site of patterns stored inside the computer. Whichever pattern is matched is called a character read. Patterns that cannot be identified are rejected. OCRs are expensive though better the MICR.
 - Other input devices
 - Fingerprint sensor
 - Barcode reader
 - Webcam
 - Joystick
 - Lightens
 - Voice recognition system
 - Microphone

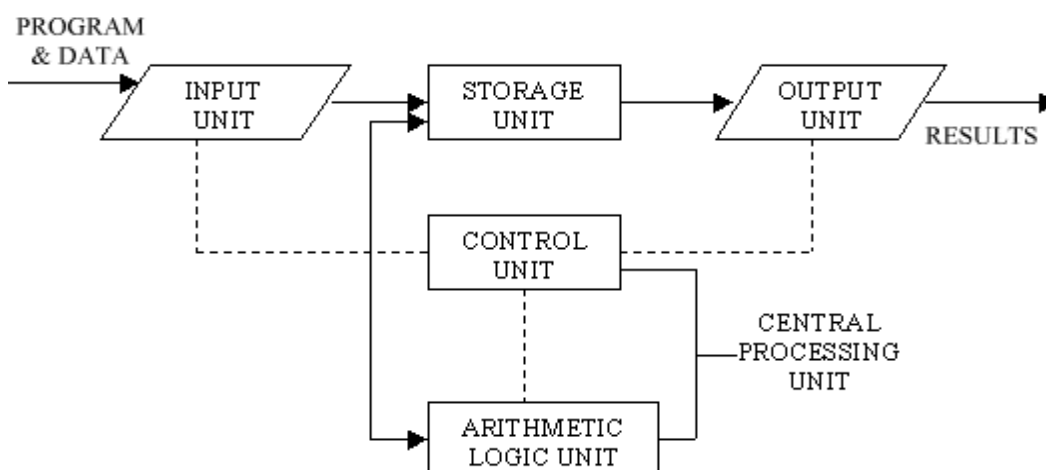


Fig. Basic computer Operations

2. Storage devices

Magnetic Tape: Magnetic tapes are used for large computers like mainframe computers where large volume of data is stored for a longer time. In PC also you can use tapes in the form of cassettes. The cost of storing data in tapes is inexpensive. Tapes consist of magnetic materials that store data permanently. It can be 12.5 mm to 25 mm wide plastic film-type and 500 meter to 1200 meter long which is coated with

magnetic material. The deck is connected to the central processor and information is fed into or read from the tape through the processor. It similar to cassette tape recorder

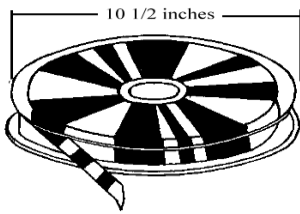


Fig. 2.3 Magnetic Tape

Advantages of Magnetic Tape:

Compact: A 10-inch diameter reel of tape is 2400 feet long and is able to hold 800, 1600 or 6250 characters in each inch of its length. The maximum capacity of such tape is 180 million characters. Thus data are stored much more compactly on tape.

Economical: The cost of storing characters is very less as compared to other storage devices.

Fast: Copying of data is easier and fast.

Long term Storage and Re-usability: Magnetic tapes can be used for long term storage and a tape can be used repeatedly without loss of data.

1. **Magnetic Disk:** You might have seen the gramophone record, which is circular like a disk and coated with magnetic material. Magnetic disks used in computer are made on the same principle. It rotates with very high speed inside the computer drive. Data is stored on both the surface of the disk. Magnetic disks are most popular for *direct access* storage device. Each disk consists of a number of invisible *concentric circles* called *tracks*. Information is recorded on tracks of a disk surface in the form of tiny magnetic spots. The presence of a magnetic spot represents *one bit* and its absence represents zero bit. The information stored in a disk can be read many times without affecting the stored data. So the reading operation is non-destructive. But if you want to write a new data, then the existing data is erased from the disk and new data is recorded.
2. **Floppy Disk:** It is similar to magnetic disk discussed above. They are 5.25 inch or 3.5 inch in diameter. They come in single or double density and recorded on one or both surface of the diskette. The capacity of a 5.25-inch floppy is 1.2 mega bytes whereas for 3.5 inch floppy it is 1.44 mega bytes. It is cheaper than any other storage devices and is portable. The floppy is a low cost device particularly suitable for personal computer system.

Optical Disk:

With every new application and software there is greater demand for memory capacity. It is the necessity to store large volume of data that has led to the development of optical disk storage medium. Optical disks can be divided into the following categories:

Compact Disk/ Read Only Memory (CD-ROM): CD-ROM disks are made of reflective metals. CD-ROM is written during the process of manufacturing by high power *laser beam*. Here the storage density is very high, storage cost is very low and access time is relatively fast. Each disk is approximately 4 1/2 inches in diameter and can hold over 600 MB of data. As the CD-ROM can be *read only* we cannot write or make changes into the data contained in it.

Write Once, Read Many (WORM): The inconvenience that we cannot write anything in to a CD-ROM is avoided in WORM. A WORM allows the user to write data permanently on to the disk. Once the data is written it can never be erased without physically damaging the disk. Here data can be recorded from keyboard, video scanner, OCR equipment and other devices. The advantage of WORM is that it can store vast amount of data amounting to gigabytes (10⁹ bytes). Any document in a WORM can be accessed very fast, say less than 30 seconds.

Erasable Optical Disk: These are optical disks where data can be written, erased and re-written. This also applies a laser beam to write and re-write the data. These disks may be used as alternatives to traditional disks. Erasable optical disks are based on a technology known as *magnetic optical* (MO). To write a data bit on to the erasable optical disk the MO drive's laser beam heats a tiny, precisely defined point on the disk's surface and magnetises it.

Flash disks: these are portable storage devices which comes in different storage capacities



3. Processing devices

The task of performing operations like arithmetic and logical operations is called processing. The Central Processing Unit (CPU) takes data and instructions from the storage unit and makes all sorts of calculations based on the instructions given and the type of data provided. It is then sent back to the storage unit. It comprises of:

Arithmetic Logical Unit (ALU)

After you enter data through the input device it is stored in the primary storage unit. The actual processing of the data and instruction are performed by Arithmetic Logical Unit. The major operations performed by the ALU are addition, subtraction, multiplication, division, logic and comparison. Data is transferred to ALU from storage unit when required. After processing the output is returned back to storage unit for further processing or getting stored.

Control Unit (CU)

The next component of computer is the Control Unit, which acts like the supervisor seeing that things are done in proper fashion. The control unit determines the sequence in which computer programs and instructions are executed. Things like processing of programs stored in the main memory, interpretation of the instructions and issuing of signals for other units of the computer to execute them. It also acts as a switch board operator when several users access the computer simultaneously. Thereby it coordinates the activities of computer's peripheral equipment as they perform the input and output. Therefore it is the manager of all operations mentioned in the previous section.

Main Memory Unit

It holds program instructions, data being processed and results of processing awaiting transfer to the output devices.

Difference between RAM and ROM

RAM	ROM
<ul style="list-style-type: none"> • It is volatile(temporary) • Data is erasable • Read and write information • Forms the major part • Active when the computer is on hence data is lost when the power goes off. 	<ul style="list-style-type: none"> • It is non-volatile(permanent) • Data cannot be erased • Read information only • Forms the small part

4. Output devices

Visual Display Unit: The most popular input/output device is the Visual Display Unit (VDU). It is also called the monitor. A Keyboard is used to input data and Monitor is used to display the input data and to receive messages from the computer. A monitor has its own box which is separated from the main computer system and is connected to the computer by cable. In some systems it is compact with the system unit. It can be *color* or *monochrome*.



Monitor

Terminals: It is a very popular interactive input-output unit. It can be divided into two types: hard copy terminals and *soft copy* terminals. A *hard copy* terminal provides a printout on paper whereas soft copy terminals provide visual copy on monitor. A terminal when connected to a CPU sends instructions directly to

the computer. Terminals are also classified as dumb terminals or intelligent terminals depending upon the work situation.

Printer: It is an important output device which can be used to get a printed copy of the processed text or result on paper. There are different types of printers that are designed for different types of applications. Depending on their speed and approach of printing, printers are classified as *impact* and *non-impact* printers. Impact printers use the familiar typewriter approach of hammering a typeface against the paper and inked ribbon. *Dot-matrix printers* are of this type. Non-impact printers do not hit or impact a ribbon to print. They use electrostatic chemicals and ink-jet technologies. *Laser printers* and *Ink-jet printers* are of this type. This type of printers can produce color printing and elaborate graphics.



Printer

COMPUTER SOFTWARE

As you know computer cannot do anything without instructions from the user. In order to do any specific job you have to give a sequence of instructions to the computer. This set of instructions is called a computer *program*. Software refers to the set of computer programs, procedures that describe the programs, how they are to be used. We can say that it is the collection of programs, which increase the capabilities of the hardware. Software guides the computer at every step where to start and stop during a particular job. The process of software development is called *programming*.

You should keep in mind that software and hardware are complementary to each other. Both have to work together to produce meaningful result. Another important point you should know that producing software is difficult and expensive.

SOFTWARE TYPES

Computer software is normally classified into two broad categories.

- Application Software
- System software

Application Software:

Application Software is a set of programs to carry out operations for a specific application. For example, payroll is application software for an organization to produce pay slips as an output. Application software is useful for word processing, billing system, accounting, producing statistical report, analysis of numerous data in research, weather forecasting, etc. In later modules you will learn about MS WORD,

Categories of application software

- a) General purpose application software/off shelf packages
- b) User program/tailor-made/in-house programs

General purpose application software/off shelf packages

This is a set of fully described programs developed to solve particular problems with little or no alterations.

Examples are

- a. Word processors e.g. Ms word, word perfect, word star etc
- b. Spreadsheets e.g. lotus 1-2-3,ms excel etc
- c. Database packages e.g. ms access, Sql,oracle-base i & ii
- d. Accounting packages e.g. sage,quickbooks etc
- e. Presentation packages e.g. power point, Ventura etc
- f. Desktop publishing packages e.g. adobe page maker, corel draw etc

User program/tailor-made/in-house programs- these are programs developed by users to solve specific processing tasks which suit specific organizations and may not suit other organization's needs i.e banks and hospitals

System Software: You know that an instruction is a set of programs that has to be fed to the computer for

operation of computer system as a whole. When you switch on the computer the programs written in ROM is executed which activates different units of your computer and makes it ready for you to work on it. This set of program can be called system software. Therefore system software may be defined as a set of one or more programs designed to control the operation of computer system.

System software are general programs designed for performing tasks such as controlling all operations required to move data into and out of the computer. It communicates with printers, card reader, disk; tapes etc. monitor the use of various hardware like memory, CPU etc. Also system software are essential for the development of applications software. System Software allows application packages to be run on the computer with less time and effort. *Remember that it is not possible to run application software without system software.*

It is further categorized into;

- i) Operating systems
- ii) Utility programs

Functions of the O.S

- i. Scheduling and loading of programs to provide continuous job processing sequence or to provide appropriate responses to events
- ii. Error correction and handling
- iii. Passing control from one program to another in order of priority when more than one program resides in the main memory
- iv. Protection of hardware, software and data from improper use
- v. Interfaces the hardware and software

Examples of operating systems

- a. Microsoft windows flavors e.g. windows 95,7,98,2000,xp,2003,etc
- b. Unix
- c. Novel
- d. Ms-Dos
- e. GNU

Utility programs

These are small or subprograms or modules that enable the computer to perform routine activities e.g. repairing disk, scanning for viruses. They include;

- i. Anti-virus
- ii. Debuggers
- iii. Compilers
- iv. Assemblers
- v. Translators
- vi. Database management systems etc

COMPUTER VIRUS

A **computer virus** is a program that spreads by first infecting files or the system areas of a computer or network router's hard drive and then making copies of itself. Some viruses are harmless, others may damage data files, and some may destroy files. Viruses used to be spread when people shared floppy disks and other portable media, now viruses are primarily spread through email messages.

Examples of viruses include,

- Trojan
- Bomb
- Worms

Symptoms of computer virus

- Slower than normal program operation
- Slow-down of general system
- Unusual and frequent error messages
- Change in file size
- Loss or change of data
- System crash
- Files turning into shortcuts
- Computer keeping on hanging

How viruses spread

- pirated software

- Using infected disks from vendors, computer repair shops and mail order houses
- Downloading and opening infected files from internet
- Hackers' intent on malicious destruction of networked systems to which they have gained unauthorized
- Fake software e.g. games

Prevention of computer virus

1. Avoid downloading information from unknown/unprotected websites
2. Avoid pirated software
3. Scan your disks before use using antivirus program
4. Avoid using disks in several computers
5. Install anti-virus software from a reputable vendor. Update it and use it regularly



What is Windows XP?

Windows XP is a *computer operating system* and *graphical user interface* (GUI), which enables you to work with a wide variety of programs on your computer, often simultaneously. Windows XP is itself a special computer program that communicates your instructions to the actual computer hardware, and displays the results. Some of the key features of Windows XP are:

Windows within Windows

A *Window* refers to a rectangular area of the screen, within which you may view program folders and files, or display file contents such as documents, spreadsheets, and graphic images. A window can occupy part of the screen, can be maximised to fill the entire screen, or can be minimised so that it is no longer visible but remains active and is easily re-accessed.

Windows Terminology

The following are just some of the terms used to describe the Windows desktop you are likely to run into. Most are indicated in the diagram below the list:

Desktop refers to the background of your screen on which the various programs run. Think of your computer screen as your electronic desk.

Icons are those small pictures on the desktop and inside folders that represent various programs and sometimes folders.

Folders are containers that can contain icons, programs, data or other folders (sub-folders). The default folder icon looks like a Manila file folder.

Title bar refers to the bar at the top of an open window that will tell you what the folder/window is (the title) and contains the minimize, maximize and close buttons. You can also use the title bar to move a window around.

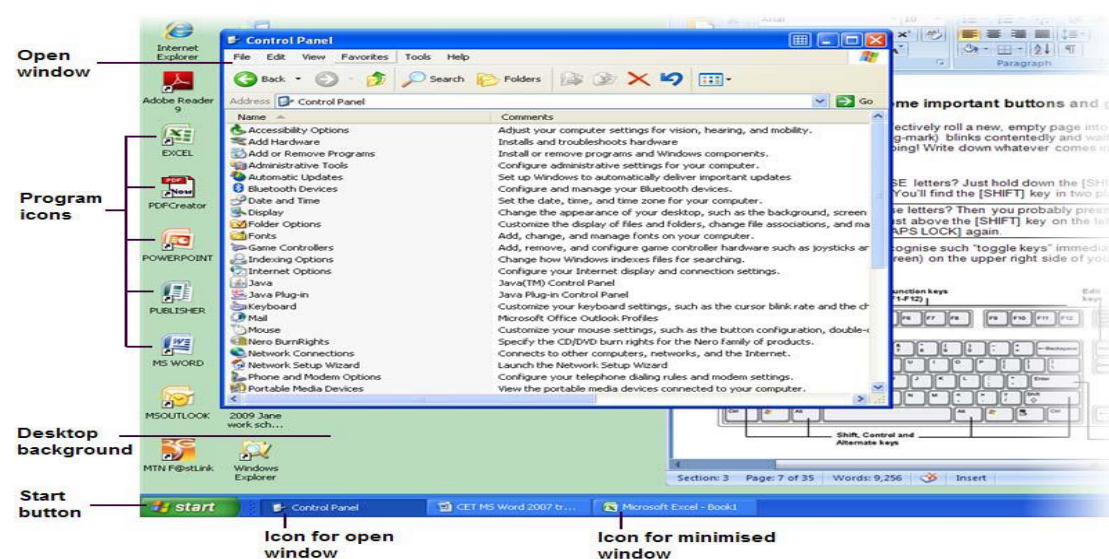
Cursor is the graphic which indicates where the mouse is and what sort of action it is performing. The cursor will change from the default arrow to various shapes according to the purpose it is serving at the time. For instance, it may form an I-beam shape when you are selecting text in a document or a double-arrow when you are resizing a window.

Task bar refers to the bar usually at the bottom of your Windows screen (it can be moved) with the Start Button on the left and the clock on the right. If there are some small icons immediately to the right of the Start Button, this is the Quick Launch, which provides an excellent way to store icons off your desktop.

Pop-up is a graphical user interface (GUI) display area, usually a small window, that suddenly appears ("pops up") in the foreground of the visual interface. Pop-ups can be initiated by a single or double mouse click or [rollover](#) (sometimes called a mouseover), and also possibly by voice command or can simply be timed to occur.

The Desktop

The *Desktop* gives you access to everything you need in Windows XP. It occupies the entire screen, and unlike a window, it can't be reduced in size. The desktop consists of a coloured or patterned *background*, containing small pictures called *Icons* that represent programs or data stores. Double-clicking on an icon opens the corresponding program or file inside a *window*.



The icons that are visible on your desktop depend on choices made at installation. In the UCT labs, you will usually see icons for;

My Computer (the gateway to your computer's drives, or data storage areas)

Recycle Bin (a temporary "trashcan" that holds files you want to delete)

The Taskbar

The *Taskbar* lies across the bottom edge of your screen. The *Start button* on the left provides access to all the

programs, data files, and other features available on your computer. When you open a program or file, a corresponding rectangular icon will be displayed on your taskbar - even if the program has been minimized and is no longer visible on your screen.



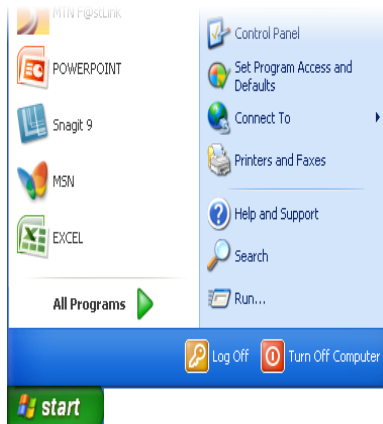
To access that program, you just need to click its icon on the taskbar!

In this example, two windows are open; the Control Panel window (which is slightly darker in colour) is currently active.

The Start menu

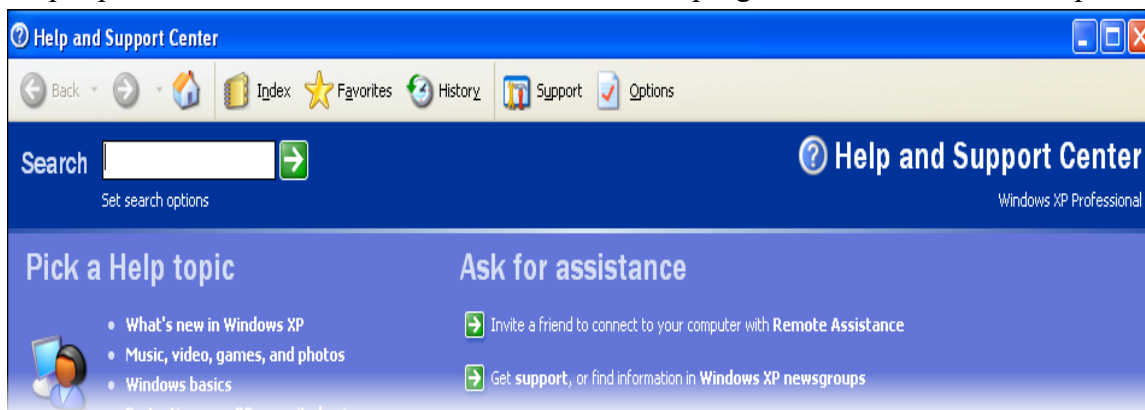
When you click on the Start button, a set of menu options is displayed. The contents will vary depending on your computer setup and most frequently accessed programs. If you click on the *All Programs* option, you'll see a list of all the programs installed on your computer – even those that don't have icons on the desktop.

Press the [ESC] (escape) key to close the menu.



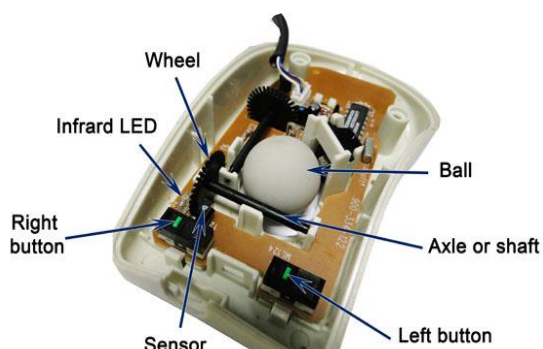
If you need help

One of the menu options displayed when you click the Start button, is labelled *Help and Support*. If you select this option, a Help window will open. To get help on a specific topic, type a word or phrase in the blank space at the top left of the window and then click the search arrow; alternatively, you can click to browse any of the Help topics listed in the window. Click the X in the top right corner to close the Help window.



Using your mouse

The mouse is your most useful tool when working with Windows! It allows you to quickly select and run programs by simply clicking a button.



It all clicks into place

Mouse techniques

Pointing: Move your mouse so that the cursor points to an item on the screen.

Clicking: Hold the mouse still, and click the left mouse button once. Clicking usually selects an object (highlighting it) or opens a menu or window.

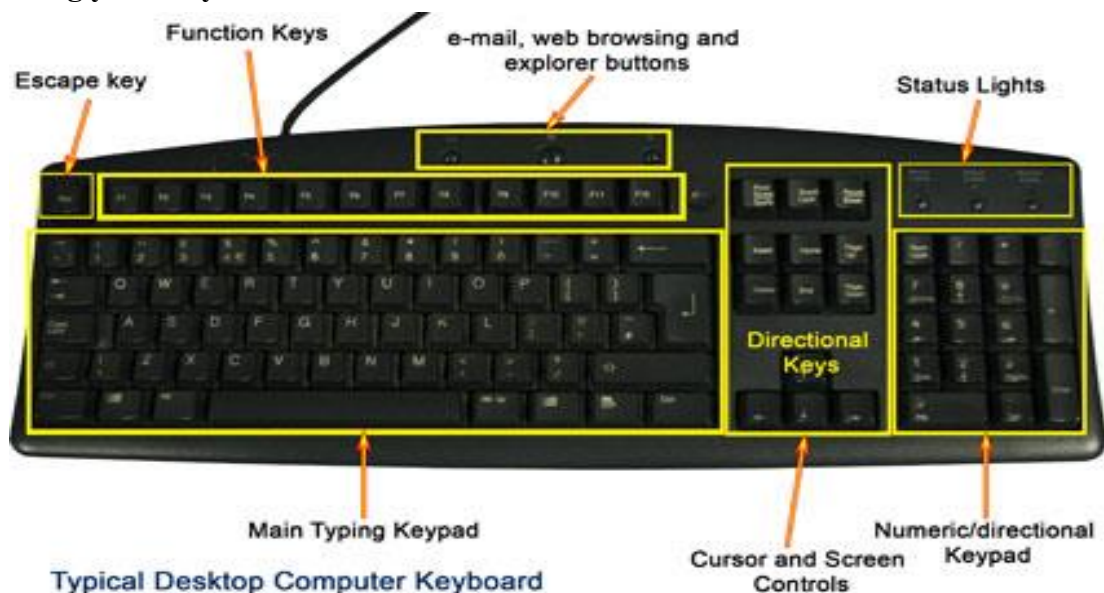
Double-clicking: Hold the mouse still and click the left mouse button twice in quick succession. Double-clicking is usually used to open a program or file, or to expand a folder so that you can see its contents.

Right-clicking: Hold the mouse still, and click the right mouse button once. Right clicking usually opens a context-sensitive menu that provides you with a set of relevant options.

Dragging: Position your mouse on an object, hold down the left mouse button, and drag the object before releasing the button.

Choosing or selecting? **Selecting** an item on your desktop means that you click on it once with the left mouse button, to highlight the object. **Choosing** an item means that you double-click it with the left mouse button, so that it is not only selected but also opened. You can achieve the same result by selecting the item and then pressing [ENTER] on the keyboard.

Using your Keyboard



Computer Keyboard keys

[Computer keyboard](#) is a device that holds different computer keyboard keys, which are used to input commands, data or run specific programs installed in a computer system. Actually, it is the most commonly used input device in computer systems comparing to other input devices such as mouse, touch screen, voice recognition and pen devices.

In this article, we will discuss about the main computer keyboard keys found on standard keyboards, **layout** and usage of the keys.

The **layout of computer keyboard** is similar to the traditional typewriter (only the layout), but adds special type of keys that speed up user interaction with a computer. In reality, the design of computer keyboard is changing day to day but the layout is the same.

Main areas of computer keyboard

In any standard computer keyboard, it is divided at least into 4 major areas:-

- **Typing**
- **Numeric pad**
- **Function keys**
- **Cursor control keys**
- **Computer keys**

The typing area: is the most important and busiest area where you use to input text and numbers into any type of computer application such word processors and spread sheet. Depending on your language, this area holds individual computer keyboard keys on which characters and numbers are engraved.

Most keys are stamped with single character, but there are other keys that give different meaning when you press them in combination with other keys such as Shift, Alt and Ctrl.

The numeric pad: is the other area of keyboard keys used to enter numbers. It is arranged at the right side of a keyboard. The numeric pad is like an adding machine, which is used mostly by accountants and cashiers. You also find number keys at the top of the main typing area.

These keys are engraved with other characters as well such as @, #, \$, %. These keys are used to enter numbers in the middle of typing a text, if you do not want to get off your hands from the main typing area.

Function keys: are arranged at the top a computer keyboard starting from **F1** through **F12**. These computer keyboard keys are commonly used by software developers to trigger a specific type of command. **For example** in Microsoft products, pressing **F1** key will bring Help center.

Cursor and Arrow keys: are used to control what you see or do on current screen or document. Most of these key types found at the **middle of main typing** and **numeric pad**, e.g. **Home, PageUp, Delete, End, PageDown keys, right, left down and up arrow keys.**

Computer Keys: are keys mainly used in conjunction with the typing keys, e.g. Ctrl, Alt, Insert, Delete, Esc. **The Alt and Ctrl keys:** (used for specific functions), the Tab key (used to insert the cursor) and the Shift key (used to make capital letters or symbols that are located on the number keys).

Escape: The Escape key is located in the upper left-hand corner of the keyboard. It is used to cancel operations.

Keyboard types based on connection

There are three types of computer keyboards classified based on the connection interface. A computer keyboard can be connected with the main system in three ways.

- **USB** (the most common connection type used in modern systems)
- **6-pin connector or PS/2** (now it is becoming obsolete). This connection type is no more available in modern systems.
- **Wireless**

Names of Some of the Character keys

- ! - Exclamation mark
- @ - At symbol
- # - Octothorpe, sharp, or Hash
- % - Percent
- ^ - Caret
- & - And or Ampersand
- § - Section
- / - front slash
- \ - back slash
- ~ - Tilde

Common keyboard shortcuts

Do you know you can operate windows using keyboard shortcuts? Well, I often use some of them. it will help you to increase your speed of doing things on the computer.

Specifically, if you do more on word processing and spreadsheet, you will be forced to use shortcuts that will easily gets you the desired result rather than using a mouse.

The following are some of the most common keyboard shortcuts found in Windows XP.

Key combination	Result
Alt + F4	Closes current window
Alt + F6	Switches between open windows of the same application
Alt + Tab	Switches between currently open windows
Ctrl + A	Select all items
Ctrl + C	Copy file, text, or folder
Ctrl + End	Move to the end of a page
Ctrl + Esc	Opens Start menu
Ctrl + Home	Move to the beginning of a page
Ctrl + S	Save
Ctrl + Tab	Moving through menus in any dialogue box
Ctrl + V	Paste copied from the clipboard
Ctrl + W	Close current window
Esc	Cancel actions
F1	Opens windows help
F2	To Rename selected file or folder
F3	Opens Search dialogue box
F5	Open Find and Replace dialogue box
Shift + Delete	Deletes file or folder, it will not move to Recycle Bin
Windows + E	Open windows explorer
Windows + F	Open search dialogue box
Windows + L	Lock or logoff windows
Windows + M	Minimizing all open applications
Windows + R	Open Run dialogue box

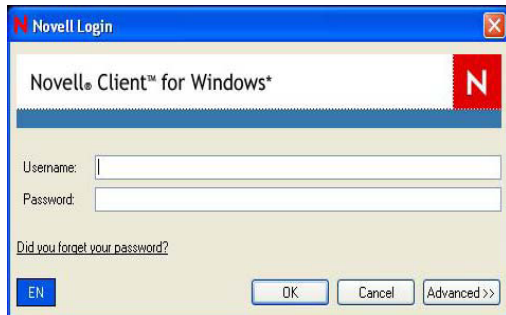
Logging in and out

All the computers in the UCT labs are linked to a network. You must *log in* before you use a computer – this process identifies you as a legitimate user. After you've logged in, you'll be able to access your files even if you created them using a different computer.

To log in

The login window should be visible on the screen. If the screensaver is currently active, then just move the mouse slightly to return the login window to view.

1. Type your *login name* (usually your student number) in the *Username* field of the dialog box.
2. Type your password on the *Password* field of the dialogue box.
3. Click on the *OK* button or else press [ENTER].



The Windows XP desktop will appear. In some labs you may then have to click another button to show that you accept the lab rules (such as no food or drink, and no cell phones).

To log out

After you've finished working, you must *log out* so that the next user of that computer won't be able to access your personal files and email, or use your print credits.

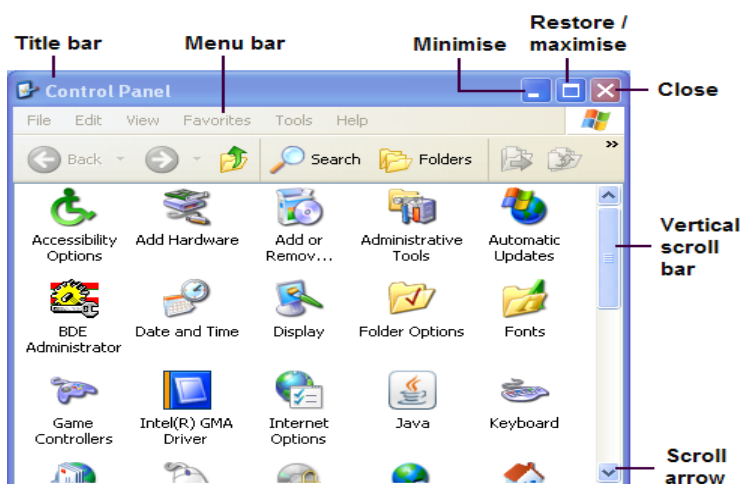
1. Click on the *Start* button on the taskbar. You will see an option to *Log Off*, as well as an option to shut down (i.e. turn off) the computer.



2. Click on the *Log Off* button. The system will ask you to confirm that you are logging off. The network login box will then appear for the next user to log in. (Note: Don't use the Shut Down option, or the next user will have to wait for the computer to start up again, which can take some time.)

Working with windows


Let's start by identifying the various components of a typical window, and how they are used.





Title bar

The top line of the window is called the *Title bar*, and displays the name of the corresponding program or folder. You can move an open window to a different part of the screen by dragging its title bar. If more than one window is open on the screen, then clicking on the title bar (or inside the window) will make a window *active* - which is indicated by a darkened title bar.

There are three **control buttons** at the right end of the title bar, which are activated by clicking on them:

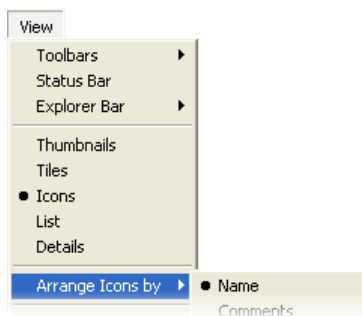
1. **Minimise** (on the left) keeps your program open, but reduces it to a rectangular icon on the taskbar. 

2. **Restore / maximise** (in the middle) reduces the size of a full-screen window, or maximises a window that is not full-screen. 

3. **Close** (on the right) closes the window or program. 

Menu bar and viewing options

One row below the title bar is the *Menu bar*. If you click a word on the menu bar, a menu of additional choices appears. An arrow to the right of a menu option indicates that it has a submenu.



Navigating inside a window

If you can't see all the information contained in a window, then use the *Scrollbar* at the bottom or right edge to view more. You can "move" the contents displayed in the window using the arrows at each end of a scroll bar: for example, clicking on the bottom arrow on the vertical scroll bar will reveal what lies below the bottom border of the window.

Alternatively, you can drag the *Scrollbox* within the scrollbar to see hidden areas of the window.

If a window is too big or too small for displaying the items it contains, then you can *resize* it. Hold your cursor over a border until it becomes a double arrow. Then drag the border to the size you want.

Starting and exiting applications


An **application** is a program that you use to do work with your computer – common examples are a spreadsheet, a word processor, or a database. There are two different ways that you can start up a Windows application:

Using icons

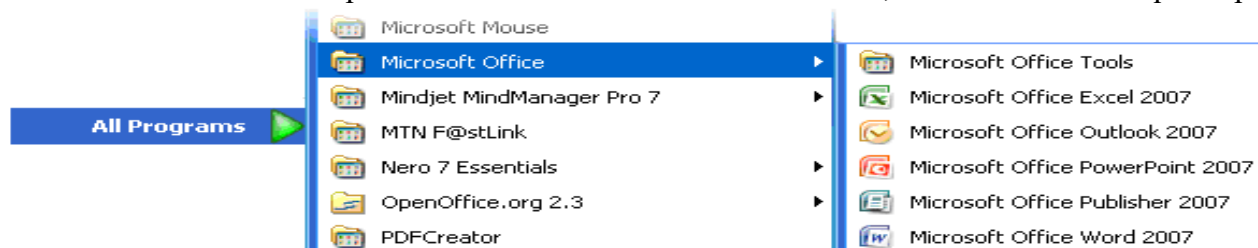
If the application you want to use has an icon, either on the desktop or inside a window, then you just need to double-click the icon and the program will start. An example is the My Computer icon on your desktop, used for viewing the drives and folders on your computer.

Using the Programs menu

Most of the applications on your computer probably won't have desktop icons associated with them – the desktop would get too cluttered! So you need to be able to start applications using the Programs menu:

1. Click on the **Start** button 
2. Point to the **All Programs** option on the Start menu. The Programs menu will appear.
3. Click the name of the application that you want to use, and the corresponding program will open in a new window.

Note that some applications (such as MS Office) consist of several related programs which may be grouped together in a submenu. If this is the case, then the application name on the Programs menu will be followed by an arrow. Move the mouse pointer over the arrow to see the submenu, then click on the required program.



Working with multiple windows

One of the most important features of Windows XP is its **multitasking** capability. This allows you to run more than one application at the same time. What's more, within one application you could have several files open, each in its own window. For example, you might have both MS Word and MS Excel open at the same time, and within MS Word you might be working on two different document files, each in its own window.

Moving between applications

Each open window (even if it has been minimized) is represented by a rectangular icon on the taskbar at the bottom of your screen. The icon for the currently active window usually appears darker, and looks as if it has been "pressed in".



- To switch between open applications, just click on the taskbar icon for the application that you want to switch to, and Windows will display its window on top of anything else that may be on your screen.

Arranging windows

When you have multiple windows open, some of them may be hidden by others. Windows XP helps you to arrange them so that all your open windows are visible.

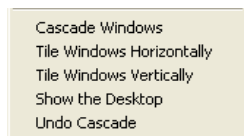
Cascade: Open windows lie on top of each other, with the title bar of each one visible. To access a window that is not at the top of the cascade, just click its title bar.

Tile horizontally: Windows are resized so that they fit one above the other on the screen.

Tile vertically: Windows are resized so that they fit side by side on the screen.



- To change the way your windows are arranged, right-click on a blank area of the taskbar and choose the option that you want.



Cutting and pasting between applications

Windows allows you to cut or copy material from one application and paste it into another. For example, you can copy text from a page displayed in your web browser, and paste it into a Word document. Similarly, you could copy an Excel chart into a report you are writing in Word.

You would do it like this:

1. Open the application window from which you want to copy material, and select the text or data to be copied.
2. Choose the *Copy* command from the toolbar, the menu bar, or a pop-up menu.
3. Open the application window into which you want to copy the selected text or data.
4. Position the cursor where the copy should be inserted.
5. Choose the *Paste* command from the toolbar, the menu bar, or a pop-up menu. (Some applications also have a *Paste Special* option which lets you specify in more detail how the material should be pasted.)



If the *Copy* and *Paste* commands aren't available on a menu or toolbar, then you can use the following keyboard shortcuts:

Copy: [CTRL] + [C]

Cut: [CTRL] + [X]

Paste: [CTRL] + [V]

Using a Notepad

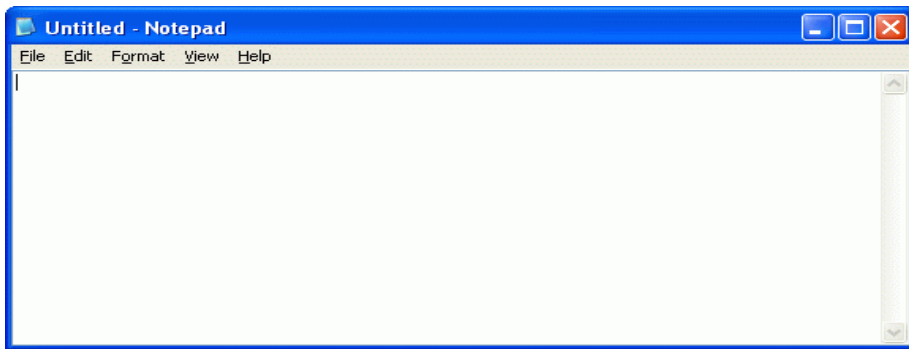
Open Notepad

1. To open Notepad click on start.
2. All Programs.
3. Accessories.
4. Notepad

To enter text

- Start typing in Notepad.

If you make a mistake typing you can backspace over it.



Save

1. To save your work click on File.
2. Save and if you have not saved it before a screen will appear.

Print

1. To print File.
2. Print... The three dots after the word Print means there will be another screen that pops up.
3. Select the printer you wish to print to then click the 'Print' button.

Using Calculator

The Windows Calculator is actually two calculators: the unimposing Standard Calculator that does simple arithmetic, and a more complicated Scientific Calculator.

Open Calculator

1. Choose Start
2. All Programs
3. Accessories
4. Calculator. Switch from one calculator to the other by using the View menu.

You can enter numbers into the calculator by clicking its buttons or by typing the numbers using the keyboard. If you mis-enter a digit, click the Calculator's Backspace button or press BACKSPACE on the keyboard. The CE button stands for Clear Entry (clear the current entry) and the C button stands for Clear (clear the current calculation).

Using the Standard Calculator

The Standard Calculator (which you switch to by choosing View | Standard) adds, subtracts, multiplies, divides, takes square roots, calculates percentages, and finds multiplicative inverses. It has a one-number memory.

Performing Arithmetic

To perform an arithmetic calculation, enter the calculation as you would type it, left to right, as in
 $3 + 5 =$

To compute a percentage, make the percentage the second number in a multiplication and don't use the equal sign.

For example, to figure 15 percent of 7.4, enter
 $7.4 \times 15\%$

The $1/x$ button computes the multiplicative inverse of the displayed number.

Storing Numbers in Memory

The four buttons on the left side of the Standard Calculator control its memory. To store the currently displayed number in the memory, click the MS (memory store) button. An *M* appears in the box above the MC button to show the memory is in use. The memory holds only one number, so storing another number causes the calculator to forget the previously stored number. Clicking MC (memory clear) clears the memory. To recall the number stored in memory, click MR (memory recall). Clicking the M+ button adds the displayed number to the number in memory and stores the result in the memory.

Using the Scientific Calculator

The Scientific Calculator (shown in Figure 17-6) is considerably larger, more powerful, and more complex than the Standard Calculator. Switch to it by choosing View | Scientific. Anything you can do on the Standard Calculator works exactly the same way on the Scientific Calculator, except the Scientific Calculator has no % or sqrt button. (Compute square roots by clicking x^2 when the Inv box is checked.) In addition, you can perform calculations in a variety of number systems, do logical operations, use trigonometric functions, and do statistical analyses.

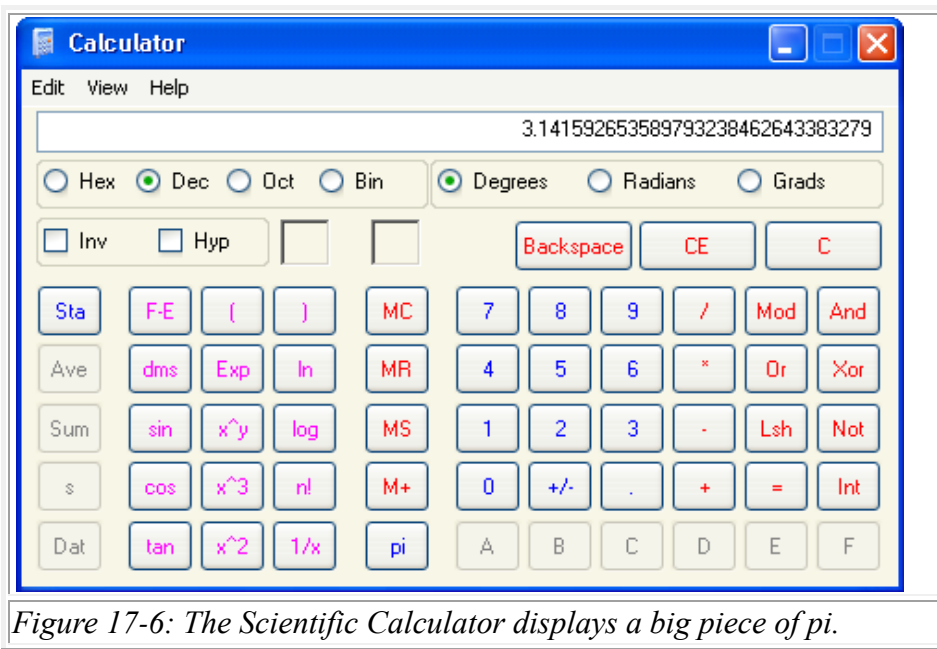


Figure 17-6: The Scientific Calculator displays a big piece of pi.

Using Windows Explorer

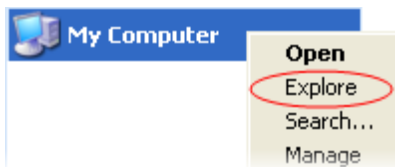
Windows Explorer is the file management tool that comes with Windows XP. It gives you the ability to rename, copy, move or delete the folders and files on your computer's drives.

Folders and files are displayed hierarchically within Windows Explorer. Folders can contain subfolders as well as files.

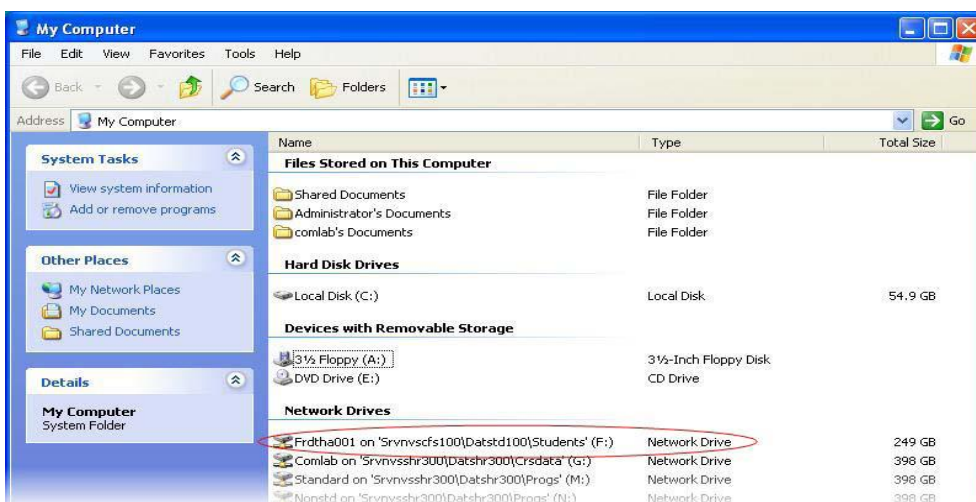
Opening Windows Explorer

To start Windows Explorer, find the *My Computer* icon on your desktop or the Start menu.

Right-click to display the pop-up menu, and choose *Explore*.



The window that opens will look similar to the example below. The title bar at the top of the window shows "My Computer". All the drives and other storage devices associated with this computer are shown on in the right hand pane.



To navigate through the directory structure and locate files that you want to open, copy, move or delete, you would do as follows:

Double-click on the required drive or removable device (floppy disk or flash drive) to display its contents.

Within the selected drive or device, double-click on any folder to view the subfolders and files that it contains.

