

Shutdown, and then choose reboot. This should fix the problem, if not a technician should look at the machine.

8. Keyboard Problems

- a. I am receiving a keyboard error when booting my computer: This is usually caused by a key being pushed down while the computer starts. Make sure nothing is on top of the keyboard during boot time. Also this could be caused by the keyboard becoming disconnected from the back of the computer. If neither of these are the problem, contact your technician.
- b. My Keyboard won't respond at all: If your computer has "frozen" and the keyboard will not respond at all, the first thing to do is to check the keyboard connection to the computer and restart the computer. If your keyboard still does not respond, you may need technical assistance.

9. Printer Problems

- a. The printer won't print my document: Check the printer to make sure it is plugged in and turned on. Click Start → Settings → Printers. If the printer you want to use is not listed, you will have to install that printer. You can do this by clicking "Add Printer" and following the installation process through to completion. If the printer appears light or grayed-out, your printer is offline. Double-click on the printer in question, then click "Printer" and uncheck "Pause Printing" and "Use Printer Offline" or Right-Click the printer and select Online. Next, make sure that you have chosen the correct printer. You can check this by going back into the file you were trying to print and click on File → Print. The name of the printer will appear near the top of that window next to "Name". If the correct printer does not appear in this box, click on the down arrow to the right of the name of the printer being used. Find your printer's name and highlight it by clicking the left mouse button on it. Once you have ensured that the correct printer is chosen and that the printer is not offline or paused, ensure that you are logged onto the network. To do this, click Start and look to see if your logon name is listed after "Log Off". If your logon name is not there, you need to log back onto the network. To start this process, ensure that you have saved your work. Then, click Start → Log Off. This will bring up a dialog box. Click "Yes." You will be prompted to enter your name and password to log back onto the network. Once you finish this, click "Ok" or "Enter." Open your file again and try to print it. If you still cannot print, please call a technician.
- b. Documents come out faded or striped: This is usually due to dirty or clogged print heads, or the printer being out of ink. Try running a print-head cleaning utility to clean the heads. Most printers come with this to help with dirty or clogged heads. Do this by going to Start → Settings → Printers, and then right clicking on the printer in question. Try cleaning the heads, and then print a page. If you still get fades or stripes, try it once more. If after two times your pages are still coming out faded or striped, then you may need to replace the ink. If, however, the ink is not an issue, you should contact a professional.
- c. I am receiving an "out of memory" error or a spooter error: This is caused when the machine that the printer is connected to runs out of memory, or has an internal error. This usually happens because of large print jobs. If you get this error frequently you might want to consider upgrading the memory on the computer with the printer attached to it. It can also be caused by lack of free disk space. Check to see if you have enough free space. To do this, double click on My Computer → Right-Click "C" Drive → Properties. The free space should be listed on that screen. If you only have a couple of megabytes or less, that could be your problem. You will need to either clean up your drive or replace it with a bigger drive. Call a technician to help with either of these processes. If you have adequate disk space, try uninstalling and then reinstalling the printer. To do this, Click Start → Settings → Printers → Right-Click on the printer in question and select "Delete." You want to remove it completely from the system. Then click "Add Printer" and reinstall the same printer. If it was used across a network make sure you reestablish the "share" with the same name. This can be done by right clicking on the printer and choosing "Share This Printer".

10. CD-Rom Issues

- a. I have no audio and/or my CD player won't come on when playing an audio CD: First, check to see if your speakers are turned on and the volume levels are adequate. At the Task bar tray is a little speaker,

double click it to get its properties. Make sure the volume levels are turned up and that none of the controls are muted. Next, look at the back of the computer where the speakers plug in. If there is a volume control there, make sure it is turned up. Then check to see if the speakers are plugged into the correct jack for audio out. There are usually three jacks on the back of a sound card plug as appropriate. Next, we want to open the CD player application by clicking Start→Programs→Accessories→Entertainment→CD Player. If the application will not open, you will need to reinstall the CD player application of the Windows CD. You can do that by going into Start→Settings→Control Panel→Add/Remove Programs→Windows Setup→Multimedia→Details. You should see the “CD Player” checked (if it is not, check it and click ok and then apply), uncheck it and click Ok. Then click “Apply,” but don’t shut the panel. We now need to go back to “Multimedia” and recheck the “CD Player,” click “Ok,” and then click “Apply” again. If this was not the issue, contact your technician.

- b. I am receiving a “CD ROM is not accessible” error: Check to see if you have placed the CD you want to read in the CD ROM drive. Pick up the CD and check to see if it is dirty, or scratched. If your CD is clean and fully inserted in the drive, try to read from the drive again. You can also insert another CD into the drive and try to read the new CD. Some “burned” CDs cannot be read by certain CD ROM drives. If your issue goes unresolved, call a professional for assistance.

Inspections

Inspections are used in order to uncover hidden failures (also called dormant failures). In general, no maintenance action is performed on the component during an inspection unless the component is found failed, in which case a corrective maintenance action is initiated. However, there might be cases where a partial restoration of the inspected item would be performed during an inspection. For example, when checking the motor oil in a car between scheduled oil changes, one might occasionally add some oil in order to keep it at a constant level.

About Backups

A backup is a copy of your file, made in case you lose or damage the original. For those using system in offices or at home, it will be necessary to follow a strict backup regime, using floppy disks or ZIP disks, Flash drives and other secondary memory devices. A zip disk is like a floppy disk except that it hold 70 times as much information: obviously useful for graphics and multimedia projects. A flash drive can hold larger information than a ZIP drive.

Be Disciplined

It requires discipline from the user for a backup strategy to work. Make backups at the end of every day or every week depending on how much work you do and how important the data is. To make backups of individual files, copy them to disk using Explorer or My Computer. Note that you can also copy entire folders with this method. Alternatively, open the file and use the Save as option in the application perhaps the most convenient method is to make a copy of the Zip or floppy disk, using Copy Disk.

Don’t work directly with backup files (i.e. Zip/floppy disk), you work on the hard disk and thereafter copy to a ZIP or floppy disk. We cannot stress enough just how important it is to make backups, horror stories exist when people loose months or years of work. Unfortunately even people, who know they should make backups, tend not to bother until they have been stung. So follow the advice in this book and be an exception to this tendency!

WORKING WITH DESKTOP



Figure 4: Window's Desktop

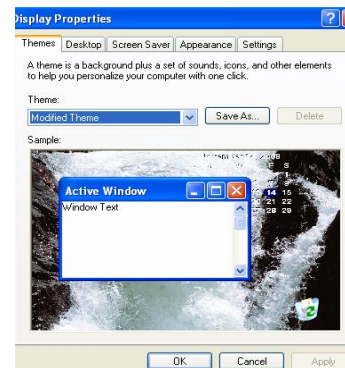


Figure 5: Display Properties Dialog Box

The computer's interface uses a "desktop" metaphor. The desktop is the coloured background you see on the screen when you start your computer (this may vary for different computer since it is customizable). It is the place where you manipulate the work you are doing by handling icons (a little pictures that represent your files, folders, and disks). It summarises the systems properties by enabling you to have access to all these properties. It serves as an intermediary between the system and the user.

The desktop elements include the icons, the taskbar (Start Menu, Taskbar and the System Tray) wallpaper and screen saver. The icons are images, pictures, symbols, or logos that represent items on the desktop. For instance, the desktop above has 30 icons. An icon may represent an application, a file, a folder, a shortcut or even a location on the hard drive. The taskbar is the horizontal (by default) bar placed separately on the desktop but will never appear on the screen saver. The wallpaper represents the picture used as the desktop image. It is the placeholder for the icons (i.e. the icons are placed on it). The screen saver is the animated picture shown instead of the wallpaper when the system is idle for some time. It differs from wallpaper in that it can't harbour the icons.

There are two entities that mainly need to interact with icons:

- As a person using the computer, icons allow you to familiarize with the various programs that are installed in a computer. Every application or every category of application has its own icon. This is easily possible because every person who creates an application has the possibility of providing a special icon for that particular application.
- The operating system also has an interior mechanism to identify an icon or a type of icon and associate it with a particular application or a series of applications of the same type. Microsoft Windows ships with various icons for its own use. For example, every version of Microsoft Windows ships with a special icon for the My Computer program. There is also a special icon for Recycle Bin, etc.

The sizes of icons are standardized and they should not have just any random dimensions. For example, the icons on the desktop are 32x32 pixels. Sometimes, the icons display in a 16x16 dimension.

You can customize your desktop's elements using the Display Properties Dialog box (shown above) which can be accessed by either Right-Clicking the desktop → Properties or Start → Control Panel → Double-Click on Display. This window will enable you to change the appearance of your desktop, such as the background (wallpaper), screen saver, colours, font sizes, and screen resolution. Use the various tabs to change the various properties.

You can also right click any section of the taskbar and select Properties to customize it. This will display the Taskbar and Start Menu Properties Window where you can select the Tab you need as the case may be. To customize the System tray section, Click the Customize button on the Taskbar Tab of the window.

WORKING WITH WINDOWS

Working with “windows” gives you the ability to “look at” something. It allows you to look into a document, or a folder, or a disk. When you begin using your PC, you will be confronted with the desktop, which is simply the term used for the space on your screen. When you want to run a particular application, you need to load the package (launch). To do this depends on the location of the package.

- a. Desktop
 - i. Click its icon/ press Enter
 - ii. Double-click the icon
 - iii. Right-click/open
- b. Start menu

Start/All Programs/Navigate to where it resides/Select the application

- c. Quick Launch (this is just beside the start button for easy launch)

Click on the icon once.

- d. Taskbar Tray (this is at the right on the task bar)

Double-Click on the icon.

Note that for all the methods, you double-click twice to launce any application. This is also true for any icon (files, folders or executables).

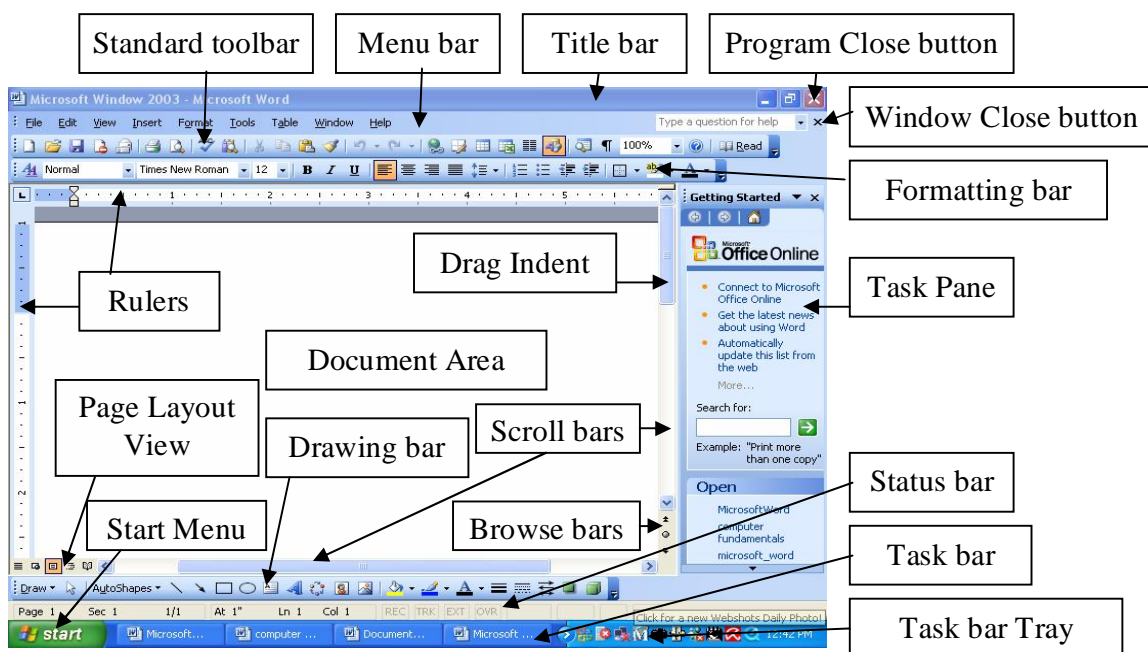


Figure 6: Common Application Window

For any method you use, you've performed some actions. Each action is stored in a particular program and kept under a button or a menu. A program's menu, simply referred to as a menu, is a series of words usually aligned on a (vertical) column, each line of words indicating a particular action.

For any window you open, what is common to all packages is the title bar. There are different types of windows we will encounter when working with the computer. Some of them include a dialog box, a Single Document Interface (SDI), and a Multiple Document Interface (MDI).

Dialog Boxes

A Dialog Box is a square or rectangular window whose main role is to carry, hold, or host, other windows. The objects it carries define its role and name. A dialog box is made of two main sections. On top, it displays a **Title Bar** (with the title and System Close Button). By convention, a dialog box cannot be minimized or maximized. Therefore, it doesn't have those system buttons. Sometimes, a dialog box will have a button with a question mark (the Help button). A dialog box equipped with the Help button indicates that you can get quick help on the items displayed on the dialog box. The second section of a dialog box is its **body** (programmers call it the **Client Area**). This is the area where the objects the dialog box is hosting are positioned. Examples include the Save As Dialog Box and the Open Dialog Box in most applications.

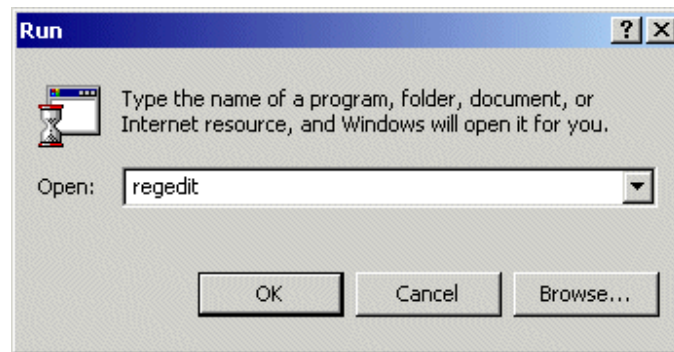


Figure 7: A Typical Dialog Box (The Run Dialog Box)

The Single Document Interface (SDI)

This is a window that allows the user to work on only one opened document at a time. It is similar to a typical window. An example is the WordPad

The Multiple Document Interface (MDI)

This is similar to the SDI except that you can work on more than one document at a time. An example is the Microsoft Word.

The Windows Controls

The controls on a window refer to the objects that are available on the window. There are various controls to include Command buttons, Text boxes, List boxes, Option (Radio) buttons, Check boxes, Combo boxes, Scroll bars, Progress Bar, etc. For all the objects that may be present on a window, only one of them can receive focus at a time. The focus is a visual aspect that indicates that a control is ready to receive input from you. Various controls have different ways of expressing that they have received focus. Button-based controls indicate that they have focus by drawing a dotted rectangle around their text. In the following picture, the button on the right

has focus. A text-based control indicates that it has focus by displaying a blinking cursor. A list-based control indicates that it has focus when one of its items has a surrounding dotted rectangle.

To give focus to a control, you can click it. Alternatively, if the focus is already on one of the controls, to give focus to a particular control, you can press Tab continuously until the control shows that it has focus. On a browser, if you press Tab continuously, the focus would move from one link or control to another. This means that a link on a web page can receive focus as if it were a control.

Main Menu Display

We have just seen that, when you know where a menu is available, to access it, you can just click or right-click the item that holds the menu. How a menu appears can be influenced by the available room. The operating system decides on the availability of room to display the menu. If a menu is accessed from the middle to top section of a window, the operating system would display it under the item that was clicked. If the menu is being accessed from the bottom section of the screen, the operating system would calculate the available room under the item that was clicked. If there is enough room, the menu would be displayed under the item that was clicked. If there is not enough room, then the operating system would decide to display the menu above the item that was clicked.

Categories of Menus

To diversify the actions that can be performed on a computer, there are six main categories of menus, each of which depends on the person who created the menu.

- a) **Stand-Alone Items:** The simplest menu item displays a word or a group of words on its line. To use this menu type, you can simply click it. What happens depends on the program and the familiarity with it. Example is the Refresh menu on most browsers.
- b) **Disabled Menu Items:** If a menu appears gray, this means that the menu is not available at this time. Such a menu is said to be disabled. Clicking a disabled menu would not do anything, at all. Most of the time, such a menu would require a prerequisite action in order to become available or enabled.
- c) **Ellipsis Menus (...):** A menu with three periods indicates that an intermediary action is required. To use such a menu, click it. Once clicked, sometimes another window would be displayed. Example is the Save As ... option of the file menu in several windows.
- d) **Check Menus:** A menu that appears with a check mark is used as a "witness" of a window object being available or not. This means that, when the check mark is set, the object the menu item refers to is visible. If you click such a menu item, the check mark disappears along with the item it refers to; the menu item is still visible: only its check mark and the item it refers to disappear.
- e) **Radio Menus:** Some menu items appear in a group of two or more (usually not more than 7). The group is delimited by a horizontal line above the top menu item and another horizontal line below the bottom object. At any time, one of the menu items has a big round dot on its left side. This dot is called a radio button. The item that is currently active has the radio button and the other menu items don't. If you click an item other than the one with the radio button, the dot moves to the item you clicked and the previous item loses the radio button. This type of menu is used when the programmer wants only one item of the group to indicate which item of a category is active.
- f) **Arrow Menus:** When a menu appears with an arrow, this means that the menu item holds its own list, called a **submenu**. Again, this design depends on the person who created the menu and is not subject to any preconceived rule. To access the menu item, simply position the mouse cursor on the menu item that has the arrow. How the submenu appears may depend on the section of the screen from where the menu is being accessed. The operating system decides how to display this submenu based on the available room.

Main and Context-Sensitive Menus

We have seen that a menu on the same object can be different depending on what item you click to access such a menu. Based on this, a menu that appears when you simply click an object is considered the regular menu of the object, and it is simply called the menu. Sometimes when you click or even right-click an object, a menu might not appear. On the other hand, if a menu appears when you right-click an item or an area of a window, this menu is referred to as the context-sensitive menu.

Most applications display a menu in their top section, the Main Menu, below the Title Bar. The main menu displays columns of menus, each column is represented by a word (sometimes it will be more than one word for a menu item). To use this main menu, you can click a word. This causes a list of menu items to display. There are no strict rules (only suggestions) on what items must appear under what word. The person who creates an application also decides on the menu columns, their items, and their roles.

After clicking a menu column, if you find the item you are looking for, you can click it. If you don't see the item you are looking for and you want to check another column, you have two options. You can simply move the mouse to another menu column of your choice. You can also click the menu item you had opened, then click the new column you desire. If you still don't see what you are looking for, you can dismiss the menu.

There are various ways you can dismiss the menu if it is opened. If you click an item in the list of the displayed column, the menu would retract and close itself. If you have opened a menu but don't want to use it anymore, you can click one of the menu items on top. You can also click anywhere other than the opened menu; this also closes the menu.

To access or close the menu using the keyboard, use Alt + the Access Key (underlined letter on the menu) for the menu. Once this is initiated, you just press the access key for each command under the main menu. To dismiss a displayed menu, press the Esc key. You can also use the navigation keys to move from menu to menu (Left and Right Arrows) or down a menu using the Up and Down Arrows.

➤ The Control/System Buttons (located at the top right corner of a window)

- i. Minimize button: Click this to reduce the programs to a button on the Taskbar.
- ii. Restore/Maximize button: This switches the window size between full-screen size (docked window) and Half-Window (or customized) size (floating or cascade window). You can also double-click the empty space of the title bar to toggle between the options.
- iii. Close button: Click this to dispense with the window until the next time you open the program. If the file inside the window has not been saved, it will prompt you to save it.

You can also access any of the actions by clicking the application logo or right-clicking the empty space of the title bar and then select the action you want.

➤ Moving Windows

If a window gets in the way of what you are doing, you can move it to a different place on the screen by clicking and holding the Title bar using the Left Mouse button (only possible for floating window).

You can change a windows shape or size so that you can see more of its contents or so that you can arrange windows side-by-side manually. This is possible when the window is restored down. Place the mouse over the edge of the window so that the mouse pointer changes shape to a double-pronged arrow (either side or edge), drag inwards or outwards to reduce or enlarge the window (default Restored).

➤ Splitting Window

This is usually done when you want to compare different places of a particular document. For instance, view pages 50 and 350 of a particular document at the same time. To do this, select Window ➔ split; the cursor

will change to a horizontal line which you will click at the desired location. You can work on each of them as if you are dealing with a single window. To remove Window → Remove split.

➤ Arranging Windows

For a particular document, more than one window can be opened simultaneously. To do this, select Window → New Window. The new window will change the name of the document by adding index. The name will be like Filename:index_number e.g. Adebisi:1 while the second name will be Adebisi:2. You can add as many as you want. You can now arrange the window using Window → Arrange All. This will arrange the windows horizontally. To change the arrangement to side-by-side, select Window → Compare Side by Side. To change to horizontal, select Window → Close Side by Side.

Note that these two procedures may seem similar in that both are used for comparing a document in different windows. Thus, the major differences are:

- i. Splitting windows does not use name index; both bear the same name.
- ii. Splitting windows has only one title bar and toolbars while each window in New Window has its own title bar and toolbars.
- iii. Splitting windows can only be viewed horizontally whereas New Windows can be viewed in two ways (either horizontal or vertical).

To arrange windows of different documents, Right-Click on the taskbar → Choose either Cascade windows (all windows restored), Tile Windows Horizontally, Tile Windows Vertically, or Show the Desktop (all windows minimized).

➤ The Taskbar

The taskbar appears at the bottom of the screen and displays all the programs that are currently open. When you minimize a window, it still appears as a button on the taskbar. Click the program button on the taskbar to restore it to a window. By selecting different program buttons on the taskbar, you can switch easily between currently open programs or press Alt + Tab key or WIN + Tab key + Enter.

➤ The status bar

The status bar, which is a horizontal area at the bottom of the document window (e.g. in Microsoft Word) which provides information about the current state of what you are viewing in the window and any other contextual information. To display the status bar, click **Tools** → **Options** → **View** tab → select the **Status bar** check box under **Show**. The elements on the status bar for the above window include the following.

- i. Page number: Shows the page number.
- ii. Sec number: Shows the section number of the page shown in the window.
- iii. Number/number: Shows the page number and the total number of pages based on the physical page count in the document.
- iv. At measurement: Shows the distance from the top of the page to your insertion point. No measurement is displayed if the insertion point is not in the window.
- v. Ln number: Shows the line of text where the insertion point is located. No measurement is displayed if the insertion point is not in the window.

- vi. Col number: Shows the distance, in number of characters, from the left margin to the insertion point. No measurement is displayed if the insertion point is not in the window.
- vii. REC: Shows the macro recorder status. Double-click REC to turn the macro recorder on or off. When the recorder is off, REC appears dimmed.
- viii. TRK: Shows the track changes status. Double-click TRK to turn the Track Changes feature on or off. When changes are not being tracked, TRK appears dimmed.
- ix. EXT: Shows the extend selection mode status. Double-click EXT to turn the mode on or off. When selection mode is off, EXT appears dimmed.
- x. OVR: Shows the overtype mode status. Double-click OVR to turn the mode on or off. When overtype mode is off, OVR appears dimmed.
- xi. Spelling and Grammar: Shows the spelling and grammar checking status. When Word is in the process of checking for errors, an animated pen appears over the book. If no errors are found, a check mark appears. If an error is found, an “X” appears. To resolve the error, double-click this icon.
- xii. Background save: When a pulsating disk icon appears, Word is saving your document in the background as you work.
- xiii. Background print: When a printer icon appears, Word is printing your document in the background as you work. A number next to the printer icon shows the current page number being printed. To cancel the print job, double-click the printer icon.

Note that the status bar are grouped into sections: Page (i, ii, and iii), Measurement (iv, v, vi), while others shows the current status of the commands.

USING THE SYSTEM (BOOTING/SHUTTING DOWN)

Turning the system ON (Booting) is very easy. It only requires you to press the On Button once. This button is usually the upper button in front of the system console. Before doing this, you must ensure that power supply has entered into the power supply unit. To enforce this, switch on the UPS, turn the console box ON if there is ON/OFF button at the back of the box (optional).

Shutting down has many options. The settings in the Shut Down Windows dialog box include Stand by, Hibernate, Shut down, Restart, Log off, and Disconnect. To display the Shut Down Windows dialog box, click Start→Shut Down. Stand by and Hibernate appear only if your computer supports these features and you have turned them on in Power Options. Disconnect appears only if you are connected to a Windows Server running Terminal Services. On Windows 2000 Server products, you will be prompted to supply information regarding why you are shutting down or restarting the computer. This feature is turned off in Windows XP.

Stand by mode: A state in which your computer consumes less electric power when it is idle, but remains available for immediate use. Typically, you put your computer on standby to save power instead of leaving it on for extended periods. In standby mode, information in computer memory is not saved on your hard disk. If the computer loses power, the information in memory will be lost. This option appears only if your computer supports this feature and you have selected this option in Power Options.

Hibernate: A state in which your computer saves any Windows settings that you changed, writes any information that is currently stored in memory to your hard disk, and turns off your computer. Unlike shutting down, when you restart your computer, your desktop is restored exactly as it was before hibernation.

Shutdown: A state in which your computer saves any Windows settings that you changed and writes any information that is currently stored in memory to your hard disk. This prepares your computer to be turned off.

Restart: A state in which your computer saves any Windows settings that you changed, writes any information that is currently stored in memory to your hard disk, and then restarts your computer.

Log off: A state in which your computer closes all your programs, disconnects your computer from the network, and prepares your computer to be used by someone else. When connected to a Windows 2000 Server running Terminal Services, Log off closes all programs running in your Terminal Services session, disconnects your session, and returns you to your Windows desktop.

Disconnect: A state in which your Terminal Services session is disconnected, but remains active on the server. When you reconnect to Terminal Services, you are returned to the same session, and everything looks exactly as it did before you disconnected.

Make sure that you always shut the system down in the normal way, else you are hastening to destroy the system especially when you are using Window XP.

INTRODUCTION TO THE INTERNET

Computer Network (Networking and Internetworking)

Until recently, getting a computer was mostly equivalent to getting a machine that would be used to perform office-related assignments and other calculations. This type of computer was commonly referred to as **standalone**. A **network** is a group of computers linked together so that they can share resources such as printers, software programs and documents. Computer network is the interconnectivity of autonomous computers. In order for two computers to share what they have, they must establish some type of communication. This is easily done using a cable and an appropriate object (a network card, also called NIC) inserted in each computer. This means that a cable would go from this object of one computer to the same type of object on the other computer. This is perfectly possible to connect two computers. If you have more than two computers, then you use a type of intermediary object whose job is to "direct traffic". This object is called a hub. For example, when one computer A requests to use or open a piece of text that is located in a computer B but to print it in a printer that is connected to a computer C, this intermediary object is able to know what computer has the text, what computer has the printer, and what computer needs these two services. For these reasons, most connections use this intermediary object: the hub

There are two types of networking relationship: computer workstations (clients) are connected to a number of central network servers, which allocate resources. In a peer-to-peer relationship, computer workstations serve each other: one workstation may have access to a printer and allocates this resource to others in the network; another may have access to file storage and allocates this to others (including the workstation with the printer).

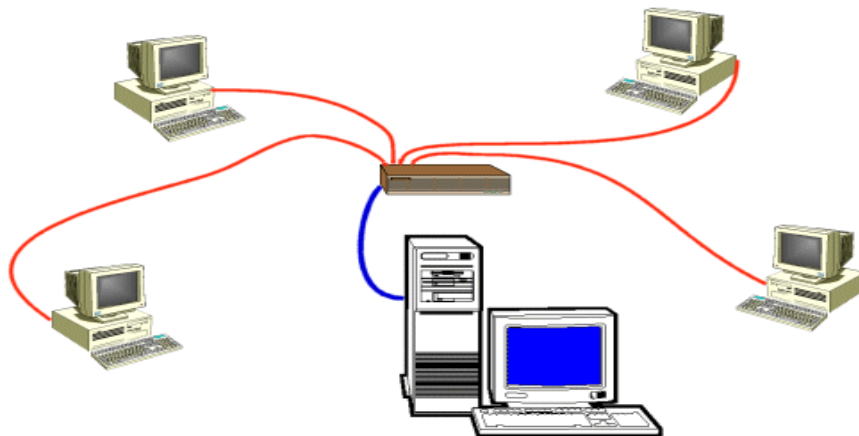


Figure 8: Connection of Computers using the Hub

Only computers that are connected can share what they have. A computer A that is connected to a computer B can access what computer B has. When two or more computers are connected, the idea is to let them share and exchange what they contain. If the computers are small, like regular desktop computers, they may become overwhelmed and they may not have enough to share. The next step is to have a "bigger" central computer that holds even more things that other small computers would need (the word big here doesn't necessarily mean that this computer is physically big; it implies that this computer can do more things, for example it can perform more and faster calculations, than the other small computers). Such a central computer is called a server, because its job is to serve other computers (these other small computers are then called workstations):

As information and resources (things to share) became more and more useful and in demand, servers of different companies started establishing types of connections among themselves, of course following some rules. In fact, in some situations, some big computers (servers) were made simply to provide information to other computers, without needing to know who owned these small computers, why these small computers needed this information, or what to do with them. The internet was born.

The Internet is a group of big computers connected to share the information they hold. Some of these computers belong to the government, schools (mostly universities), big companies (corporations), small companies and some to individuals. The computers that are connected may not have anything at all in common. To make sure that this communication is possible, a few rules (called protocols) were established so that anybody who wants to make his or her information available to other people through the Internet must follow these rules, no matter what he or she does with the server or computer.

The rules to make a server available on the Internet are numerous and complicated. Therefore, another type of computers was created that allows casual users to get on the internet without knowing, or being interested to know how these servers communicate. These new intermediate computers are held by companies called service providers (they are the middle man). When you have a computer and want to get on the internet, you use an Internet Service Provider (ISP) who will establish the connection for you and will make sure that your computer can get on the Internet. Based on this, the Internet can be illustrated as follows:

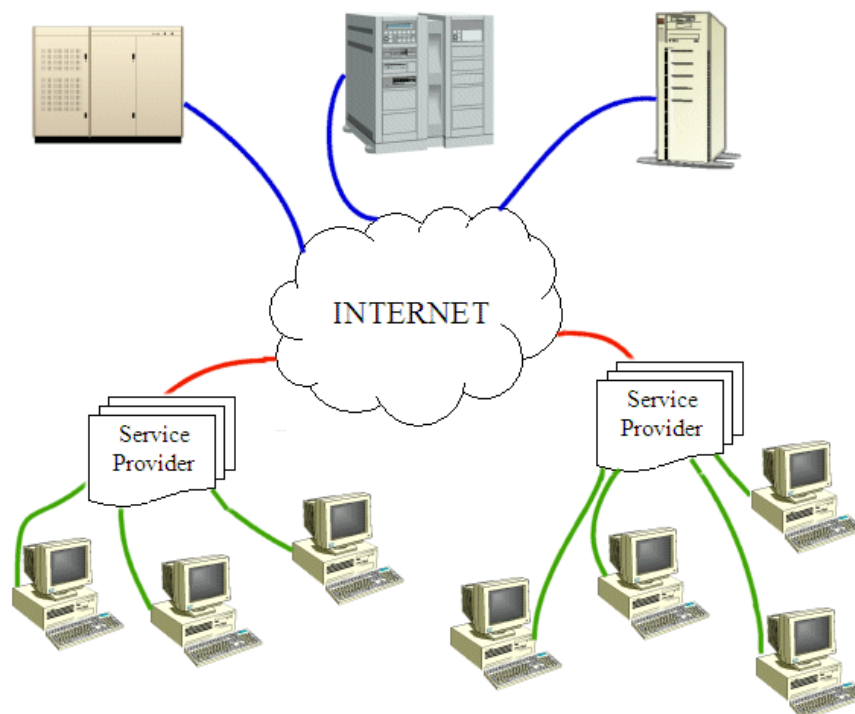


Figure 9: The internet

The advantages of using a network are:

- a) Data and information sharing
- b) Resources sharing such as a printer, even if they are not physically connected.
- c) Reliability and security
- d) You can use email
- e) You can access the internet

TYPES OF NETWORKS

In describing the basics of networking technology, it will be helpful to explain the different types of networks in use.

Local Area Networks (LANs)

A network is any collection of independent computers that exchange information with, each other over a shared communication medium. Local Area Networks or LANs are usually confined to a limited geographic area, such as a single building or a college campus. LANs can be small, linking as few as three computers, but can often link hundreds of computers used by thousands of people. The development of standard networking protocols and media has resulted in worldwide proliferation of LANs throughout business and educational organizations.

There is another advanced LAN called the Metropolitan Area Network (MAN), used when we consider the distance covered to be between 1 to 10km unlike the LAN that spans within 1km.

Wide Area Networks (WANs)

Often elements of a network are widely separated physically. Wide area networking combines multiple LANs that are geographically separate. This is accomplished by connecting the several LANs with dedicated leased lines such as a T1 or a T3, by dial-up phone lines (both synchronous and asynchronous), by satellite links and by data packet carrier services. WANs can be as simple as a modem and a remote access server for employees to dial into, or it can be as complex as hundreds of branch offices globally linked. Special routing protocols and filters minimize the expense of sending data over vast distances.

Wireless Local Area Networks (WLANs)

Wireless LANs, or WLANs, use radio frequency (RF) technology to transmit and receive data over the air. This minimizes the need for wired connections. WLANs give users mobility as they allow connection to a local area network without having to be physically connected by a cable. This freedom means users can access shared resources without looking for a place to plug in cables, provided that their terminals are mobile and within the designated network coverage area. With mobility, WLANs give flexibility and increased productivity, appealing to both entrepreneurs and to home users. WLANs may also enable network administrators to connect devices that may be physically difficult to reach with a cable.

Intranet: A Secure Internet-Like Network for Organizations

With advancements in browser-based software for the Internet, many private organizations have implemented intranets. An intranet is a private network utilizing Internet-type tools, but available only within that organization. For large organizations, an intranet provides easy access to corporate information for designated employees.

- In the left frame, click the drive and click the parent folder. In the right frame, right-click the parent folder, position the mouse on New and click Folder, then give it a name

You can also create a folder when saving a file. To do this, in the dialog box that comes up, click the Create New Folder button and give it a name.

Naming a Folder

There are some suggestions you should follow and various rules you must observe when naming a folder:

- The name of a folder can be a single letter or a digit
- The name of a folder can also be a single special character except the following: | > / : \ < ? * and "
- The name of a folder can be a combination of letters, digits, and some special characters

As a suggestion, you should use a name that indicates what is stored in the folder. This makes it easy to find information.

Archive

Archives are files that contain other files. Typically the files in an archive are compressed. Archives usually have file names ending with ZIP, LZH, ARJ, or ARC, depending on how they were created. Archives make it easy to group files and make transporting and copying these files faster.

Typical Uses of Archives

- Most files available on the Internet and on electronic services like America Online are distributed as archives. Two benefits of using archives for electronic file distribution are that only one file transfer operation ("download") is required to obtain all related files, and file transfer time is minimized because the files in an archive are compressed.
- It is often useful to send a group of related files to an associate. Rather than distributing individual files it is often easier to distribute the files as an archive to benefit from the file grouping and compression.
- Some files are important but not used often. To save disk space simply compress these files into an archive when they are not used, and decompress them only when needed.

Self-Extracting Zip File

A self-extracting Zip file is an executable program file (.EXE file) that includes both a Zip file and software to extract or "unzip" the contents of the Zip file. Users can extract the contents of a self-extracting Zip file by simply running it. This is convenient, because the end user does not need an unzip program (like WinZip®) to extract files from these self-extracting archives.

WinZip Self-Extractor Personal Edition, included with WinZip, creates Windows self-extracting Zip files.

Archive formats:

- Zip files are the most common archive format. Zip files can span multiple disks, and provide both compression and file grouping. WinZip does not use external programs to work with Zip files.

- TAR, Z, GZ, TAZ, and TGZ files are often found on Unix-based Internet sites. TAR stands for "Tape ARchive". The TAR format does not provide compression; it is used only to group files. GZ and Z files are gzip files. GZ and Z files cannot contain multiple files. TAZ and TGZ files are TAR files compressed in the gzip format. Since almost all new archives are created in Zip format, WinZip does not provide facilities to add to or create files in these formats (however, all other WinZip functions are supported). WinZip does not use external programs when working with files in these formats.
- File formats such as UUencoded, XXencoded, BinHex, and MIME are used primarily to transfer binary files by Internet e-mail. If you encounter one of these files, you can open it and extract its contents with WinZip. You can UUencode an archive using the UUencode entry in the WinZip Actions pull-down menu. WinZip does not use external programs when working with files in these formats.
- WinZip also handles most files in the old Microsoft Compress format (also known as LZEXPAND format). However, there are several variations on this format, and Microsoft has not released documentation on these variations. WinZip issues an appropriate message if you attempt to decompress a file not supported by your version of Windows. Microsoft Compress files usually end with a trailing underscore, for example, "commdlg.dl_". Like Z and GZ files, Microsoft Compress format files contain only one file. This format is used for many files on the Windows 3.1 distribution disks and many older Microsoft products. Note that not all files ending with an underscore are Microsoft Compress format files. WinZip does not use external programs when working with files in these formats.
- The Microsoft CAB (short for Cabinet) format is used by most Microsoft setup programs, including those used to install Windows. CAB files provide both file compression and file grouping. You can use WinZip to open and extract the contents of CAB files. WinZip will handle most self-extracting CAB files. WinZip does not use external programs when working with CAB files.
- ARC, ARJ, and LZH are older formats that provide both grouping and compression, like Zip files. Unlike other supported file formats, WinZip's optional support for these formats requires external programs that are not included as part of the WinZip distribution.

Files

In our introductions, we defined a document as what you create in an application. In a word processor, the characters you type constitute a document. For a graphics application, the drawings you perform or the picture you manipulate is called a document. In order to keep such a document for later use, you must store it somewhere. A file is an object used to hold a document. Put it another way, in order to have a file, you must save a document. We have mentioned how to save a document. Like a folder, you must name a file when saving a document. The name of a file follows the same rules we defined for a folder.

FILE MANAGEMENT

Bits and Bytes

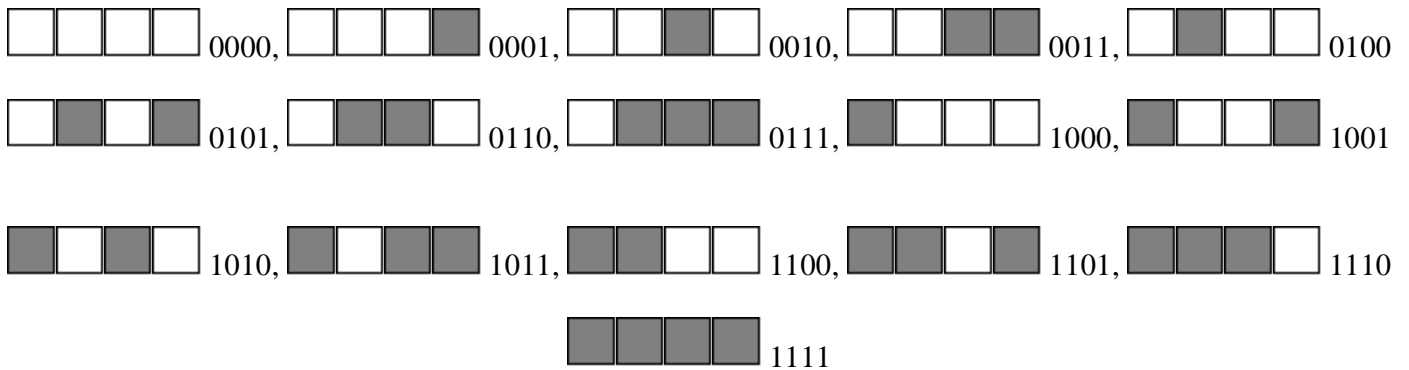
To hold information, a medium such as a hard disk uses a system that resembles a combination of small boxes. Let's illustrate it as follows:



This box can hold only a small piece of information. It can only be either 0 or 1. When the box is empty, it holds a value of 0. When it is full, it holds a value of 1:



You can represent a piece of information with one of two states. This box used to represent a value is called a binary digit; in its abbreviated form, it is called a **bit** (for *binary digit*).

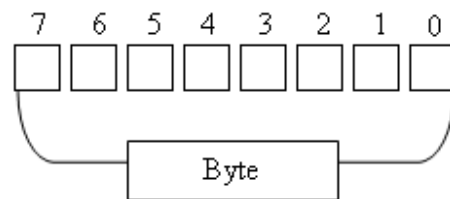


This produces the following binary combinations: 0000, 0001, 0010, 0011, 0100, 0101, 0110, 0111, 1000, 1001, 1010, 1011, 1100, 1101, 1110, 1111 = 16 combinations. When using the decimal system, these combinations can be represented as 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15.

This combination is also a system that the computer uses to count bits internally. This technique is valuable and allows you to always identify a number as a divider of 4.

When all bits of a group of 4 are 0, the combination has the lowest value, which is 0000. Any of the other combinations has at least one 0 bit, except for the last one. When all bits are 1, this provides the highest value possible for a group of 4 bits. The lowest value, also considered the minimum value, can be represented as 0. The highest value, also considered the maximum, can be expressed in decimal value as 2^4 (2 represents the fact that there are two possible states: 0 and 1; 4 represents the fact that there are four possible combinations), which is 16. This produces 16 because $2^4 = 16$.

A combination of 8 consecutive bits is called a **byte**. The bits are counted from right to left starting at 0:



You can represent a byte using a combination of 0s and 1s. If you have the patience to create combinations of bits using the boxes as we did for the group of 4, you would find out that there are 256 possible combinations. Another way to find it out is by using the base 2 technique:

$$\begin{aligned}
 &2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0 \\
 = &128 + 64 + 32 + 16 + 8 + 4 + 2 + 1 \\
 = &255
 \end{aligned}$$

Therefore, the maximum decimal value you can store in a byte is 255. Remember that the byte with all bits having a value of 0 has its value set to 0. Since this byte also holds a valid value, the number of combinations = $255 + 1 = 256$.

The only type of information you can store in a byte is a character or symbol, such as a readable letter from the alphabet: a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, and Z. Besides these readable characters, a byte can also hold one digit: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. A byte can also hold a readable or non-readable symbols such as ` ~ ! @ # \$ % ^ & * () - _ = + [{] } \ | ; : ' < ? . / , > "

This means that a combination of 8 bits, called a byte, is enough to represent one symbol recognized in the English language. In this globalization word, a computer also needs to be able to store characters from other Latin-based languages such as letters from Français or Español. To make this possible, instead of 8 bits, the operating system must use 16 bits. A combination of 16 consecutive bits is also called a word.

A group of 1000 bytes is supposed to be called a kilobyte but, based on the way the computer calculates the bits, a group of 1024 bytes is called a kilobyte or KB. A group of 1,000,000 bytes is called a megabyte but actually it is a group of 1,024,000 bytes that is called a megabyte or MB. A group of 1,000,000,000 bytes or actually a group of 1,073,741,824 bytes is called a gigabyte or GB.

The Size of a Drive

Because a drive cannot have unlimited space, it is recognized for its size. The size of a drive can be measured by, or specified in, MB or GB. For example, a typical CD can hold 700MB of data. A regular DVD can hold information up to 4.7GB in size. The sizes of hard drives are very varied. To find the size of a hard drive in your computer, from either Windows Explorer or My Computer, you can right-click the drive letter and click Properties.

The Size of a File

In order to keep track of the various files in a computer, each file has a size. The size of a file can be measured in bytes, kilobytes, or megabytes. To know the size of a file, in either Windows Explorer or My Computer, you can right-click it and click Properties.