

Operating Systems and Windows

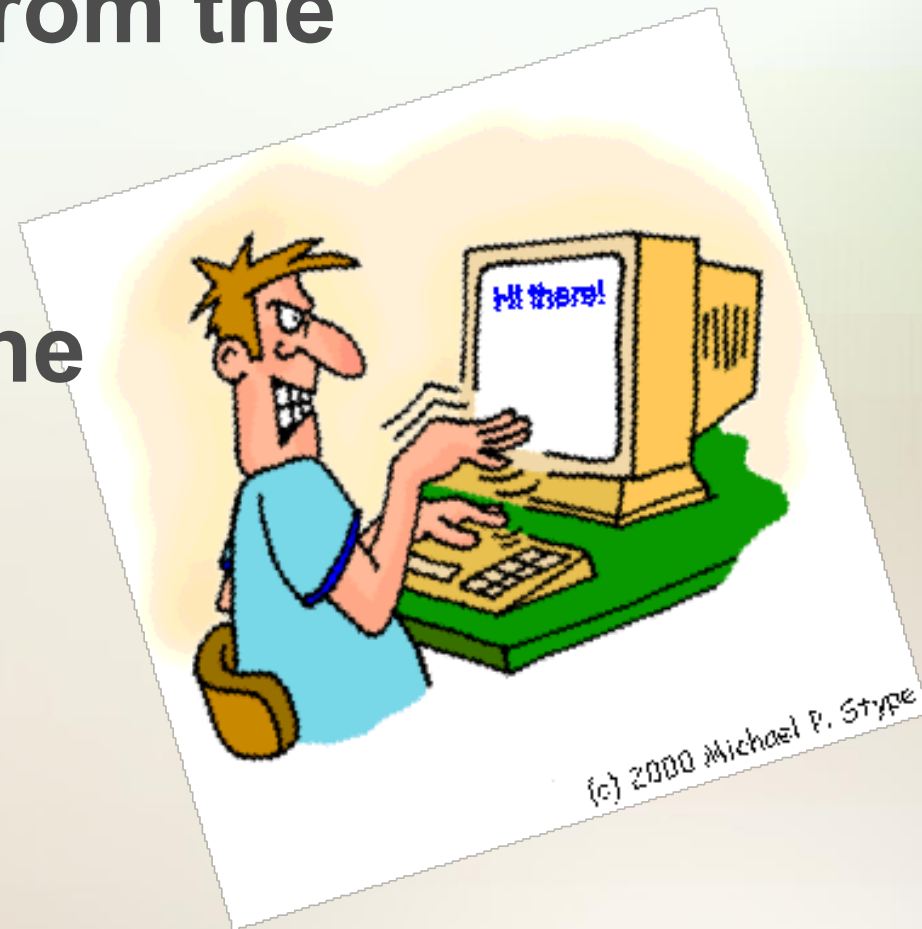
What is an Operating System?

- The **most important** program that runs on your computer. It **manages** all other programs on the machine.
- Every PC **has to have one** to run other applications or programs. It's the first thing "**loaded**".



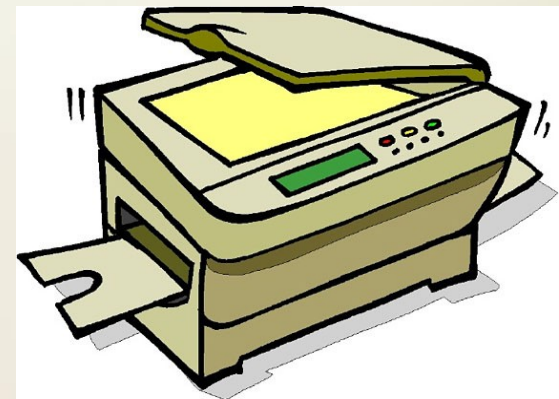
Operating System

- It performs basic tasks, such as:
 - **Recognizing input** from the keyboard or mouse,
 - **Sending output** to the monitor,



Operating System

- **Keeping track of files and directories on the disk, and**
- **Controlling peripheral devices such as disk drives and printers.**



Is There More Than One Type of OS?

- Generally, there are four types, based on the **type of computer they control** and the **sort of applications they support**.

1. Single-user, single task

This type manages the computer so that one user can effectively do one thing at a time.

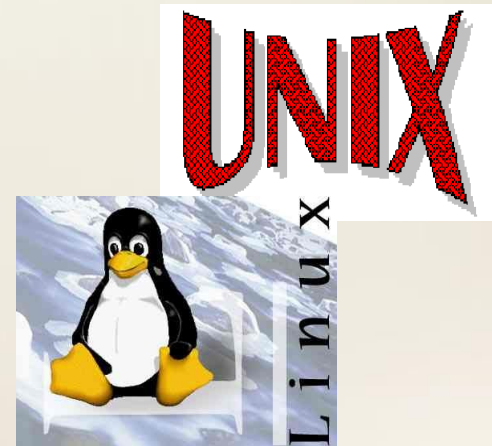


Types of Operating Systems

2. Multi-user, multi-task

Allows two or more users to run programs at the same time. Some operating systems permit hundreds or even thousands of concurrent users.

Mainframe



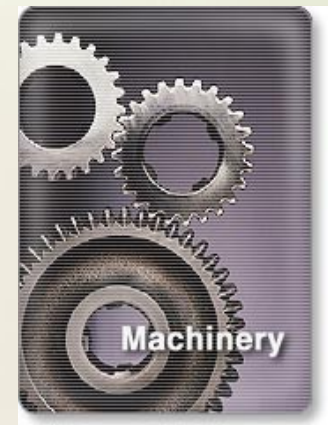
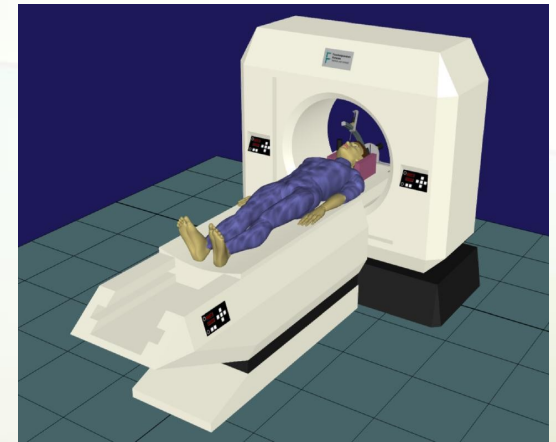
Types of Operating Systems

3. Real Time Operating Systems

RTOS are used to control machinery, scientific instruments, and industrial systems.

There is typically very little user-interface capability.

Resources are managed so that a *particular operation executes precisely the same every time.*

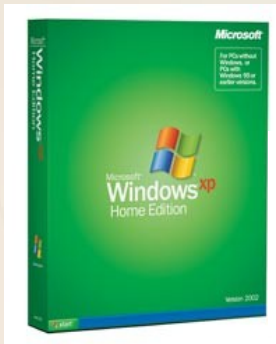


Types of Operating Systems

4. Single-user, Multi-tasking

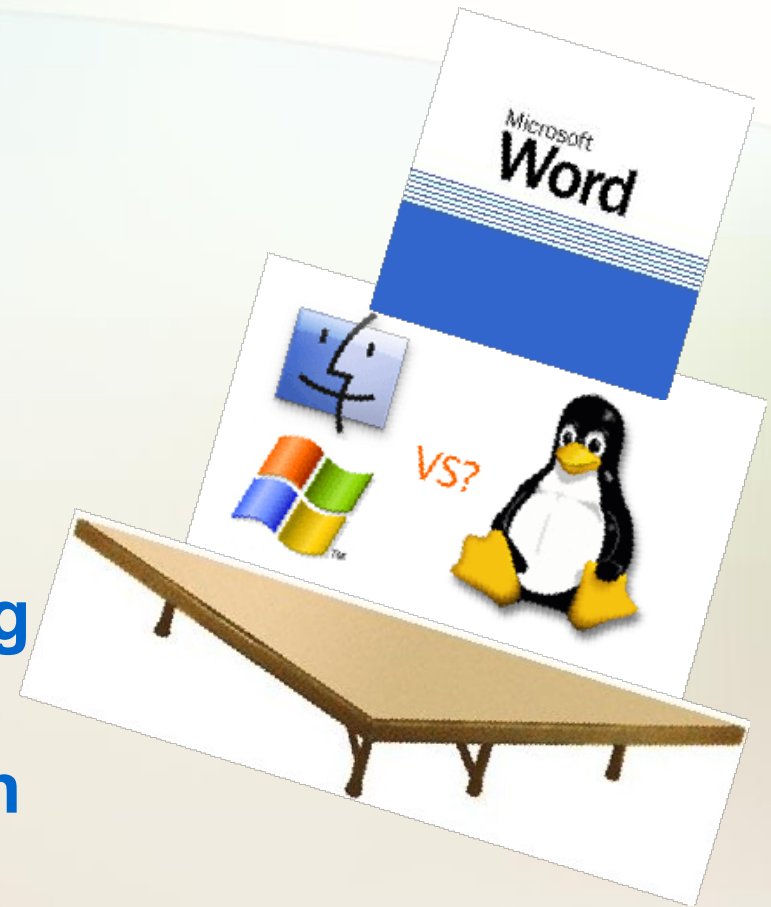
*This is the type of operating system **most desktops and laptops use today.***

*Microsoft's Windows and Apple's MacOS are both examples of operating systems that will let a **single user have several programs in operation at the same time.***



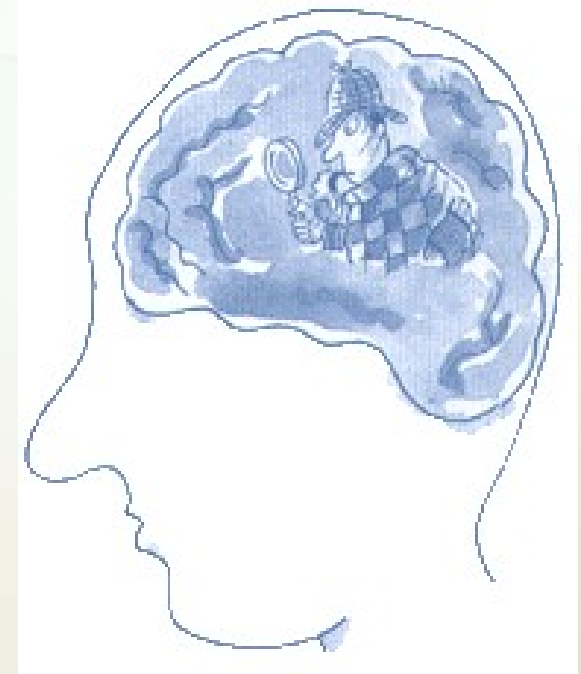
OS's Manage Applications

- Operating systems provide a software platform on top of which other “application” programs can run.
- The application programs must be written to run on a particular operating system.
- So, your choice of operating system determines what application software you can run.



Operating System Functions

- Besides managing hardware and software resources on the system, the OS must **manage resources and memory.**
- **There are two broad tasks to be accomplished.**



OS - Memory Storage and Management

1. Each process **must have enough memory** in which to execute, and

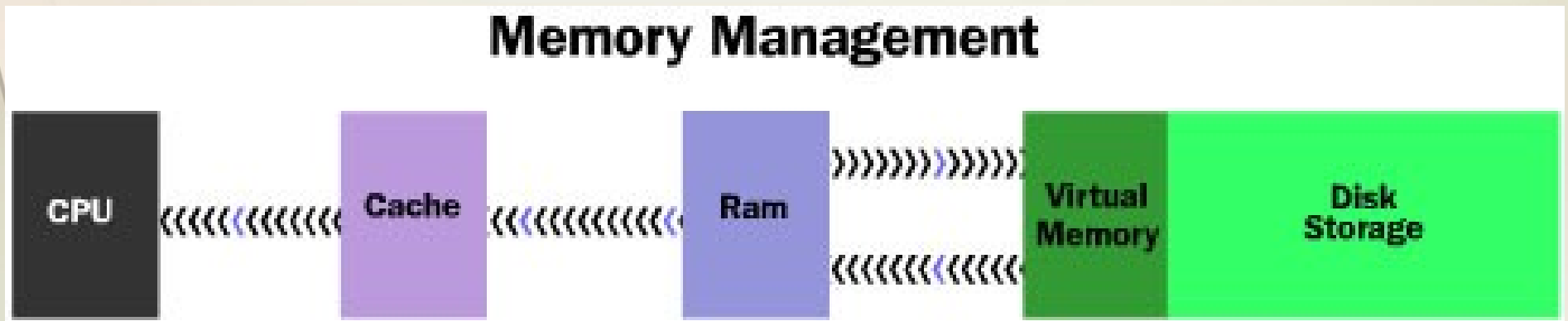
It can **neither run into** the memory space of another process,

Nor be run into by another process.



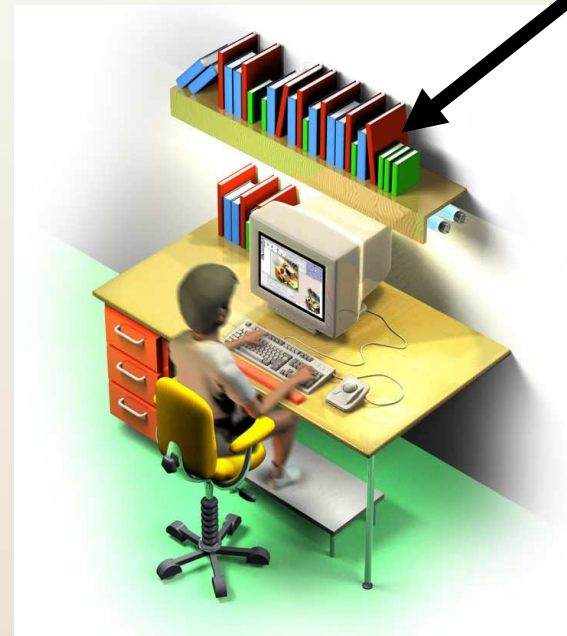
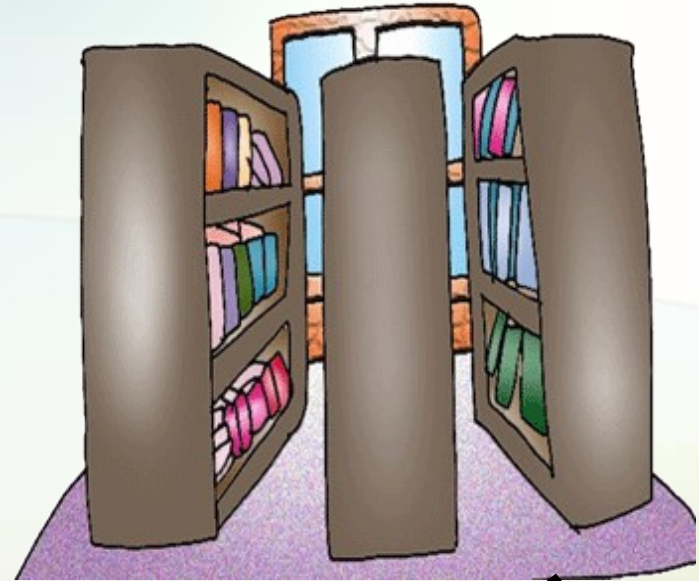
OS - Memory Storage and Management

1. The different types of memory in the system **must be used properly** so that each process can run most effectively.



Cache Memory

- **Cache** - A section of a computer's memory which **temporarily retains recently accessed data** in order to speed up repeated access to the same data.
- It provides **rapid access** without having to wait for systems to load.

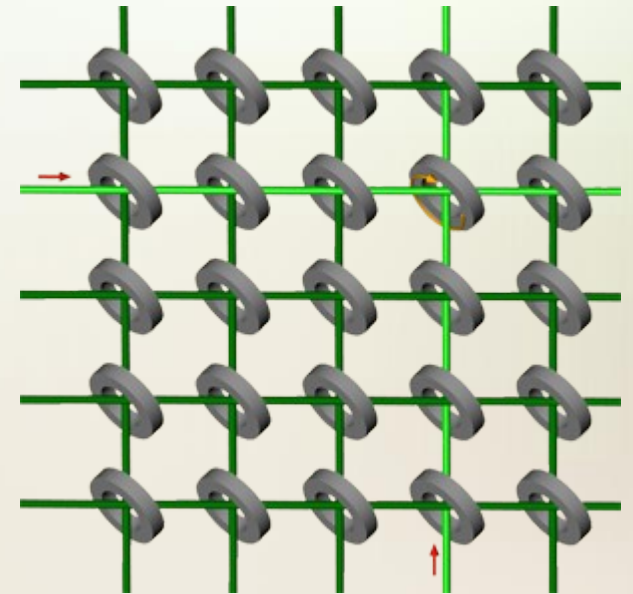


RAM Memory

- **Random access memory (RAM)** is the best known form of computer memory.



- RAM is considered "random access" because you can **access any memory cell directly** if you know the row and column that intersect at that cell.



RAM Memory

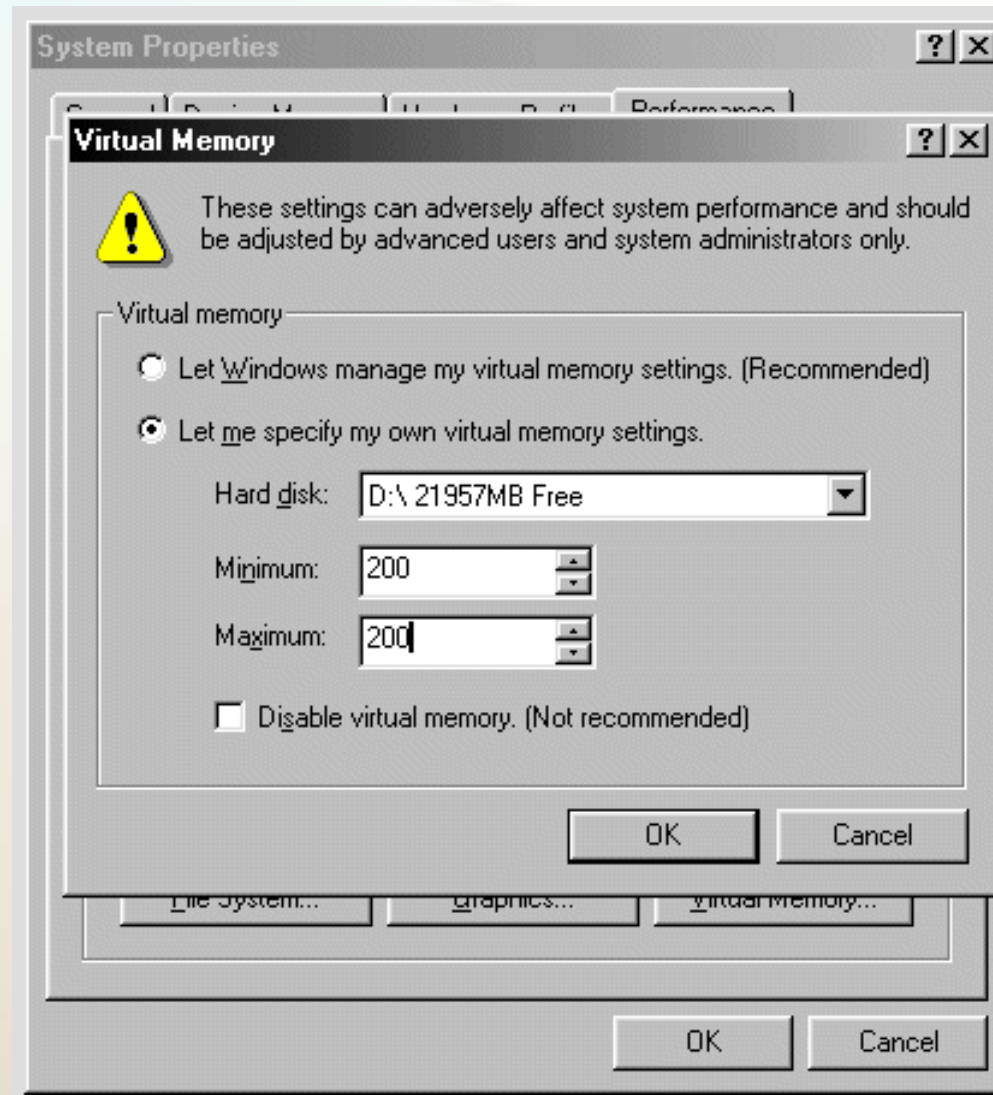
- The **more** RAM your computer has, the **faster** programs can function. The two main types are called DRAM and SRAM. SRAM is faster than DRAM, but, more expensive.

Remember, that if the power is turned off, then all data left in RAM, that has not been saved to the hard drive, is lost.

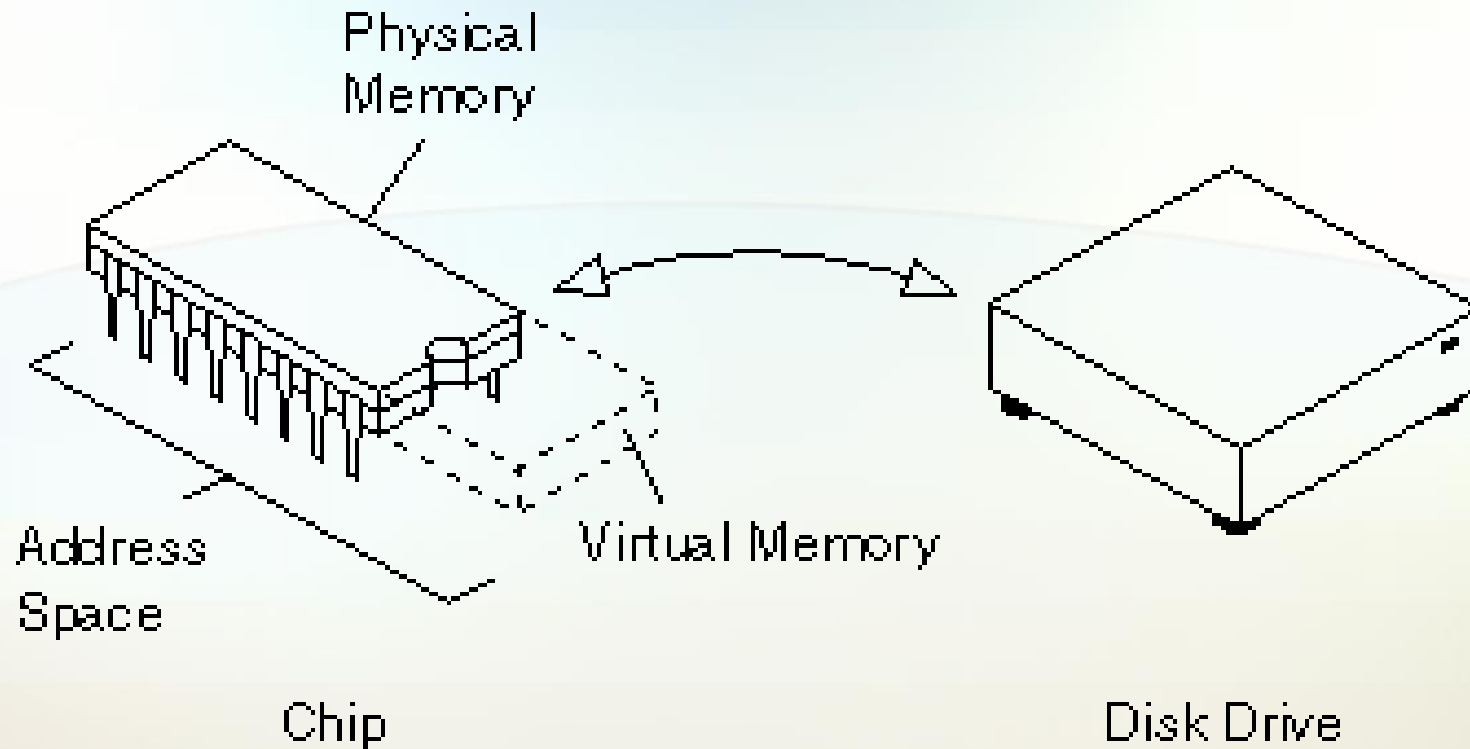
Virtual Memory

- **Virtual Memory** – a method of using **hard disk space** to provide **extra memory**. It simulates additional RAM.

- In Windows, the amount of virtual memory available, equals the amount of **free RAM** plus the amount of **disk space** allocated to the **swap file**.



Virtual Memory – Swap File



A swap file is an area of your hard disk that is set aside for virtual memory. Swap files can be either temporary or permanent.

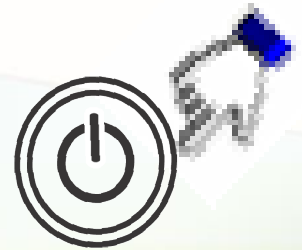
Okay – So Now What?





OS - Wake up call

• When you **turn on the power** to a PC, the first program that **runs** is a set of **instructions** kept in the computer's read-only memory (ROM).



OS - Wake up Call



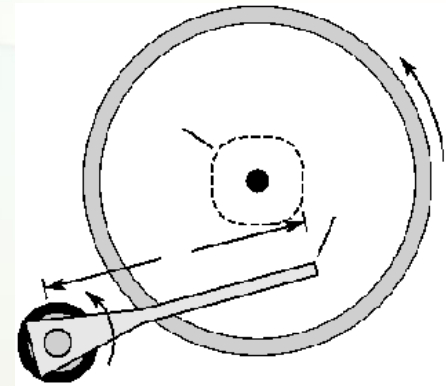
- It checks to make sure everything is **functioning properly**.

- It **checks** the CPU, memory, and basic input-output systems (BIOS) **for errors**.



OS – Wake up Call

- Once successful, the software will begin to **activate** the computer's **disk drives**.



- It then **finds** the first piece of the operating system: the **bootstrap loader**.



OS - Booting the PC

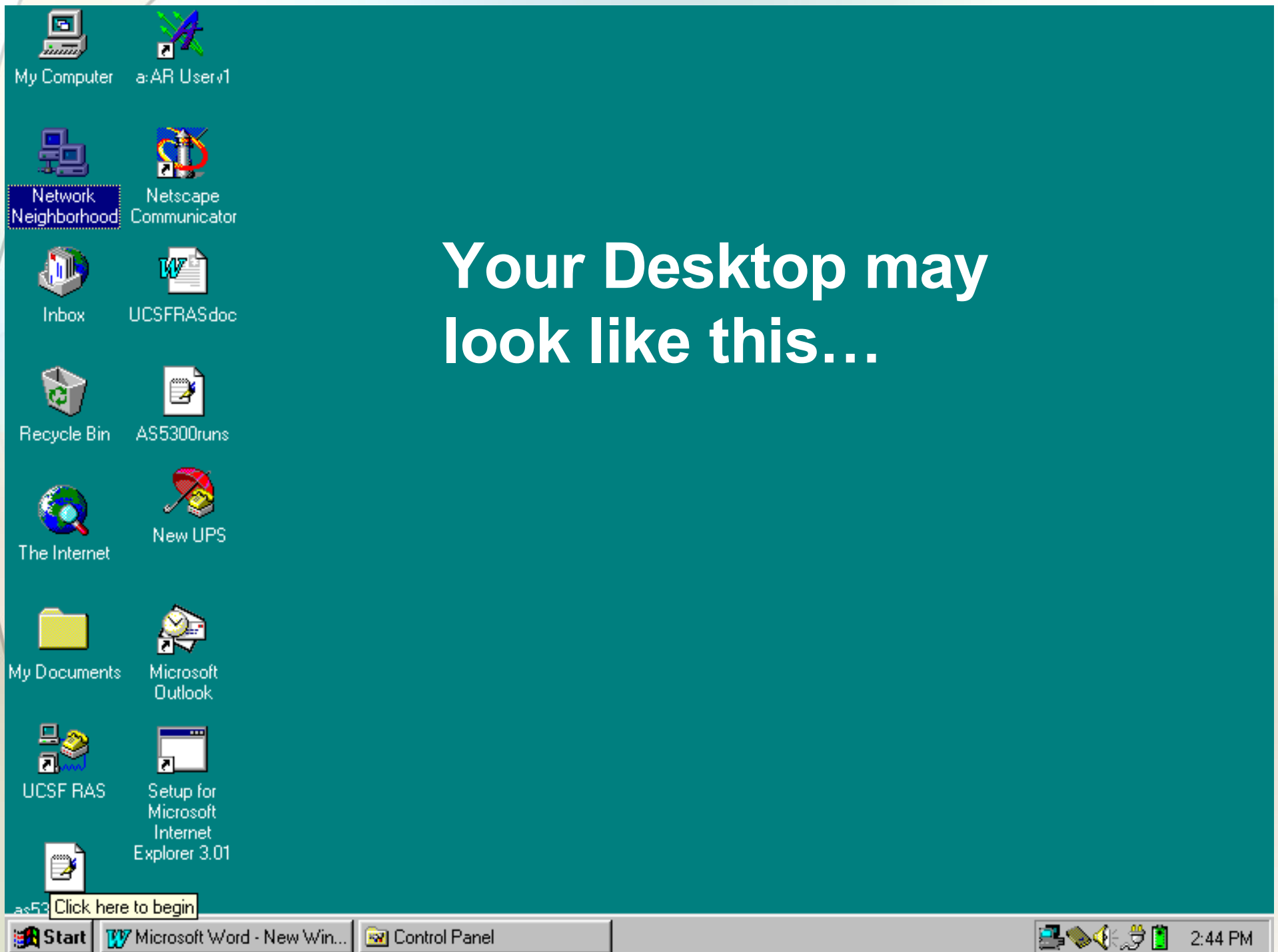
- The **bootstrap loader** is a small program that has a single function: It **loads the operating system** into memory and allows it to begin operation.

OS - Booting the PC

- The bootstrap loader **sets up** the small ***driver programs*** that interface with and control the various hardware.
- It **sets up** the divisions of
 - memory
 - user information, and
 - applications.



Windows Desktop



Windows Desktop

...Or like this.

-  Norton Protectoreset
-  My Stuff
-  My Funds
-  Mummy Maze Deluxe
-  Jasc Paint Shop Pro 8
-  Jasc Paint Shop Photo Album

Windows taskbar showing the Start button, application icons (Internet Explorer, Outlook, etc.), a taskbar with open windows (W, U.), a Links button, and the system tray with various icons and the time 6:29 PM.

How Do I Tell The OS What I Want To Do?

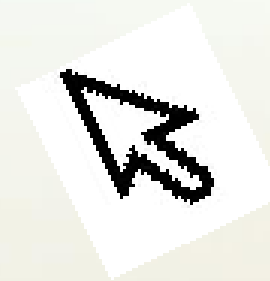
- You must continue to **give the operating system commands** that are accepted and executed.

- *The first command was pushing the “ON” button which started the “boot” process.*



Enter Commands

- Commands can be **entered** several ways:
 - Through a **keyboard**.
 - Pointing or clicking on an **object** with a mouse. (Graphical User Interface or GUI)
 - Sending a command from **another program**.





Windows and Mac are GUI's



- *Microsoft Windows and Apple Macintosh* operating systems are “**graphical user interfaces**” or *GUI's*.

GUI is defined as: A picture used in place of a word or words to issue commands.

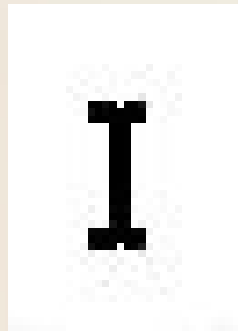
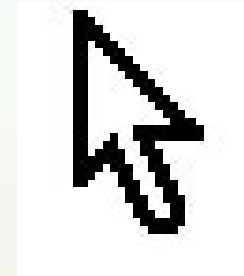
GUI – Standards

- **GUI** interfaces have **standards** that are usually the same or similar in all systems and applications.
- **Standards apply to:**
 - **Pointers and pointing devices**
 - **Icons, desktops, windows and menus**

Windows - GUI Pointers

- **GUI** uses *pictures, symbols, or icons* rather than words to **represent** some object or function. For example:

















- A **pointer** or **mouse pointer** is a small arrow or other symbol that moves on the screen as you move a mouse.



- An **I-Beam pointer** is used by many desktop publishing systems and word processors to **mark** blocks of text and **move** the insertion point.

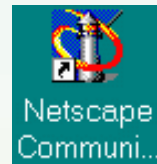
GUI – Cursors / Pointers

•The term “**cursor**” typically is used to show where your typing will appear. Otherwise, the term “**pointer**” is the better choice.

Pointer Shapes			
Normal Select		Vertical Resize	
Help Select		Horizontal Resize	
Working In Background		Diagonal Resize 1	
Busy		Diagonal Resize 2	
Precision Select		Move	
Text Select		Alternate Select	
Handwriting		Drag- make copy	
Unavailable		Drag - make shortcut	

Windows - GUI Icons

- **Icon** - A small picture that represents a command, object, file, or window.



- **Point and click** with a mouse **to execute** a command or convert the icon into a window.
- Icons are **moveable** around the display screen, just like moving things around on your desk.

Object Icons & Shortcut Icons

• One type of icon is an **object icon**. It allows you to open applications and documents on your PC.



Recycle Bin



My Computer



My Network Places

• You can create and use a **shortcut icon** to open any application quickly. You don't have to use the Start Menu to access a program or document.



Shortcut to TechTraining



Shortcut (2) to Exercise



Shortcut (3) to Exercise



My Documents



My Computer



My Network
Places



Recycle Bin



Internet
Explorer

Windows - GUI Windows & Desktop

- You can divide the screen into different areas.
- In each window, you can run a different program or display a different file.
- You can move windows around the display screen, and change their shape and size at will.

Windows 2000 Professional

Pre-release (Build 2000)

C:\WINNT



Address

www.microsoft.com

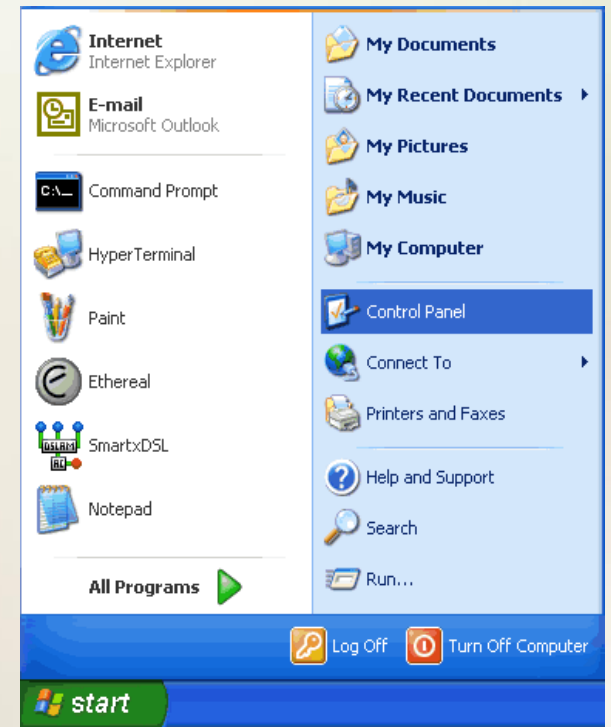
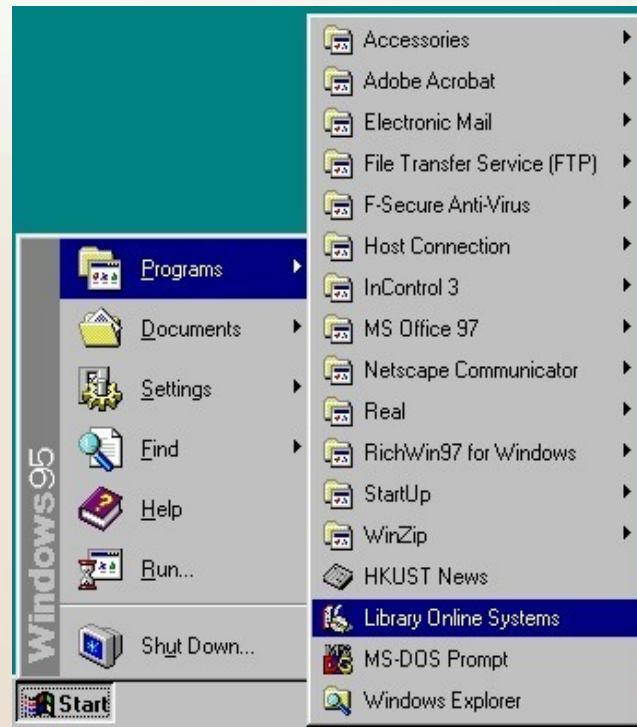
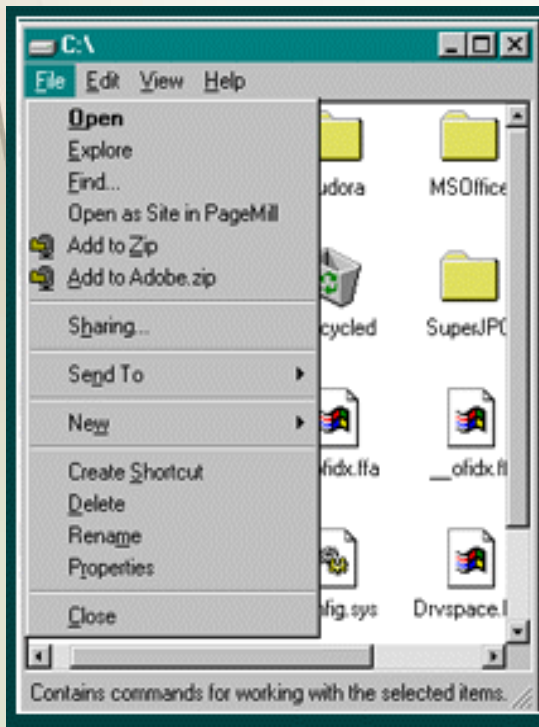
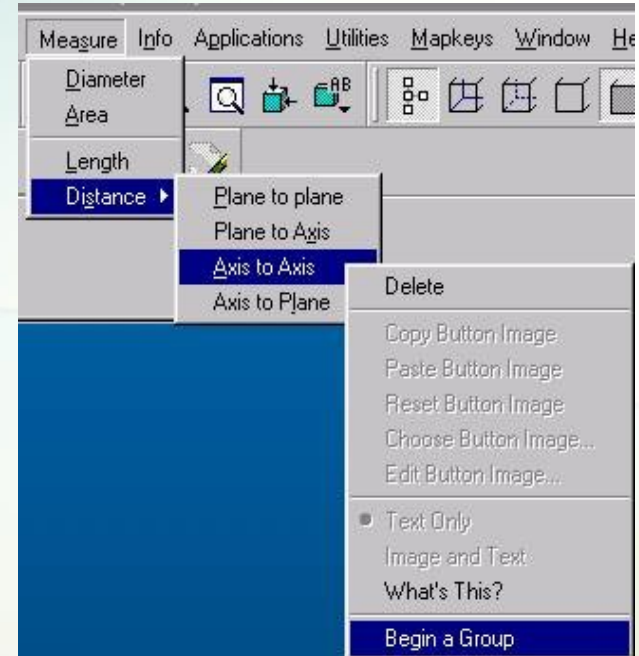
Go



2:54 PM

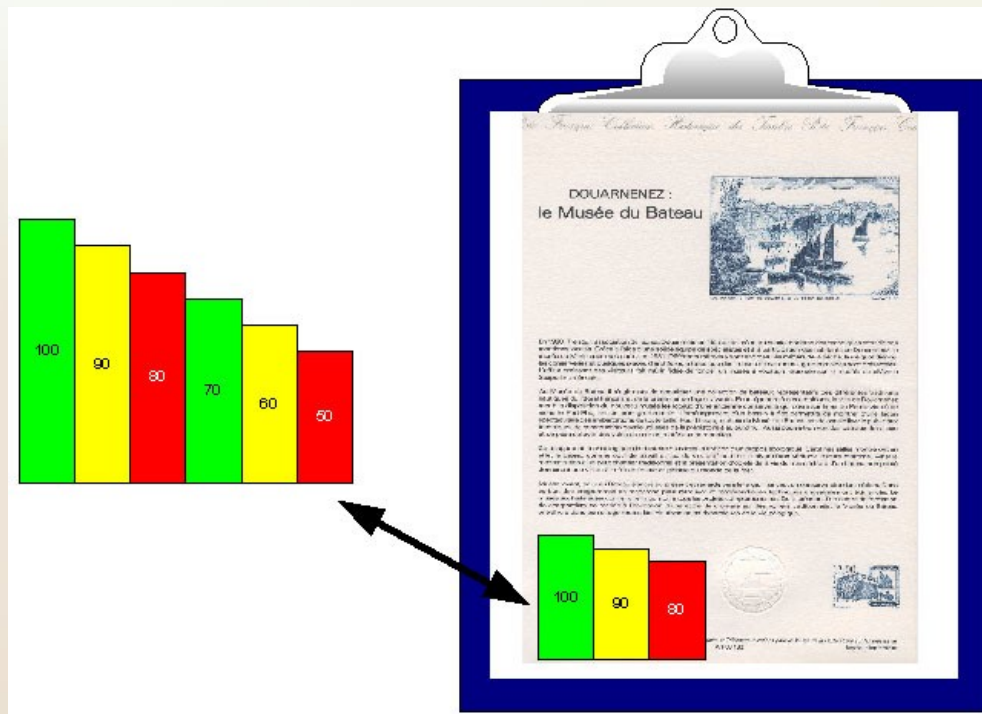
Windows - GUI Menus

• **Menu** - is an on-screen list of **options** for using a program. It can also be a list of categories with many other menu options under it. Menus can "pop up" or "pull down."

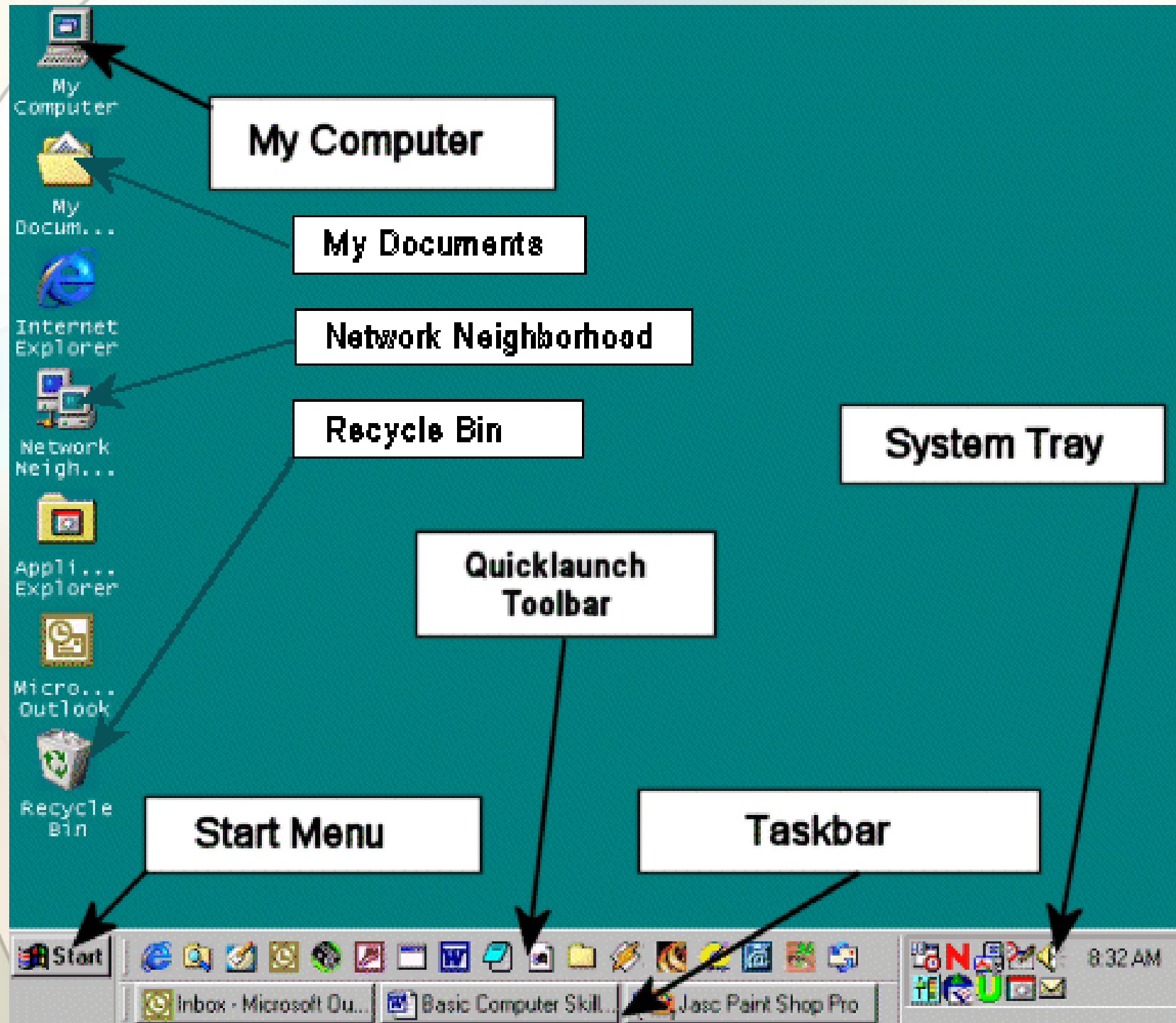


GUI – Share Data

- Because the formats are well-defined, different programs that run under a common **GUI** can **share data**. This makes it possible, for example, to copy a graph created by a spreadsheet program into a document created by a word processor.



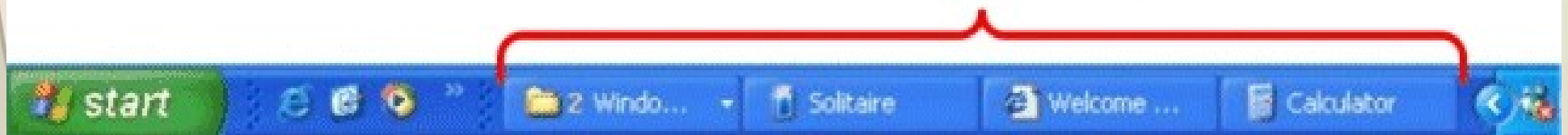
Parts of the Desktop



Windows - Taskbar

- **Taskbar** – shows you the windows or programs that are currently open on the desktop. You can switch between windows by clicking on the applicable button.

Each taskbar button represents an open program (a "task in progress")

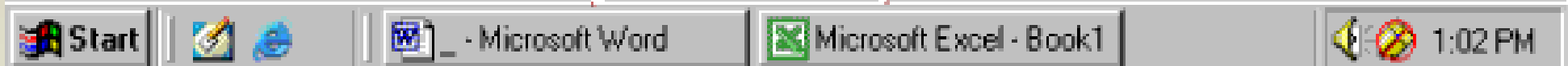
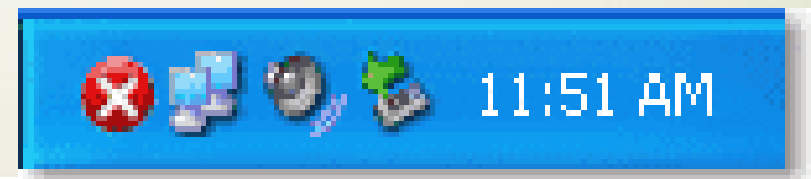


window tabs



Windows – System Tray

- **System Tray** – shows you running programs that were **started automatically** by the operating system, like anti-virus programs, the clock and volume controls. These programs are running in the background.



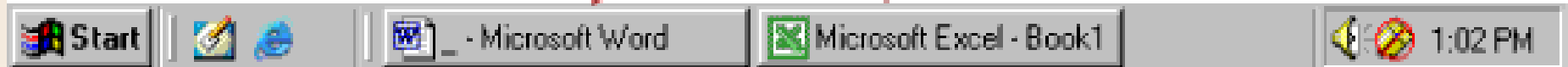
system tray

Windows - Quick Launch Toolbar

- **Quick Launch Toolbar** – contains one-click *buttons*, or *shortcuts*, which open programs. You can customize this toolbar however you like.



Quicklaunch Toolbar



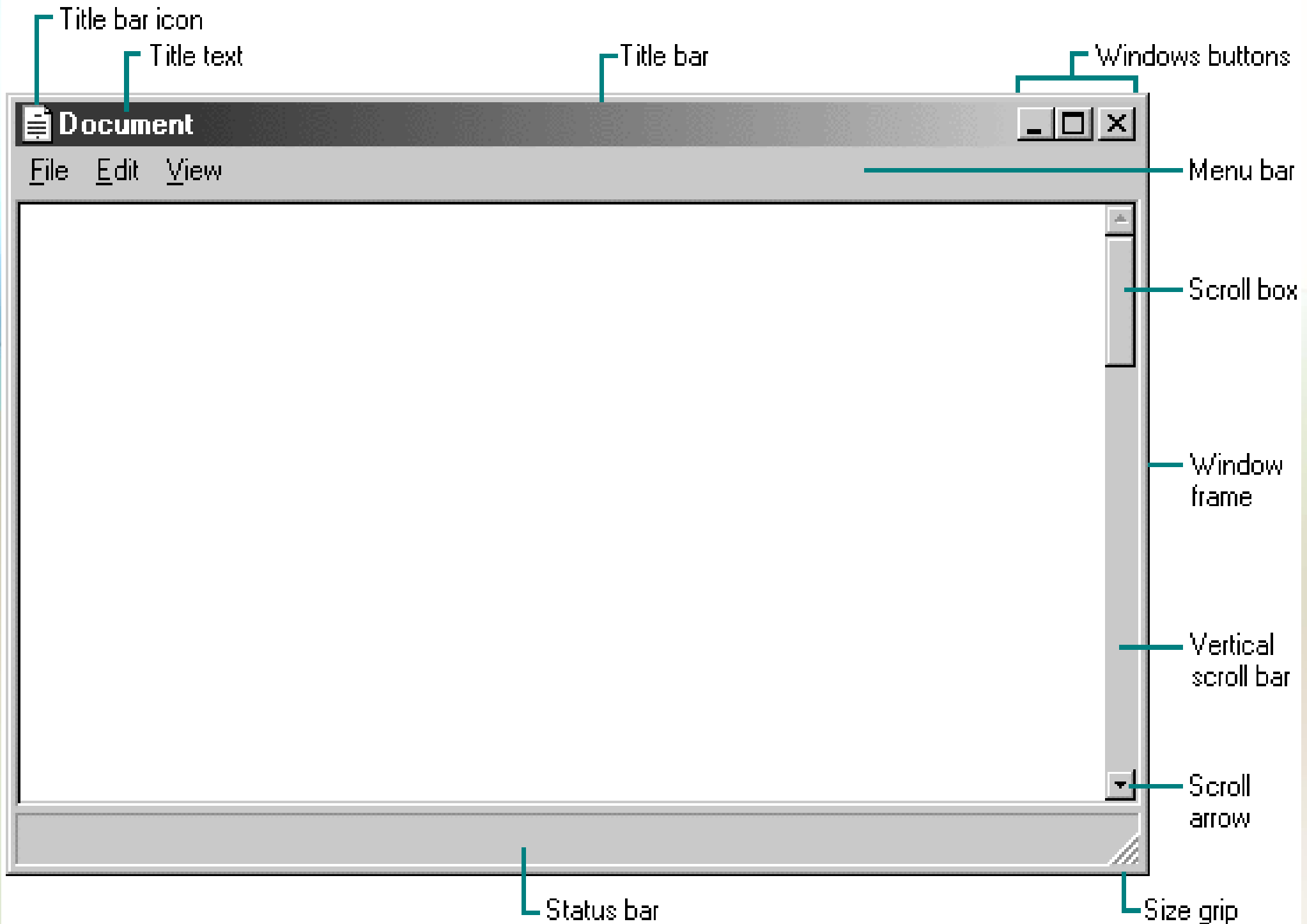
quick launch bar

Start Button

- The **start button** allows you to easily access your computer programs or configure Windows. By default the start button is located at the bottom left side of the screen.



Parts of a Window

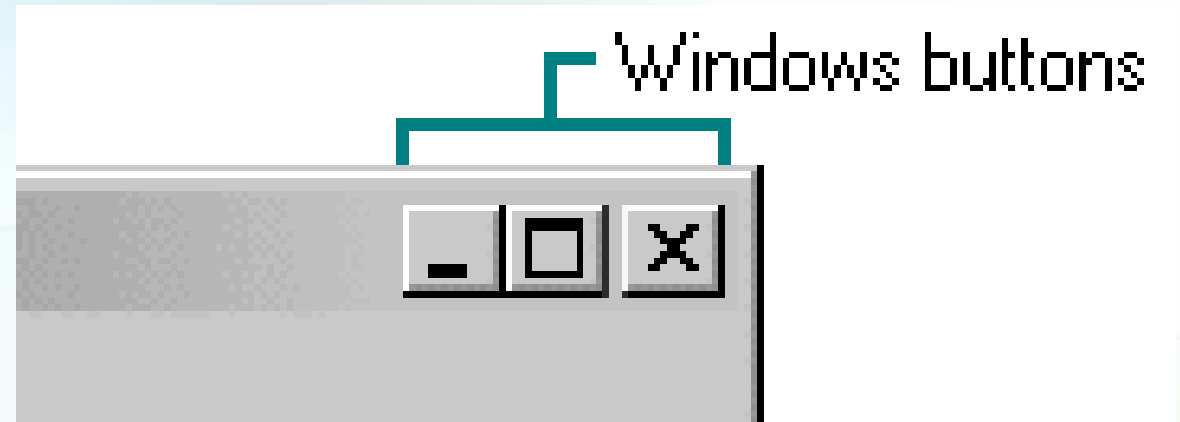


Title Bar



- At the top edge of the window, inside its border, is the **title bar** which extends across the width of the window. It contains the title of the application or document.
- A small icon in the far left corner of the title bar represents the **object being viewed** in the window.

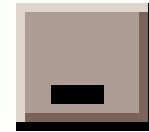
Minimize, Maximize and Resize Windows



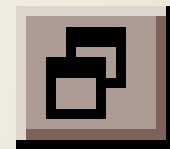
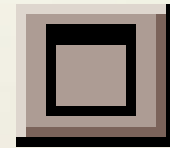
- The title bar contains three little buttons in the upper right-corner of the window and are used to **manage the window size** or close it altogether.

Minimize - Maximize

- The first button is the **minimize button** and it will hide the window. The window can be opened again by clicking its button on the taskbar.

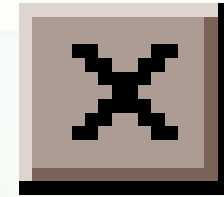


- The second button is **maximize**, which makes the window take up all the screen space. Clicking again turns the window back to the size it was. The double-box image is known as the **restore** button.



Close Window

- The last button will **close** a window. If it is the last window of a certain type of program, it will **exit or quit** that program.

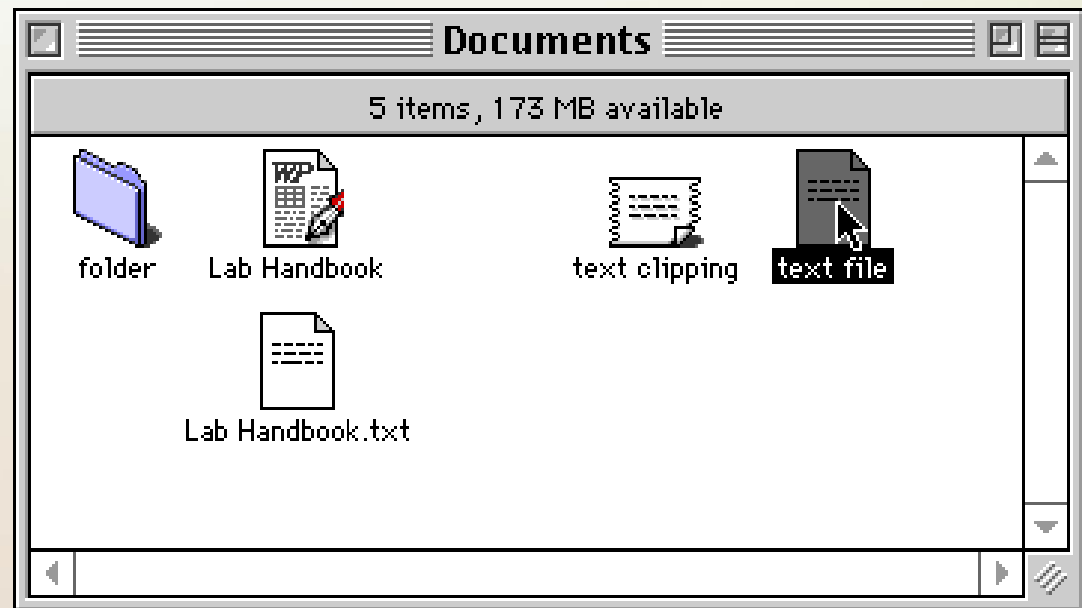


Move a Window

- You can move a window to any location on the desktop by “clicking and dragging” the title bar with your mouse.

- This is also referred to as “drag and drop”.

- *You can also drag and drop icons to move the location of files or shortcuts.*



Menu Bar



- **Menu bar** - The horizontal bar near the top of a window that displays the names of menus from which you can access features and perform tasks for the current application.

Types of Menu Items

New



- **Arrow:** another menu will cascade from it.

Format...

- **Three dots:** a dialog box will open, containing choices for you to make.

Types of Menu Items

- **Checkmark:**
clicking this item will toggle the feature on or off.

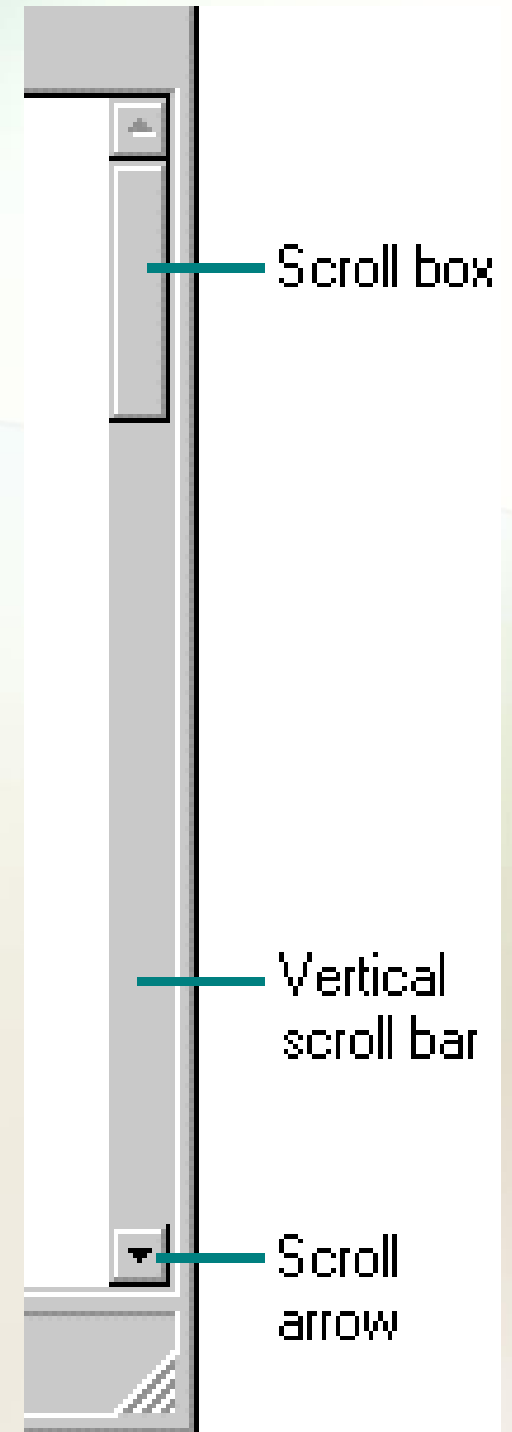
✓ Color Box Ctrl+L

- If a **keyboard shortcut** is shown in the menu, you can use those keys to *run the command* without having to open the menu.

New Ctrl+N

Scroll Bar

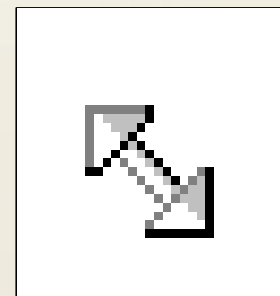
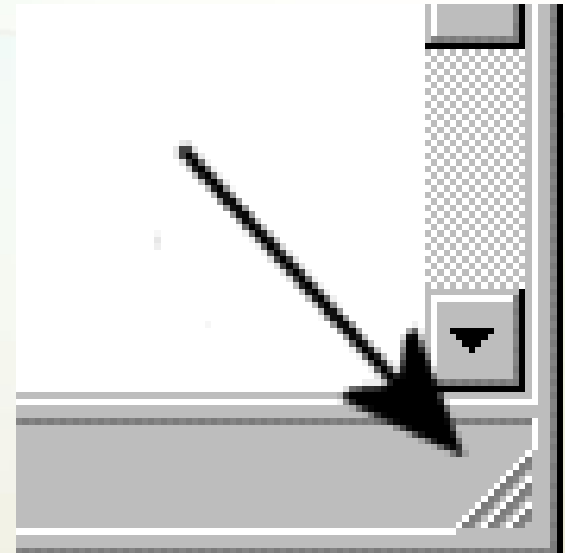
- **Scroll bar** - the narrow rectangular bar at the far right of windows.
- **Clicking** on the **up or down arrow** enables you to move up and down through a document.
- A **movable square** indicates your **location** in the document.



Windows Frame & Resizing

- You can also **resize** a window by a *click and drag* move.

Put the mouse cursor on the edge of a window (that is not maximized) and when the pointer changes to a double arrow, click and drag for the new size. Some windows have a handle on them for resizing.



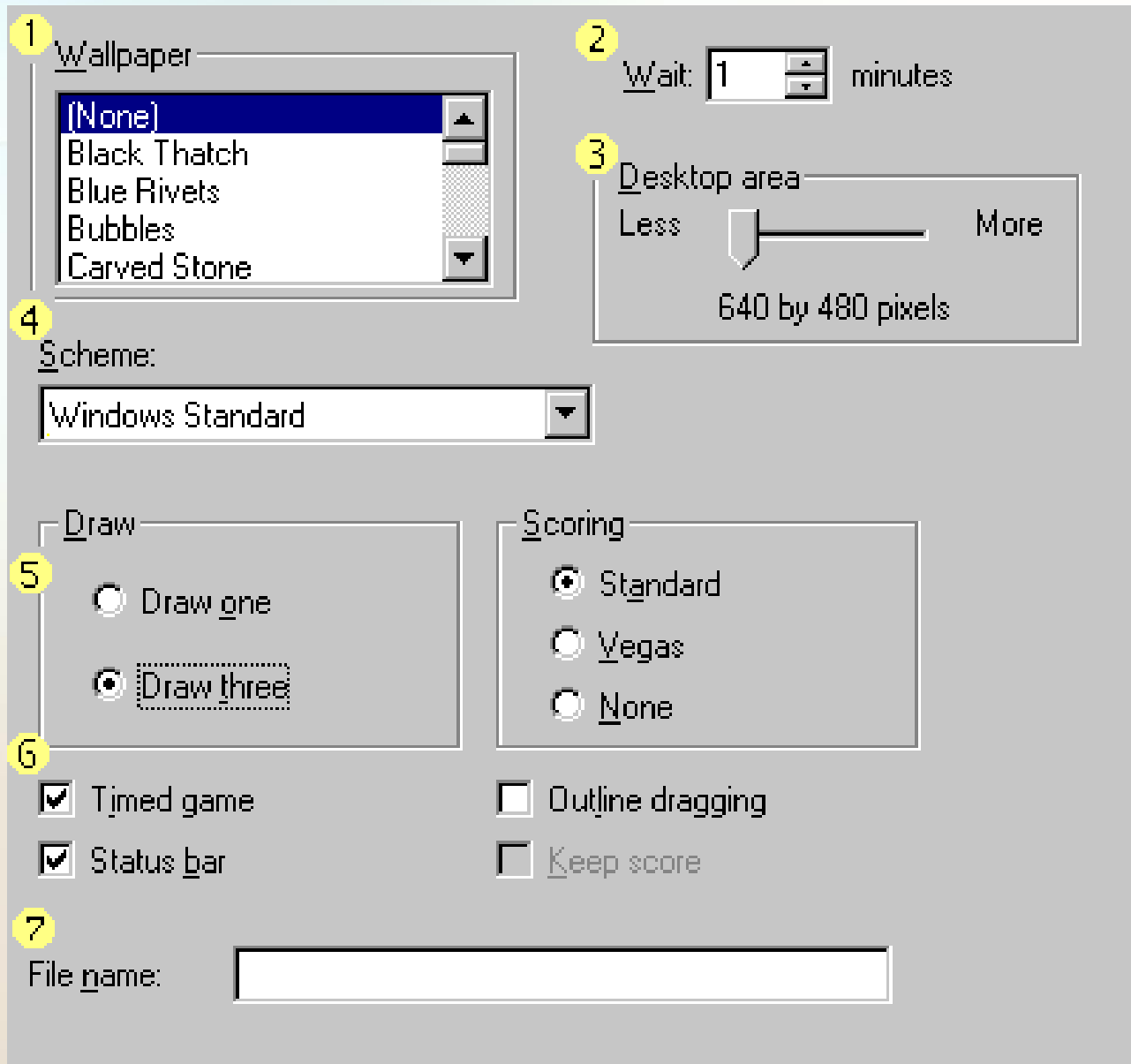
Status Bar

- **Status bar** – is located at the bottom of a window and contains information about **formatting options, errors, prompts, messages, or the status** of an application.



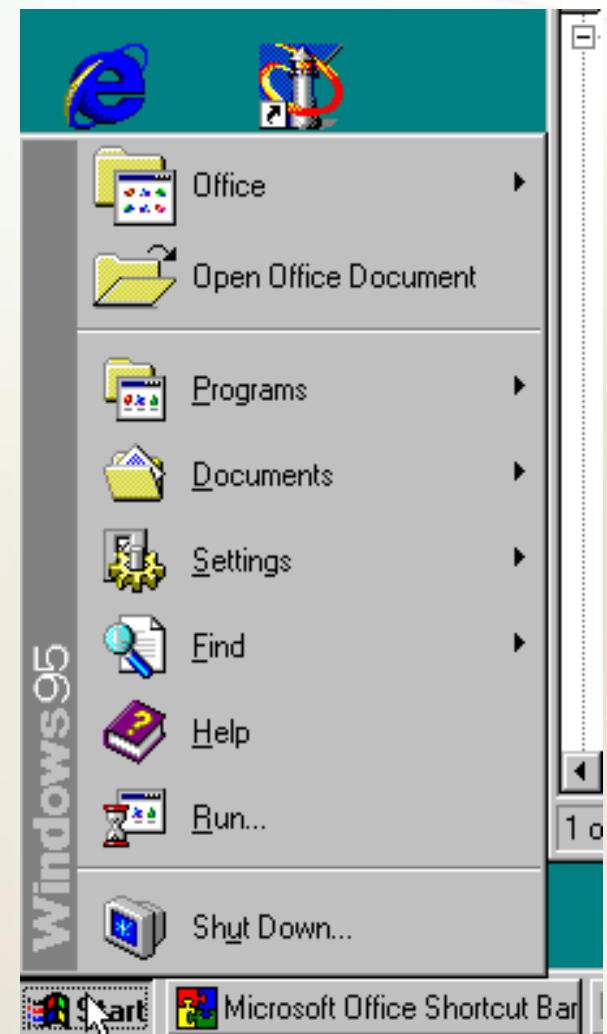
Dialog Boxes

1. List box
2. Spin control box
3. Slide
4. Drop-down list
5. Radio button
6. Checkbox
7. Text box



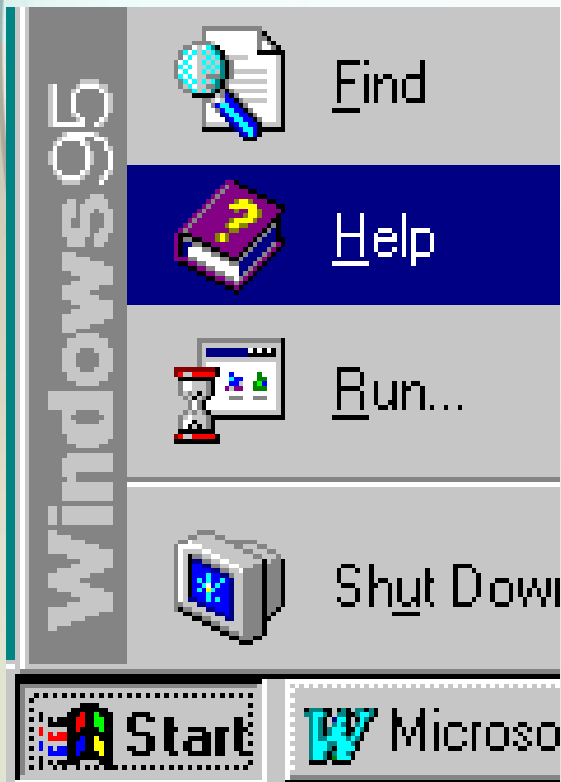
Windows – Start Menu

- **Start Menu** – gives you access to all **programs** and **functions** on your PC, including “help” files and “search” capabilities.

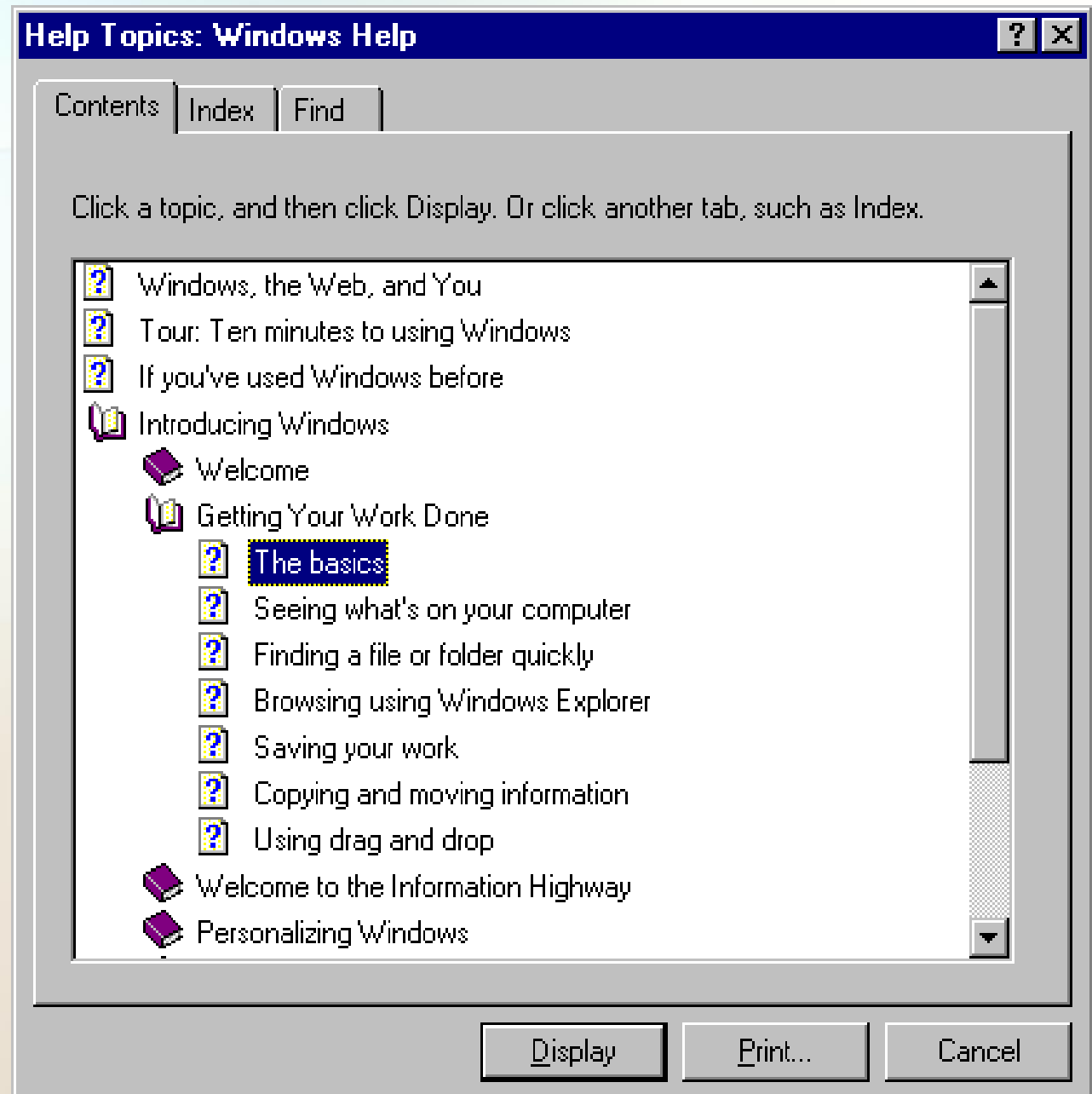


Windows HELP

- Access **Windows HELP** through the **Start** menu.

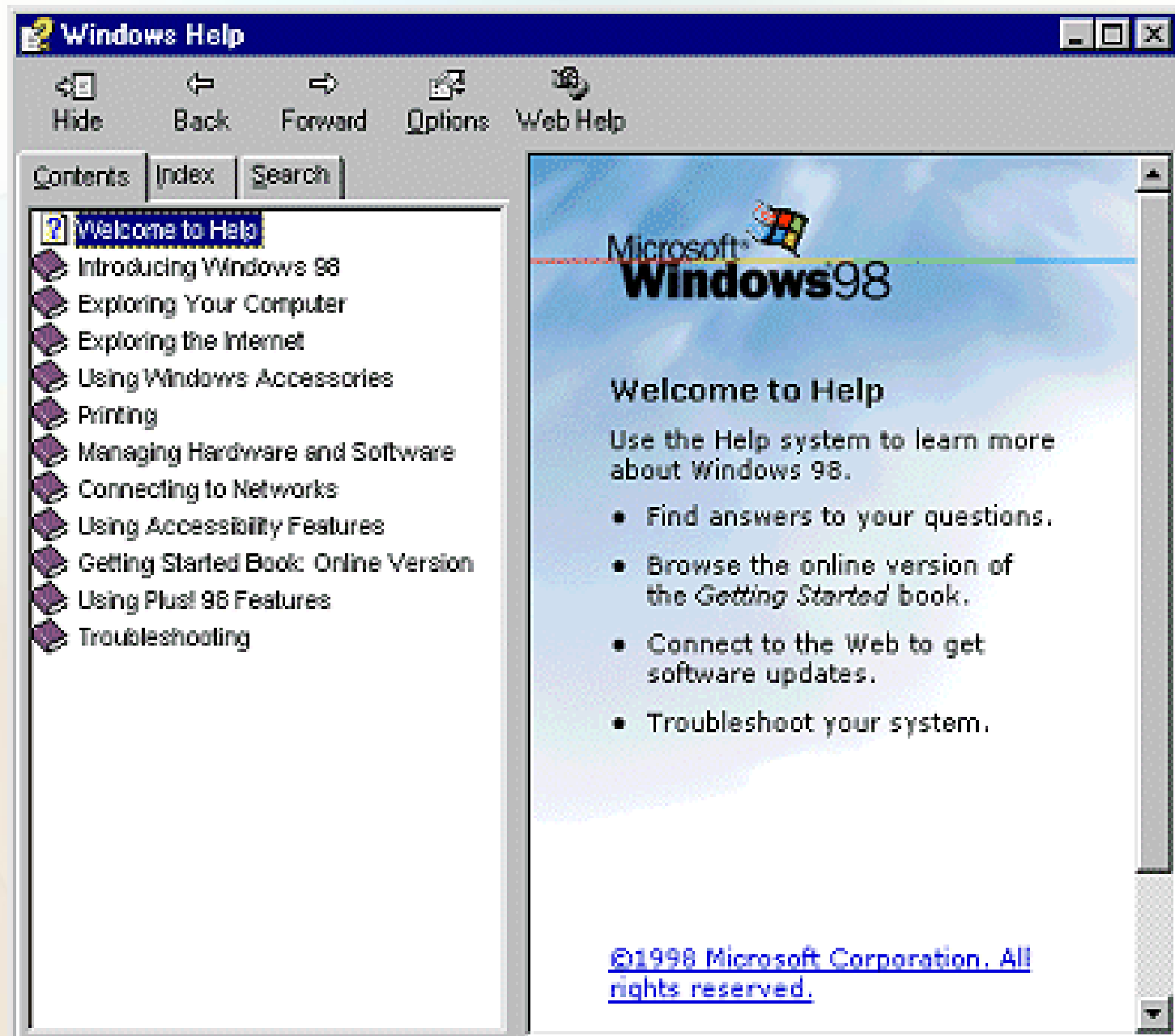


Windows 95 HELP menu



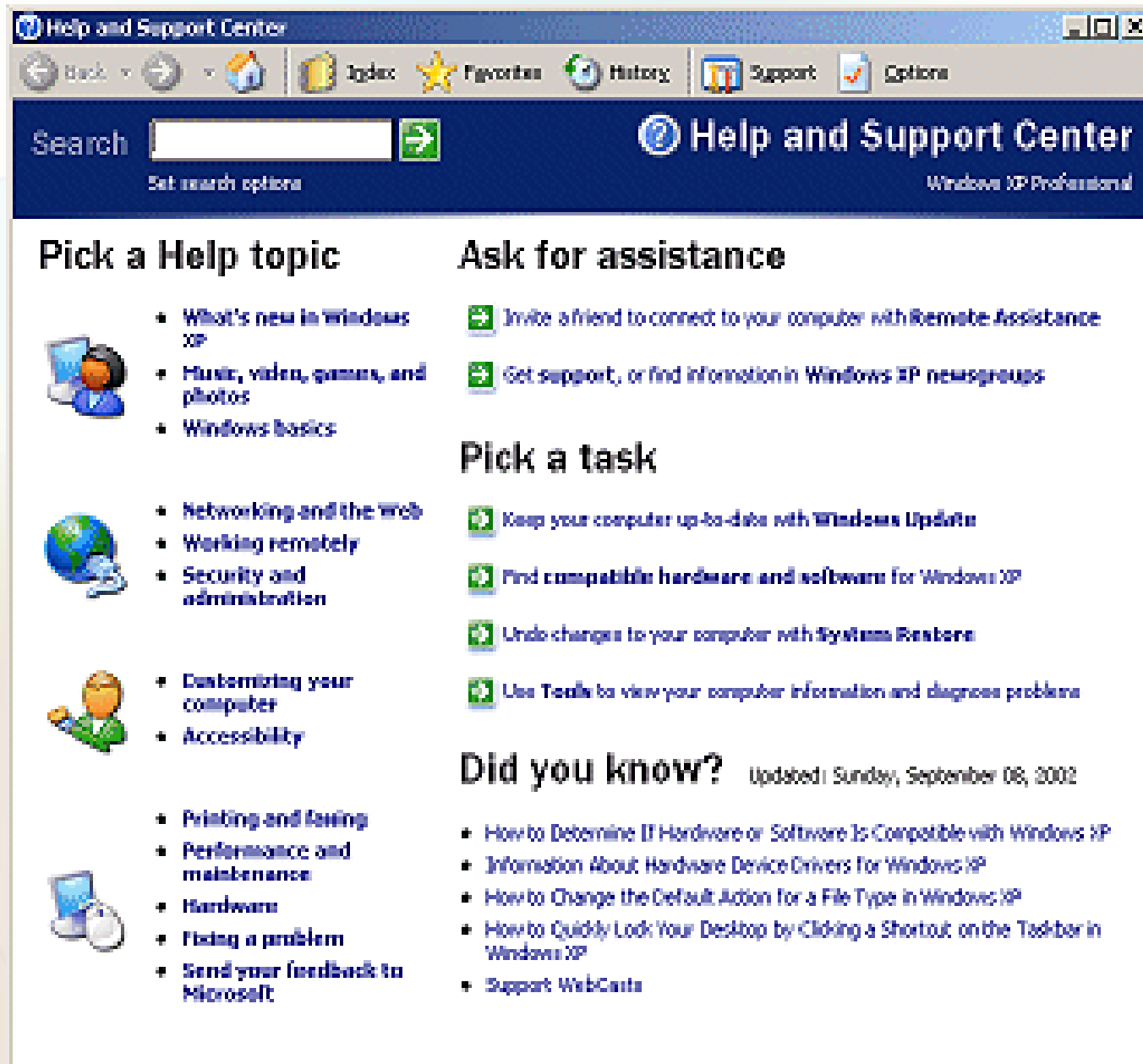
Windows HELP

Windows 98 HELP menu



Windows HELP

•Windows XP HELP menu



The screenshot shows the Windows XP Help and Support Center web interface. At the top, there is a navigation bar with icons for Back, Forward, Home, Index, Favorites, History, Support, and Options. Below this is a search bar with a search button and the text "Set search options". The main content area is divided into several sections:

- Pick a Help topic**: A list of topics with corresponding icons:
 - What's new in Windows XP (computer icon)
 - Music, video, games, and photos (music note icon)
 - Windows Basics (Windows logo icon)
 - Networking and the Web (globe icon)
 - Working remotely (person at computer icon)
 - Security and administration (shield icon)
 - Customizing your computer (person icon)
 - Accessibility (person in wheelchair icon)
 - Printing and faxing (printer icon)
 - Performance and maintenance (gauge icon)
 - Hardware (laptop icon)
 - Fixing a problem (wrench icon)
 - Send your feedback to Microsoft (envelope icon)
- Ask for assistance**: A list of actions with green plus icons:
 - Invite a friend to connect to your computer with Remote Assistance
 - Get support, or find information in Windows XP newsgroups
- Pick a task**: A list of tasks with green plus icons:
 - Keep your computer up-to-date with Windows Update
 - Find compatible hardware and software for Windows XP
 - Undo changes to your computer with System Restore
 - Use Tools to view your computer information and diagnose problems
- Did you know?**: A section with a date "Updated: Sunday, September 08, 2002" and a list of tips:
 - How to Determine If Hardware or Software Is Compatible with Windows XP
 - Information About Hardware Device Drivers for Windows XP
 - How to Change the Default Action for a File Type in Windows XP
 - How to Quickly Lock Your Desktop by Clicking a Shortcut on the Taskbar in Windows XP
 - Support WebCasts

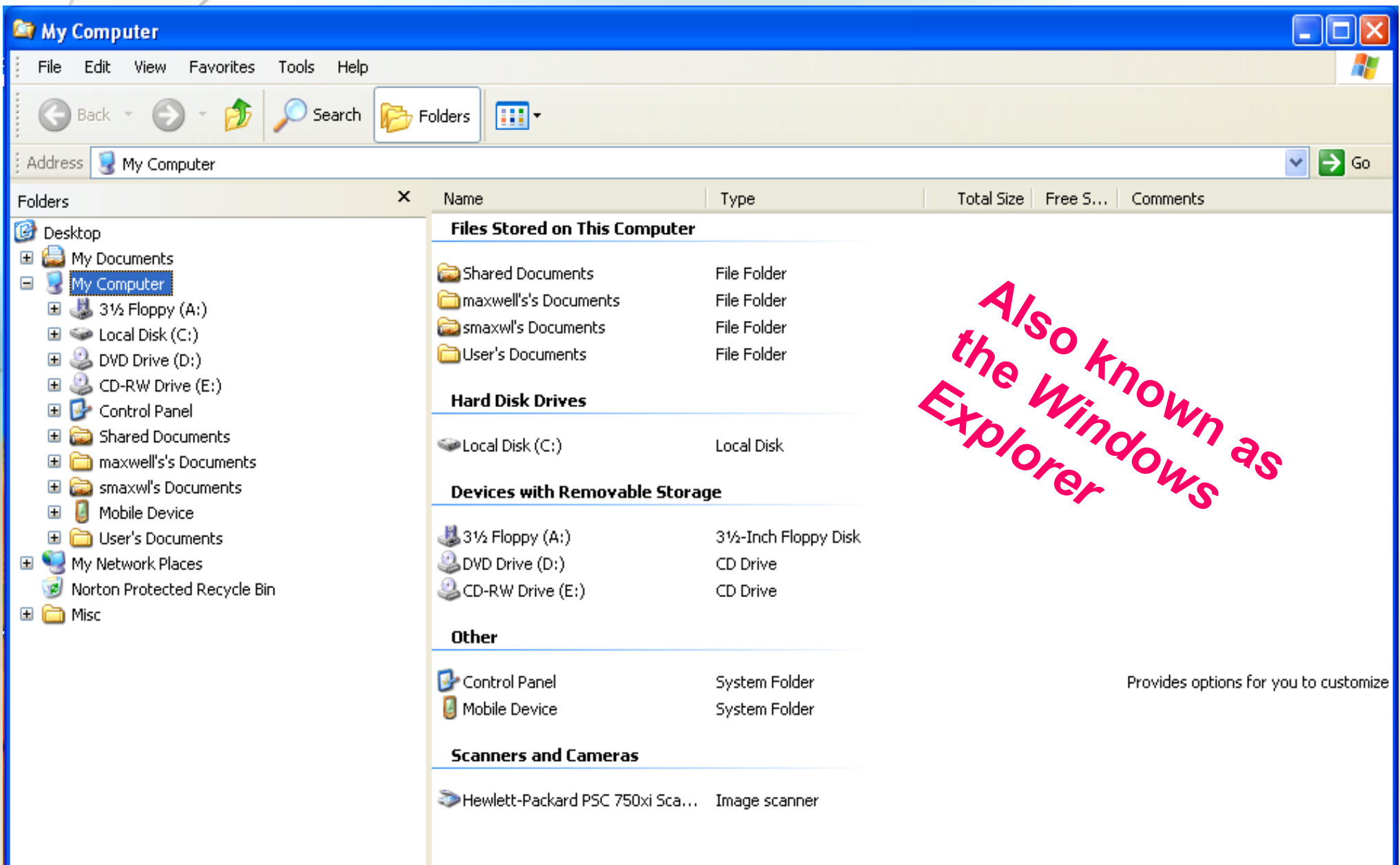
Windows System Programs

- *Windows* has a number of **internal programs** as part of the operating system that help keep you **organized** and your PC **healthy**.

- Here are a few:



Windows - My Computer



The screenshot shows the Windows 'My Computer' window. The left sidebar lists various folders and drives, including Desktop, My Documents, My Computer (selected), 3 1/2 Floppy (A:), Local Disk (C:), DVD Drive (D:), CD-RW Drive (E:), Control Panel, Shared Documents, maxwell's Documents, smaxwl's Documents, Mobile Device, User's Documents, My Network Places, Norton Protected Recycle Bin, and Misc.

The main pane displays 'Files Stored on This Computer' and 'Hard Disk Drives'. A table lists the following items:

Name	Type	Total Size	Free S...	Comments
Files Stored on This Computer				
Shared Documents	File Folder			
maxwell's Documents	File Folder			
smaxwl's Documents	File Folder			
User's Documents	File Folder			
Hard Disk Drives				
Local Disk (C:)	Local Disk			
Devices with Removable Storage				
3 1/2 Floppy (A:)	3 1/2-Inch Floppy Disk			
DVD Drive (D:)	CD Drive			
CD-RW Drive (E:)	CD Drive			
Other				
Control Panel	System Folder			Provides options for you to customize
Mobile Device	System Folder			
Scanners and Cameras				
Hewlett-Packard P5C 750xi Sca...	Image scanner			

*Also known as
the Windows
Explorer*

• **My Computer** – inside this icon you can find every folder and file that your PC has access to.







Recycle Bin

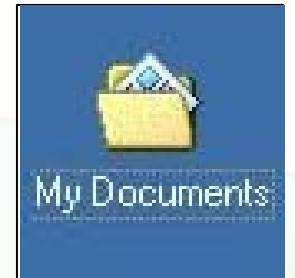
Windows – Recycle Bin

• **Recycle Bin** – Deleted files and folders go here first, where they **wait** to be permanently deleted by you, or by rules that you set up. This is a **temporary storage area** on your hard drive.



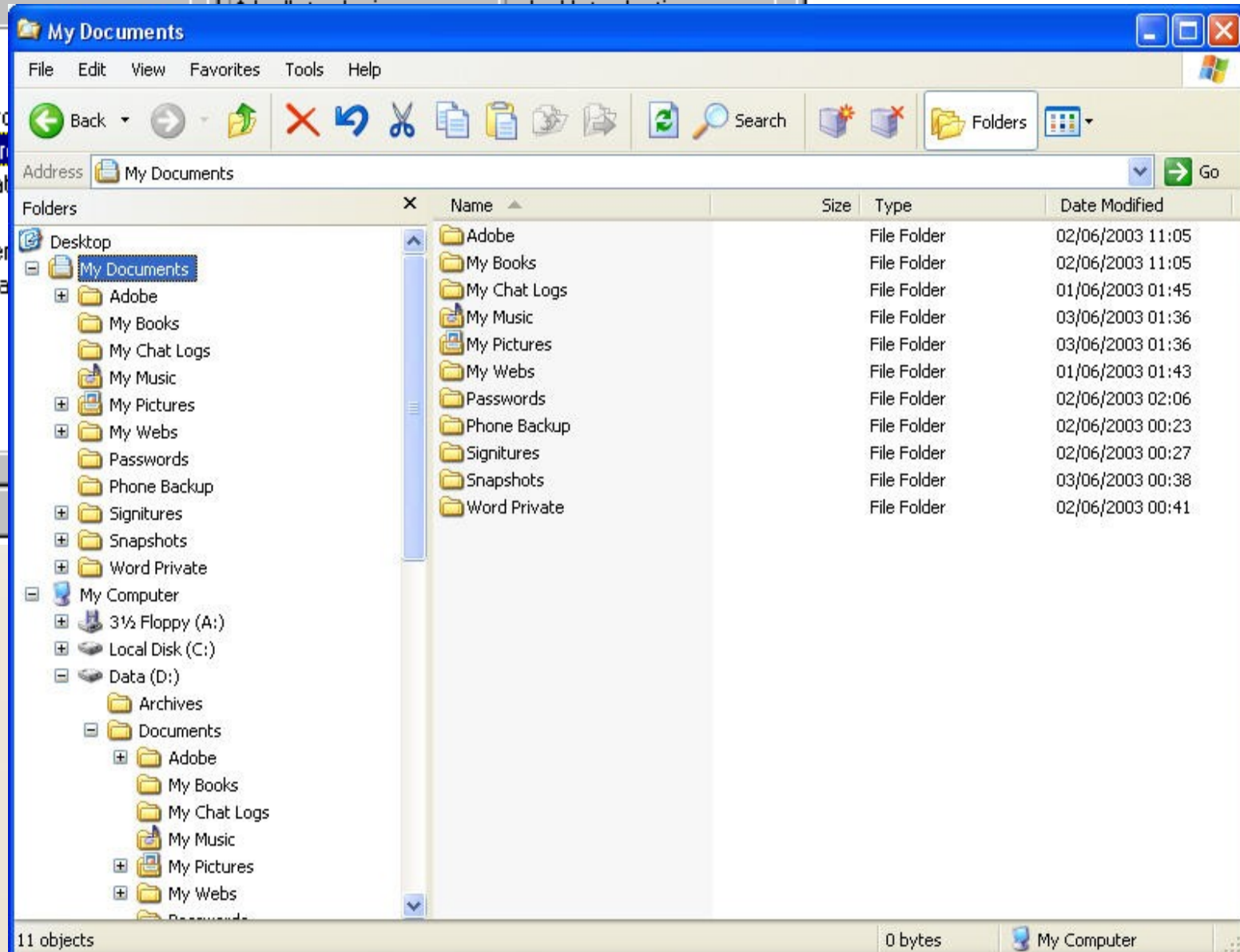
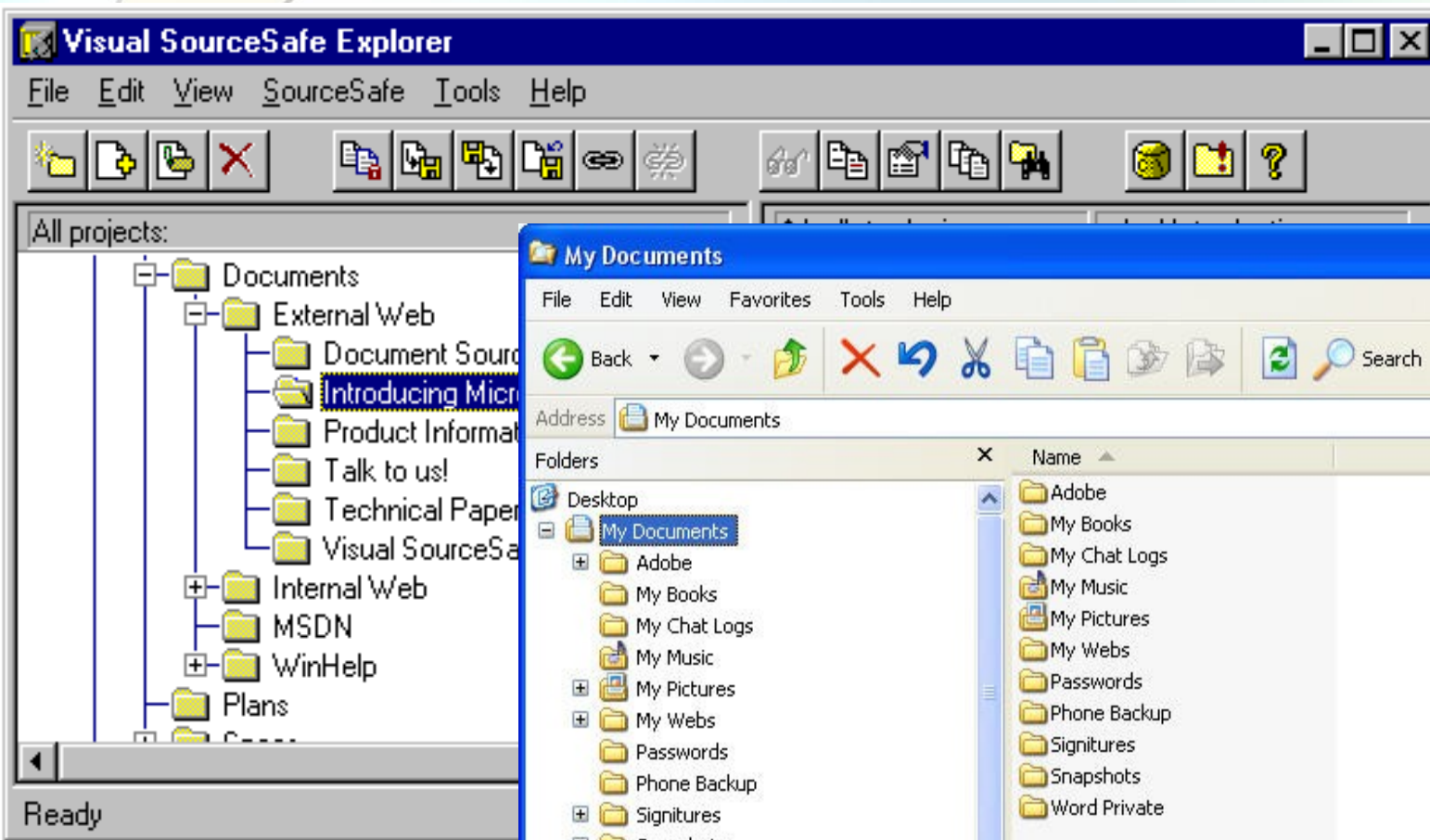
Windows – My Docs

- **My Documents** – a place to store the **documents** and **files** you create. Clicking on this opens an **explorer window** displaying the detail.



- *It's wise to keep the files you create separate from the program files, so when you backup your data, it's all located in one location. You can then backup just this area of your storage.*

My Documents – Explorer Window



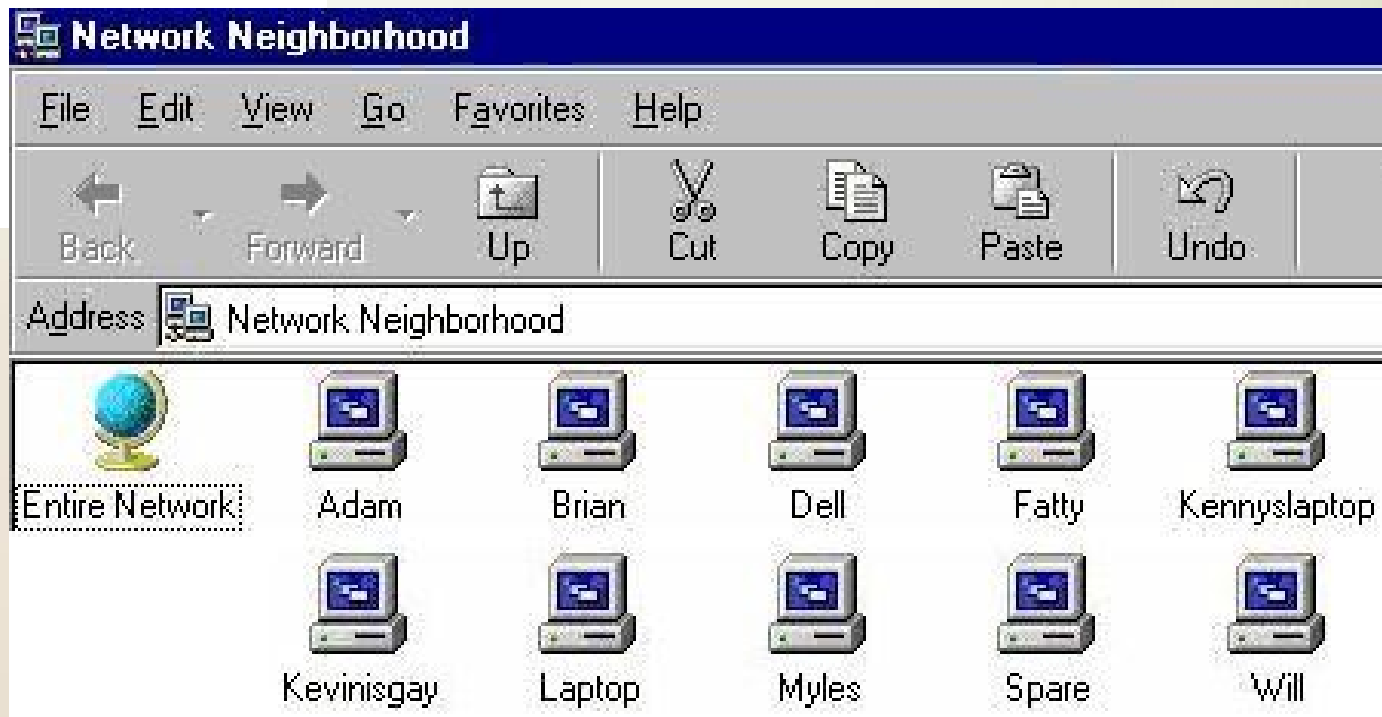
Windows – Network Neighborhood

- **Network Neighborhood** – serves as a window into the network resources you have on your PC.



- **If you are connected to a network you will see all the other PC's linked to your network and you can share files, printers or other hardware.**

Network Neighborhood



Logoff

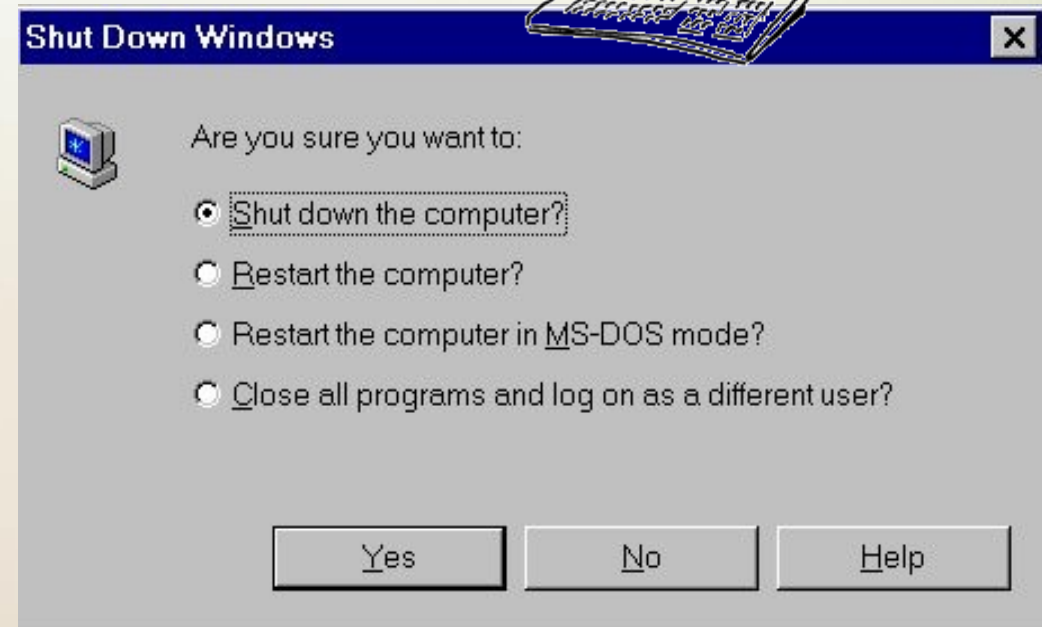
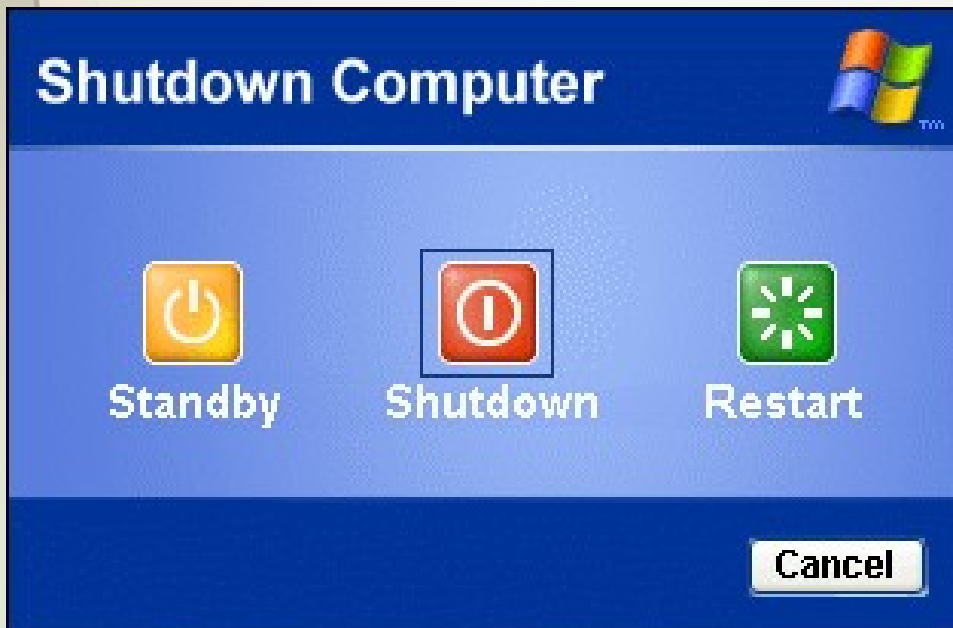
- If you have **multiple users** on a PC with separate “**profiles**” or **user logons**, use the *logoff process* to close out of your profile or to switch users.



Shutdown Windows

- There is a “graceful” way of **shutting down your PC** that will **save** your program settings and files.

- *This shutdown process basically puts the operating system to bed.*



Which Explorer?

• *Tip: Don't confuse Windows Explorer with Internet Explorer.*

• *Windows Explorer* is the program that lets you **explore things "inside" your own computer.**

• *Internet Explorer* lets you **explore things "outside" your computer** -- namely things on the Internet.

