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chapter 3

Application Software

For Productivity & Creativity

Chapter Topics & Key Questions

3.1 **Application Software: For Sale, for Free, or for Rent?** What are five ways of obtaining application software, tools available to help you learn to use software, three common types of files, and the types of software?

3.2 **Common Features of Software** What are some common features of the graphical software environment, and how do they relate to the keyboard and the mouse?

3.3 **Word Processing** What can you do with word processing software that you can't do with pencil and paper?

3.4 **Spreadsheets** What can you do with an electronic spreadsheet that you can't do with pencil and paper and a standard calculator?

3.5 **Database Software** What is database software, and what is personal information management software?

3.6 **Specialty Software** What are the principal uses of specialty software such as presentation graphics, financial, desktop publishing, drawing and painting, video/audio editing, project management, computer-aided design, and web page design software?

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Bigger, bolder, faster, twisted, more weird. Remove all the boredom, heighten all the action."

ethics

That's how one of the creators of Grand Theft Auto: Vice City, a video game set in a Miami-like virtual city, described how the 2002 edition differed from previous Grand Theft Auto versions.[1] Other video games offer more gore, but the Grand Theft Auto series invert the usual rules: Instead of killing bad guys, players *become* one of the bad guys, free to kill whomever they want—an approach widely criticized as "a playground for pathology."

Not all computer games are so ethically ambiguous. Video game designers are on a constant search for the most effective reward systems to motivate gamers, and they have found that the 5-minute shoot-'em-ups that work for 13-year-olds need to give way to longer, more imaginative strategies for 28-year-olds (the average age of today's game player).[2] For instance, with The Sims Online, one of the latest in the series of the biggest-selling personal computer game ever, the game's reason for being is social interaction: You create a simulated person or family and help them get through their daily lives as they go to work, decorate their houses, and interact with characters controlled by other players in the game.[3] So popular are video games that now their sales surpass those of Hollywood feature films. Advertisers—including U.S. Army recruiters—use them to woo consumers. Video game makers even encourage computer enthusiasts to make their own modifications—called "mods" or "patches"—to their games.[4]

more info!

The term *software* was coined by John Tukey. Who was he? Did he coin any other important computer terms? Do a keyword search on his name and see what you can find out.

Video games are just one kind of software. As we mentioned in Chapter 1, *software*, or *programs*, consists of all the electronic instructions that tell the computer how to perform a task. These instructions come from a software developer in a form (such as a CD, or compact disk) that will be accepted by the computer. ***Application software*, the subject of this chapter, is software that has been developed to solve a particular problem for users—to perform useful work on specific tasks or to provide entertainment.** *System software*, which we discuss in detail in the next chapter, enables the application software to interact with the computer and helps the computer manage its internal and external resources. New microcomputers are usually equipped not only with system software but also with some application software.

3.1 Application Software: For Sale, for Free, or for Rent?

KEY QUESTIONS

What are five ways of obtaining application software, tools available to help you learn to use software, three common types of files, and the types of software?

At one time, just about everyone paid for microcomputer application software. You bought it as part of the computer or in a software store, or you downloaded it online with a credit card charge. Now, other ways exist to obtain software. *(See ● Panel 3.1.)*

- **Commercial software:** *Commercial software*, also called *proprietary software* or *packaged software*, is software that's offered for sale, such as Microsoft Word, Microsoft Office XP, or Adobe PhotoShop. Although such software may not show up on the bill of sale when you buy a new PC, you've paid for some of it as part of the purchase. And, most likely, whenever you order a new game or other commercial program, you'll have to pay for it. This software is copyrighted. **A *copyright* is the exclusive legal right that prohibits copying of intellectual property without the permission of the copyright holder.**

  Software manufacturers don't sell you their software; rather, they sell you a license to become an authorized user of it. What's the

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PANEL 3.1
Choices among application software

Types	Definition
Commercial software	Copyrighted. If you don't pay for it, you can be prosecuted.
Public-domain software	Not copyrighted. You can copy it for free without fear of prosecution.
Shareware	Copyrighted. Available free, but you should pay to continue using it.
Freeware	Copyrighted. Available free.
Rentalware	Copyrighted. Lease for a fee.

Example of software license

SOFTWARE PRODUCT LICENSE

The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PRODUCT is licensed, not sold. The term "COMPUTER" as used herein shall mean the HARDWARE, if the HARDWARE is a single computer system, or shall mean the computer system with which the HARDWARE operates, if the HARDWARE is a computer system component.

1. GRANT OF LICENSE. This EULA grants you the following rights:
   - Software Installation and Use. Except as otherwise expressly provided in this EULA, you may only install, use, access, run, or otherwise interact with ("RUN") one copy of the SOFTWARE PRODUCT on the COMPUTER. The SOFTWARE PRODUCT may not be installed, accessed, displayed, run, shared or used concurrently on or from different computers, including a workstation, terminal or other digitial electronic device.
   - Back-up Copy. If Manufacturer has not included a back-up copy of the SOFTWARE PRODUCT with the COMPUTER, you may make a single back-up copy of the computer software portion of the SOFTWARE PRODUCT. You may use the back-up copy solely for archival purposes.
   - Back-up Utility. If the SOFTWARE PRODUCT includes a Microsoft back-up utility you may use the utility to make the single back-up copy. After the single back-up copy is made, the back-up utility will be permanently disabled. Except as expressly provided in this EULA, you may not otherwise make copies of the SOFTWARE PRODUCT, including the printed materials accompanying the SOFTWARE PRODUCT.

Source: Microsoft Office

difference? In paying for a ***software license***, **you sign a contract in which you agree not to make copies of the software to give away or resell.** That is, you have bought only the company's permission to use the software and not the software itself. This legal nicety allows the company to retain its rights to the program and limits the way its customers can use it. The small print in the licensing agreement usually allows you to make one copy *(backup copy* or *archival copy)* for your own use. (Each software company has a different license; there is no industry standard.)

Various types of software licenses exist.

Site licenses allow the software to be used on all computers at a specific location.

Concurrent-use licenses allow a certain number of copies of the software to be used at the same time.

A *multiple-user license* specifies the number of people that may use the software.

A *single-user license* limits software use to one user at a time.

Most personal computer software licenses allow you to run the program on only one machine and make copies of the software only for personal backup purposes. Personal computer users often buy their software in shrink-wrapped packages; once you have opened the shrink wrap, you have accepted the terms of the software license.

Every year or so, software developers find ways to enhance their products and put forth new versions or new releases. A *version* is a major upgrade in a software product, traditionally indicated by numbers such as 1.0, 2.0, 3.0. More recently, other notations have been used. After 1995, for a while Microsoft labeled its Windows and Office software versions by year instead of by number, as in Microsoft's Office 97, Office 2000, and so forth. However, its latest software version is Office XP. A *release*, which now may be called an "add" or "addition," is a minor upgrade. Often this is indicated by a change in number after the decimal point. (For instance, 3.0 may become 3.1, 3.11, 3.2, and so on.) Some releases are now also indicated by the year in which they are marketed. And, unfortunately, some releases are not clearly indicated at all. (These are "patches," which may be downloaded from the software maker's website, as can version updates.)

- **Public-domain software:** ***Public-domain software*** **is not protected by copyright and thus may be duplicated by anyone at will.** Public-domain programs—sometimes developed at taxpayer expense by government agencies—have been donated to the public by their creators. They are often available through sites on the internet. You can download and duplicate public domain software without fear of legal prosecution.

more info! SECURITY

Security
Check out these links to public-domain and commercial security software:
www.alw.nih.gov/Security/security-prog.html
www.wiretapped.net/
www.symantec.com

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more info!

What kinds of shareware and freeware are available? To find out, go to *www.downloadalot.com, www.sharewareking.com, and http://shareware.cnet.com/.*

- **Shareware: *Shareware* is copyrighted software that is distributed free of charge but requires that users make a monetary contribution, or pay a registration fee, to continue using it**—in other words, you can try it before you buy it. Once you pay the fee, you usually get supporting documentation, access to updated versions, and perhaps some technical support. Shareware is distributed primarily through the internet, but because it is copyrighted, you cannot use it to develop your own program that would compete with the original product. If you copy shareware and pass it along to friends, they are also expected to pay the registration fee, if they choose to use the software.
- **Freeware: *Freeware* is copyrighted software that is distributed free of charge,** today most often over the internet. Why would any software creator let his or her product go for free? Sometimes developers want to see how users respond, so that they can make improvements in a later version. Sometimes they want to further some scholarly or humanitarian purpose—for instance, to create a standard for software on which people are apt to agree. In its most recent form, freeware is made available by companies trying to make money some other way—actually, by attracting viewers to their advertising. (The web browsers Internet Explorer and Netscape Navigator are of this type.) Freeware developers generally retain all rights to their programs; technically, you are not supposed to duplicate and redistribute the programs. (Freeware is different from free software, or public-domain software, which has no restrictions on use, modification, or redistribution.)

ASPs

There are five main categories of "apps on tap":

- **Enterprise:** ASPs for high-end business applications
- **Local/Regional:** ASPs for smaller firms in a local area
- **Specialist:** ASPs that provide applications for a specific need, such as human resources or website maintenance
- **Vertical market:** ASPs that provide support to a specific industry, such as healthcare
- **Volume business:** ASPs that supply small or medium-sized businesses with prepackaged application service in volume

- **Rentalware: *Rentalware* is software that users lease for a fee and download whenever they want it.** This is the concept behind *application services providers (ASPs)*, firms that lease software, usually over the internet. An ASP is a specialized form of ISP (p. 47, Chapter 2) that allows users—usually companies—to have access to software stored on the ASP's servers and supplies support and other services. Sometimes leased applications and services can be furnished on-site. This information technology service reduces companies' expenditures and need to constantly update.
- **Pirated software: *Pirated software* is software obtained illegally,** as when you get a floppy disk from a friend who has made an illicit copy of, say, a commercial video game. Sometimes pirated software can be downloaded off the internet. Sometimes it is sold in retail outlets in foreign countries. If you buy such software, not only do the original copyright owners not get paid for their creative work but you risk getting inferior goods and, worse, picking up a *virus*, a deviant program that can corrupt or destroy your computer's programs or data. (We discuss viruses in Chapter 9.) To discourage software piracy, many software manufacturers, such as Microsoft, require that users register their software when they install it on their computers. If the software is not registered, it will not work properly.

more info!

If you want to learn more about ASPs, go to *www.aspnews.com.*

- **Abandonware:** "Abandonware" does not refer to a way to obtain software. It refers to software that is no longer being sold or supported by its publisher. U.S. copyright laws state that copyrights owned by corporations are valid for up to 95 years from the date the software was first published. Copyrights are not considered abandoned even if the software is no longer being produced. Therefore, abandoned software does not enter the public domain just because it is no longer supported. Don't copy it.

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Occasionally, companies or individuals need software written specifically for them, to meet unique needs. This software is called *custom software*, and it's created by software engineers and programmers. (See Appendix A for more information on programming.)

Tutorials & Documentation

How are you going to learn a given software program? Most commercial packages come with tutorials and documentation.

- **Tutorials: A *tutorial* is an instruction book or program that helps you learn to use the product by taking you through a prescribed series of steps.** For instance, our publisher offers several how-to books, known as the Advantage Series, that enable you to learn different kinds of software. Tutorials may also form part of the software package.
- **Documentation: *Documentation* is all information that describes a product to users, including a user guide or reference manual that provides a narrative and graphical description of a program.** While documentation may be print-based, today it is usually available on CD, as well as via the internet. Documentation may be instructional, but features and functions are usually grouped by category for reference purposes. For example, in word processing documentation, all features related to printing are grouped together so that you can easily look them up.

A Few Facts About Files+& the Usefulness of Importing & Exporting

We discuss different types of files in detail in Chapter 8. Here, however, we need to mention that there is only one reason for having application software: to take raw data and manipulate it into useful files of information. **A *file* is (1) a named collection of data or (2) a program that exists in a computer's secondary storage** (Chapter 1, p. 12), such as floppy disk, hard disk, or CD/DVD.

Three well-known types of data files are as follows:

- **Document files:** Document files are created by word processing programs and consist of documents such as reports, letters, memos, and term papers.
- **Worksheet files:** Worksheet files are created by electronic spreadsheets and usually consist of collections of numerical data such as budgets, sales forecasts, and schedules.
- **Database files:** Database files are created by database management programs and consist of organized data that can be analyzed and displayed in various useful ways. Examples are student names and addresses that can be displayed according to age, grade-point average, or home state.

Survival Tip

When Your PC Freezes Up

Hold down the *Ctrl* and *Alt* keys, then press *Del.* Click on *End task* or *Shut down*. You may lose some information, but at least you'll be able to start over.

It's useful to know that often files can be exchanged—that is, imported and exported—between programs.

- **Importing: *Importing* is defined as getting data from another source and then converting it into a format compatible with the program in which you are currently working.** For example, you might write a letter in your word processing program and include in it—that is, import—a column of numbers from your spreadsheet program. The ability to import data is very important in software applications because it means that one application can complement another.

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- **Exporting: *Exporting* is defined as transforming data into a format that can be used in another program and then transmitting it.** For example, you might work up a list of names and addresses in your database program and then send it—export it—to a document you wrote in your word processing program. Exporting implies that the sending application reformats the data for the receiving application; importing implies that the receiving application does the reformatting.

QuickCheck

Distinguish among the following kinds of software: commercial, public-domain, shareware, freeware, rentalware, and pirated software.

What is software licensing, and to what does it entitle a user?

Describe tutorials and documentation.

What are three types of data files?

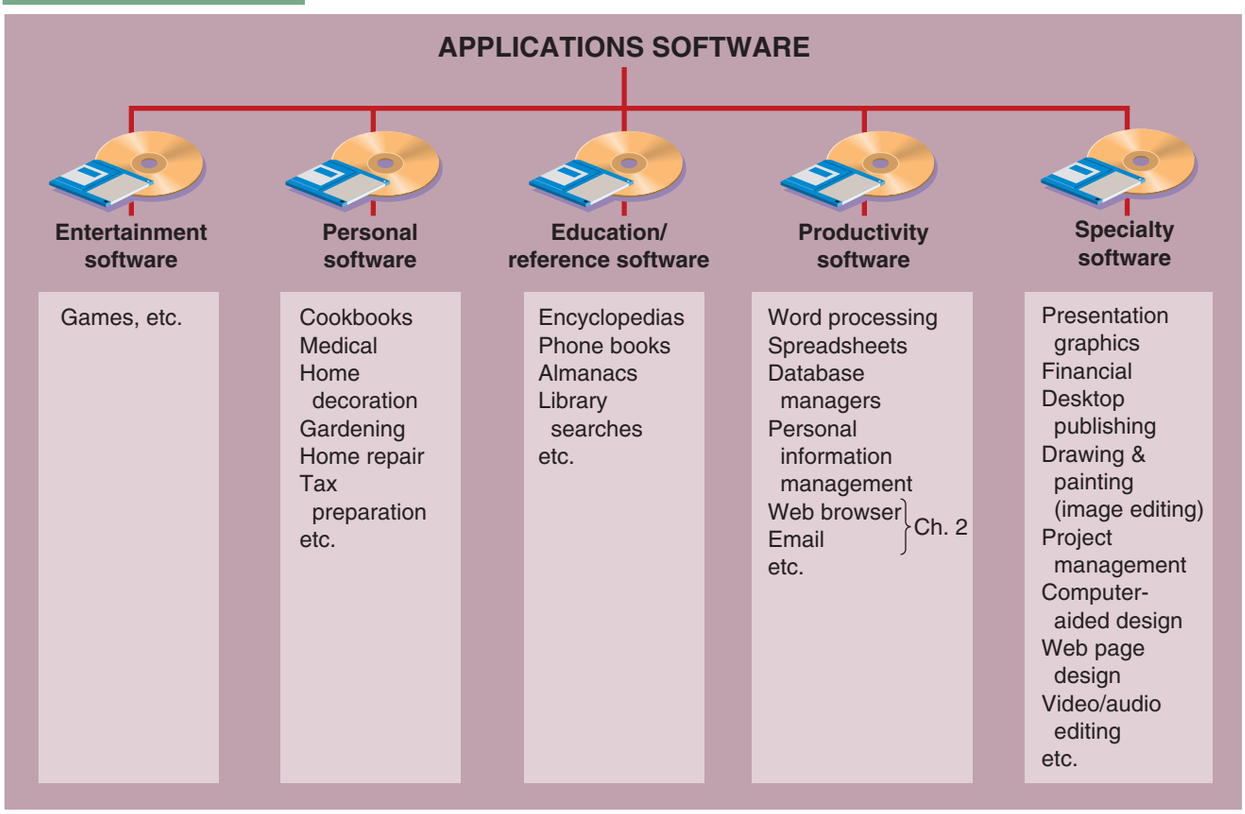
Distinguish importing from exporting.

Types of Application Software

Application software can be classified in many ways—for entertainment, personal, education/reference, productivity, and specialized uses. *(See ● Panel 3.2.)*

In the rest of this chapter we will discuss types of ***productivity software*—such as word processing programs, spreadsheets, and database managers—whose purpose is to make users more productive at particular tasks.** Some productivity software comes in the form of an *office suite*, which bundles several applications together into a single large package. Microsoft Office, for

● PANEL 3.2
Types of application software



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example, includes (among other things) Word, Excel, and Access—word processing, spreadsheet, and database programs, respectively. Corel offers similar programs. Other productivity software, such as Lotus Notes, is sold as *groupware*—online software that allows several people to collaborate on the same project and share some resources.

We now consider the three most important types of productivity software: word processing, spreadsheet, and database software (including personal information managers). We then discuss more specialized software: presentation graphics, financial, desktop-publishing, drawing and painting, video/audio editing, project management, computer-aided design, and web page design software. But first, let's look at some common features of software.

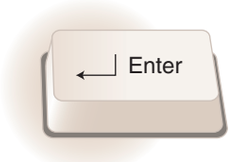
3.2 Common Features of Software

KEY QUESTIONS

What are some common features of the graphical software environment, and how do they relate to the keyboard and the mouse?

The first thing you look at when you call up any application software on the screen is the ***user interface*—the user-controllable display screen that allows you to communicate, or interact, with the computer.** Like the dashboard on a car, the user interface has gauges that show you what's going on and switches and buttons for controlling what you want to do. From this screen, you choose the application programs you want to run or the files of data you want to open.

You can interact with this display screen using the keys on your keyboard. As well as letter, number, and punctuation keys and often a calculator-style numeric keypad, computer keyboards have special-purpose and function keys. *(See ● Panel 3.3 on the next two pages.)*



- **Special-purpose keys: *Special-purpose keys* are used to enter, delete, and edit data and to execute commands.** An example is the *Esc* (for "Escape") key, which tells the computer to cancel an operation or leave ("escape from") the current mode of operation. The Enter, or Return, key, which you will use often, tells the computer to execute certain commands and to start new paragraphs in a document. *Commands* are instructions that cause the software to perform specific actions.

  Special-purpose keys are generally used the same way regardless of the application software package being used. Most keyboards include the following special-purpose keys: *Esc, Ctrl, Alt, Del, Ins, Home, End, PgUp, PgDn, Num Lock*, and a few others. (*Ctrl* means "Control," *Del* means "Delete," *Ins* means "Insert," for example.)
- **Function keys: *Function keys*, labeled "F1," "F2," and so on, are positioned along the top or left side of the keyboard. They are used to execute commands specific to the software being used.** For example, one application software package may use F6 to exit a file, whereas another may use F6 to underline a word.
- **Macros:** Sometimes you may wish to reduce the number of keystrokes required to execute a command. To do this, you use a macro. **A *macro*, also called a *keyboard shortcut*, is a single keystroke or command—or a series of keystrokes or commands—used to automatically issue a longer, predetermined series of keystrokes or commands.** Thus, you can consolidate several activities into only one or two keystrokes. The user names the macro and stores the corresponding command sequence; once this is done, the macro can be used repeatedly. (To set up a macro, pull down the Help menu and type in *macro*.)

  Although many people have no need for macros, individuals who find themselves continually repeating complicated patterns of keystrokes say they are quite useful.

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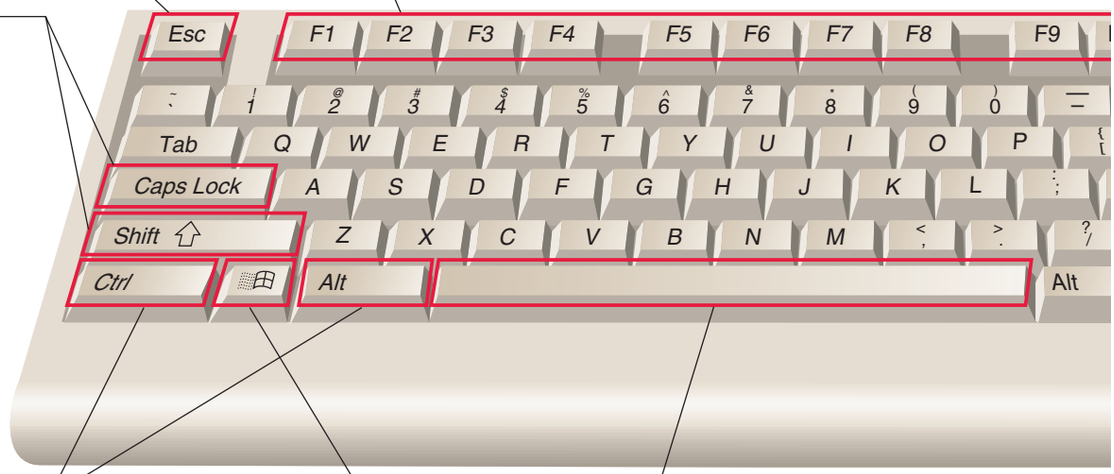

Escape Key

You can press **Esc** to quit a task you are performing.

Function Keys

These keys let you quickly perform specific tasks. For example, in many programs you can press **F1** to display help information.

Caps Lock and Shift Keys

These keys let you enter text in uppercase (ABC) and lowercase (abc) letters.

Press **Caps Lock** to change the case of all letters you type. Press the key again to return to the original case.

Press **Shift** in combination with another key to type an uppercase letter.

Ctrl and Alt Keys

You can use the **Ctrl** or **Alt** key in combination with another key to perform a specific task. For example, in some programs, you can press **Ctrl** and **S** to save a document.

Windows Key

You can press the **Windows** key to quickly display the Start menu when using many Windows operating systems.

Spacebar

You can press the **Spacebar** to insert a blank space.

● PANEL 3.3
Keyboard functions

You will also frequently use your mouse to interact with the user interface. The mouse allows you to direct an on-screen pointer to perform any number of activities. **The *pointer* usually appears as an arrow, although it changes shape depending on the application. The mouse is used to move the pointer to a particular place on the display screen or to point to little symbols, or icons.** You can activate the function corresponding to the symbol by pressing ("clicking") buttons on the mouse. Using the mouse, you can pick up and slide ("drag") an image from one side of the screen to the other or change its size. *(See ● Panel 3.4.)*

The GUI

In the beginning, personal computers had *command-driven interfaces*, which required that you type in complicated-looking instructions (such as *copy a:\filename c:* to copy a file from a floppy disk to a hard disk). In the next version, they also had *menu-driven interfaces*, in which you could use the arrow keys on your keyboard (or a mouse) to choose a command from a menu, or list of activities. Today the computer's "dashboard" is usually a ***graphical user interface (GUI)*** **(pronounced "gooey"), which allows you to use a mouse or keystrokes to select icons (little symbols) and commands from menus (lists of activities).** The GUIs on the PC and on the Apple Macintosh (which was the first easy-to-use personal computer available on a wide scale) are somewhat similar. Once you learn one version, it's fairly easy to learn the other. However, the best-known GUI is that of Microsoft Windows system software. *(See ● Panel 3.5, p. 106.)* (We consider system software further in the following chapter.)

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Backspace Key

You can press **Backspace** to remove the character to the left of the cursor.

Delete Key

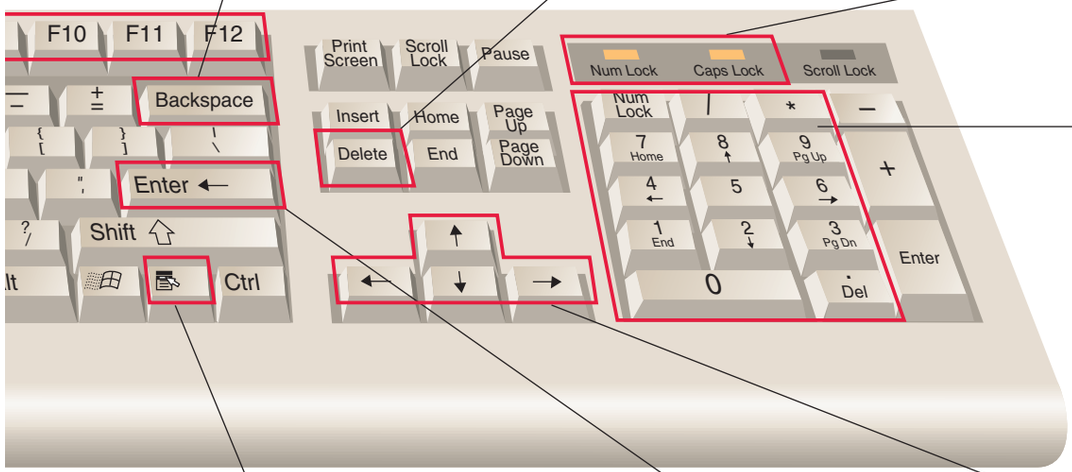
You can press **Delete** to remove the character to the right of the cursor.

Status Lights

These lights indicate whether the **Num Lock** or **Caps Lock** features are on or off.

Numeric Keypad

When the **Num Lock** light is on, you can use the number keys (0 through 9) to enter numbers. When the **Num Lock** light is off, you can use these keys to move the cursor around the screen. To turn the light on or off, press **Num Lock**.



Application Key

You can press the **Application** key to quickly display the shortcut menu for an item on your screen. Shortcut menus display a list of commands commonly used to complete a task related to the current activity.

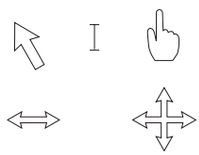
Enter Key

You can press **Enter** to tell the computer to carry out a task. In a word processing program, press this key to start a new paragraph.

Arrow Keys

These keys let you move the cursor around the screen.

PANEL 3.4
Mouse language

Term	Action	Purpose
Point 	Move mouse across desk to guide pointer to desired spot on screen. The pointer assumes different shapes, such as arrow, hand, or I-beam, depending on the task you're performing.	To execute commands, move objects, insert data, or similar actions on screen
Click 	Press and quickly release left mouse button.	To select an item on the screen
Double-click 	Quickly press and release left mouse button twice.	To open a document or start a program
Drag and drop 	Position pointer over item on screen, press and hold down left mouse button while moving pointer to location in which you want to place item, then release.	To move an item on the screen
Right-click 	Press and release right mouse button.	To display a shortcut list of commands, such as a pop-up menu of options

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Outlook Express: Part of Microsoft's browser, Internet Explorer, that enables you to use email.

Microsoft Network: Click here to connect to Microsoft Network (MSN), the company's online service.

My Documents: Where your documents are stored unless you specify otherwise.

Network Neighborhood: If your PC is linked to a network, click here to get a glimpse of everything on the network.

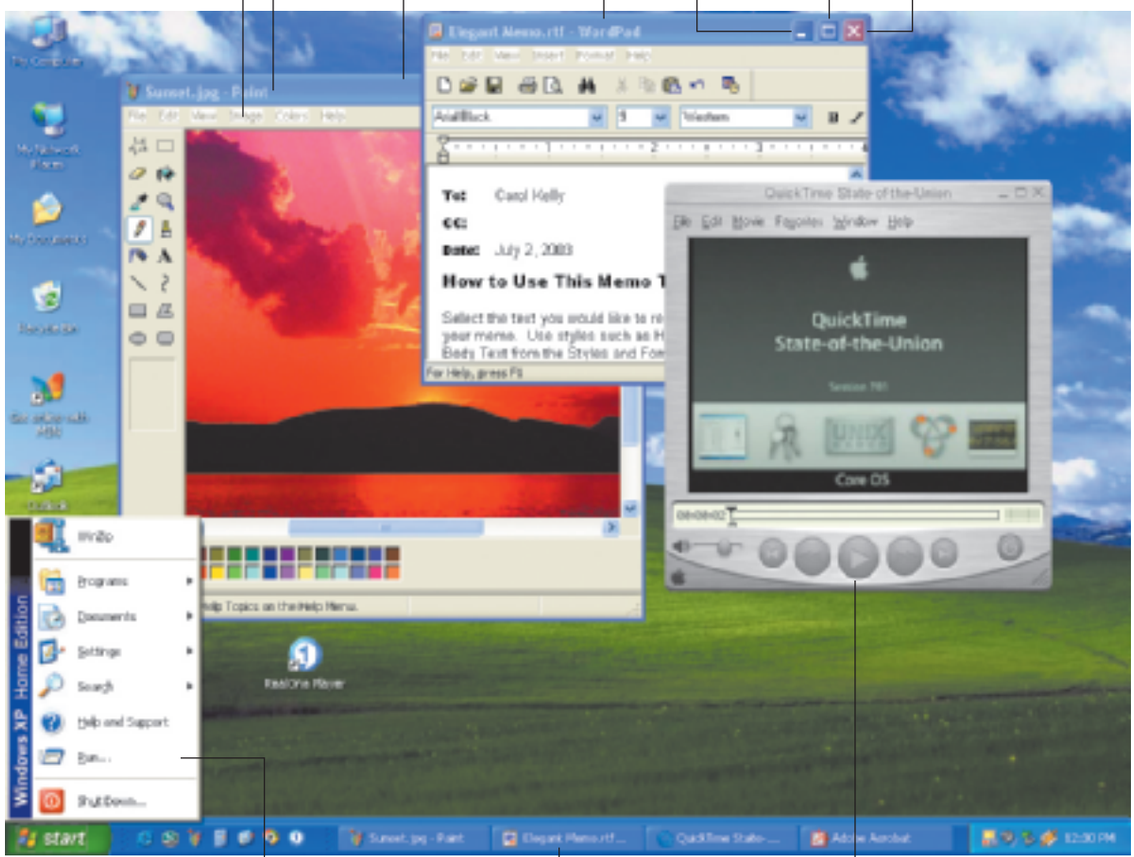
My Computer: Gives you a quick overview of all the files and programs on your PC.

Documents: Multitasking capabilities allow users to smoothly run more than one program at once.

Menu bar

Title bar

Minimize Maximize Close



Start button: Click for an easy way to start using the computer.

Start menu: After clicking on the *Start* button, a menu appears, giving you a quick way to handle common tasks. You can launch programs, call up documents, change system settings, get help, and shut down your PC.

Taskbar: Gives you a log of all programs you have opened. To switch programs, click on the icon buttons on the taskbar.

Multimedia: Windows XP features sharp graphics and video capabilities.

PANEL 3.5
A graphical user interface (desktop)
This is for Windows XP. (Icons may differ on your PC.)

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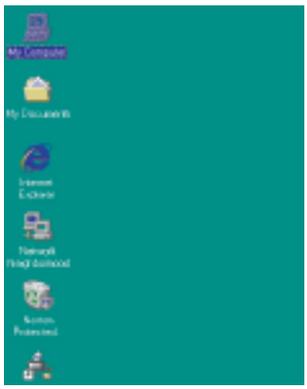


Desktop

Desktop, Icons, & Menus

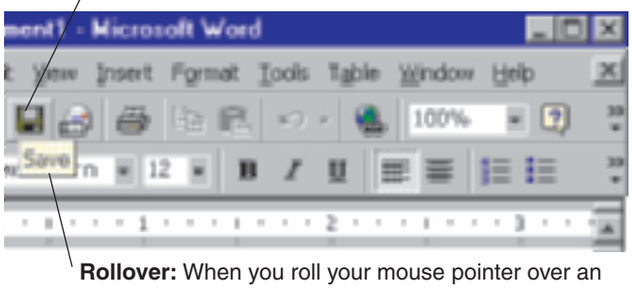
Three features of a GUI are the desktop, icons, and menus.

- **Desktop:** After you turn on the computer, the first screen you will encounter is the *desktop*, a term that embodies the idea of folders of work (memos, schedules, to-do lists) on a businessperson's desk. **The *desktop*, which is the system's main interface screen, displays pictures (icons) that provide quick access to programs and information.**
- **Icons and rollovers:** We're now ready to give a formal definition: ***Icons* are small pictorial figures that represent programs, data files, or procedures.** For example, a trash can represents a place to dispose of a file you no longer want. If you click your mouse pointer on a little picture of a printer, you can print out a document. One of the most important icons is the *folder*, a representation of a manila folder; folders hold the files in which you store your documents and other data.

  Of course, you can't always be expected to know what an icon or graphic means. **A *rollover* feature, a small text box explaining the icon's function, appears when you roll the mouse pointer over the icon. A rollover may also produce an animated graphic.**
- **Menus:** Like a restaurant menu, a ***menu* offers you a list of options to choose from**—in this case, a list of commands for manipulating data, such as Print or Edit. Menus are of several types. Resembling a pull-down window shade, a ***pull-down menu*, also called a *drop-down menu*, is a list of options that pulls down from the menu bar at the top of the screen.** *(See ● Panel 3.6.)* For example, if you use the mouse to "click on" (activate) a command (for example, File) on the menu bar, you will see a pull-down menu offering further commands. Choosing one of these options may produce further menus called ***cascading menus*, menus that seem to fly back to the left or explode out to the right,** wherever there is space.

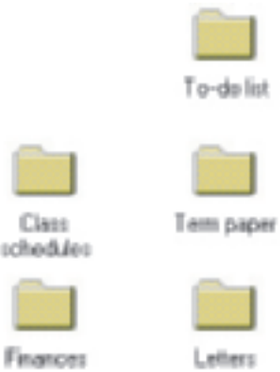
  A *pull-up menu* is a list of options that pulls up from the menu bar at the bottom of the screen. In Windows XP, a pull-up menu appears in the lower left-hand corner when you click on the *Start* button.

  A *pop-up menu* is a list of command options that can "pop up" anywhere on the screen when you click the right mouse button. In contrast to pull-down or pull-up menus, pop-up menus are not connected to a menu bar.



Icon: Symbol representing a program, data file, or procedure. Icons are designed to communicate their function, such as a floppy disk for saving.

Rollover: When you roll your mouse pointer over an icon or graphic (in this case, the "Save" icon), a small box with text appears that briefly explains its function.



Folders

Sophisticated application software. Animation artist at work at the Studio Ghibli, Mitaka, Japan.

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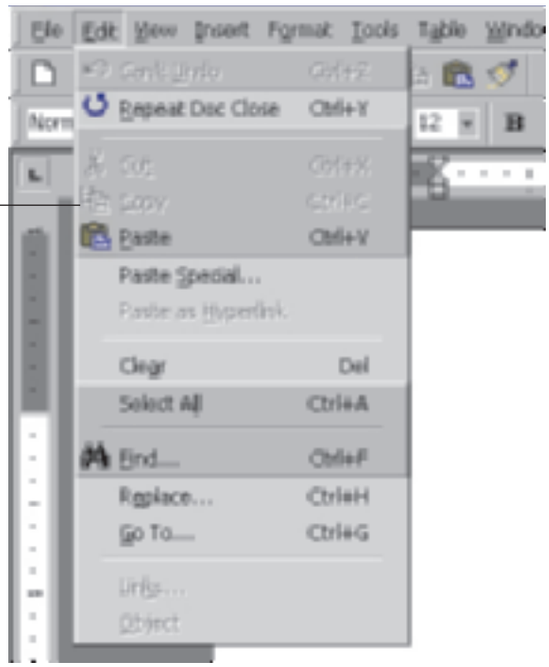
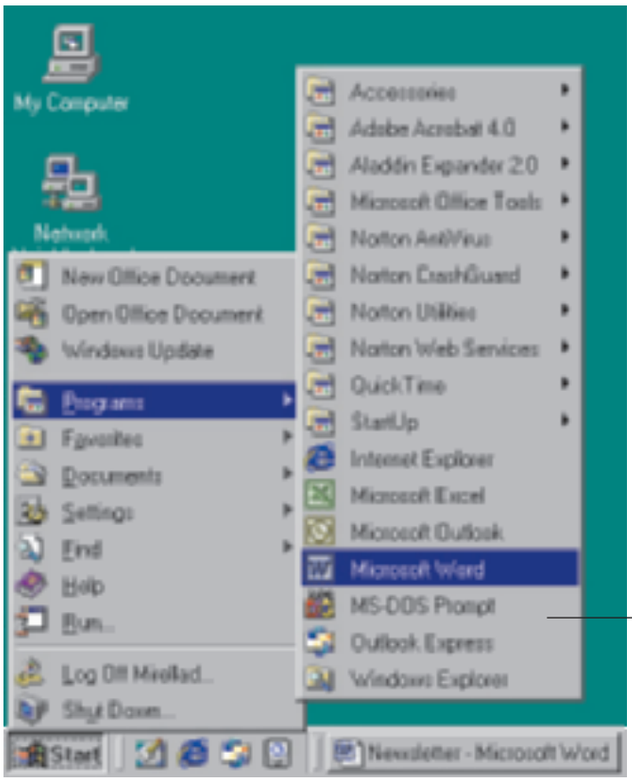
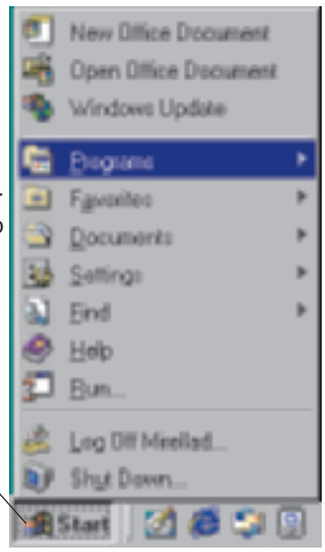
PANEL 3.6
Different types of menus



Pull-down menu: When you click the mouse on the menu bar, a list of options appears or pulls down like a shade.



Cascading menu: Moving the mouse pointer to an option on the pull-up menu produces a flyout menu with more options.



Pull-up menu: When you click the mouse pointer on the *Start* button, it produces a pull-up menu offering access to programs and documents.

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Documents, Title Bars, Menu Bars, Toolbars, Taskbars, & Windows (Small "w")

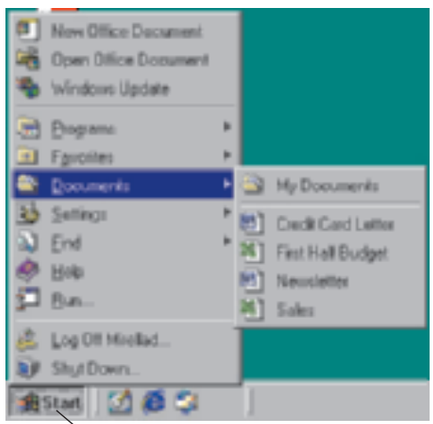
If you want to go to a document, there are two ways to begin working from a typical Microsoft Windows GUI desktop: (1) You can click on the *Start* button at lower left and then make a selection from the pull-up menu that appears. Or (2) you can click on one of the icons on the desktop, probably the most important of which is the *My Computer* icon, and pursue the choices offered there. Either way, the result is the same: The document will be displayed in the window. *(See ● Panel 3.7.)*

Once past the desktop—the GUI's opening screen—if you click on the *My Computer* icon, you will encounter various "bars" and window functions. *(See ● Panel 3.8, next page.)*

- **Title bar: The *title bar* runs across the very top of the display window and shows the name of the folder you are in**—for example, "My Computer."
- **Menu bar:** Below the title bar is the ***menu bar*, which shows the names of the various pull-down menus available.** Examples of menus are File, Edit, View, Favorites, Tools, and Help.
- **Toolbar: The *toolbar*, below the menu bar, displays menus and icons representing frequently used options or commands.** An example of an icon is the picture of two pages in an open folder with a superimposed arrow, which issues a *Copy to* command.

● PANEL 3.7
Two ways to go to a document in Windows XP

From Start menu



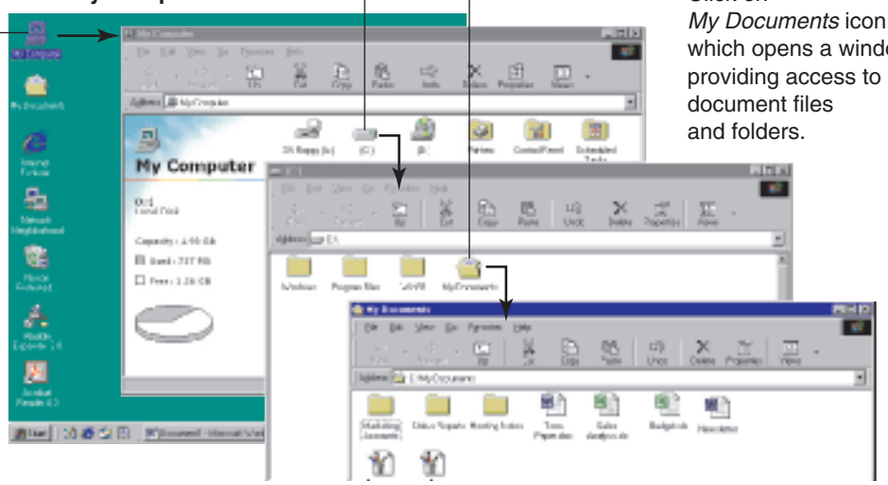
Click on *Start* button to produce Start menu, then go to *Documents* option, then to *My Documents*.

From My Computer icon

Click on *My Computer* icon, which opens a window that provides access to information on your computer.

Click on C, which opens a window that provides access to information stored on your hard disk.

Click on *My Documents* icon, which opens a window providing access to document files and folders.



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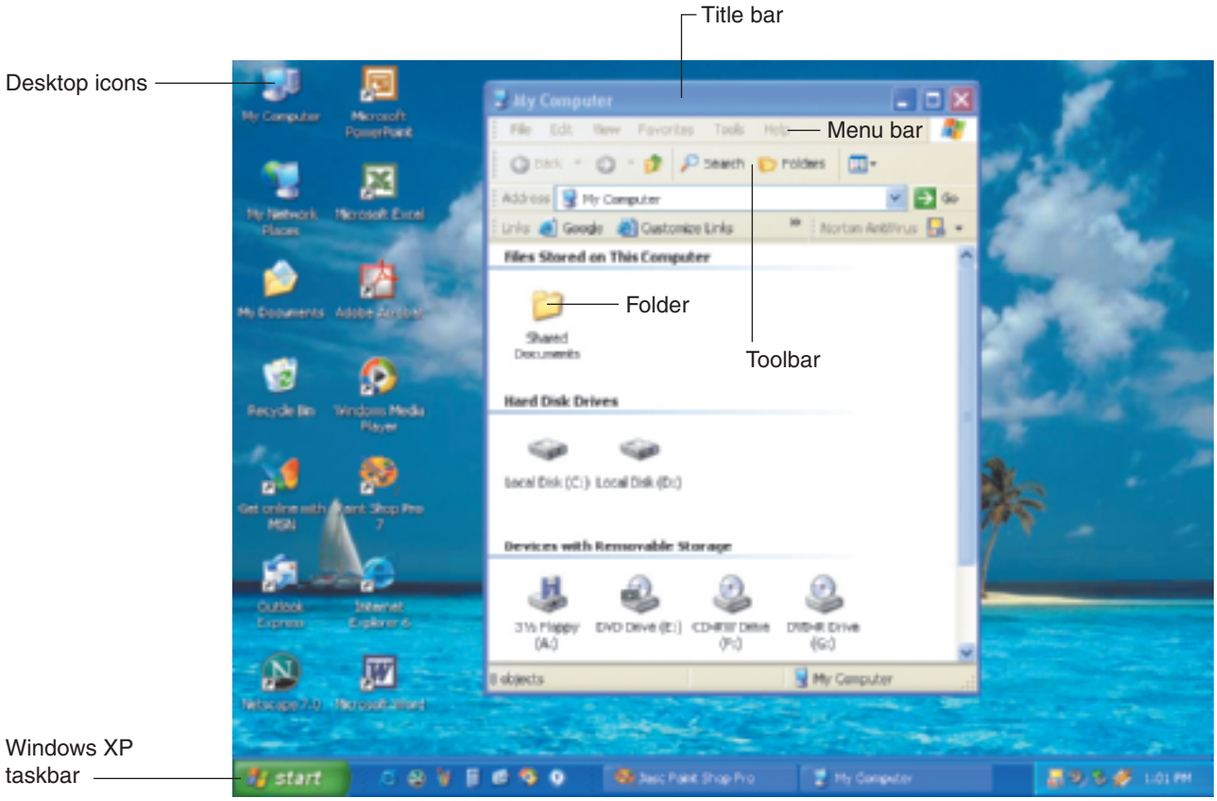
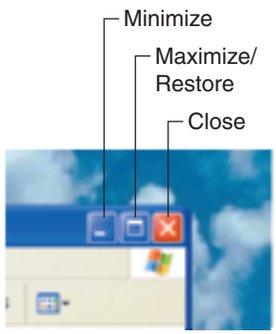


PANEL 3.8
"Bars" and windows functions

- **Taskbar:** In Windows, the ***taskbar*** **is the bar across the bottom of the desktop screen that contains the Start button and that appears by default.** Small boxes appear here that show the names of open files. You can switch among the files by clicking on the boxes.
- **Windows:** When spelled with a capital "W," Windows is the name of Microsoft's system software (Windows 95, 98, Me, XP, and so on). When spelled with a lowercase "w," a ***window*** **is a rectangular frame on the computer display screen. Through this frame you can view a file of data—such as a document, spreadsheet, or database—or an application program.**

  In the right-hand corner of the Windows title bar are some window controls—three icons that represent *Minimize, Maximize and Restore*, and *Close.* By clicking on these icons, you can *minimize* the window (shrink it down to an icon at the bottom of the screen), *maximize* it (enlarge it), or *close* it (exit the file and make the window disappear). You can also use the mouse to move the window around the desktop, by clicking on and dragging the title bar.

  Finally, you can create *multiple windows* to show programs running concurrently. For example, one window might show the text of a paper you're working on, another might show the reference section for the paper, and a third might show something you're downloading from the internet. If you have more than one window open, click on the *Maximize* button of the window you want to be the main window to *restore* it.



The Help Command

Don't understand how to do something? Forgotten a command? Accidentally pressed some keys that messed up your screen layout and you want to undo it? Most toolbars contain a ***Help command*****—a command generating a table**

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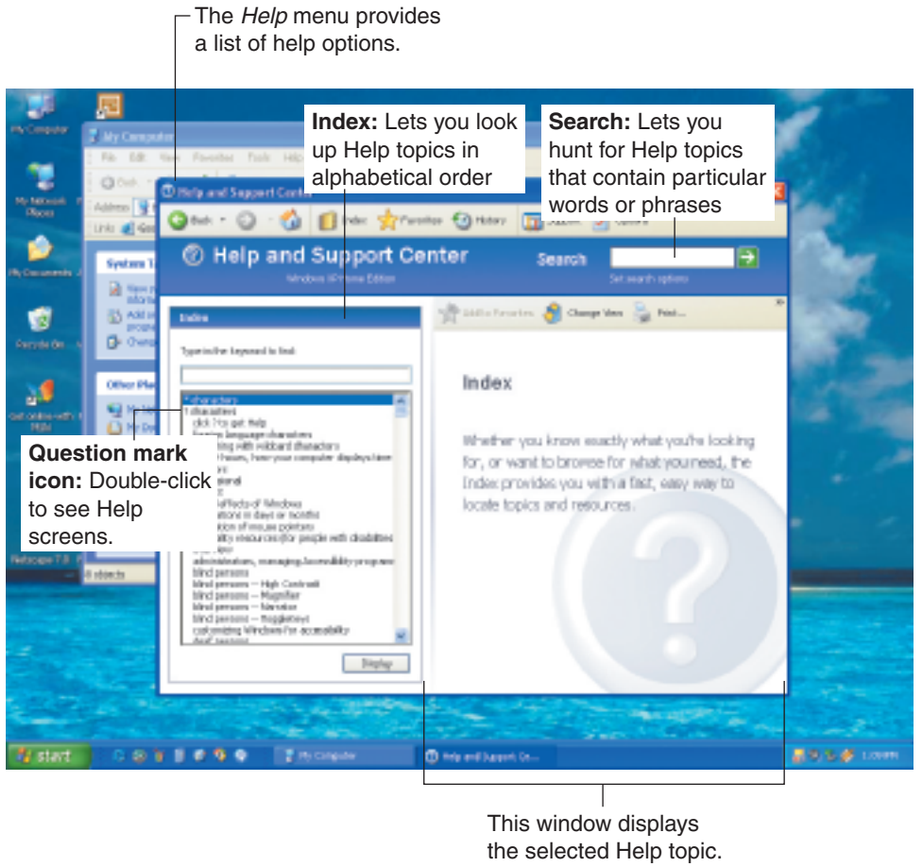
● PANEL 3.9
Help features
The Help command yields a pull-down menu.



Survival Tip

Getting Help

On Windows computers, you can find the Help area by pressing the *F1* key. Or use the mouse to click on *Start* in the lower left screen; then click on *Help.* On the Macintosh, Help is located under the main menu bar.

of contents, an index, and a search feature that can help you locate answers. In addition, many applications have *context-sensitive help*, which leads you to information about the task you're performing. *(See ● Panel 3.9.)*

QuickCheck

What are special-purpose keys, function keys, and macros?

Describe the features of the GUI: desktop, icons, and the various kinds of menus and bars.

What does the mouse do?

What is the difference between Windows and windows?

What is the Help command?

3.3 Word Processing

KEY QUESTION
What can you do with word processing software that you can't do with pencil and paper?

After a long and productive life, the typewriter has gone to its reward. Indeed, it is practically as difficult today to get a manual typewriter repaired as to find a blacksmith. Word processing software offers a much-improved way of dealing with documents.

Word processing software **allows you to use computers to create, edit, format, print, and store text material,** among other things. Word processing is the most common software application. The best-known word processing program is probably Microsoft Word, but there are others such as Corel WordPerfect and the word processing components of Lotus Smart Suite and Sun Microsystems' StarOffice. Word processing software allows users to work

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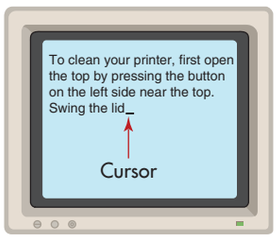
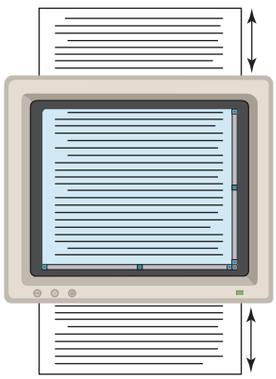
through a document and *delete, insert*, and *replace* text, the principal edit/correction activities. It also offers such additional features as *creating, formatting, printing*, and *saving.*

Creating Documents




Scrolling

Creating a document means entering text using the keyboard or the dictation function associated with speech-recognition software. Word processing software has three features that affect this process—the *cursor, scrolling*, and *word wrap*:

- **Cursor: The *cursor* is the movable symbol on the display screen that shows you where you may next enter data or commands.** The symbol is often a blinking rectangle or an I-beam. You can move the cursor on the screen using the keyboard's directional arrow keys or a mouse. The point where the cursor is located is called the *insertion point.*
- **Scrolling: *Scrolling* means moving quickly upward, downward, or sideways through the text or other screen display.** A standard computer screen displays only 20–22 lines of standard-size text. Of course, most documents are longer than that. Using the directional arrow keys, or the mouse and a scroll bar located at the side of the screen, you can move ("scroll") through the display screen and into the text above and below it.
- **Word wrap: *Word wrap* automatically continues text to the next line when you reach the right margin.** That is, the text "wraps around" to the next line. You don't have to hit a "carriage-return" key or Enter key, as was necessary with a typewriter.

To help you organize term papers and reports, the *Outline View* feature puts tags on various headings to show the hierarchy of heads—for example, main head, subhead, and sub-subhead. Word processing software also allows you to insert footnotes that are automatically numbered and renumbered when changes are made. The basics of word processing are shown in the accompanying illustration. *(See ● Panel 3.10.)*

Survival Tip

Shortcut Keys

You don't always need to use the mouse to pull down menus to perform functions. These menus provide information about which shortcut keys serve the same mouse-click function. For instance, pull down the Edit menu and look for "select-all" (select all the text in the document)—you will see to the right of that selection "ctrl-A," the shortcut. So, if you press *Ctrl+A,* you select all the text in your document, just as if you used the mouse to click on that item in the pull-down menu. Most commands have a shortcut key, and common functions usually have the same shortcut command in different programs.

Editing Documents

Editing is the act of altering your document. Some Edit features are *insert* and *delete, undelete, find and replace, cut/copy and paste, spelling checker, grammar checker*, and *thesaurus*. Some of these commands are in the Edit pull-down menu and icons on the toolbar.

- **Insert and delete:** *Inserting* is the act of adding to the document. Simply place the cursor wherever you want to add text and start typing; the existing characters will be pushed along. If you want to write over (replace) text as you write, press the *Insert* key before typing. When you're finished typing, press the *Insert* key again to exit Insert mode.

  Deleting is the act of removing text, usually using the *Delete* or *Backspace* key.

  The *Undo command* allows you to change your mind and restore text that you have deleted. Some word processing programs offer as many as 100 layers of "undo," so that users who delete several paragraphs of text, but then change their minds, can reinstate the material.
- **Find and replace:** The *Find*, or *Search, command* allows you to find any word, phrase, or number that exists in your document. The *Replace command* allows you to automatically replace it with something else.

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Title bar:
Shows name of document you're working on

Menu bar:
Allows access to all commands

Toolbar:
Allows quick access to frequently used commands

Spelling and Grammar button:
Click on to check for misspelled words and incorrect grammar.

Text alignment buttons:
Click on to align text to be left, center, right, or full justified.

Window controls:
Let you enlarge a window, restore its previous position, or hide it from view

Style button:
Click on to access variety of format styles.

Ruler:
Shows tabs and margins

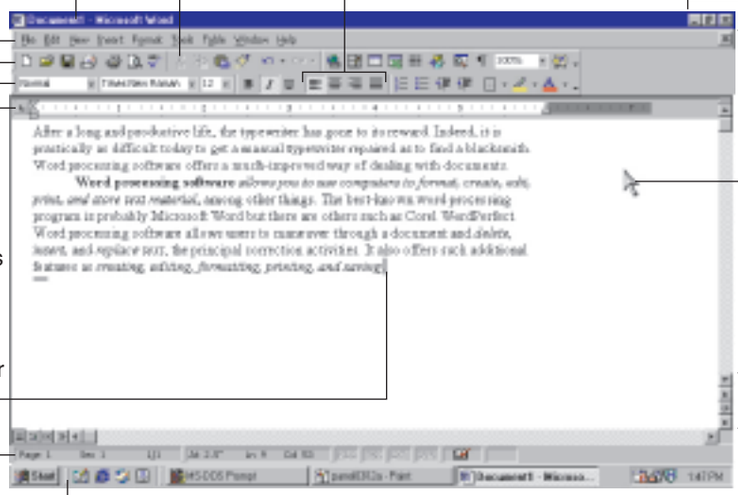
Mouse pointer:
Use the mouse to move the insertion point, to click on icons, or to select text for editing.

Insertion point:
Blinking symbol shows where the next character you type will appear

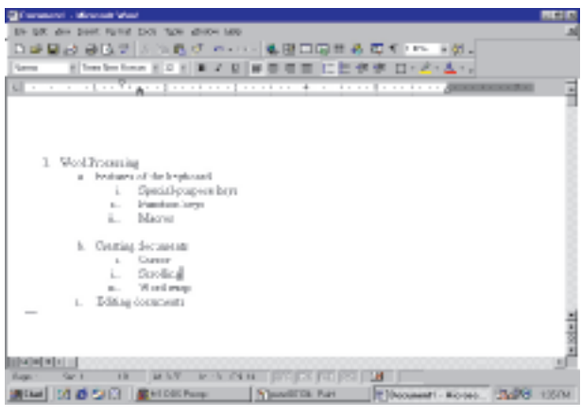
Scroll bars:
Let you scroll the document to reveal hidden portions

Status bar:
Shows details about the document you're working on

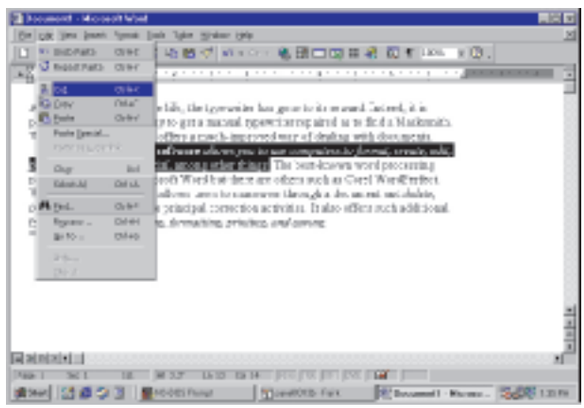
Taskbar

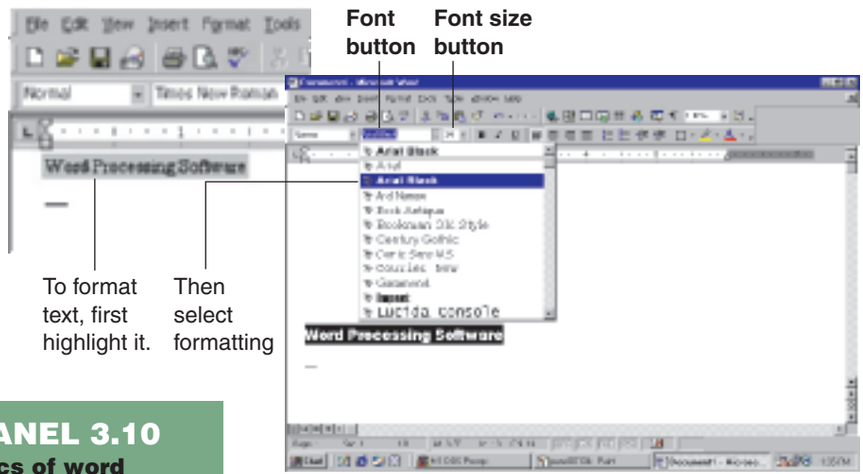


Outline feature:
Enables you to view headings in your document



Cut-and-paste feature:
Enables you to move blocks of text. First highlight the text. On Edit menu, select Cut option. Then, on Edit menu, select Paste option. (You can also use the icons in the toolbar.)





Formatting feature:
Enables you to change type font and size. First highlight the text. Then click next to Font button for pull-down menu of fonts. Click next to Font Size button for menu of type sizes.

PANEL 3.10
Basics of word processing

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- **Cut/copy and paste:** Typewriter users who wanted to move a paragraph or block of text from one place to another in a manuscript used scissors and glue to "cut and paste." With word processing, moving text takes only a few keystrokes. You select (highlight) the portion of text you want to copy or move. Then you use the *Copy* or *Cut command* to move it to the *clipboard*, a special holding area in the computer's memory. From there, you use *Paste* to transfer the material to any point (indicated with the cursor) in the existing document or in a new document. The clipboard retains its material, so repeated pastes of the same item will work without your having to recopy each time.
- **Spelling checker:** Most word processors have a ***spelling checker*, which tests for incorrectly spelled words.** As you type, the spelling checker indicates (perhaps with a squiggly line) words that aren't in its dictionary and thus may be misspelled. *(See ● Panel 3.11.)* Special add-on dictionaries are available for medical, engineering, and legal terms. In addition, programs such as Microsoft Word have an Auto Correct function that automatically fixes such common mistakes as transposed letters—replacing "teh" with "the," for instance.
- **Grammar checker: A *grammar checker* highlights poor grammar, wordiness, incomplete sentences, and awkward phrases.** The grammar checker won't fix things automatically, but it will flag (perhaps with a different-color squiggly line) possible incorrect word usage and sentence structure. *(See ● Panel 3.12.)*
- **Thesaurus:** If you find yourself stuck for the right word while you're writing, you can call up an on-screen ***thesaurus*, which will present you with the appropriate word or alternative words.**

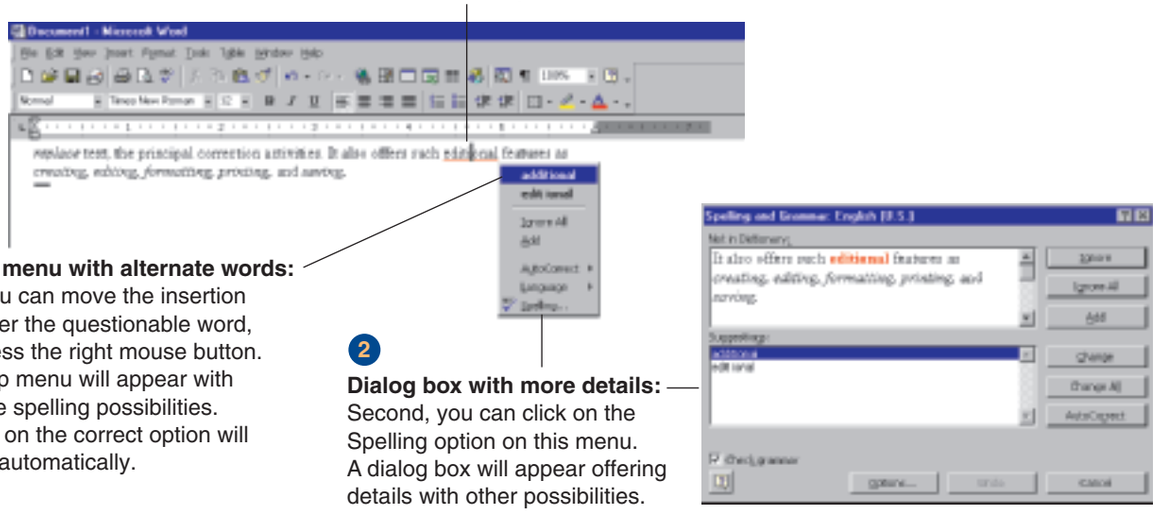
more info!

A character, word, or image that appears faintly in the background of a printed document is called a *watermark.* To add one to your Word document, select *Format, Background* and *Printed Watermark.* Then select *Picture Watermark* or *Text Watermark* and provide the requested information.

Formatting Documents with the Help of Templates & Wizards

In the context of word processing, ***formatting* means determining the appearance of a document.** To this end, word processing programs provide two helpful devices—templates and wizards. **A *template* is a preformatted document that provides basic tools for shaping a final document**—the text, layout, and

● PANEL 3.11
Spelling checker
How a word processing program checks for misspelled words and offers alternatives



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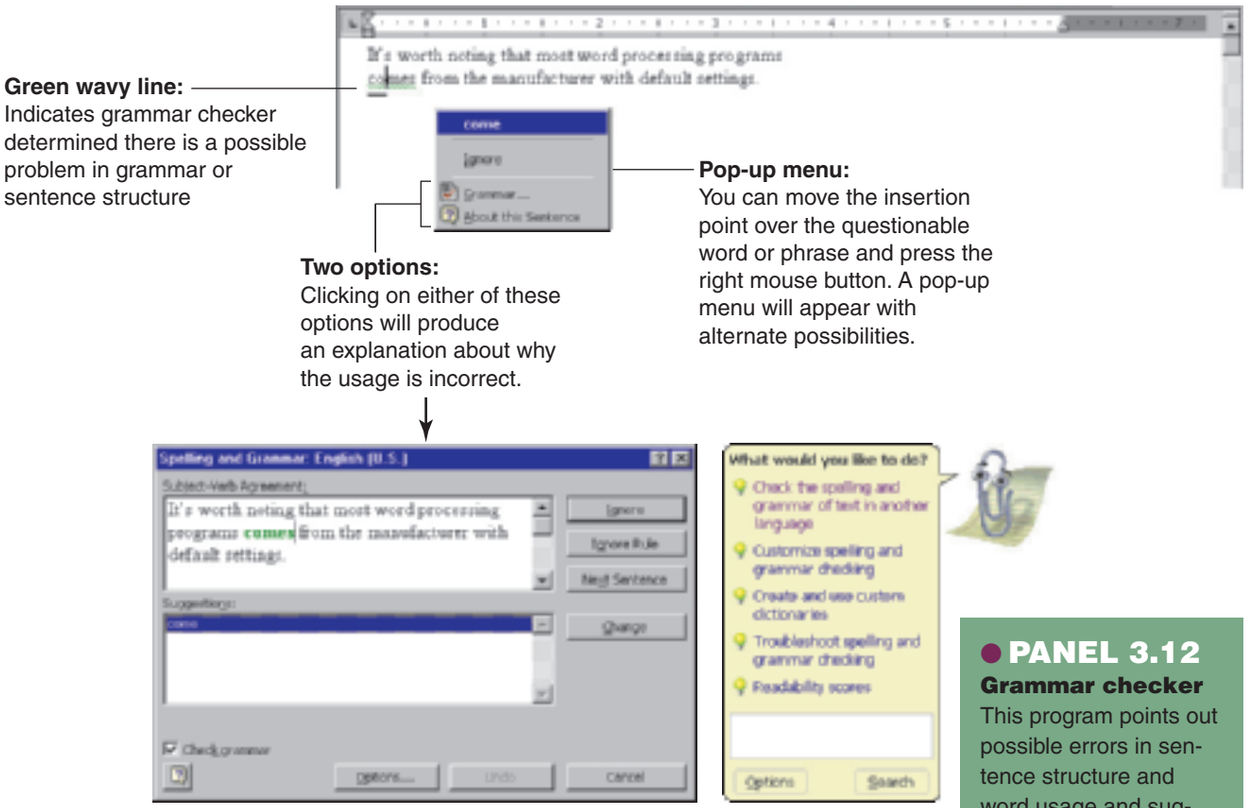

● PANEL 3.12
Grammar checker
This program points out possible errors in sentence structure and word usage and suggests alternatives.

10 point
Times Roman

14 point Arial Black

16 point Courier

60
(60 point Arial)

style for a letter, for example. **A *wizard* answers your questions and uses the answers to lay out and format a document** (or perform other actions)**.** In Word, you can use the Memo wizard to create professional-looking memos or the Résumé wizard to create a résumé.

Among the many aspects of formatting are the following:

- **Font:** You can decide what ***font*—typeface and type size**—you wish to use. For instance, you can specify whether it should be Arial, `Courier`, or *Apple Chancery*. You can indicate whether the text should be, say, 10 points or 12 points in size and the headings should be 14 points or 16 points. (There are 72 points in an inch.) You can specify what parts should be underlined, *italic*, or **boldface.**
- **Spacing and columns:** You can choose whether you want the lines to be *single-spaced* or *double-spaced* (or something else). You can specify whether you want text to be *one column* (like this page), *two columns* (like many magazines and books), or *several columns* (like newspapers).
- **Margins and justification:** You can indicate the dimensions of the margins—left, right, top, and bottom—around the text. You can specify the text *justification*—how the letters and words are spaced in each line. To *justify* means to align text evenly between left and right margins, as in most newspaper columns. To *left-justify* means to align text evenly on the left. (Left-justified text has a "ragged-right" margin, as do many business letters and this paragraph.) *Centering* centers each text line in the available white space between the left and right margins.

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Survival Tip

When Several Word Documents Are Open

You can write with several Word documents open simultaneously. To go ("toggle") back and forth, hold down *Ctrl* and press *F6.* To go backward, press *Ctrl, Shift,* and press *F6.* To display several documents at once, go to the Window menu and select *Arrange All.* You can cut and paste text from one document to another.

- **Headers, footers, and page numbers:** You can indicate headers or footers and include page numbers. A *header* is common text (such as a date or document name) printed at the top of every page. A *footer* is the same thing printed at the bottom of every page. If you want page numbers, you can determine what number to start with, among other things.
- **Other formatting:** You can specify *borders* or other decorative lines, *shading, tables*, and *footnotes*. You can even import *graphics* or drawings from files in other software programs, including *clip art*—collections of ready-made pictures and illustrations available online or on CDs/DVDs.

It's worth noting that word processing programs (and indeed most forms of application software) come from the manufacturer with default settings. ***Default settings*** **are the settings automatically used by a program unless the user specifies otherwise, thereby overriding them.** Thus, for example, a word processing program may automatically prepare a document single-spaced, left-justified, with 1-inch right and left margins, unless you alter these default settings.

Printing, Faxing, or Emailing Documents

Most word processing software gives you several options for printing. For example, you can print *several copies* of a document. You can print *individual pages* or a *range of pages*. You can even preview a document before printing it out. *Previewing (print previewing)* means viewing a document on-screen to see what it will look like in printed form before it's printed. Whole pages are displayed in reduced size.

You can also send your document off to someone else by fax or email attachment if your computer has the appropriate communications link.

Saving Documents

Saving **means storing, or preserving, a document as an electronic file permanently**—on floppy disk, hard disk, or CD, for example. Saving is a feature of nearly all application software. Having the document stored in electronic form spares you the tiresome chore of retyping it from scratch whenever you want to make changes. You need only retrieve it from the storage medium and make the changes you want. Then you can print it out again. (Save your documents often while you are working; don't wait until the document is finished.)

Tracking Changes & Inserting Comments

~~Four score and~~ Eighty-seven years ago, our fathers and mothers brought forth on this continent a new nation

What if you have written an important document and have asked other people to edit it? Word processing software allows editing changes to be tracked by highlighting them, underlining additions, and crossing out deletions. Each person working on the document can choose a different color so that you can tell who's done what. And anyone can insert hidden questions or comments that become visible when you pass the mouse pointer over yellow-highlighted words or punctuation. An edited document can be printed out showing all the changes, as well as a list of comments keyed to the text by numbers. Or it can be printed out "clean," showing the edited text in its new form, without the changes.

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Web Document Creation

Most word processing programs allow you to automatically format your documents into HTML (see Chapter 2, p. 64) so that they can be used on the web.

QuickCheck

Describe the role of the cursor, scrolling, and word wrap in creating documents.

What word processing features are available to help edit documents?

What assistance is available to help you format documents, and what aspects of formatting should be of concern to you?

Besides printing and saving, what other word processing options are available?

3.4 Spreadsheets

KEY QUESTION

What can you do with an electronic spreadsheet that you can't do with pencil and paper and a standard calculator?

What is a spreadsheet? Traditionally, it was simply a grid of rows and columns, printed on special light-green paper, that was used to produce financial projections and reports. A person making up a spreadsheet spent long days and weekends at the office penciling tiny numbers into countless tiny rectangles. When one figure changed, all other numbers on the spreadsheet had to be recomputed. Ultimately, there might be wastebaskets full of jettisoned worksheets.

In 1978, Daniel Bricklin was a student at the Harvard Business School. One day he was staring at columns of numbers on a blackboard when he got the idea for computerizing the spreadsheet. He created the first *electronic spreadsheet,* now called simply a spreadsheet. **The *spreadsheet* allows users to create tables and financial schedules by entering data and formulas into rows and columns arranged as a grid on a display screen.** Before long, the electronic spreadsheet was the most popular small business program. Unfortunately for Bricklin, his version (called VisiCalc) was quickly surpassed by others. Today the principal spreadsheets are Microsoft Excel, Corel Quattro Pro, and Lotus 1-2-3. Spreadsheets are used for maintaining student grade books, tracking investments, creating and tracking budgets, calculating loan payments, estimating project costs, and creating other types of financial reports.

The Basics: How Spreadsheets Work

A spreadsheet is arranged as follows. *(See ● Panel 3.13, next page.)*

- **How a spreadsheet is organized—column headings, row headings, and labels:** A spreadsheet's arrangement of columns, rows, and labels is called a *worksheet.* In the worksheet's frame area (work area), lettered *column headings* appear across the top ("A" is the name of the first column, "B" the second, and so on). Numbered *row headings* appear down the left side ("1" is the name of the first row, "2" the second, and so forth). ***Labels* are any descriptive text that identifies categories,** such as APRIL, RENT, or GROSS SALES. You use your computer's keyboard to type in the various headings and labels. Each worksheet has 256 columns and 65,536 rows, and each spreadsheet file holds up to 255 related worksheets.

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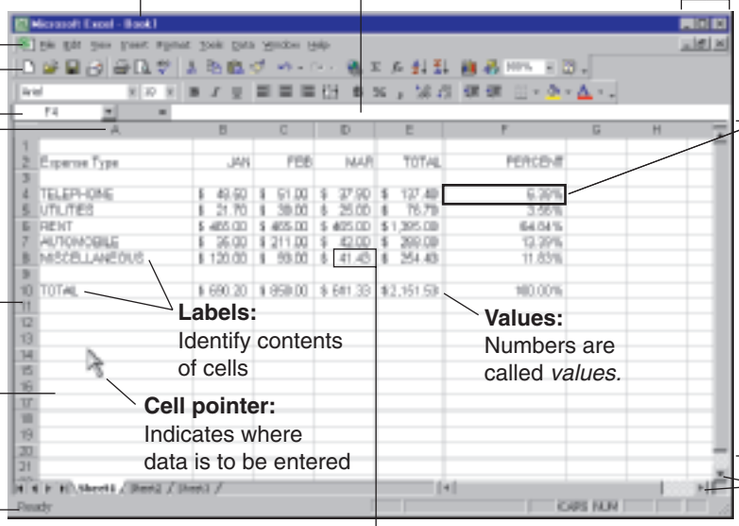
Toolbar: Allows quick access to frequently used commands

Menu bar: Allows access to all menus and commands

Title bar: Shows name of document you're working on

Formula bar: Shows contents of cell and lets you enter data or formulas into a cell

Window controls: Let you enlarge a window, restore its previous position, or hide it from view



Cell location: Displays column (F) and row (4) of current cell

Column headings: Let you select an entire column with a mouse click

Row headings: Let you select an entire row with a mouse click

Cell: Formed by intersection of row and column (letter and number)

Status bar: Shows details about the document you're working on

Labels: Identify contents of cells

Values: Numbers are called *values.*

Cell pointer: Indicates where data is to be entered

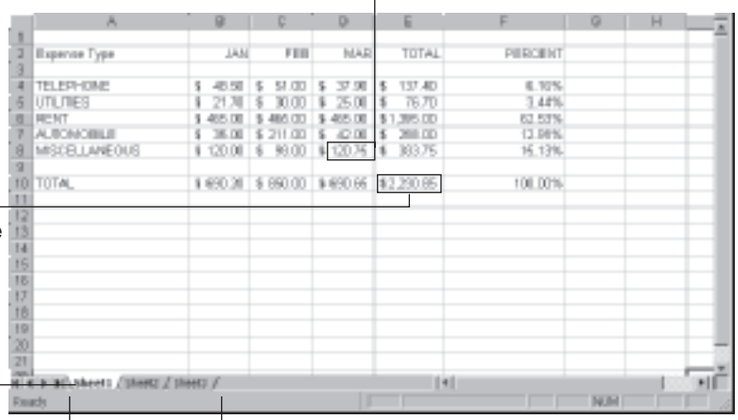
Heavy outline acts as a cursor; indicates current cell

Worksheet area: This area contains the worksheet itself.

Scroll bars: Let you scroll the document to reveal hidden portions

Recalculation and what-if analysis: *Recalculation* is the process of recomputing values. *What-if analysis* is changing one or more values to see what would happen with recalculation.

1 What if March expenses for Miscellaneous changed from $41.43 to $120.75?

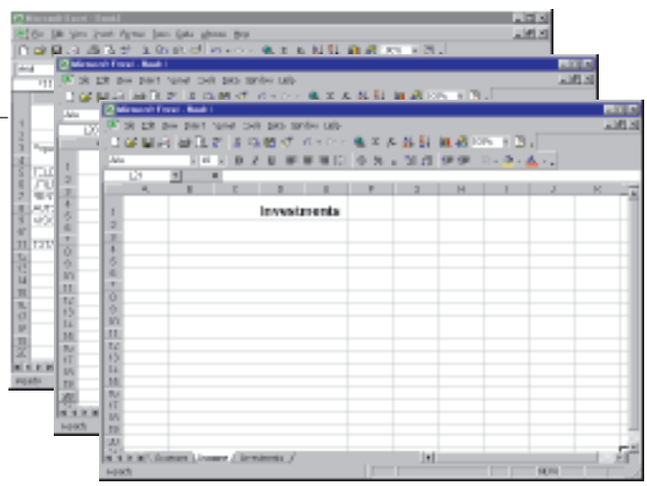


2 Then total expenses would change from $2,151.53 to $2,230.85. Moreover, all the percentages would change.

Formulas and functions: Instructions for calculations are called *formulas* (not shown). Built-in formulas that perform common calculations such as addition are called *functions.*

Sheet tab: Lets you select a worksheet

Worksheets: A *spreadsheet file* can contain several related *worksheets,* each covering a different topic. This allows pertinent data or formulas to be easily accessed and applied when needed.



PANEL 3.13
Electronic spreadsheet
This shows how you can keep track of your monthly income and expenses.

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- **Where columns and rows meet—cells, cell addresses, ranges, and values: A *cell* is the place where a row and a column intersect; its position is called a cell address.** For example, "A1" is the cell address for the top left cell, where column A and row 1 intersect. **A *range* is a group of adjacent cells**—for example, A1 to A5. **A number or date entered in a cell is called a *value*.** The values are the actual numbers used in the spreadsheet—dollars, percentages, grade points, temperatures, or whatever. Headings, labels, and formulas also go into cells. **A *cell pointer*, or *spreadsheet cursor*, indicates where data is to be entered.** The cell pointer can be moved around like a cursor in a word processing program.

  Each worksheet has more than 16 million cells.

- **Why the spreadsheet has become so popular—formulas, functions, recalculation, and what-if analysis:** Now we come to the reason the electronic spreadsheet has taken offices by storm. ***Formulas*** **are instructions for calculations; they define how one cell relates to other cells.** For example, a formula might be = SUM(A5:A15) or @SUM(A5:A15), meaning "Sum (that is, add) all the numbers in the cells with cell addresses A5 through A15. "

  Functions **are built-in formulas that perform common calculations.** For instance, a function might average a range of numbers or round off a number to two decimal places.

  After the values have been entered into the worksheet, the formulas and functions can be used to calculate outcomes. However, what was revolutionary about the electronic spreadsheet was its ability to easily do recalculation. ***Recalculation*** **is the process of recomputing values,** either as an ongoing process as data is entered or afterward, with the press of a key. With this simple feature, the hours of mind-numbing work required to manually rework paper spreadsheets became a thing of the past.

  The recalculation feature has opened up whole new possibilities for decision making. In particular, ***what-if analysis*** **allows the user to see how changing one or more numbers changes the outcome of the recalculation.** That is, you can create a worksheet, putting in formulas and numbers, and then ask, "What would happen if we change that detail?"—and immediately see the effect on the bottom line.

- **Using worksheet templates—prearranged forms for specific tasks:** You may find that your spreadsheet software makes worksheet templates available for specific tasks. *Worksheet templates* are forms containing formats and formulas custom-designed for particular kinds of work. Examples are templates for calculating loan payments, tracking travel expenses, monitoring personal budgets, and keeping track of time worked on projects. Templates are also available for a variety of business needs—providing sales quotations, invoicing customers, creating purchase orders, and writing a business plan.

Most spreadsheet applications are *multidimensional*, meaning that you can link one spreadsheet to another. A three-dimensional spreadsheet, for example, is like a stack of spreadsheets all connected by formulas. A change made in one spreadsheet automatically affects the other spreadsheets.

more info!

Want to see all the formulas in your Excel worksheet? Press the *Ctrl* key and the ` key. Press them again to return to the computed numbers.

Spreadsheet-managed cow care. Many farmers use spreadsheets and other application software to track and manage many aspects of their work.

Analytical Graphics: Creating Charts

You can use spreadsheet packages to create analytical graphics, or charts. ***Analytical graphics*****, or *business graphics*, are graphical forms that make numeric data easier to analyze than when it is organized as rows and columns of numbers.** Whether viewed on a monitor or printed out, analytical graphics help make sales figures, economic trends, and the like easier to

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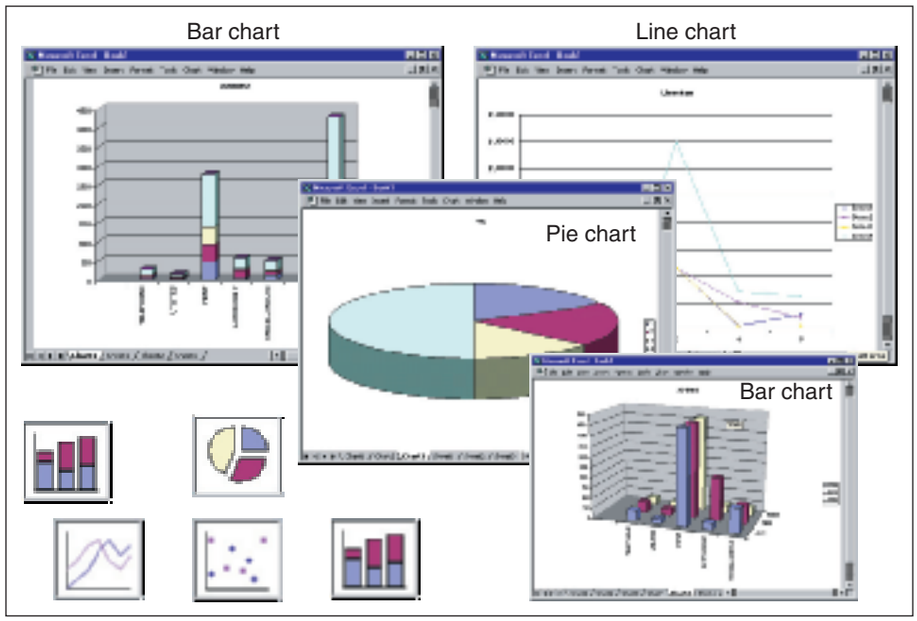
PANEL 3.14
Analytical graphics
Bar charts, line graphs, and pie charts are used to display numbers in graphical form.



comprehend and visualize. In Excel, you enter your data to the worksheet, select the data, and use the Chart wizard to step through the process of choosing the chart type and various options.

Examples of analytical graphics are *column charts, bar charts, line graphs, pie charts*, and *scatter charts*. *(See ● Panel 3.14.)* If you have a color printer, these charts can appear in color. In addition, they can be displayed or printed out so that they look three-dimensional. Spreadsheets can even be linked to more exciting graphics, such as digitized maps.

QuickCheck

What is a spreadsheet? A worksheet?

What are the components of a spreadsheet?

What is the significance of recalculation and what-if analysis?

What's useful about worksheet templates and analytical graphics?

3.5 Database Software

KEY QUESTIONS
What is database software, and what is personal information management software?

In its most general sense, a database is any electronically stored collection of data in a computer system. In its more specific sense, a ***database*** **is a collection of interrelated files in a computer system.** These computer-based files are organized according to their common elements, so that they can be retrieved easily. (Databases are covered in detail in Chapter 8.) Sometimes called a *database manager* or *database management system (DBMS)*, ***database software*** **is a program that sets up and controls the structure of a database and access to the data.**

The Benefits of Database Software

When data is stored in separate files, the same data will be repeated in many files. In the old days, each college administrative office—registrar, financial aid, housing, and so on—might have a separate file on you. Thus, there was *redundancy*—your address, for example, was repeated over and over. The advantage of database software is that data is not in separate files. Rather, it is *integrated*. Thus, your address need only be listed once, and all the

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separate administrative offices will have access to the same information. For that reason, information in databases is considered to have more *integrity*. That is, the information is more likely to be accurate and up to date.

Databases are a lot more interesting than they used to be. Once they included only text. Now they can also include pictures, sound, and animation. It's likely, for instance, that your personnel record in a future company database will include a picture of you and perhaps even a clip of your voice. If you go looking for a house to buy, you will be able to view a real estate agent's database of video clips of homes and properties without leaving the realtor's office.

Today the principal microcomputer database programs are Microsoft Access, Corel Paradox, and Lotus Approach. (In larger systems, Oracle is a major player.)

The Basics: How Databases Work

Let's consider some basic features of databases:

- **How a relational database is organized—tables, records, and fields:** The most widely used form of database, especially on PCs, is the ***relational database*, in which data is organized into related tables.** Each table contains rows and columns; the rows are called *records*, and the columns are called *fields*. An example of a record is a person's address—name, street address, city, and so on. An example of a field is that person's last name; another field would be that person's first name; a third field would be that person's street address; and so on. *(See ● Panel 3.15 on the next page.)*

  Just as a spreadsheet may include several worksheets, so a relational database might include a database with several tables. For instance, if you're running a small company, you might have one database headed *Employees*, containing three tables—*Addresses, Payroll*, and *Benefits*. You might have another database headed *Customers*, with *Addresses, Orders*, and *Invoices* tables.
- **How various records can be linked—the key:** In relational databases a ***key*—also called *key field, sort key, index,* or *keyword*—is a field used to sort data.** For example, if you sort records by age, then the age field is a key. Most database management systems allow you to have more than one key so that you can sort records in different ways. One of the keys is designated the *primary key* and must hold a unique value for each record. A key field that identifies records in different tables is called a *foreign key*. Foreign keys are used to cross-reference data among relational tables. The most frequent key field used in the United States is the Social Security number, but any unique identifier, such as employee number or student number, can be used.
- **Finding what you want—querying and displaying records:** The beauty of database software is that you can locate records quickly. For example, several offices at your college may need access to your records, but for different reasons: registrar, financial aid, student housing, and so on. Any of these offices can *query records—locate and display records*—by calling them up on a computer screen for viewing and updating. Thus, if you move, your address field will need to be corrected for all relevant offices of the college. A person making a search might make the query, "*Display the address of [your name].*" Once a record is displayed, the address field can be changed. Thereafter, any office calling up your file will see the new address.

more info!

Do a keyword search on *databases*. What kinds of databases and database services are available? Did you find any databases that could be useful to you?

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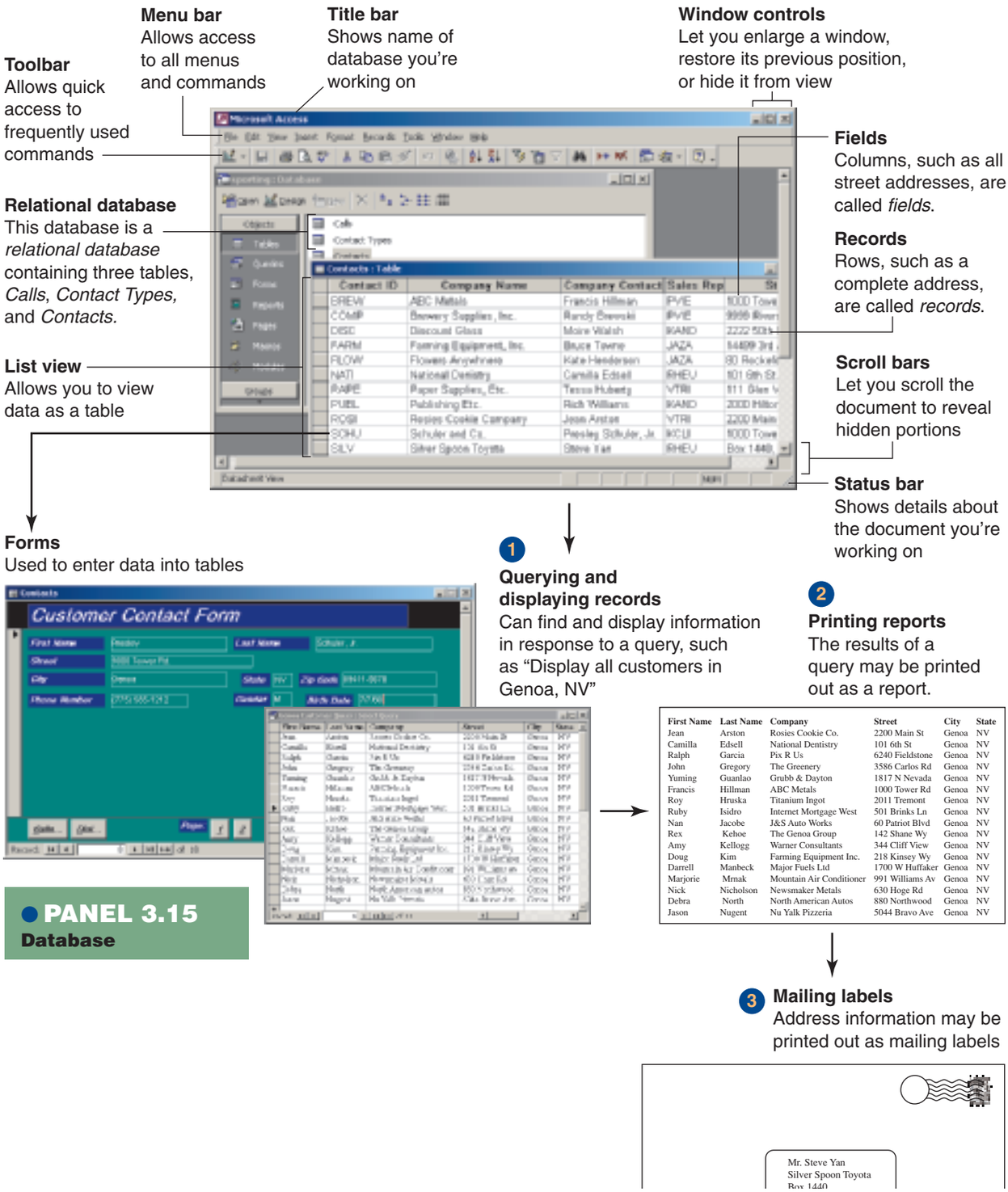

PANEL 3.15
Database

- **Sorting and analyzing records and applying formulas:** With database software you can easily find and change the order of records in a table—in other words, they can be *sorted* in different ways—arranged alphabetically, numerically, geographically, or in some other order. For example, they can be rearranged by state, by age, or by Social Security number.

  In addition, database programs contain built-in mathematical formulas so that you can analyze data. This feature can be used, for example, to find the grade-point averages for students in different majors or in different classes.

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- **Putting search results to use—saving, formatting, printing, copying, or transmitting:** Once you've queried, sorted, and analyzed the records and fields, you can simply save them to your hard disk, floppy disk, or CD. You can format them in different ways, altering headings and typestyles. You can print them out on paper as reports, such as an employee list with up-to-date addresses and phone numbers. A common use is to print out the results as names and addresses on *mailing labels*—adhesive-backed stickers that can be run through your printer, and then stuck on envelopes. You can use the copy command to copy your search results and then paste them into a paper produced on your word processor. You can also cut and paste data into an email message or make the data an attachment file to an email, so that it can be transmitted to someone else.

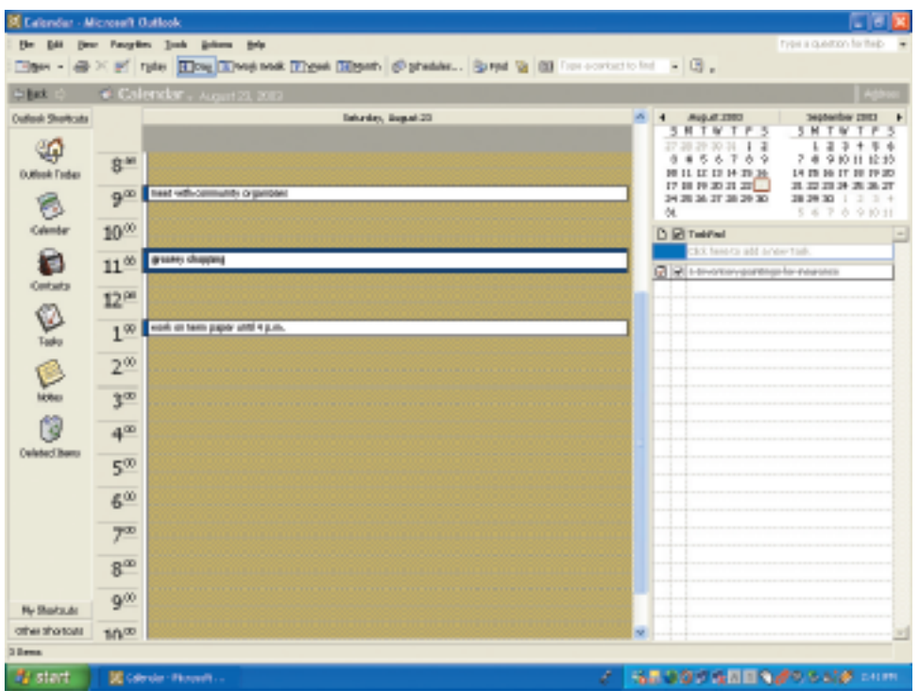
Personal Information Managers

Pretend you are sitting at a desk in an old-fashioned office. You have a calendar, a Rolodex-type address file, and a notepad. Most of these items could also be found on a student's desk. How would a computer and software improve on this arrangement?

Many people find ready uses for specialized types of database software known as personal information managers. **A *personal information manager (PIM)* is software that helps you keep track of and manage information you use on a daily basis, such as addresses, telephone numbers, appointments, to-do lists, and miscellaneous notes.** Some programs feature phone dialers, outliners (for roughing out ideas in outline form), and ticklers (or reminders). With a PIM, you can key in notes in any way you like and then retrieve them later based on any of the words you typed.

Popular PIMs are Microsoft Outlook, Lotus SmartSuite Organizer, and Act. Microsoft Outlook, for example, has sections such as Inbox, Calendar, Contacts, Tasks (to-do list), Journal (to record interactions with people), Notes (scratchpad), and Files. *(See ● Panel 3.16.)* Other PIM programs are DayTimer and !SBiSTER International Time & Chaos.

● PANEL 3.16
Personal information manager
This shows the calendar available with Microsoft Outlook.



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QuickCheck

What is a database, and what are its benefits?

Describe the basic features of a relational database.

How might a PIM help you?

3.6 Specialty Software

KEY QUESTIONS

What are the principal uses of specialty software such as presentation graphics, financial, desktop publishing, drawing and painting, video/audio editing, project management, computer-aided design, and web page design software?

After learning some of the productivity software just described, you may wish to become familiar with more specialized programs. For example, you might first learn word processing and then move on to desktop publishing, or first learn spreadsheets and then learn personal-finance software. We will consider the following kinds of software, although they are but a handful of the thousands of specialized programs available: *presentation graphics, financial, desktop-publishing, drawing and painting, video/audio editing, project management, computer-aided design,* and *web page design software.*

Presentation Graphics Software

You may already be accustomed to seeing presentation graphics because many college instructors now use such software to accompany their lectures. ***Presentation graphics software*** **uses graphics, animation, sound, and data or information to make visual presentations.** Well-known presentation graphics packages include Microsoft PowerPoint, Corel Presentations, Innovus Multimedia Presentations, Design Intelligence i publish, and Lotus Freelance Graphics. *(See ● Panel 3.17.)*

Visual presentations are commonly called *slide shows*, although they can consist not only of 35-mm slides but also of paper copies, overhead transparencies, video, animation, and sound. Presentation graphics packages often come with slide sorters, which group together a dozen or so slides in miniature. The person making the presentation can use a mouse or keyboard to bring the slides up for viewing or even start a self-running electronic slide show. You can also use a projection system from the computer itself.

Let's examine the process of using presentation software:

- **Using templates to get started:** Just as word processing programs offer templates for faxes, business letters, and the like, presentation graphics programs offer templates to help you organize your presentation, whether it's for a roomful of people or over the internet. Templates are of two types: design and content. *Design templates* offer formats, layouts, background patterns, and color schemes that can apply to general forms of content material. *Content templates* offer formats for specific subjects; for instance, PowerPoint offers templates for "Selling Your Ideas," "Facilitating a Meeting," and "Motivating a Team." The software offers wizards that walk you through the process of filling in the template.
- **Getting assistance on content development and organization:** To provide assistance as you're building your presentation, PowerPoint displays three windows on your screen at the same time—*Outline View, Slide View*, and *Notes Page View.* This enables you to add new slides, create and edit the text on the slides, and create notes (to use as lecture or speech notes) while developing your presentation.

  Outline View helps you organize the content of your material in standard outline form. The text you enter into the outline is

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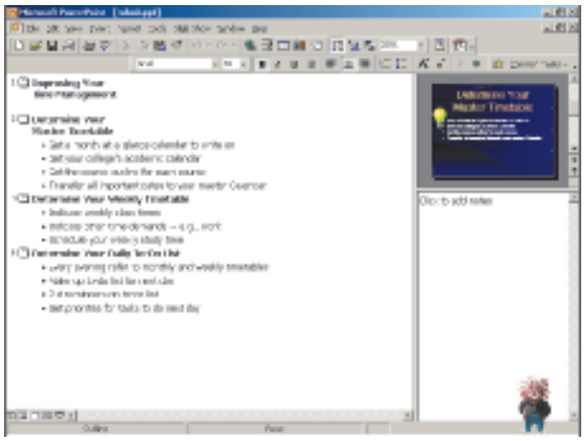
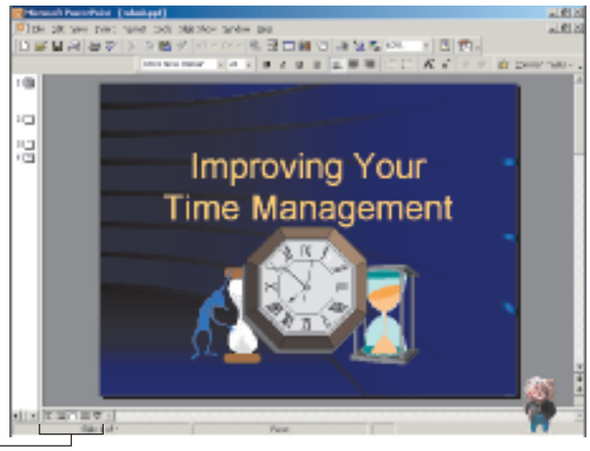
1 Outline View
This view helps you organize the content of your material in standard outline form.

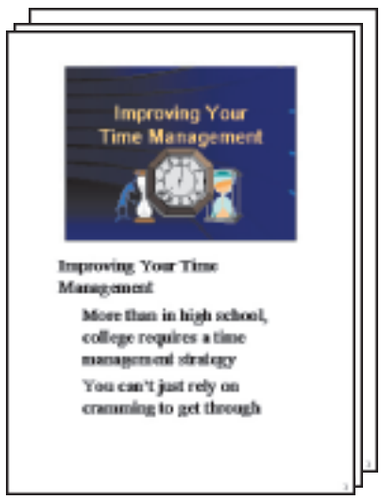


2 Dressing up your presentation
PowerPoint offers professional design templates of text format, background, and borders. You place your text for each slide into one of these templates. You can also import a graphic from the clip art that comes with the program.

3 Slide View
This view allows you to see what a single slide will look like. You can use this view to edit the content and looks of each slide.

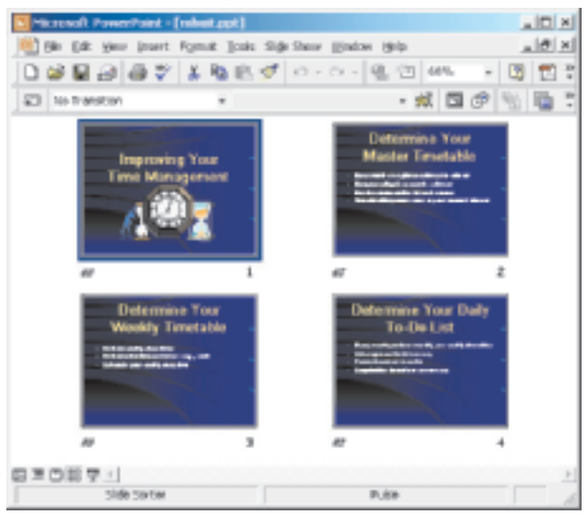


4 Notes Page View
This view displays a small version of the slide plus the notes you will be using as speaker notes.



View icons
Clicking on these offers different views: *Slide, Outline, Slide Sorter, Notes Page,* and *Slide Show*

5 Slide Sorter View
This view displays miniatures of each slide, enabling you to adjust the order of your presentation.



● PANEL 3.17
Presentation graphics
Microsoft PowerPoint helps you prepare and make visual presentations.

automatically formatted into slides according to the template you selected. If you wish, you can pull in (import) your outline from a word processing document. *Slide View* helps you see what a single slide will look like. The outline text appears as slide titles and subtitles in subordinate order. *Notes Page View* displays the notes you will be using as speaker notes. It includes a small version of the slide.

Two other views are helpful in organizing and practicing. *Slide Sorter View* allows you to view a number of slides (4 to 12 or more)

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at once, so you can see how to order and reorder them. *Slide Show View* presents the slides in the order in which your audience will view them, so you can practice your presentation.

- **Dressing up your presentation:** Presentation software makes it easy to dress up each visual page ("slide") with artwork by pulling in clip art from other sources. Although presentations may make use of some basic analytical graphics—bar, line, and pie charts—they usually look much more sophisticated. For instance, they may utilize different texture (speckled, solid, cross-hatched), color, and three-dimensionality. In addition, you can add audio clips, special visual effects (such as blinking text), animation, and video clips.

QuickCheck

What are the benefits of presentation graphics software?

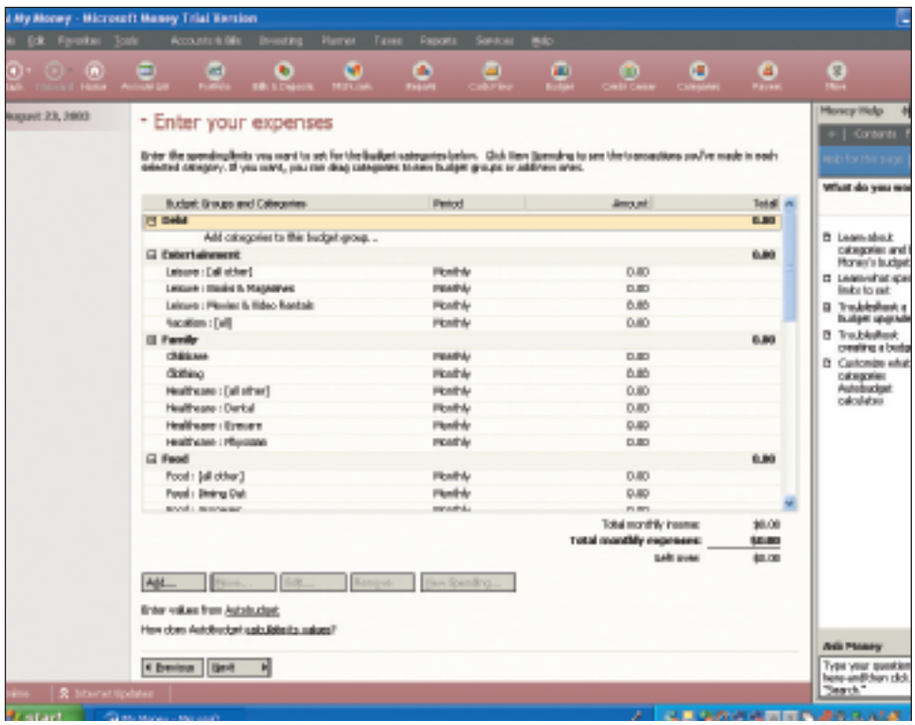
What kind of help is available with a presentation graphics package?

Financial Software

Financial software **is a growing category that ranges from personal-finance managers to entry-level accounting programs to business financial-management packages.**

Consider the first of these, which you may find particularly useful. ***Personal-finance managers*** **let you keep track of income and expenses, write checks, do online banking, and plan financial goals.** Such programs don't promise to make you rich, but they can help you manage your money. They may even get you out of trouble. Many personal-finance programs, such as Quicken and Microsoft Money, include a calendar and a calculator, but the principal features are the following:

- **Tracking of income and expenses:** The programs allow you to set up various account categories for recording income and expenses, including credit card expenses.
- **Checkbook management:** All programs feature checkbook management, with an on-screen check writing form and check register that



Financial software. Microsoft Money can be used for all sorts of money-related management. It includes guidance tips for setting up your accounts.

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look like the ones in your checkbook. Checks can be purchased to use with your computer printer.

- **Reporting:** All programs compare your actual expenses with your budgeted expenses. Some will compare this year's expenses to last year's.
- **Income tax:** All programs offer tax categories, for indicating types of income and expenses that are important when you're filing your tax return.
- **Other:** Some of the more versatile personal-finance programs also offer financial-planning and portfolio-management features.

Besides personal-finance managers, financial software includes small business accounting and tax software programs, which provide virtually all the forms you need for filing income taxes. Tax programs such as TaxCut and TurboTax make complex calculations, check for mistakes, and even unearth deductions you didn't know existed. Tax programs can be linked to personal-finance software to form an integrated tool.

Many financial software programs may be used in all kinds of enterprises. For instance, accounting software automates bookkeeping tasks, while payroll software keeps records of employee hours and produces reports for tax purposes.

Some programs go beyond financial management and tax and accounting management. For example, Business Plan Pro, Management Pro, and Performance Now can help you set up your own business from scratch.

Finally, there are investment software packages, such as StreetSmart Pro from Charles Schwab and Online Xpress from Fidelity, as well as various retirement-planning programs.

QuickCheck

What is financial software?

What functions does financial software perform?

Desktop Publishing

Adobe Systems was founded in 1982, when John Warnock and Charles Geschke began to work on solving some of the long-standing problems that plagued the relationship between microcomputers and printers. Collaboration with Apple Computers produced the first desktop-publishing package, using Adobe PostScript, a printer language that can handle many fonts and graphics, in 1984. By 1987, Adobe had agreements with IBM, Digital, AST Research, Hewlett-Packard, and Texas Instruments for them to use PostScript in their printers.[5]

Not everyone can be successful at desktop publishing, because many complex layouts require experience, skill, and knowledge of graphic design. Indeed, use of these programs by nonprofessional users can lead to rather unprofessional-looking results. Nevertheless, the availability of microcomputers and reasonably inexpensive software has opened up a career area formerly reserved for professional typographers and printers.

Desktop publishing (DTP) **involves mixing text and graphics to produce high-quality output for commercial printing, using a microcomputer and mouse, scanner, laser or ink-jet printer, and DTP software.** Often the printer is used primarily to get an advance look before the completed job is sent to a typesetter service bureau for even higher-quality output. Service bureaus have special machines that convert the DTP files to film, which can then be used to make plates for offset printing. Offset printing produces higher-quality documents, especially if color is used, but is generally more expensive than laser printing.

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OCTAVE
Before
OCTAVE
After

Kerning refers to adjusting the space between characters, especially by placing two characters closer together than normal. Kerning makes certain combinations of letters, such as WA, MW, TA, and VA, look better.

Only the most sophisticated word processors and desktop publishing systems perform kerning. Normally, you can activate or deactivate kerning for particular fonts.

Source: www.webopedia.com

Professional DTP programs are QuarkXPress, Adobe InDesign, and Adobe PageMaker. Microsoft Publisher is a "low-end," consumer-oriented DTP package. Some word processing programs, such as Word and WordPerfect, also have many DTP features, although still not at the sophisticated level of the specialized DTP packages. DTP packages, for example, give you more control over typographical characteristics, such as kerning, and provide more support for full-color output.

Desktop publishing has the following characteristics:

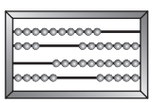
- **Mix of text with graphics:** Desktop-publishing software allows you to precisely manage and merge text with graphics. As you lay out a page on-screen, you can make the text "flow," liquid-like, around graphics such as photographs. You can resize art, silhouette it, change the colors, change the texture, flip it upside down, and make it look like a photo negative.
- **Varied type and layout styles:** As do word processing programs, DTP programs provide a variety of fonts, or typestyles, from readable Times Roman to staid Tribune to wild Jester and Scribble. Additional fonts can be purchased on disk or downloaded online. You can also create all kinds of rules, borders, columns, and page-numbering styles.
- **Use of files from other programs:** It's usually not efficient to do word processing, drawing, and painting with the DTP software. As a rule, text is composed on a word processor, artwork is created with drawing and painting software, and photographs are input using a scanner and then modified and stored using image editing software. Prefabricated art to illustrate DTP documents may be obtained from disks containing clip art, or "canned" images. The DTP program is used to integrate all these files. You can look at your work on the display screen as one page or as two facing pages (in reduced size). Then you can see it again after it has been printed out. *(See ● Panel 3.18.)*

Drawing & Painting Programs

It may be no surprise to learn that commercial artists and fine artists have begun to abandon the paintbox and pen and ink for software versions of palettes, brushes, and pens. The surprise, however, is that an artist can use

Timeline: Developments in . . . Application Software

3000 BCE	1621 CE	1642	1820	1833	1843
Abacus is invented in Babylonia	Slide rule invented (Edmund Gunther)	First mechanical adding machine (Blaise Pascal)	The first mass-produced calculator, the Thomas Arithmometer	Babbage's difference engine (automatic calculator)	World's first computer programmer, Ada Lovelace, publishes her notes





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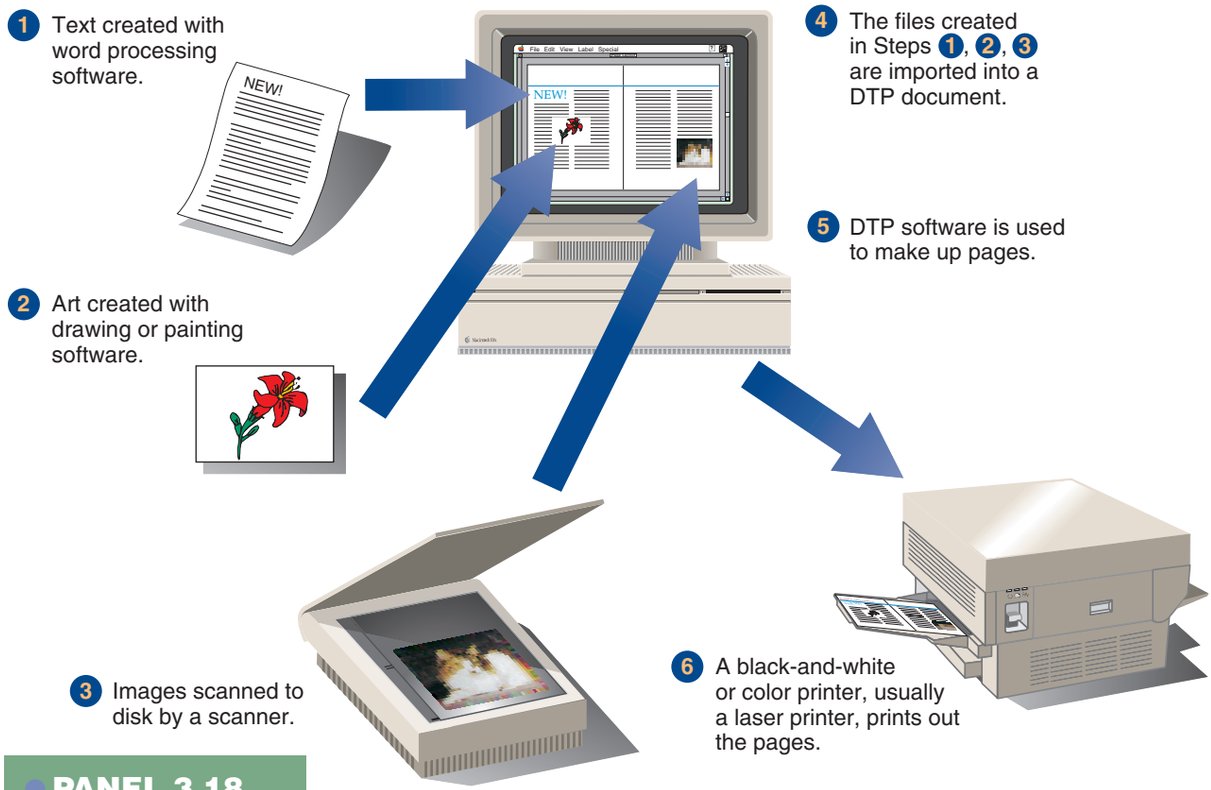


PANEL 3.18
How desktop publishing uses other files

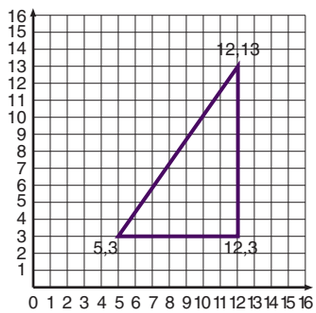
mouse and pen-like stylus to create computer-generated art as good as that achievable with conventional artist's tools. More surprising, even nonartists can produce good-looking work with these programs.

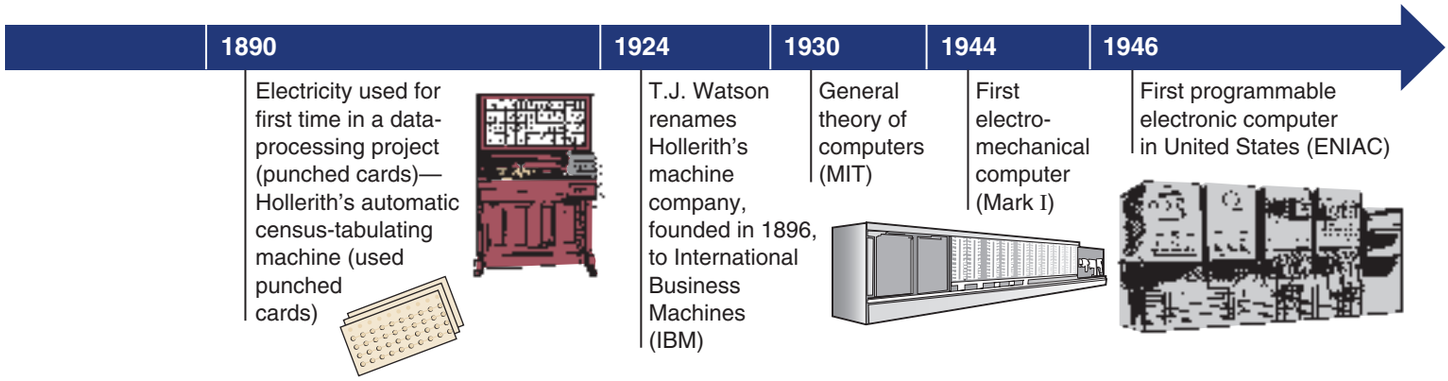
There are two types of computer art programs, also called *illustration software*—drawing and painting:

- **Drawing programs: A *drawing program* is graphics software that allows users to design and illustrate objects and products.** Some drawing programs are CorelDRAW, Adobe Illustrator, Macromedia Freehand, and Sketcher.

  Drawing programs create *vector images*—images created from geometrical formulas. Almost all sophisticated graphics programs use vector graphics.

vector image





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BOOKMARK IT!

PRACTICAL ACTION BOX

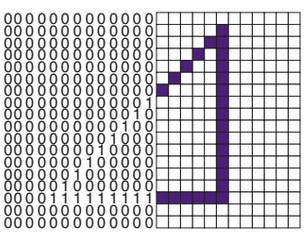
How to Buy Software

Whatever type of software you're interested in, you need to be clear on a few things before you buy:

- *Do you know your needs?* You should understand what you want your computer to do for you. Are you mainly writing research papers? Projecting sales figures? Building a mailing list? Creating artwork?
- *Do you know what software you want?* The safest course is to pick software packages used successfully by people you know or packages given high ratings in computer magazines. If you have a particular brand and type in mind, make sure it's the most recent version and release. (If a new version will be released soon, you may want to hold off buying until it's available.)
- *Will the salespeople speak your language?* Some salespeople know their wares but talk down to newcomers to try to impress them with their knowledge. Others have only the barest familiarity with their products, although they may be patient with novices' questions. You hope, of course, you'll get someone who is both knowledgeable and helpful.

The types of software sellers are as follows:

- *Computer retail stores:* Small retail stores may offer you a well-informed, knowledgeable staff. Such stores may be those in dealer chains, such as MicroAge Computer Centers, or they may be home-grown independents. Computer superstores, such as ComputerLand, may offer computers for trying out software and classes for learning particular software packages. Retailers also have technical departments for installing software and readying and repairing hardware.
- *Electronics, office, department, and warehouse stores:* Electronics stores (Radio Shack, Circuit City, Best Buy), large office-supply stores (Staples, Office Depot), department stores (Sears, Macys), and certain discount warehouse stores (Costco, Target) all may sell software at steeply discounted prices. The drawbacks are that these stores may not have repair services, customer support, or salespeople with deep product knowledge.
- *Online sellers:* Amazon.com (*www.amazon.com),* BuyCheapSoftware (*www.buycheapsoftware.com*), MicroWarehouse *(www.warehouse.com/pm*), and TigerDirect *(www.tigerdirect.com*) are all online sellers with toll-free numbers or websites from which you may order software. You charge the order to your credit card, and the product is delivered to you by UPS, FedEx, or Priority Mail.



bit-mapped image

- **Painting programs: *Painting programs* are graphics programs that allow users to simulate painting on screen.** A mouse or a tablet stylus is used to simulate a paintbrush. The program allows you to select "brush" sizes, as well as colors from a color palette. Examples of painting programs are MetaCreations' Painter 3D, Adobe PhotoShop, Corel PhotoPaint, and JASC's PaintShop Pro.

  Painting programs produce *bit-mapped images,* or *raster images,* made up of little dots.

1962	1963	1964	1964	1967	1967–1968	1969
Doug Engelbart, at the Stanford Research Laboratory, introduces the first word processor; first graphical video game—SpaceWar by Steve Russel of MIT	Sketchpad, the first drawing system, is introduced	IBM introduces 360 line of computers	IBM develops a computer-aided design system	Handheld calculator; the software business is born when IBM announces it will no longer sell hardware and software in a single unit	National Crime Information Center (NCIC) creates 5 databases with 95,000 records	ARPANet established, led to internet

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Painting software is also called *image-editing software* because it allows you to retouch photographs, adjust the contrast and the colors, and add special effects, such as shadows.

Video/Audio Editing Software

The popularity of digital camcorders ("camera recorders") has caused an increase in sales of video editing software. This software allows you to import video footage to your PC and edit it—for example, deleting parts you don't want, reordering sequences, and adding special effects. (To use this software, you'll need some special hardware, which we will discuss in Chapter 6.) Popular video editing software packages include Adobe Premiere, Pinnacle Studio DV, and Unlead VideoStudio.

Audio editing software provides similar capabilities for working with sound tracks, and you can also clean up background noise (called *artifacts*) and emphasize certain sound qualities. Sound editing software includes Audacity, GoldWave, FASoft, Ace of WAV, Cakewalk Home Studio, Cool Edit Pro, Cubase SX, and WaveLab.

QuickCheck

What can you do with desktop-publishing software?

What are some characteristics of DTP software?

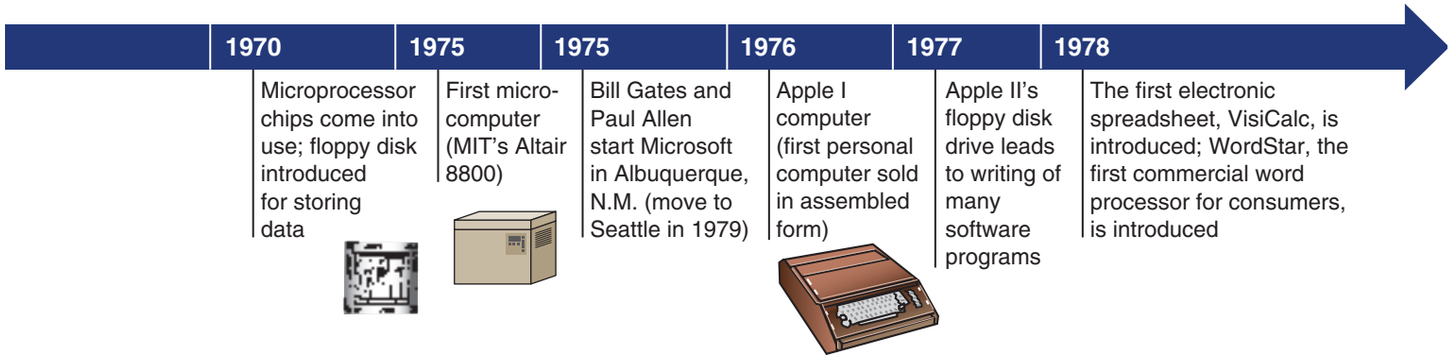
What are some features of drawing programs? Of painting programs?

What can you do with video/audio editing software?

Project Management Software

As we have seen, a personal information manager (PIM) can help you schedule your appointments and do some planning. That is, it can help you manage your own life. But what if you need to manage the lives of others in order to accomplish a full-blown project, such as steering a political campaign or handling a nationwide road tour for a band? Strictly defined, a *project* is a one-time operation involving several tasks and multiple resources that must be organized toward completing a specific goal within a given period of time. The project can be small, such as an advertising campaign for an in-house advertising department, or large, such as construction of an office tower or a jetliner.

Project management software **is a program used to plan and schedule the people, costs, and resources required to complete a project on time.** For instance, the associate producer on a feature film might use such software



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to keep track of the locations, cast and crew, materials, dollars, and schedules needed to complete the picture on time and within budget. The software would show the scheduled beginning and ending dates for a particular task—such as shooting all scenes on a certain set—and then the date that task was actually completed. Examples of project management software are Mindjet MindManager, Harvard Project Manager, Microsoft Project, and Suretrack Project Manager.

Computer-Aided Design

more info!

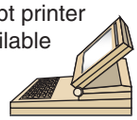
The Ultimate CAD Directory has information about all sorts of CAD products to suit every type of need: *www.tenlinks.com/CAD*

Computers have long been used in engineering design. ***Computer-aided design (CAD)*** **programs are intended for the design of products, structures, civil engineering drawings, and maps.** CAD programs, which are available for microcomputers, help architects design buildings and workspaces and help engineers design cars, planes, electronic devices, roadways, bridges, and subdivisions. CAD and drawing programs are similar. However, CAD programs provide precise dimensioning and positioning of the elements being drawn, so that they can be transferred later to computer-aided manufacturing (CAM) programs. Also, CAD programs lack the special effects for illustrations that come with drawing programs. One advantage of CAD software is that the product can be drawn in three dimensions and then rotated on the screen so the designer can see all sides. *(See ● Panel 3.19.)* Examples of CAD programs for beginners are Autosketch, Turbocad, and CorelCAD.

Computer-aided design/computer-aided manufacturing (CAD/CAM) **software allows products designed with CAD to be input into an automated manufacturing system that makes the products.** For example, CAD/CAM systems brought a whirlwind of enhanced creativity and efficiency to the fashion industry. Some CAD systems, says one writer, "allow designers to electronically drape digital-generated mannequins in flowing

● PANEL 3.19
CAD
CAD software is used for nearly all three-dimensional designing.

1981	1981	1982	1983	1984
IBM introduces personal computer	Introduction of dBase by Ashton-Tate—early microcomputer database program	Portable computers; WordPerfect word processor introduced; Adobe PostScript printer language is available	The spreadsheet Lotus 1-2-3, which includes analytical graphics, is introduced	Apple Macintosh; first personal laser printer



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gowns or tailored suits that don't exist, or twist imaginary threads into yarns, yarns into weaves, weaves into sweaters without once touching needle to garment."[6] The designs and specifications are then input into CAM systems that enable robot pattern-cutters to automatically cut thousands of patterns from fabric with only minimal waste. Whereas previously the fashion industry worked about a year in advance of delivery, CAD/CAM has cut that time to 8 months—a competitive edge for a field that feeds on fads.

QuickCheck

Describe what project management software can do.

What is the purpose of CAD software?

Web Page Design/Authoring Software

As we mentioned in Chapter 2 (page 79), web page design software is used to create web pages with sophisticated multimedia features. A few of these packages are easy enough for even beginners to use. Among the best-known are Macromedia Dreamweaver, Macromedia Flash, Adobe GoLive, and Microsoft FrontPage.

Chapter 7 includes a box on how to design your own web page.

Survival Tip

Want to Learn How to Use Flash?

www.macromedia.com/support/training
www.fmctraining.com
www.learnit.com

1985 Aldus PageMaker becomes the first integrated desktop publishing program

1987 Microsoft's Excel program introduced

1992 Microsoft's Access database program released

1993 Multimedia desktop computers

1994 Apple and IBM introduce PCs with full-motion video built in; wireless data transmission for small portable computers; Netscape's first web browser is introduced (based on Mosaic, introduced in 1993)

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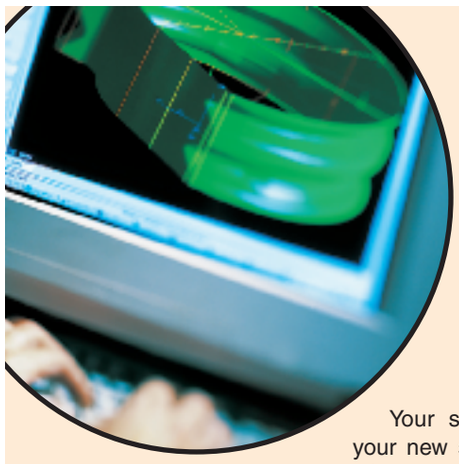

Experience Box

The Mysteries of Tech Support

Your screen flashes "Fatal Error," your new software upgrade screws up your printer, you can't connect to your ISP—these are the kinds of situations that might lead you to (shudder) have to call tech support. Because of the complicated mesh of elements—software, hardware, communications, people—Murphy's Law ("If something can go wrong, it will") seems to apply in computing as almost nowhere else. Thus, one of the most valuable tasks you can learn is how to deal with tech support—getting technical help on the phone or online when things don't work.

What's Wrong with Tech Support?

Usability pays. That's what Oracle, maker of sophisticated database software, learned a few years ago when potential customers were turning away their sales reps with complaints about an inability to figure out how to use Oracle products. Indeed, it has been found that for every $1 the typical company spends buying information technology, it will spend $4–$10 making it all work.[7] Thus, two decades after Apple Computer revolutionized PC software with intuitive, easy-to-use designs, software companies have begun to get the message about the importance of usability.[8]

Simultaneously, technology companies have also had to try to improve their tech support operations, which customers said were falling down on the job. (For instance, only 60% of 1,026 Americans polled in mid-2002 said software companies served customers well—down from 80% the year before. And just 59% said hardware companies did so, down from 78%.[9]) The result was tedious delays on help lines and complaints about unhelpful tech advice, among other things. Customer-rating website PlanetFeedback gave the software industry a grade of C, the hardware industry a grade of C−, and the ISP industry a grade of D+.

Two problems seem to affect the tech support industry:

- *PCs are becoming more complex:* The more personal computers are expected to do—music, video, photos, DVDs, home networking, and so on—the more complex the interaction between the components and the harder it is to figure out what's wrong.
- *Manufacturers practice a "blame game":* One computer user found he had a possible online virus (a rogue program that can damage a computer) when he started up his PC. He wasn't sure what to do, so he first called the computer manufacturer, who said it was a software issue and referred him to the maker of his antivirus software—who could only provide help if he went online, which his affected computer didn't allow him to do. Later he discovered the antivirus manufacturer had tech support phone numbers, but there was a charge ($3.95 a minute) for their use. Eventually a friend had to help him out. This kind of experience is not uncommon.

Improving Your Chances for Avoiding Tech Support Hassles

Wouldn't it be wonderful if you never had to go through tech support agony in the first place? Here are three things technology writer Edward C. Baig suggests that you can do *in advance* to improve your chances:[10]

- *Never upgrade, and never add software: "*If your PC is working fine and you have no ambitions for doing more," says Baig, "don't mess around" by adding new hardware accessories or new software. Many problems occur, for instance, because of conflicts between the operating system and special software (known as *drivers*) that arise when people do upgrades or add software that didn't come with the original system. (Of course, this would seem to defeat one of the purposes of having a computer in the first place—that you can save money by readily adding new things to it. If you must do so, ask the retailer from whom you buy them to handle the installation.)
- *Use the web to research a manufacturer's tech support before you buy:* If you decide to upgrade/add anyway, go to the manufacturer's website and look at tech support resources to see "how coherent and easily accessible" they are, advises Baig. This will also give you some feel for the kinds of problems customers are having.
- *Call tech support before you buy:* Calling tech support in advance of purchasing may cost you something in long-distance charges, but you'll also find out how confusing the voice menu is and how long it takes to reach a live human.

We would add some other tips:

- *Check PlanetFeedback for customer complaints before you buy:* Go to PlanetFeedback (*www.planetfeedback.com*), then go to "Select an Industry," scroll down and click on *Computer Software* (or *Computer Hardware* or *ISP*), and you will see customer letters, most of them complaints. (PlanetFeedback also posts consumer letters pro and con about other subjects—see, for example, "Politicians" and "George W. Bush.") For example, in 2002 and 2003, Intuit received many complaints about the usability and customer service for its TurboTax software.
- *Create a fact sheet with your computer's important specs:* When you get a computer, advises computer consultant Richard Jacobs of Millburn, N.J., create a fact sheet listing the important technical specifications and attach it to the outside of the case. This will also provide you with the kind of information that tech support personnel are apt to ask should you call on them. Take a copy along with you whenever you buy a game or other video- and sound-intensive application to make sure it is compatible with the rest of your system.[11]

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Finding Your Own Personal Tech Support

Can't get any satisfaction from Microsoft (whose tech support might charge you $35 per incident), Apple, AOL, Dell, or the like? Maybe you should turn to your own personal support service—for instance, to Support Freaks (prices starting at $30 an hour) or Speak With a Geek ($34.95 a month). *(See ● Panel 3.20.)*

Because these services don't have a stake in any particular kind of software or hardware, you are more apt to avoid the blame-game problem in which, say, Dell will buck you to Microsoft, which will try to direct you to AOL, and so on. "We'll support your Gateway talking to your Compaq talking to your scanner talking to your digital camera," says a representative of Speak With a Geek.[13] On the other hand, because most of these operations are small, you may find yourself waiting while whoever answers the phone or online inquiry tracks down an on-call consultant to help you.

Other Sources of Help

Although usually less specific in solving your problem, there are nonetheless a number of other sources of help to be aware of:

- *Help: instruction manuals, software, and online:* User guides or instruction manuals printed on paper have traditionally accompanied a box of application software diskettes or CDs. Software publishers are now relying more on Help programs on a CD/DVD, which contain a series of Help menus. Sometimes, however, these guides may be a puzzle to anyone not trained as a programmer because they are often written by the very people who developed the software. Help programs are also available through the internet. The problem with this, of course, is: How do you go online to solve the problem of your computer not working if your computer isn't working? Or how do you access the internet to get advice on how to fix your software and simultaneously fix your software? (It helps to have two computers.)
- *Commercial how-to books:* Because of the inadequacies in user support by the software developers themselves, an entire industry has sprung up devoted to publishing how-to books. These are the kind of books found both in computer stores and in general bookstores such as Barnes & Noble or Borders. Examples are the "For Dummies" or "Complete Idiot's" books (such as *PCs for Dummies* and *The Complete Idiot's Guide to Microsoft Office*).
- *Knowledgeable friends:* Believe it or not, nothing beats having a knowledgeable friend: your instructor, a student more advanced than you, or someone with a technical interest in computers. We can't stress enough how important it is to get to know people—from your classes, from computer user groups (including online internet groups), from family friends, or whatever—who can lend aid and expertise when your computer software gives you trouble.

● PANEL 3.20

Some individual technical support services

800 and 888 numbers are toll.free. Most services are available 24 hours a day 7 day a week. Note that not all operations serve Mac-intosh users, and not all have a phone option—which can be a handicap when you're not able to go online.[12]

Company	Price	Services
AAATechSupport.com 888-644-5810	First 2 minutes free. $2.79 per minute after that.	Phone support for Windows, Mac, Palm
Ask Dr. Tech 800-AskDrTech *www.AskDrTech.com*	$89 per year for home plan, $299 per year for business plan	Phone, email, or online chat support for PCs and Macs and peripherals
888-Geek-Help Toll free: 888-433-5435	$1.50 per minute	Phone support with consultants for numerous software and hardware problems, from graphics to design to Linux
Live Repair *www.LiveRepair.com*	$11.95 per month for PC	Tech support via web-based chat for PCs
Speak With A Geek 866-933-HELP *www.SpeakWithAGeek.com*	Individual plan $34.95 per month, family plan $97.95 per month	Phone, email, or online chat support for Windows, Macs, Linux, and peripherals
Support Freaks 888-4-FREAKS *www.SupportFreaks.com*	Prices start at $29 per hour, with half hour minimum	Phone or web-based chat support for all kinds of software and hardware issues
TechKnow-How.com 1-866-TKH-HELP *www.techknowhow.com*	Basic subscription free, standard subscription $9.95 per month	Phone, email, and online tech support for PC software
Tech 24 Inc. *www.tech24inc.com*	$16.95 per incident	Online support for Windows, Macs, and peripherals

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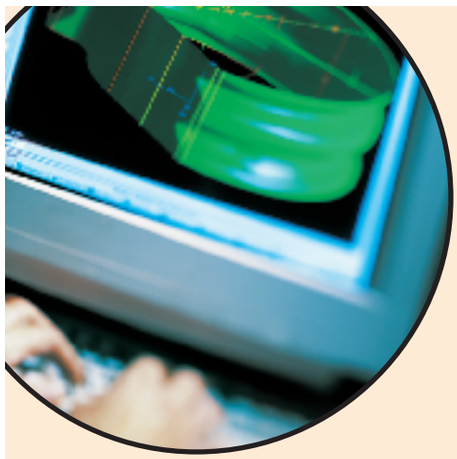


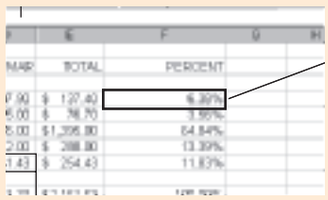
Summary

analytical graphics (p. 119, KQ 3.4) Also called *business graphics;* graphical forms that make numeric data easier to analyze than when it is organized as rows and columns of numbers. The principal examples of analytical graphics are bar charts, line graphs, and pie charts. Why it's important: Whether viewed on a monitor or printed out, analytical graphics help make sales figures, economic trends, and the like easier to comprehend and analyze.

application software (p. 98, Introduction) Software that has been developed to solve a particular problem for users—to perform useful work on specific tasks or to provide entertainment. Why it's important: Application software consists of most of the software you are familiar with and use on a daily basis.

cascading menu (p. 107, KQ 3.2) Menu that seems to fly back to the left or explode out to the right. Why it's important: Menus make software easier to use.

cell (p. 119, KQ 3.4) Place where a row and a column intersect in a spreadsheet worksheet; its position is called a *cell address.* Why it's important: The cell is the smallest working unit in a spreadsheet. Data and formulas are entered into cells. Cell addresses provide location references for spreadsheet users.

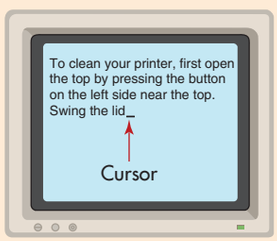


cell pointer (p.119, KQ 3.4) Also called *spreadsheet cursor;* indicates where data is to be entered**.** Why it's important: The cell pointer can be moved around like a cursor in a word processing program, and it shows you where the user is in the worksheet.

computer-aided design (CAD) programs (p. 132, KQ 3.6) Programs intended for the design of products, structures, civil engineering drawings, and maps. Why it's important: CAD programs, which are available for microcomputers, help architects design buildings and workspaces and help engineers design cars, planes, electronic devices, roadways, bridges, and subdivisions. While similar to drawing programs, CAD programs provide precise dimensioning and positioning of the elements being drawn, so that they can be transferred later to computer-aided manufacturing programs; in addition, they lack special effects for illustrations. One advantage of CAD software is that three-dimensional drawings can be rotated on screen, so the designer can see all sides of the product.

computer-aided design/computer-aided manufacturing (CAD/CAM) software (p. 132, KQ 3.6) Programs allowing products designed with CAD to be input into an automated manufacturing system that makes the products. Why it's important: CAD/CAM systems have greatly enhanced efficiency in many industries.

copyright (p. 98, KQ 3.1) Exclusive legal right that prohibits copying of intellectual property without the permission of the copyright holder. Why it's important: Copyright law aims to prevent people from taking credit for and profiting from other people's work.



cursor (p. 112, KQ 3.3) Movable symbol on the display screen that shows where the user may next enter data or commands. The symbol is often a blinking rectangle or an I-beam. You can move the cursor on the screen using the keyboard's directional arrow keys or a mouse. The point where the cursor is located is called the insertion point. Why it's important: All application software packages use cursors to show the current work location on the screen.

database (p. 120, KQ 3.5) Collection of interrelated files in a computer system. These computer-based files are organized according to their common elements, so that they can be retrieved easily. Why it's important: Businesses and organizations build databases to help them keep track of and manage their affairs. In addition, online database services put enormous resources at the user's disposal.

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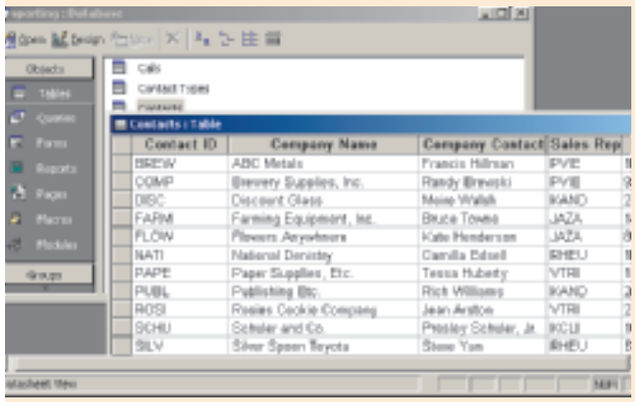


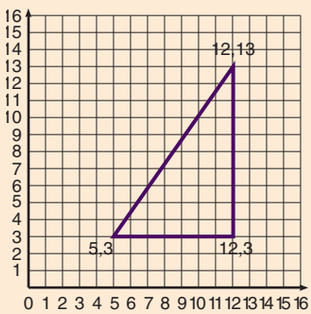
database software (p. 120, KQ 3.5) Also called *database manager* or *database management system (DBMS);* application software that sets up and controls the structure of a database and access to the data. Why it's important: Database software allows users to organize and manage huge amounts of data.

default settings (p. 116, KQ 3.3) Settings automatically used by a program unless the user specifies otherwise, thereby overriding them. Why it's important: Users need to know how to change default settings in order to customize documents.

desktop (p. 107, KQ 3.2) The operating system's main interface screen. Why it's important: The desktop displays pictures (icons) that provide quick access to programs and information.

desktop publishing (DTP) (p. 127, KQ 3.6) Application software and hardware system that involves mixing text and graphics to produce high-quality output for commercial printing, using a microcomputer and mouse, scanner, laser or ink-jet printer, and DTP software (such as QuarkXPress and PageMaker or, at a more consumer-oriented level, Microsoft Publisher). Often the printer is used primarily to get an advance look before the completed job is sent to a typesetter for even higher-quality output. Some word processing programs, such as Word and WordPerfect, have rudimentary DTP features. Why it's important: Desktop publishing has reduced the number of steps, the time, and the money required to produce professional-looking printed projects.

documentation (p. 101, KQ 3.1) All information that describes a product to users, including a user guide or reference manual that provides a narrative and graphical description of a program. While documentation may be print-based, today it is usually available on CD-ROM, as well as via the internet. Why it's important: Documentation helps users learn software commands and use of function keys, solve problems, and find information about system specifications.



Vector drawing

drawing program (p. 129, KQ 3.6) Graphics software that allows users to design and illustrate objects and products. Why it's important: Drawing programs are vector-based and are best used for straightforward illustrations based on geometric shapes.

exporting (p. 102, KQ 3.1) Transforming data into a format that can be used in another program and then transmitting it. Why it's important: Users need to know how to export many types of files.

file (p. 101, KQ 3.1) A named collection of data or a program that exists in a computer's secondary storage, such as on a floppy disk, hard disk, or CD-ROM disk. Why it's important: Dealing with files is an inescapable part of working with computers. Users need to be familiar with the different types of files.

financial software (p. 126, KQ 3.6) Application software that ranges from personal-finance managers to entry-level accounting programs to business financial-management packages. Why it's important: Financial software provides users with powerful management tools (personal-finance managers) as well as small business programs. Moreover, tax programs provide virtually all the forms needed for filing income taxes, make complex calculations, check for mistakes, and even unearth deductions you didn't know existed. Tax programs can also be integrated with personal finance software to form an integrated tool. Accounting software automates bookkeeping tasks, while payroll software keeps records of employee hours and produces reports for tax purposes. Some programs allow users to set up a business from scratch. Financial software also includes investment software packages and various retirement planning programs.

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Times Roman

**14 point
Arial Black**

16 point
Courier

60
(60 point Arial)

font (p. 115, KQ 3.3) A particular typeface and type size. Why it's important: Fonts influence the appearance and effectiveness of documents, brochures, and other publications.

formatting (p. 114, KQ 3.3) In word processing and desktop publishing, determining the appearance of a document. Why it's important: The document format should match its users' needs. Ways to format a document include using different fonts, boldface, italics, variable spacing, columns, and margins.

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formulas (p. 119, KQ 3.4) In a spreadsheet, instructions for calculations entered into designated cells. Why it's important: When spreadsheet users change data in one cell, all the cells linked to it by formulas automatically recalculate their values.

freeware (p. 100, KQ 3.1) Copyrighted software that is distributed free of charge, today most often over the internet. Why it's important: Freeware saves users money.

function key

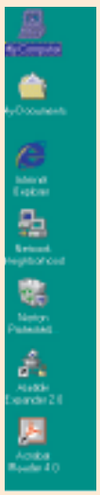
function keys (p. 103, KQ 3.2) Keys labeled "F1," "F2," and so on, positioned along the top or left side of the keyboard. Why it's important: They are used to execute commands specific to the software being used.

functions (p. 119, KQ 3.4) In a spreadsheet, built-in formulas that perform common calculations. Why it's important: After the values have been entered into the worksheet, formulas and functions can be used to calculate outcomes.

grammar checker (p. 114, KQ 3.3) Word processing feature that highlights poor grammar, wordiness, incomplete sentences, and awkward phrases. The grammar checker won't fix things automatically, but it will flag (perhaps with a color squiggly line) possible incorrect word usage and sentence structure. Why it's important: Grammar checkers help users produce better-written documents.

graphical user interface (GUI) (p. 104, KQ 3.2) User interface in which icons and commands from menus may be selected by means of a mouse or keystrokes. Why it's important: GUIs are easier to use than command-driven interfaces.

Help command (p. 110, KQ 3.2) Command generating a table of contents, an index, and a search feature that can help users locate answers to questions about the software. Why it's important: Help features provide a built-in electronic instruction manual.



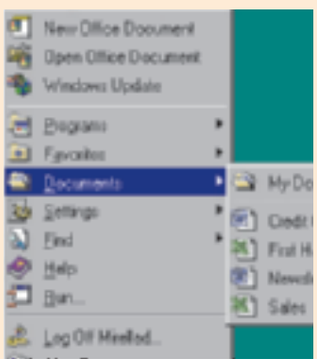
icons (p. 107, KQ 3.2) Small pictorial figures that represent programs, data files, or procedures. Why it's important: Icons have simplified the use of software. The feature represented by the icon can be activated by clicking on the icon.

importing (p. 101, KQ 3.1) Getting data from another source and then converting it into a format compatible with the program in which the user is currently working. Why it's important: Users will often have to import files.

key (p. 121, KQ 3.5) Also called *key field*, *sort key*, *index,* or *key word;* field used to sort data in a database. For example, if users sort records by age, then the age field is a key. Why it's important: Key fields are needed to identify and retrieve specific items in a database. Most database management systems allow you to have more than one key so that you can sort records in different ways. One of the keys is designated the *primary key* and must hold a unique value for each record. A key field that identifies records in different tables is called a *foreign key.* Foreign keys are used to cross-reference data among relational tables. The most frequent key field used in the United States is the Social Security number, but any unique identifier, such as employee number or student number, can be used.

label (p.117, KQ 3.4) Any descriptive text that identifies a category, such as RENT, LOANS, INCOME, etc. Why it's important: Various headings and labels in spreadsheets give meaning to the data.

macro (p. 103, KQ 3.2) Also called *keyboard shortcut;* a single keystroke or command—or a series of keystrokes or commands—used to automatically issue a longer, predetermined series of keystrokes or commands. Why it's important: Users can consolidate several activities into only one or two keystrokes. The user names the macro and stores the corresponding command sequence; once this is done, the macro can be used repeatedly.



menu (p. 107, KQ 3.2) Displayed list of options—such as commands—to choose from. Why it's important: Menus are a feature of GUIs that make software easier to use.

menu bar (p. 109, KQ 3.2) Bar across the top of the display window, below the title bar. Why it's important: It shows the names of the various pull-down menus available.

painting program (p. 130, KQ 3.6) Graphics program that allows users to simulate painting on-screen. A mouse or a tablet stylus is used to simulate a paintbrush. The program allows you to

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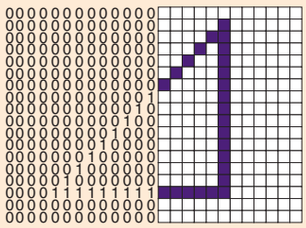
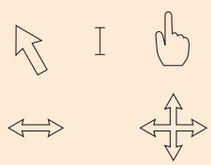


select "brush" sizes, as well as colors from a color palette. Why it's important: Painting programs, which produce raster images made up of little dots (bit-mapped), are good for creating art with soft edges and many colors.

personal-finance manager (p. 126, KQ 3.6) Application software that lets users keep track of income and expenses, write checks, do online banking, and plan financial goals. Why it's important: Personal-finance software can help people manage their money more effectively.

personal information manager (PIM) (p. 123, KQ 3.5) Software that helps users keep track of and manage information they use on a daily basis, such as addresses, telephone numbers, appointments, to-do lists, and miscellaneous notes. Some programs feature phone dialers, outliners (for roughing out ideas in outline form), and ticklers (or reminders). Why it's important: PIMs can help users better organize and manage daily business activities.

pirated software (p. 100, KQ 3.1) Software that is obtained illegally. Why it's important: If you buy such software, not only do the original copyright owners not get paid for their creative work but you risk getting inferior goods and, worse, picking up a virus. To discourage software piracy, many software manufacturers require that users register their software when they install it on their computers. If the software is not registered, it will not work properly.



pointer (p. 104, KQ 3.2) Indicator that usually appears as an arrow, although it changes shape depending on the application. The mouse is used to move the pointer to a particular place on the display screen or to point to little symbols, or icons. Why it's important: It is often easier to manipulate the pointer on the screen by means of the mouse than to type commands on a keyboard.

pop-up menu (p. 107, KQ 3.2) List of command options that can "pop up" anywhere on the screen when you click the right mouse button. In contrast to pull-down or pull-up menus, pop-up menus are not connected to a toolbar. Why it's important: Pop-up menus make programs easier to use.

presentation graphics software (p. 124, KQ 3.6) Software that uses graphics, animation, sound, and data or information to make visual presentations. Why it's important: Presentation graphics software provides a means of producing sophisticated graphics.

productivity software (p. 102, KQ 3.1) Application software such as word processing programs, spreadsheets, and database managers. Why it's important: Productivity software makes users more productive at particular tasks.

project management software (p. 131, KQ 3.6) Program used to plan and schedule the people, costs, and resources required to complete a project on time. Why it's important: Project management software increases the ease and speed of planning and managing complex projects.

public-domain software (p. 99, KQ 3.1) Software, often available on the internet, that is not protected by copyright and thus may be duplicated by anyone at will. Why it's important: Public-domain software offers lots of software options to users who may not be able to afford much commercial software. Users may download such software from the internet free and make as many copies as they wish.

pull-down menu (p. 107, KQ 3.2) Also called *drop-down menu;* list of options that pulls down from the menu bar at the top of the screen. Why it's important: Like other menu-based and GUI features, pull-down menus make software easier to use.

pull-up menu (p. 107, KQ 3.2) List of options that pulls up from the menu bar at the bottom of the screen. Why it's important: *See* pull-down menu.

range (p. 119, KQ 3.4) A group of adjacent cells in a spreadsheet—for example, A1 to A5. Why it's important: Ranges help sort data for calculation or reports.

recalculation (p. 119, KQ 3.4) The process of recomputing values in a spreadsheet, either as an ongoing process as data is entered or afterward, with the press of a key. Why it's important: With this simple feature, the hours of mind-numbing work required to manually rework paper spreadsheets became a thing of the past.

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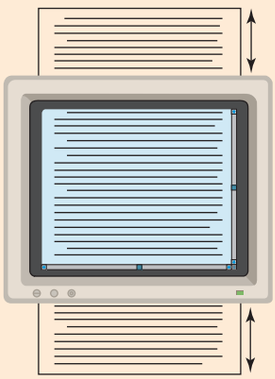
relational database (p. 121, KQ 3.5) Database in which data is organized into related tables. Each table contains rows and columns; the rows are called *records*, and the columns are called *fields.* An example of a record is a person's address—name, street address, city, and so on. An example of a field is that person's last name; another field would be that person's first name; a third field would be that person's street address; and so on. Why it's important: The relational database is a common type of database.

rentalware (p. 100, KQ 3.1) Software that users lease for a fee and download whenever they want it. Why it's important: This is the concept behind application services providers (ASPs).

rollover (p. 107, KQ 3.2) Icon feature in which a small text box explaining the icon's function appears when you roll the mouse pointer over the icon. A rollover may also produce an animated graphic. Why it's important: The rollover gives the user an immediate explanation of an icon's meaning.

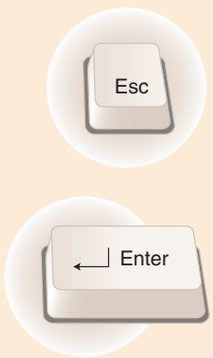
saving (p. 116, KQ 3.3) Storing, or preserving, a document as an electronic file permanently—on diskette, hard disk, or CD-ROM, for example. Why it's important: Saving is a feature of nearly all application software. Having the document stored in electronic form spares users the tiresome chore of retyping it from scratch whenever they want to make changes. Users need only retrieve it from the storage medium and make the changes, then resave it and print it out again.



scrolling (p. 112, KQ 3.3) Moving quickly upward, downward, or sideways through the text or other screen display. Why it's important: A standard computer screen displays only 20–22 lines of standard-size text; however, most documents are longer than that. Using the directional arrow keys, or the mouse and a scroll bar located at the side of the screen, users can move ("scroll") through the display screen and into the text above and below it.

shareware (p. 100, KQ 3.1) Copyrighted software that is distributed free of charge but requires that users make a monetary contribution in order to continue using it. Shareware is distributed primarily through the internet. Because it is copyrighted, you cannot use it to develop your own program that would compete with the original product. Why it's important: Like public-domain software and freeware, shareware offers an inexpensive way to obtain new software.

software license (p. 99, KQ 3.1) Contract by which users agree not to make copies of software to give away or resell. Why it's important: Software manufacturers don't sell people software; they sell them licenses to become authorized users of the software.



special-purpose keys

special-purpose keys (p. 103, KQ 3.2) Keys used to enter, delete, and edit data and to execute commands. For example, the *Esc* (for "Escape") key tells the computer to cancel an operation or leave (" escape from") the current mode of operation. The Enter, or Return, key tells the computer to execute certain commands and to start new paragraphs in a document. Why it's important: Special-purpose keys are essential to the use of software.

spelling checker (p. 114, KQ 3.3) Word processing feature that tests for incorrectly spelled words. As the user types, the spelling checker indicates (perhaps with a squiggly line) words that aren't in its dictionary and thus may be misspelled. Special add-on dictionaries are available for medical, engineering, and legal terms. Why it's important: Spelling checkers help users prepare accurate documents.

spreadsheet (p. 117, KQ 3.4) Application software that allows users to create tables and financial schedules by entering data and formulas into rows and columns arranged as a grid on a display screen. Why it's important: When data is changed in one cell, values in other cells in the spreadsheet are automatically recalculated.

taskbar (p. 110, KQ 3.2) Graphic toolbar that appears at the bottom of the Windows screen. Why it's important: The taskbar presents the applications that are running.

template (p. 114, KQ 3.3) In word processing, a preformatted document that provides basic tools for shaping a final document—the text, layout, and style for a letter, for example. Why it's important: Templates make it very easy for users to prepare professional-looking documents, because most of the preparatory formatting is done.

thesaurus (p. 114, KQ 3.3) Word processing feature that will present the user with the appropriate word or alternative words. Why it's important: The thesaurus feature helps users prepare well-written documents.

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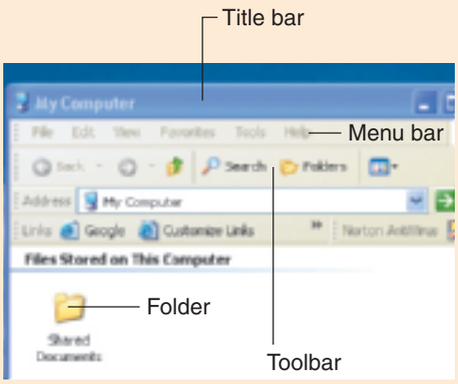

title bar (p. 109, KQ 3.2) Bar across the very top of the display window. Why it's important: It shows the name of the folder the user is in.

toolbar (p. 109, KQ 3.2) Bar across the top of the display window below the menu bar. It displays menus and icons representing frequently used options or commands. Why it's important: Toolbars make it easier to identify and execute commands.

tutorial (p. 101, KQ 3.1) Instruction book or program that helps users learn to use the product by taking them through a prescribed series of steps. Why it's important: Tutorials enable users to practice using new software in a graduated fashion and learn the software in an effective manner.

user interface (p. 103, KQ 3.2) Display screen that allows users to communicate, or interact, with the computer. The three types of user interface are command-driven, menu-driven, and graphical (GUI), which is now most common. Why it's important: Without user interfaces, no one could operate a computer system.

value (p. 119, KQ 3.4) A number or date entered in a spreadsheet cell. Why it's important: Values are the actual numbers used in the spreadsheet—dollars, percentages, grade points, temperatures, or whatever.

what-if analysis (p. 119, KQ 3.4) Spreadsheet feature that employs the recalculation feature to investigate how changing one or more numbers changes the outcome of the calculation. Why it's important: Users can create a worksheet, putting in formulas and numbers, and then ask, "What would happen if we change that detail?"—and immediately see the effect.

window (p. 110, KQ 3.2) Rectangular frame on the computer display screen. Through this frame users can view a file of data—such as a document, spreadsheet, or database—or an application program. Why it's important: Using windows, users can display at the same time portions of several documents and/or programs on the screen.

wizard (p. 115, KQ 3.3) Word processing software feature that answers your questions and uses the answers to lay out and format a document or perform other actions. Why it's important: Wizards make it easy to prepare professional-looking memos, faxes, résumés, and other documents.

word processing software (p. 111, KQ 3.3) Application software that allows users to use computers to format, create, edit, print, and store text material, among other things. Why it's important: Word processing software allows users to maneuver through a document and delete, insert, and replace text, the principal correction activities. It also offers such additional features as creating, editing, formatting, printing, and saving.

word wrap (p. 112, KQ 3.3) Special feature that automatically continues text to the next line by "wrapping around" when the user reaches the right margin. Why it's important: You don't have to hit a "carriage-return" key or Enter key to move to the next line.

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Chapter Review

stage 1 LEARNING MEMORIZATION

"I can recognize and recall information."

Self-Test Questions

1. _____ is the term for programs designed to perform specific tasks for the user.
2. _____ software allows you to create and edit documents.
3. _____ is the activity of moving upward or downward through the text or other screen display.
4. Name four editing features offered by word processing programs: _____, _____, _____, _____.
5. In a spreadsheet, the place where a row and a column intersect is called a _____.
6. A(n) _____ is a keyboard shortcut used to automatically issue a longer, predetermined series of keystrokes or commands.
7. The _____ is the movable symbol on the display screen that shows you where you may next enter data or commands.
8. When you buy software, you pay for a _____, a contract by which you agree not to make copies of the software to give away or resell.
9. Records in a database are sorted according to a _____.
10. _____ involves mixing text and graphics to produce high-quality output for commercial printing.
11. A _____ allows users to create tables and financial schedules by entering data and formulas into rows and columns arranged as a grid on a display screen.
12. _____ automatically continues text to the next line when you reach the right margin.
13. Settings that are automatically used by a program unless the user specifies otherwise are called _____.

Multiple-Choice Questions

1. Which of the following is *not* an advantage of using database software?
   a. integrated data
   b. improved data integrity
   c. lack of structure
   d. elimination of data redundancy
2. Which of the following is (are) *not* a type of menu?
   a. cascading menu
   b. pop-in menu
   c. pop-out menu
   d. pull-down menu
   e. pull-out menu
3. Which of the following is *not* a feature of word processing software?
   a. spelling checker
   b. cell address
   c. formatting
   d. cut and paste
   e. find and replace
4. What is the common consumer computer interface used today?
   a. command-driven interface
   b. graphical user interface
   c. menu-driven interface
   d. electronic user interface
   e. biometric user interface
5. Which type of software can you download and duplicate without any restrictions whatsoever and without fear of legal prosecution?
   a. commercial software
   b. shareware
   c. public-domain software
   d. pirated software
   e. rentalware

True/False Questions

T F 1. Spreadsheet software enables you to perform what-if calculations.

T F 2. *Font* refers to a preformatted document that provides basic tools for shaping the final document.

T F 3. Rentalware is software that users lease for a fee.

T F 4. Public-domain software is protected by copyright and so is offered for sale by license only.

T F 5. The records within the various tables in a database are linked by a key field.

T F 6. QuarkXPress, Adobe InDesign, and Adobe PageMaker are professional desktop-publishing programs.

T F 7. The best-known graphical user interface is the command-driven one.

T F 8. Microsoft PowerPoint, Corel Presentations, and Innovus Multimedia Presentations are examples of financial software.

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stage 2 LEARNING COMPREHENSION

"I can recall information in my own terms and explain them to a friend."

Short-Answer Questions

1. What is the difference between a command-driven interface and a graphical user interface (GUI)?
2. What are the following types of application software used for?
   a. project management software
   b. desktop-publishing software
   c. database software
   d. spreadsheet software
   e. word processing software
3. Which program is more sophisticated, analytical graphics or presentation graphics? Why?
4. How are the following different? Pop-up menu; pull-down menu; cascading menu.
5. What is importing? Exporting?
6. Briefly compare drawing programs and painting programs.
7. Explain what computer-aided design (CAD) programs do.
8. Discuss the various software licenses: site licenses, concurrent-use licenses, multiple-user licenses, single-user license.

stage 3 LEARNING APPLYING, ANALYZING, SYNTHESIZING, EVALUATING

"I can apply what I've learned, relate these ideas to other concepts, build on other knowledge, and use all these thinking skills to form a judgment."

Knowledge in Action

1. If you were in the market for a new microcomputer today, what application software would you want to use on it? Why?
2. Several websites include libraries of shareware programs. Visit the *www.download.cnet.com* site, click on the Windows shareware icon, and identify three shareware programs that interest you. State the name of each program, the operating system it runs on, and its capabilities. Also, describe the contribution you must make to receive technical support.
3. What is your opinion of downloading free music from the web to play on your own PC and/or CDs? Much attention has been given lately to music downloading and copyright infringement. Research this topic in library magazines and newspapers or on the internet, and take a position in a short report.
4. How do you think you could use desktop publishing at home? For personal items? Family occasions? Holidays? What else? What hardware and software would you have to buy?
5. Think of three new ways that software companies could prevent people from pirating their software.
6. What is your favorite application software program of all? Why?

Web Exercises

1. Some people are fascinated by the error message commonly referred to as the "Blue Screen of Death" (or "Doom") (BSOD). If you run a search on the internet, you can find websites that sell T-shirts with the BSOD image on it, photo galleries of public terminals displaying the BSOD, fictional stories of BSOD attacks, and various other forms of entertainment based on the infamous error message.

   To prevent a BSOD attack, keep an eye on how your system is using resources:

   a. On Windows 9x: Right-click on the *My Computer* icon on the Windows desktop, click *Properties*, and then choose the *Performance* tab. Next to "system resources" you will see the amount of free resources available as a percentage. Try to keep that value above 18%. If your resources dip below that level, save all your work and reboot.
   b. You can also view this information from the System Information file by using the Start menu in this sequence: *Start, Programs, Accessories, System Tools, System Information.*
   c. You can also view your system resources constantly in the bottom right-hand corner of the screen, next to the clock. If you have Microsoft Plus! installed, you can use the program entitled "System Resource Meter." This is found by using the same sequence as finding the System Information file, but instead choose *System Resource Meter*, which displays the resource usage.
   d. On Windows 2000 or Windows XP, click *Ctrl+ Alt+ Del* and select the *Performance* tab.

   Do a search on the web to find users' hypotheses of why the BSOD occurs, and find more methods to avoid it. Following are some humorous BSOD sites:

   http://zem.squidly.org/bsod/
   www.bbspot.com/News/2002/10/bsod_ads.html
   http://bsod.org
   http://pla-netx.com/linebackn/news/bsod.html

   And a site that explains some of the BSOD errors:

   www.ntbrad.com/bsod.htm

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2. Many productivity programs designed after 1997 have features built into them for converting files into web pages. If you have Microsoft Word 97 or later, or Microsoft PowerPoint 97 or later, try saving a document as a website. Under the File menu, select *Save As HTML* or *Save As Webpage* and then view the file in your web browser. What possibilities does this open up for you?
3. Using Microsoft Excel or another spreadsheet program, make a food shopping list incorporating the estimated price for each item and any coupon discounts you have, and then have Excel calculate the overall cost. Then go buy your groceries and compare Excel's price with the supermarket's price. Use page 118 to help you set up calculations. What else could Excel help you with?

   If you have Excel software, you can find Excel tutorials at:

   www. customguide.com/excel2000.htm
   www.usd.edu/trio/tut/excel
4. Is it more economical to purchase an entire office suite or just the stand-alone programs that you need? Search online for different versions of Microsoft Office and compare the price of the entire suite with what it would cost to purchase each program separately. Then compare the prices of the different suite versions: Small Business, Premium, Professional, Standard, Developer. Which bundled offer is the best purchase for you? Why? Do you need all the software that comes bundled?

   Visit this site about Office XP to examine the pricing of upgrades:

   www.microsoft.com/office/howtobuy/pricing.htm

   Can you afford to keep up with the latest software? What benefits does the Office XP upgrade offer? Do you feel it is worth the cost? Are the new features valuable to you?

SECURITY ethics

5. Security/Ethics: Visit the websites below, which discuss the Total Information Awareness (TIA) project that DARPA has developed to be a super database designed to catch terrorists. What does DARPA stand for? What do you think of this project?

   www.epic.org/privacy/profiling/tia/
   www.darpa.mil/iao/TIASystems.htm
   www.defenselink.mil/news/Feb2003/n02072003_200302074.html
6. What-If Analysis: Visit these websites to see what sorts of data are being collected using what-if analysis.

   www.db.ucsd.edu/Projects/Sesame/ResReview/sld001.htm
   www.kidasa.com/information/solutions/whatifanalysis/
   www.processdriven.org/what-if_analysis.html
   www.accountingontheweb.com/default.asp?OP=demB
7. The Windows operating system comes with a basic word processing program called *Wordpad.* Go to the Microsoft home page and find out how Wordpad differs from Microsoft Word. Then use a keyword search in a search engine to get more information about these programs. Which one is right for you?