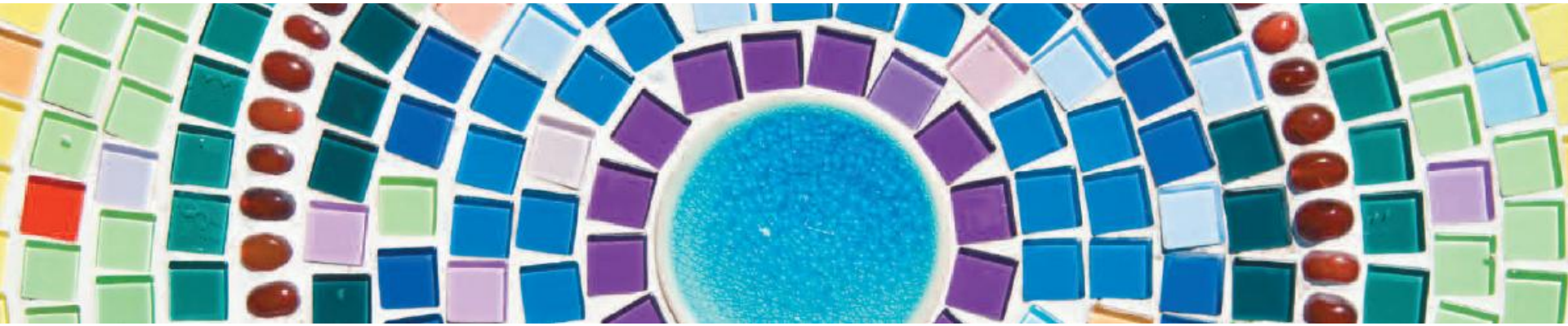
Chapter 3
Software

Computer Concepts 2014



3

Chapter Contents

- Section A: Software Basics
- Section B: Office Suites
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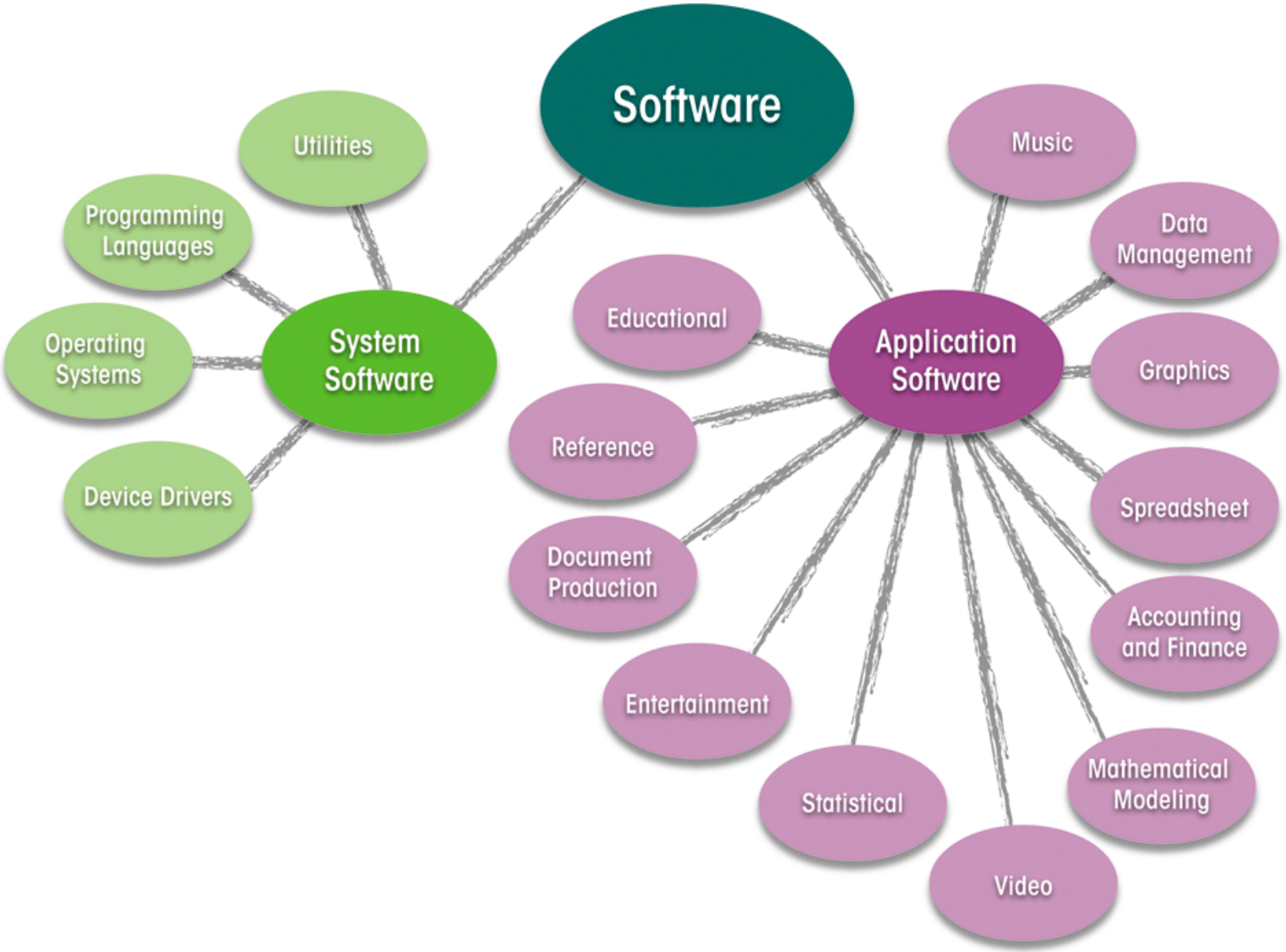
- Section E: Security Software

Section A: Software Basics

- Software Categories
- Music Software
- Video Software
- Graphics Software
- Mapping and Location-based Software

Section A: Software Basics

- Business and “Number Crunching” Software
- Desktop Publishing Software
- Personal Finance Software
- Utility Software
- Device Drivers


Software
System Software
Utilities
Programming Languages
Operating Systems
Device Drivers
Application Software
Music
Data Management
Graphics
Spreadsheet
Accounting and Finance
Mathematical Modeling
Video
Statistical
Entertainment
Document Production
Reference
Educational

Software Categories

- Software is categorized in two main categories:
  - System software
    - Designed for computer-centric tasks
  - Application software
    - Designed to help people accomplish real-world tasks

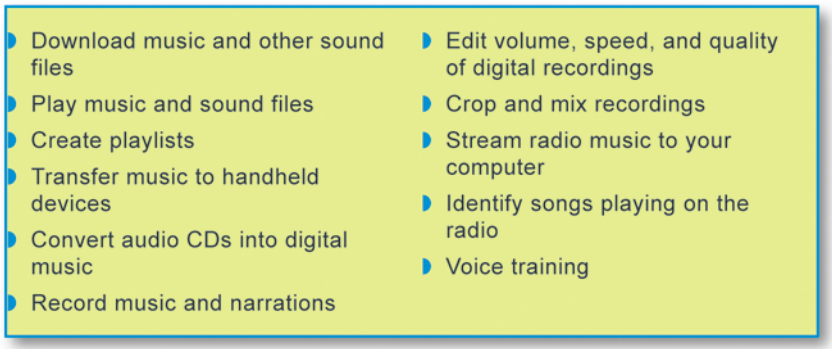


FIGURE 3-1

Music software may offer some, but not all, of these features. For example, some music software offers extensive playback features, but no way to make recordings. You might have to use more than one music software product to complete a project.

3 Music Software

- Offers many ways to work with music, sound effects, and narration from your desktop, laptop, or handheld computer
  - iTunes
  - Audio editing software

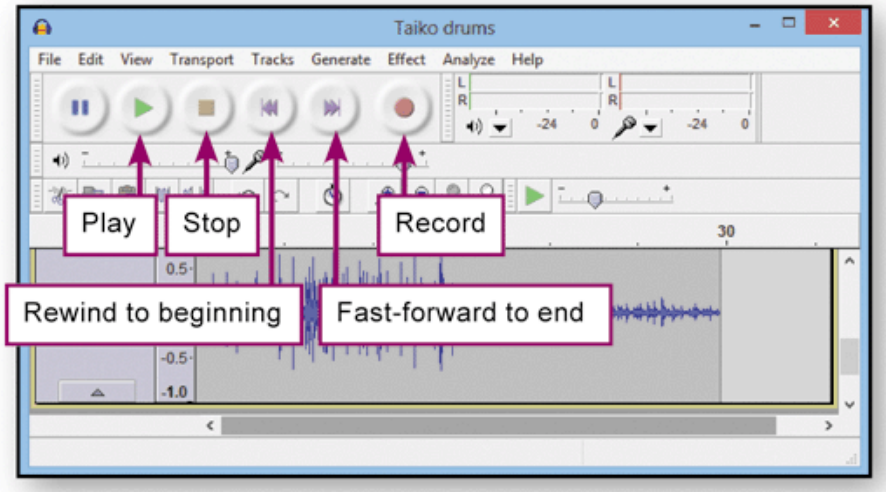


FIGURE 3-3

Audio editing software provides controls much like those on a DVD player. Menus offer additional digital editing features, such as speed control, volume adjustments, clipping, and mixing.

3 iTunes

Software © 2012 Apple Inc. All rights reserved

FIGURE 3-2

iTunes helps you collect digital music and arrange it into playlists; you can also use it to pull music from audio CDs and convert it into a format supported by your portable media player.

Video Software

- Provides a set of tools for creating video productions from raw footage
- Consumer-level video editing software
  - Windows Movie Maker
  - Apple iMovie
- DVD authoring software

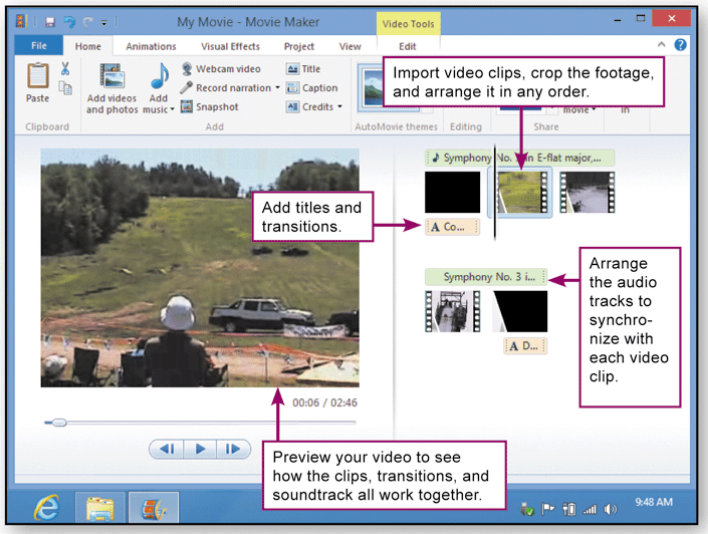


FIGURE 3-4
Video editing software helps you import a series of video clips from a camera or other video source, arrange the clips in the order of your choice, add transitions between clips, and add an audio track.

Graphics Software

- Designed to help you create, manipulate, and print graphics
  - Paint software
  - Photo editing software
  - Drawing software
  - 3-D graphics software
  - CAD software

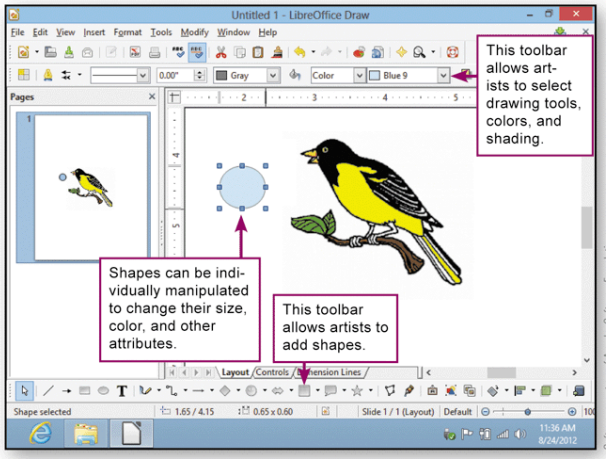


FIGURE 3-6
Drawing software provides tools for creating and manipulating graphics.

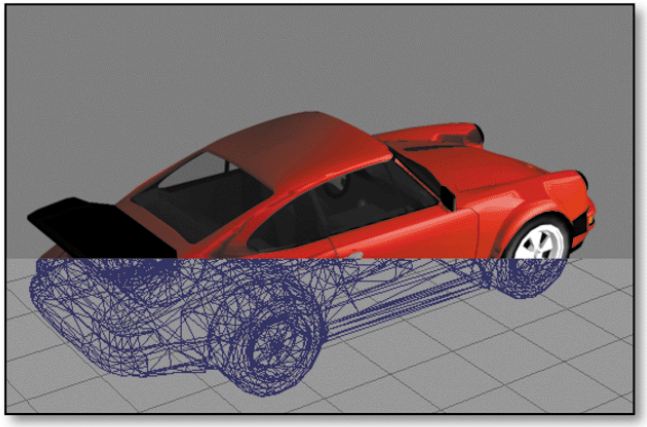
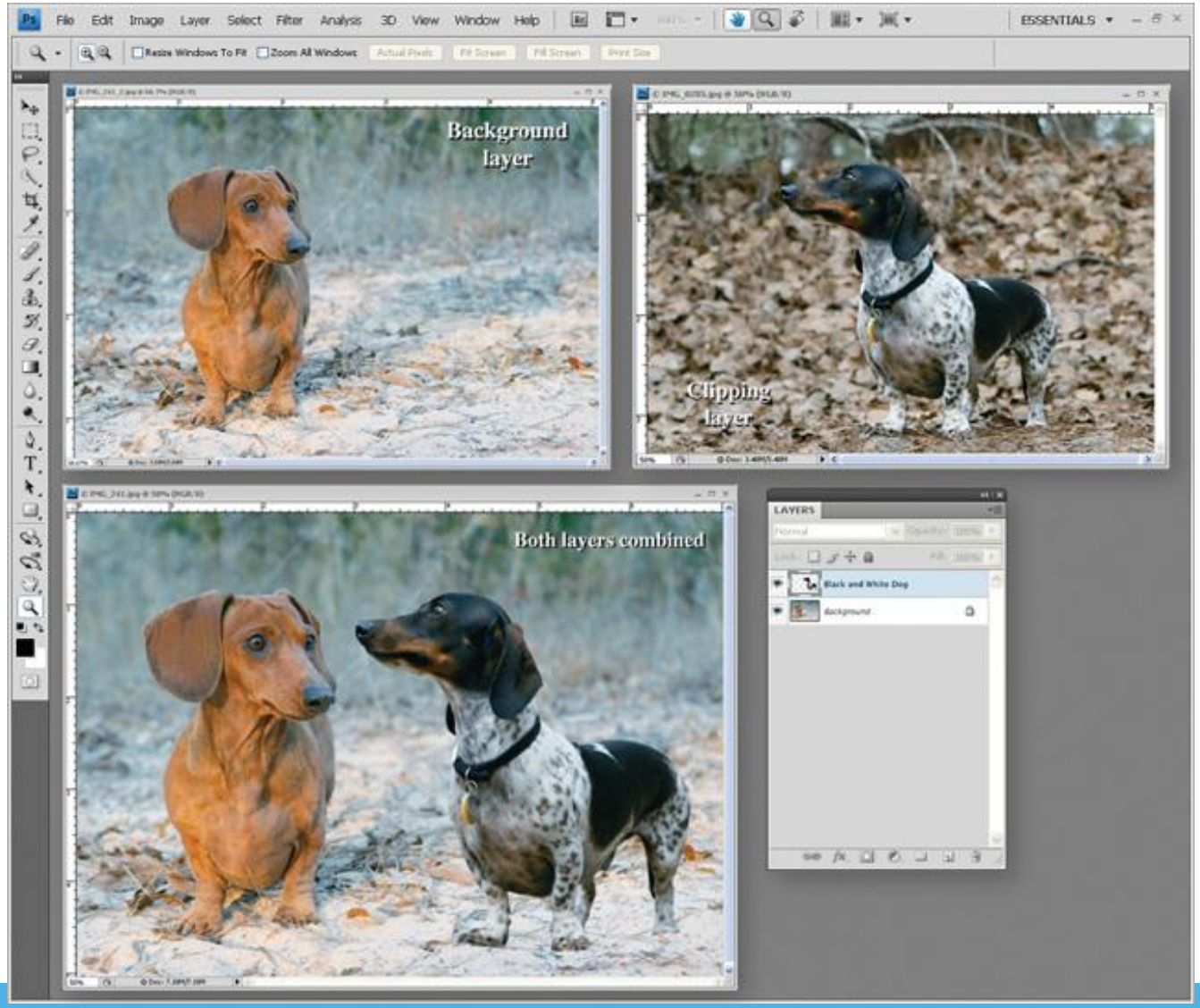


FIGURE 3-7
3-D graphics software provides tools for creating a wireframe that represents a 3-D object. Some 3-D software specializes in engineering-style graphics, while other 3-D software specializes in figures.

3 Digital Image Editing



3

CAD

3 Mapping and Location-Based Software

- A mapping application typically displays satellite, aerial, or street maps used to locate places and get directions between two addresses
  - Google Maps
- Location-based software is able to access your current location and use it to show you the closest shops, restaurants, and theaters, as well as information about each location
  - Stay alert for devices and software applications that track your location

3 Mapping and Location-Based Software

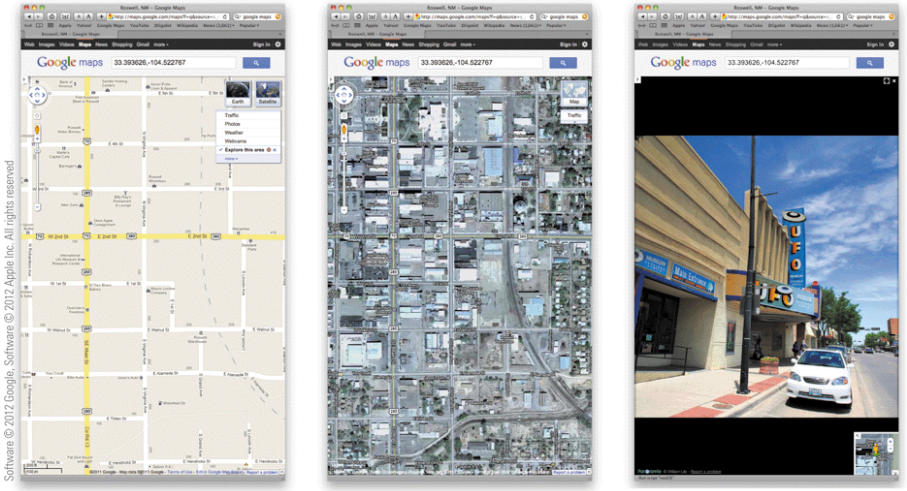


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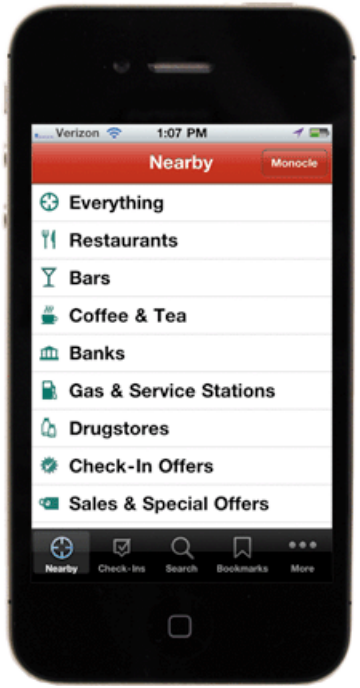
FIGURE 3-9

With Google Maps, you can view a street map, satellite image, or street view.

FIGURE 3-10

Yelp uses the GPS signal built into your mobile phone to pinpoint your position and offer suggestions for nearby restaurants, banks, museums, and other attractions.



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3 Business and "Number Crunching" Software

- Vertical market software is designed to automate specialized tasks in a specific market or business
- Horizontal market software is generic software that just about any kind of business can use
  - Payroll software
  - Accounting software
  - Project management software

3 Business and "Number Crunching" Software

- Businesses use a variety of "number crunching" software applications for planning and analysis
  - Statistical software
  - Mathematical modeling software

FIGURE 3-11

Mathematical modeling software helps you visualize complex formulas. Here the points from a sphere are graphed onto a plane to demonstrate the principles behind the Astronomical Clock of Prague.

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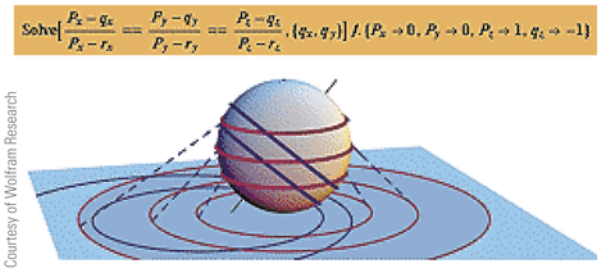

Courtesy of Wolfram Research

Desktop Publishing Software

Desktop publishing software (DTP software)

- Takes word processing to the next level
- Professional tools for producing typeset-quality documents
  - DTP software is available in consumer-level and professional-level versions
- DTP software allows you to create a page using multiple frames:
  - Frames for text,
  - Frames for titles,
  - Frames for graphics,
  - and Frames for tables, etc
- Today's word processing software typically provides an adequate feature set for the document production needs of most individuals

3 Desktop Publishing Software

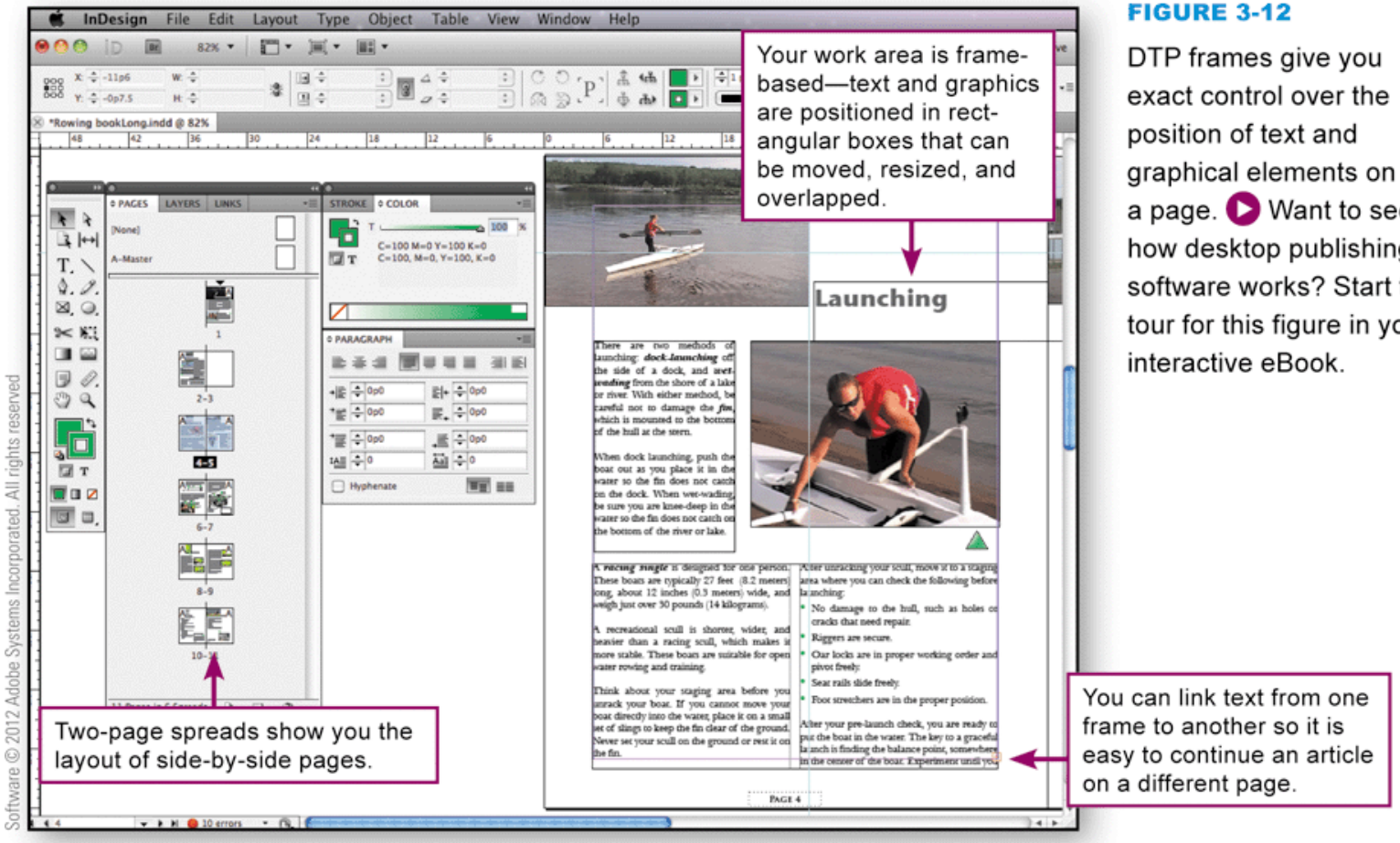

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FIGURE 3-12

DTP frames give you exact control over the position of text and graphical elements on a page. Want to see how desktop publishing software works? Start the tour for this figure in your interactive eBook.

3 Personal Finance Software

Money management software

- for tracking cash flow and investments

Personal finance software; eg. Intuit Quicken

- keep track of income, expenses, assets, and liabilities using a simple checkbook-like user interface

Tax preparation software

- specialized type of personal finance software designed to help you gather your annual income and expense data, identify deductions, and calculate tax payments

Personal Finance Software

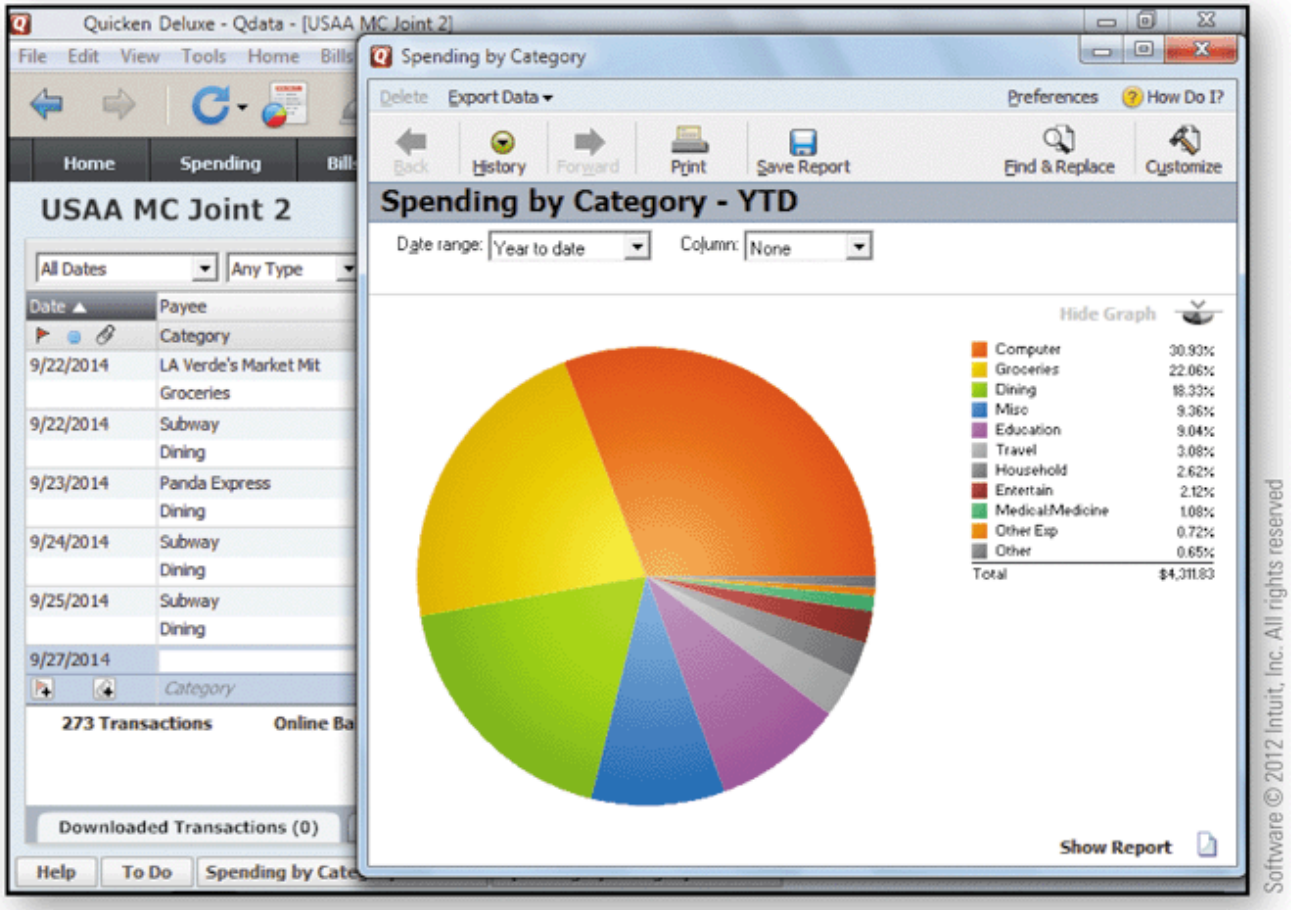

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FIGURE 3-13

Personal finance software offers lots of tools to help you get a handle on the money that comes in and goes out.

Utility Software

- Utility software is designed to help you monitor and configure settings for your digital gear, its operating system, or application software
- Third-party software companies offer additional products that extend and improve upon those supplied by the operating system
- A PDF reader, such as Adobe Reader, is an essential utility that displays documents stored in standard PDF files

Utility Software

Adaptive utilities alter a device's user interface to create an accessible environment

- providing closed captions,
- text-to-speech,
- speech-to-text,
- large screen text

Utility Software

System utilities

- track down and fix disk errors,
- repair corrupted files,
- give your device a performance-enhancing tune-up

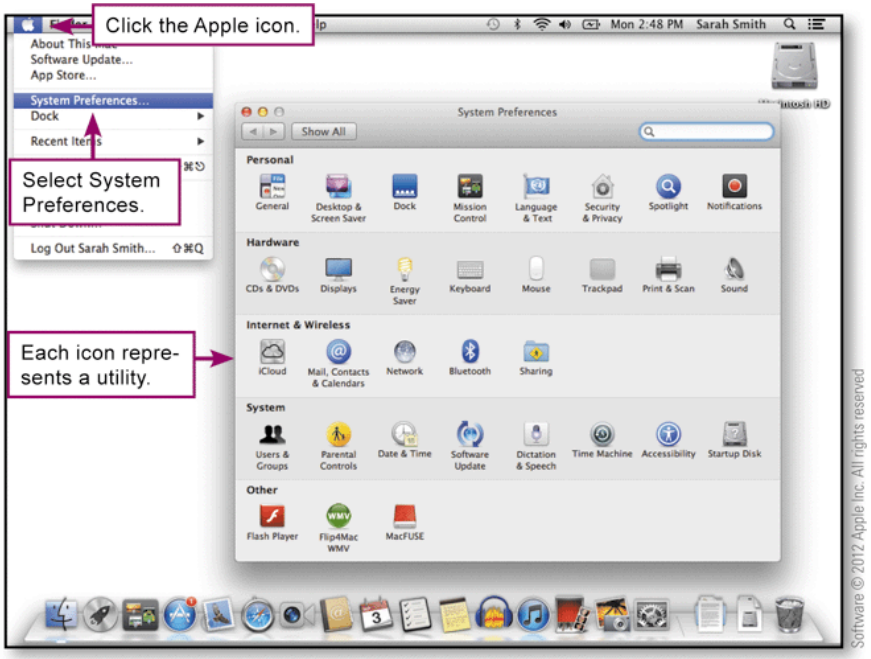


FIGURE 3-14

Mac utilities are listed in the System Preferences window.

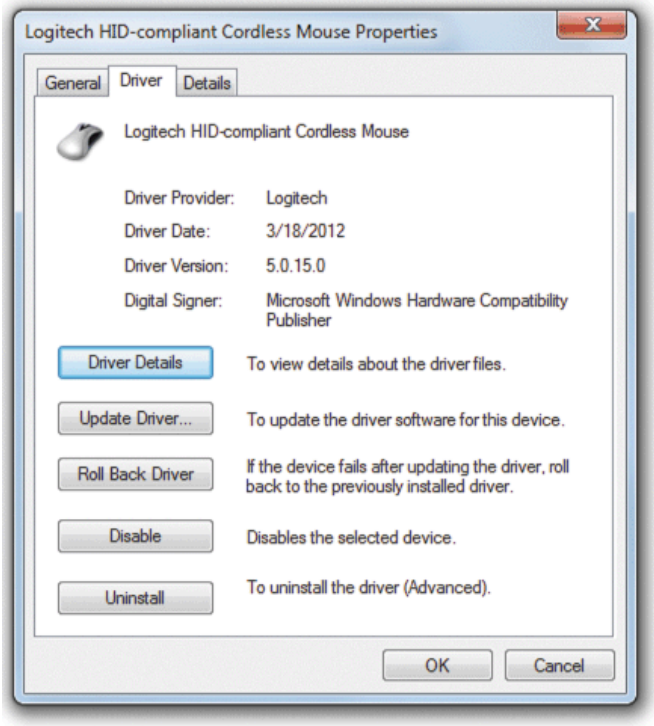
Device Drivers

- A **device driver** is software that helps a peripheral device establish communication with a computer
- On a Mac, you can click the Apple icon, select About this Mac, and then select More info to look at a list of devices connected to your computer
- On a PC, if you need to update a device driver or change its settings, you can usually view driver information by accessing the Control Panel and selecting System (or System and Security)

Device Drivers

FIGURE 3-18

The Windows Device Manager offers access to device drivers. You can check if they are working and change settings. You can also check the device driver's version number and compare it with the most recent version posted online.



Section B: Office Suites

- Office Suite Basics
- Word Processing
- Spreadsheets
- Databases
- Presentations

3 Office Suite Basics

An **office suite** is a collection of programs

- typically includes word processing, spreadsheet, presentation, and database modules

FIGURE 3-19

Popular office suites contain a similar set of modules.

Name	Modules	Platform
Google Docs	Word processing, spreadsheet, presentation	Online (Free)
iWork	Word processing, spreadsheet, presentation	Mac ($$)
LibreOffice	Word processing, spreadsheet, presentation, database, drawing	Windows, Mac, Linux (Free)
Microsoft Office	Word processing, spreadsheet, presentation, database, mail/calendar	Windows, Mac, Linux ($$)
Microsoft Office 365	Word processing, spreadsheet, presentation	Online (Free)
Zoho Office Suite	Word processing, spreadsheet, presentation, calendar, and more	Online (Free)

1 3 2

Word Processing

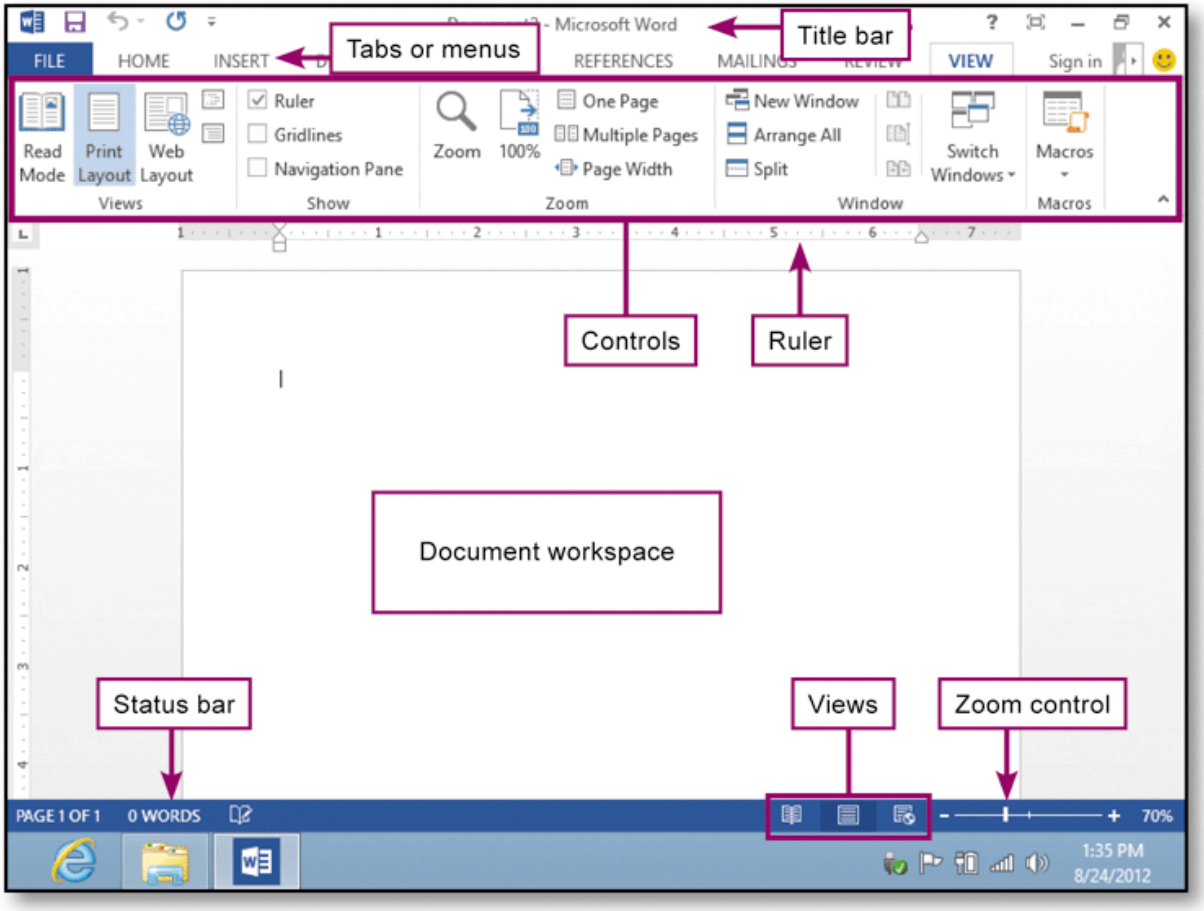
- Word processing software has replaced typewriters for producing: reports, letters, memos, papers, and book manuscripts, etc

- A typical word processor window displays a work area, called a workspace, that represents a blank piece of paper

Word Processing

FIGURE 3-20

No matter which word processor you use, it includes elements similar to those shown in this Microsoft Word example.



Word Processing

- Word processing features include:
  - Word wrap
  - Search and Replace
  - Thesaurus
  - Grammar checker
  - Readability formula
  - Spelling checker
  - Spelling dictionary

Word Processing

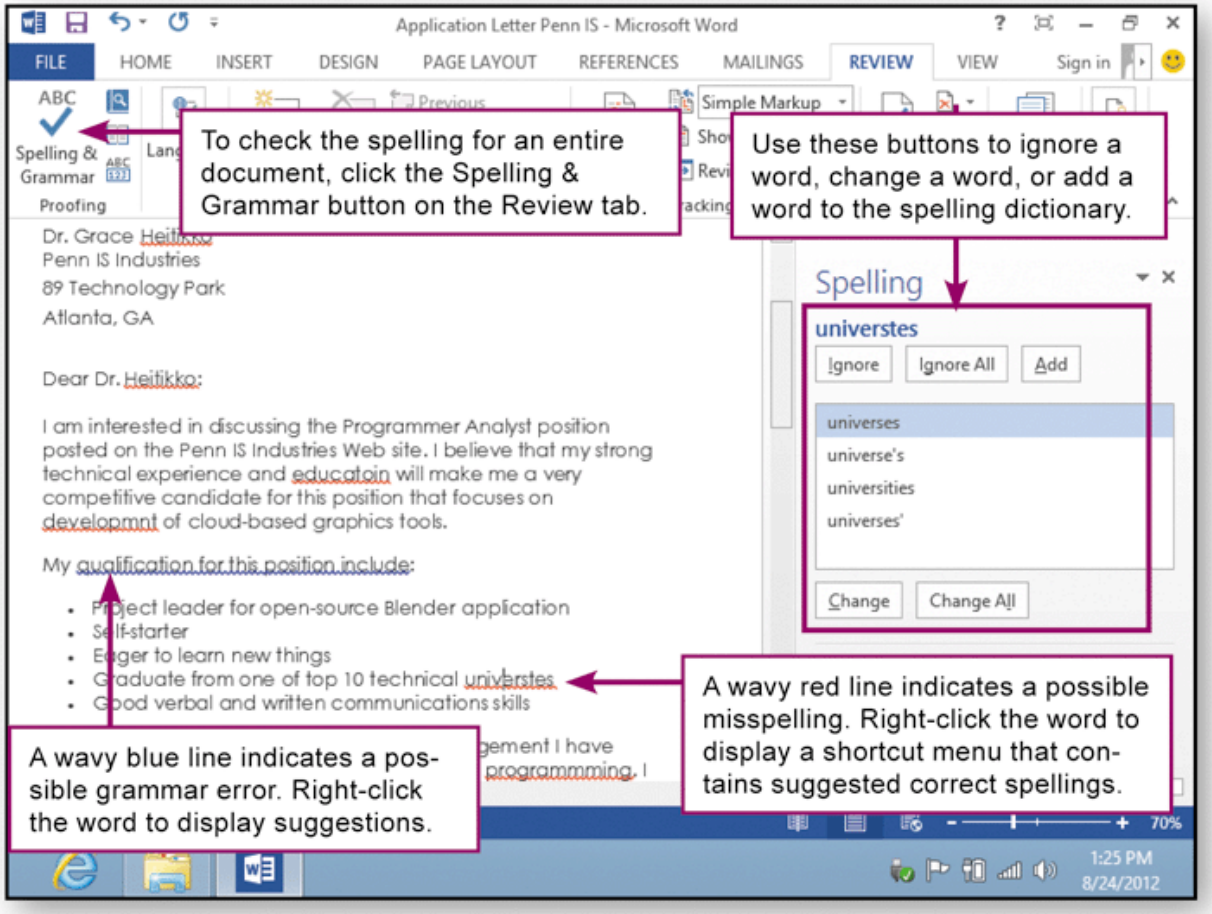


FIGURE 3-21

Word processing software can check your spelling and grammar. Refer to your interactive eBook for an overview of using your word processor's thesaurus, spelling checker, grammar checker, and readability statistics.

Word Processing

- The final format of your document depends on several formatting factors, such as page layout, paragraph style, and font
  - Page layout refers to the physical position of each element on a page
  - Paragraph style includes the alignment of text within the margins and the space between each line of text
  - A font is a set of letters that share a unified design

Word Processing

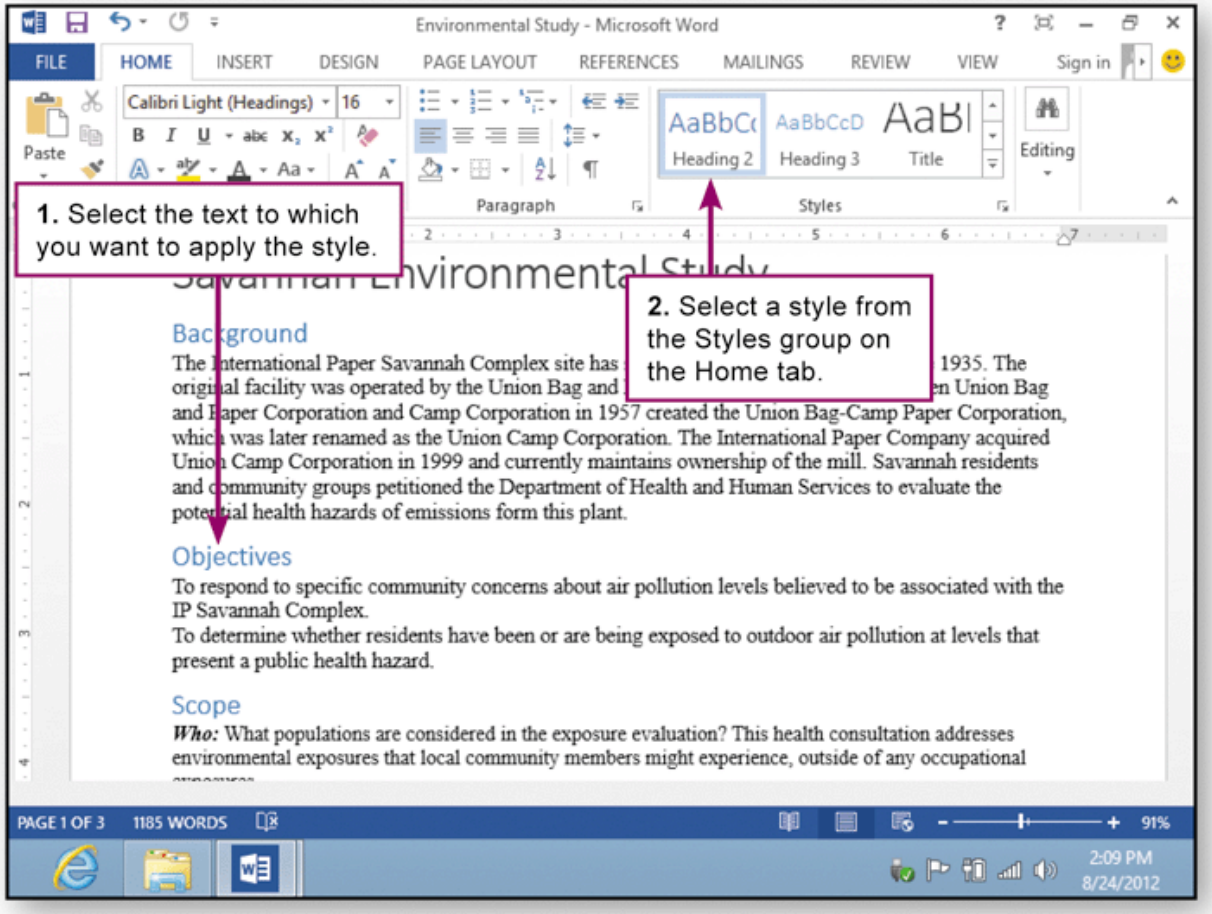


FIGURE 3-23

In this document, headings were formatted by selecting a style with a single click instead of individually selecting a font color, font size, and font style. Now if the Heading style is changed to green, for example, all the headings will automatically change from black to green. Your interactive eBook walks you through the process of defining and using styles.

3 Spreadsheets

- A spreadsheet uses rows and columns of numbers to create a model or representation of a real solution
- Spreadsheet software, such as Microsoft Excel, iWork Numbers, Google Docs Spreadsheets, or LibreOffice Calc, provides tools to create electronic spreadsheets

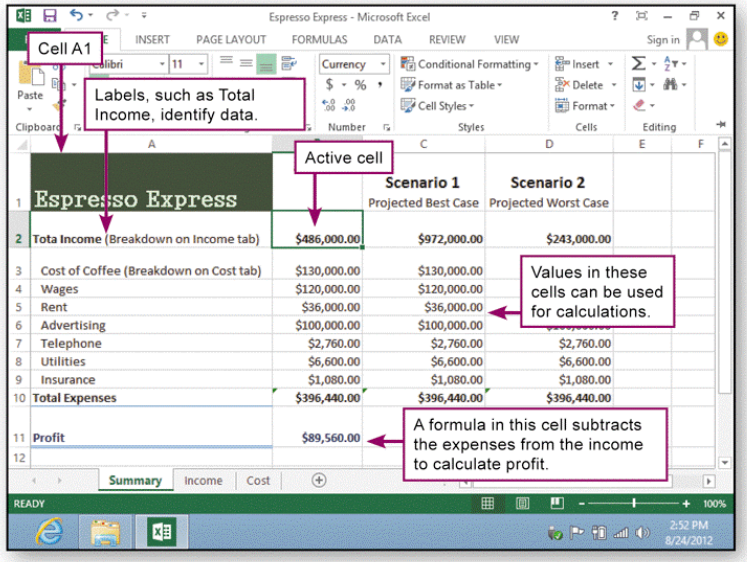


FIGURE 3-24

In a worksheet, each column is lettered and each row is numbered. The intersection of a column and a row is called a cell. Each cell has a unique cell reference, or address, derived from its column and row location. For example, A1 is the cell reference for the upper-left cell in a worksheet because it is in column A and row 1. You can designate the active cell by clicking it. Once a cell is active, you can enter data into it.

Click for an overview of spreadsheet software.

3 Spreadsheets

- A formula tells the computer how to use the contents of cells in calculations
  - Cell references
    - Relative reference
    - Absolute reference
  - Mathematical operators
  - Functions
  - Automatic recalculations

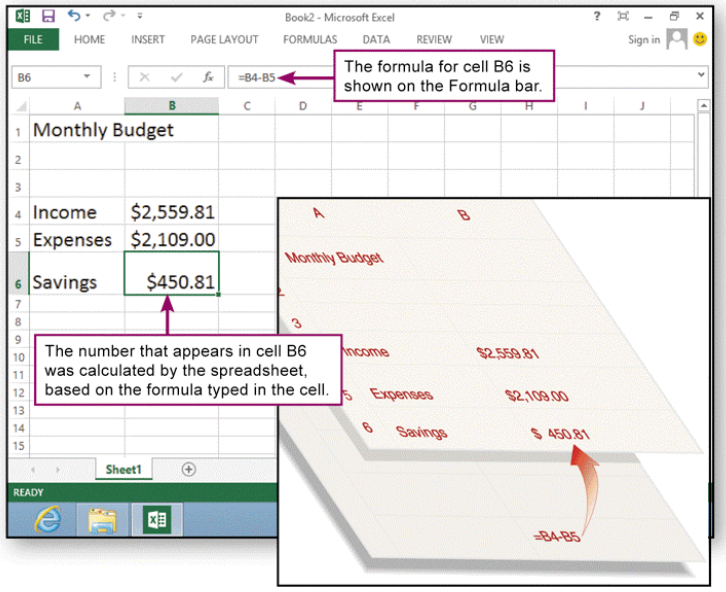
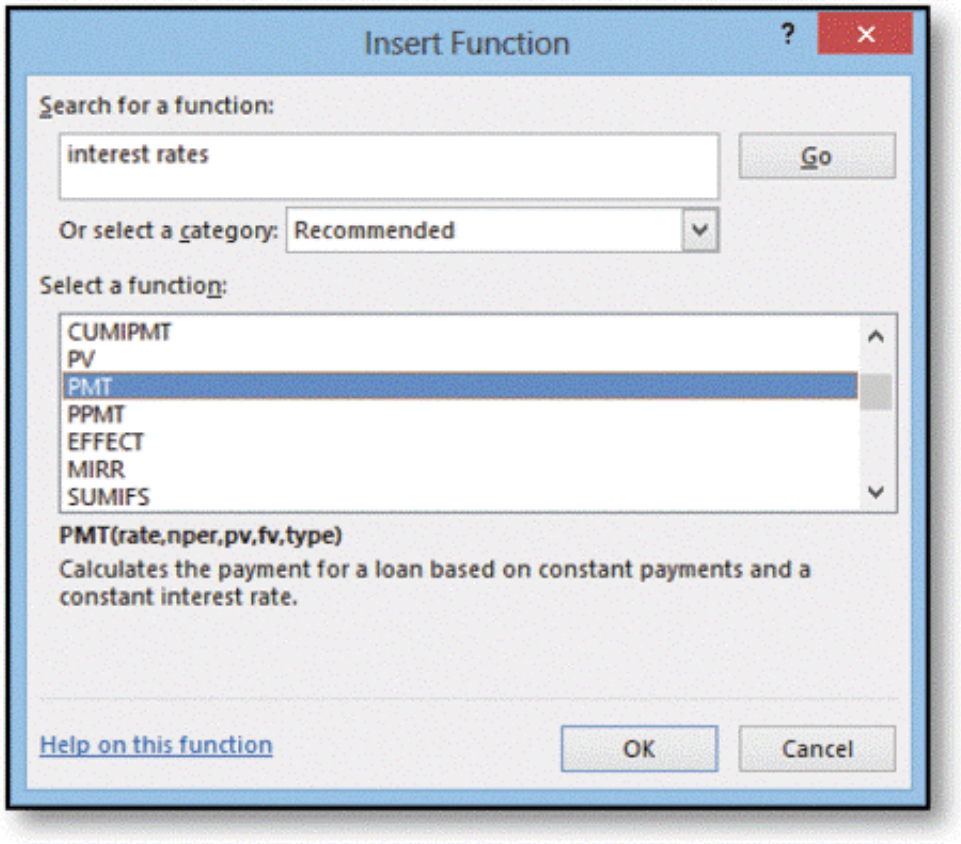


FIGURE 3-25
When a cell contains a formula, it displays the result of the formula rather than the formula itself. To view and edit the formula, you use the Formula bar. You can think of the formula as working behind the scenes to perform calculations and then to display the result.
Why is it important to use a formula such as =B4-B5 instead of a formula with the actual numbers? To find out, start the tour for this figure in your interactive eBook.

Spreadsheets

FIGURE 3-26

Functions are special formulas provided by spreadsheet software.



Spreadsheets

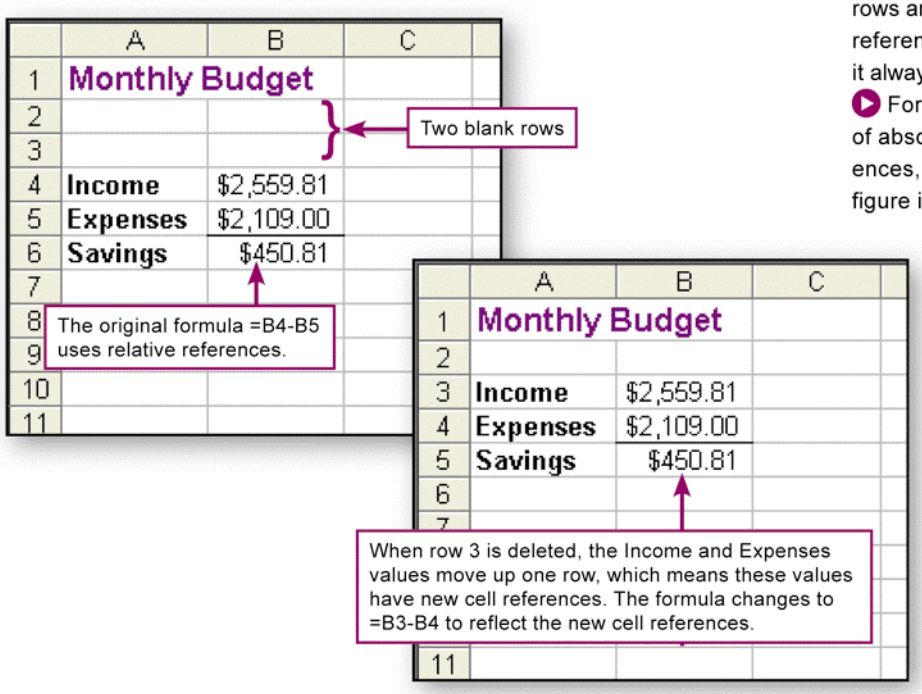
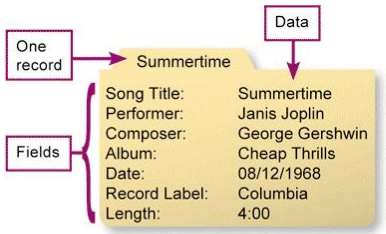


FIGURE 3-27

As shown in the examples, a relative reference within a formula can change when you change the sequence of a worksheet's rows and columns. An absolute reference is anchored so that it always refers to a specific cell. For some dynamic examples of absolute and relative references, watch the tour for this figure in your digital textbook.

Databases

- A database is a collection of data
  - Database software helps you enter, find, organize, update, and report information stored in a database



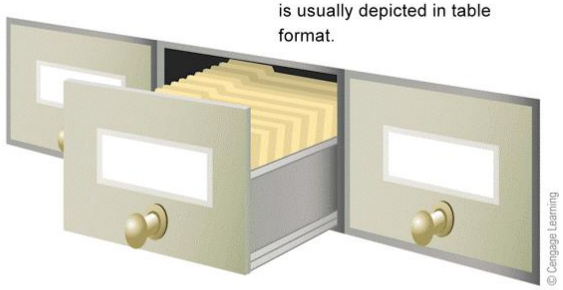


FIGURE 3-28
A single database record is similar to a Rolodex card or an index card. A series of records is usually depicted in table format.

A series of records in table format

Song Title	Performer	Composer	Album	Date	Label	Length
Take It Back	Norah Jones	Jones	Little Broken Hearts	05/01/2012	Blue Note	4:05
Even Though	Norah Jones	Jones and Harris	The Fall	11/17/2009	Blue Note	3:52
Summertime	Janis Joplin	Gershwin	Cheap Thrills	08/12/1968	Columbia	4:00
Summertime	Sarah Vaughan	Gershwin	Compact Jazz	06/22/1987	PolyGram	4:34

Databases

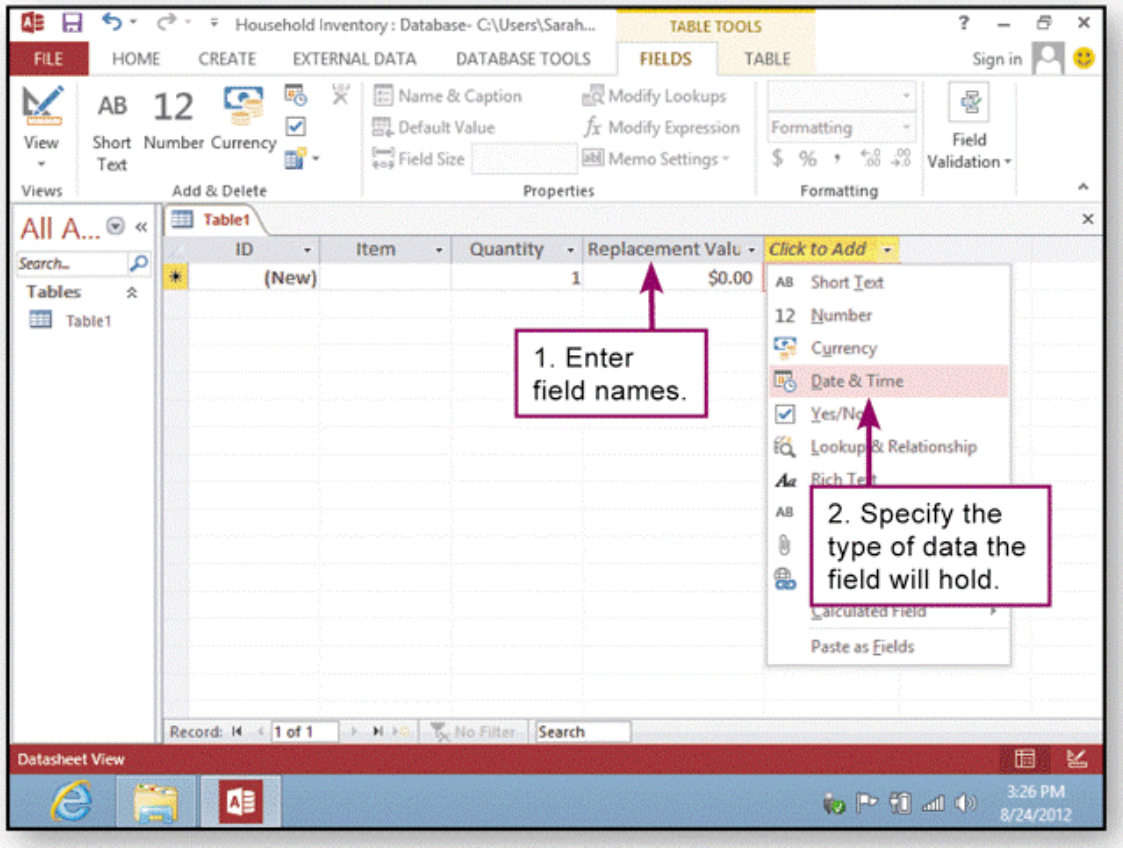


FIGURE 3-30

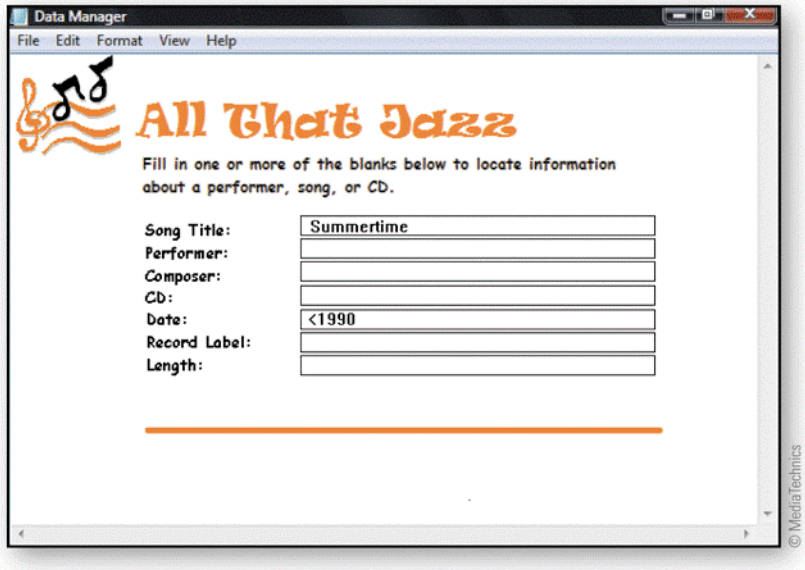
Database software provides tools for specifying fields for a series of records. Your interactive eBook shows you how to use database software to create a handy household database.

Databases

- A query language such as SQL (Structured Query Language) provides a set of commands for locating and manipulating data
  - Natural language query
  - Keyword search
  - Query by example

FIGURE 3-31

When you query by example, your database software displays a blank form on the screen, and you enter examples of the data that you want to find.



Presentations

Presentation software supplies the tools for combining

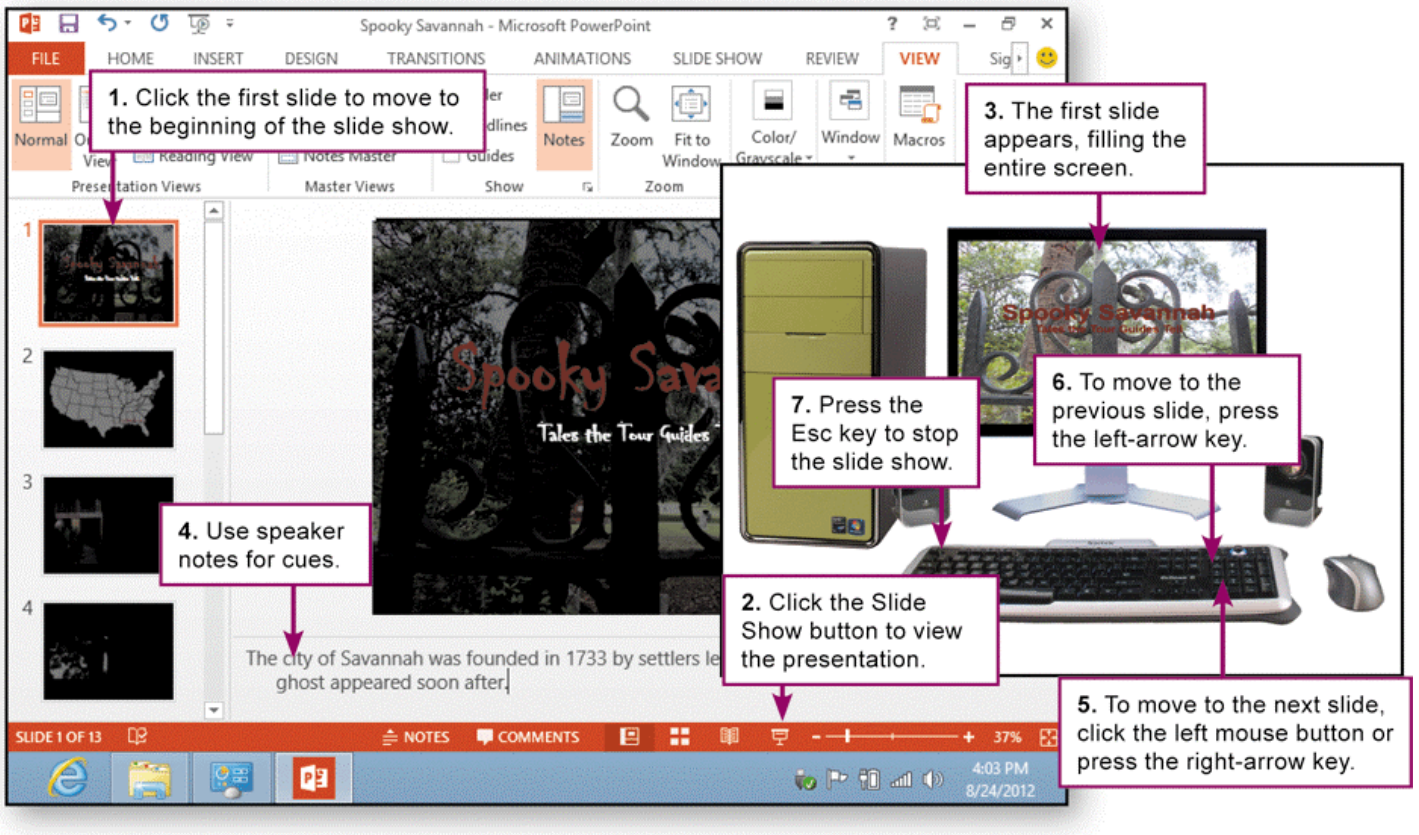
- text,
- photos,
- clip art,
- graphs,
- animations,
- sound

into a series of electronic slides that can be shown on a computer screen or projector

Presentations

FIGURE 3-32

A computer-based presentation consists of a series of slides created with presentation software. Click to find out how to use presentation software.



3 Section C: Installing Software and Upgrades

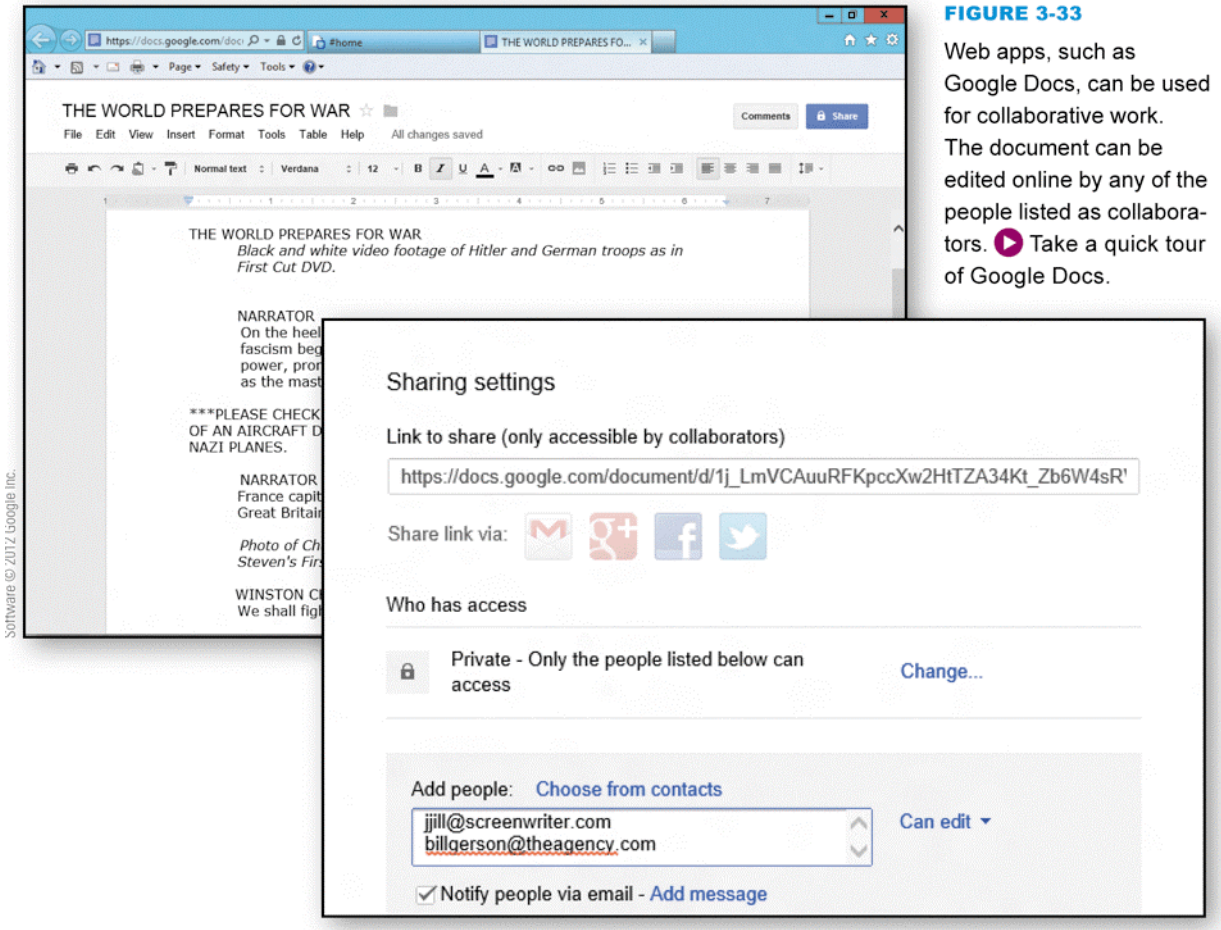
- Web Apps
- Mobile Apps
- Local Applications
- Portable Software
- Software Upgrades and Updates
- Uninstalling Software

Web Apps

- Software installation is a process that places a program into a computer so that it can be run or executed
  - Installed locally

- A Web application, or Web App, is software that is accessed with a Web browser
  - Example of cloud computing
  - Many are associated with consumer sites
  - Most require no installation at all on your local computer or handheld device

Web Apps



Software © 2017 Google Inc.

FIGURE 3-33

Web apps, such as Google Docs, can be used for collaborative work. The document can be edited online by any of the people listed as collaborators. Take a quick tour of Google Docs.

Mobile Apps

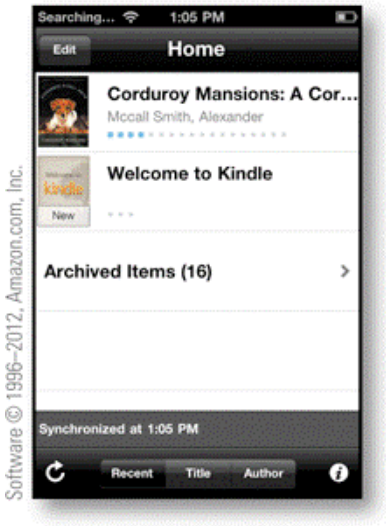
- A mobile app is designed for a handheld device, such as a smartphone, tablet computer, or enhanced media player
- Most handheld devices can use both Web apps and mobile apps
- Mobile apps can be purchased from an app store
  - Apple App Store
  - Android Market
  - Aside: http://p1xl.com/
- Apps are available from other sources, but using them requires an unauthorized change to the device's software called a *jailbreak*

Aside*:* http://en.wikipedia.org/wiki/George_Hotz

Mobile Apps

FIGURE 3-34

Mobile apps range from simple utilities that turn the device into a flashlight, to more sophisticated apps for entertainment and learning.



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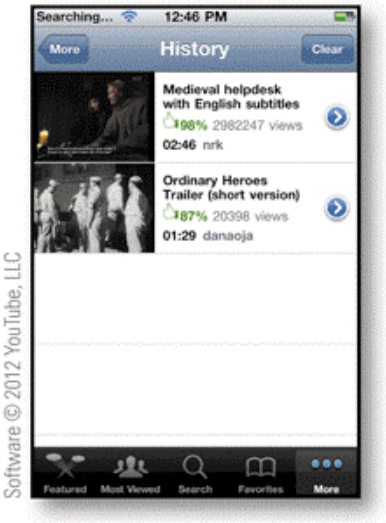

Software © 2012 YouTube, LLC

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Local Applications

- Most local applications contain a *setup program* that guides you through the installation process
  - Accept the user agreement
  - Choose where to install the software
  - Choose installation options – complete or custom

- At least one of the files included in a software package is an *executable file* designed to be started by users or automatically launched by the operating system

Local Applications

FIGURE 3-37

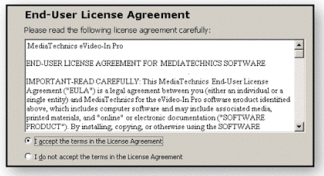
If a Mac download doesn't automatically install, you can manually drag the program icon to the Applications folder. Use your interactive eBook to see how it works.

Local Applications

FIGURE 3-40
Installing from Distribution Media

1 Insert the first distribution CD or DVD. The setup program should start automatically. If it does not, look for a file called *Setup.exe* and then run it.

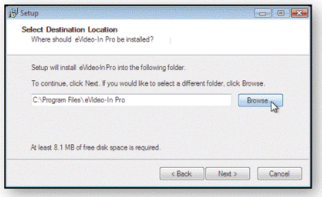
2 Read the license agreement, if one is presented on the screen. By agreeing to the terms of the license, you can proceed with the installation.



3 Select the installation option that best meets your needs. If you select a full installation, the setup program copies all files and data from the distribution medium to the hard disk of your computer system. A full installation gives you access to all features of the software.

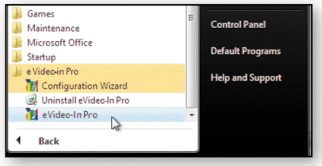
If you select a custom installation, the setup program displays a list of software features for your selection. After you select the features you want, the setup program copies only the selected program and data files to your hard disk. A custom installation can save space on your hard disk.

4 Follow the prompts provided by the setup program to specify a folder to hold the new software program. You can use the default folder specified by the setup program or a folder of your own choosing. You can also create a new folder during the setup process.



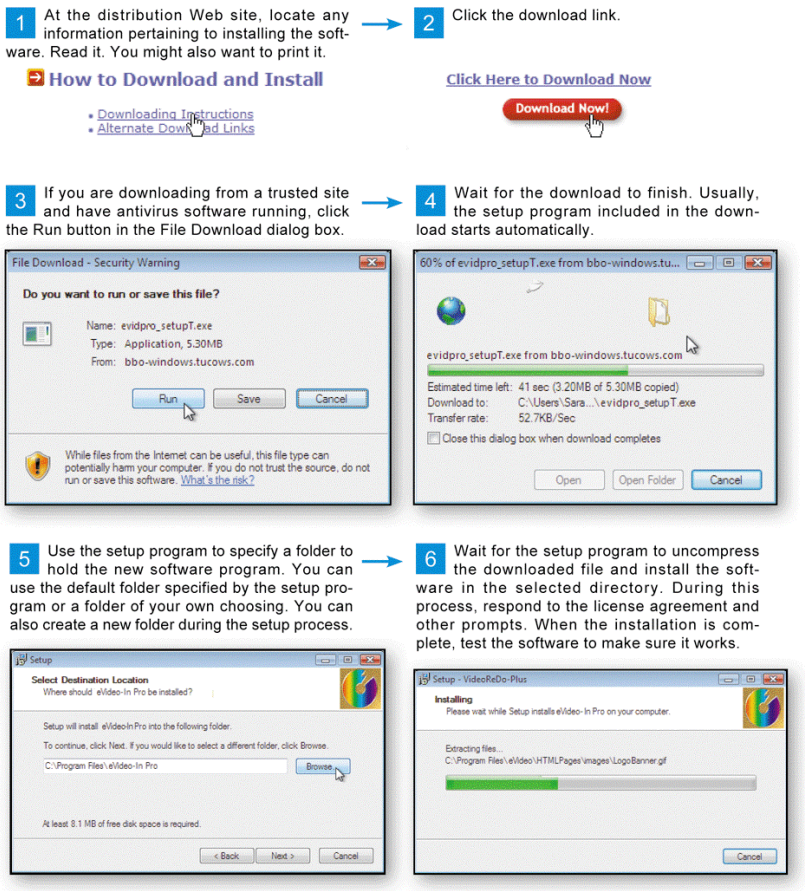
5 If the software includes multiple distribution CDs, insert each one in the specified drive when the setup program prompts you to do so.

6 When the setup is complete, start the program you just installed to make sure it works.



Local Applications

FIGURE 3-41
Installing Downloaded Software



Portable Software

- Portable software is designed to run from removable storage, such as a CD or USB flash drive
  - Installation is simply a matter of getting program files to the media on which they are supposed to run
- When travelling, install Linux on a USB flash drive
  - Can use foreign computers hardware with your software to check email, browse the web, etc

Portable Software

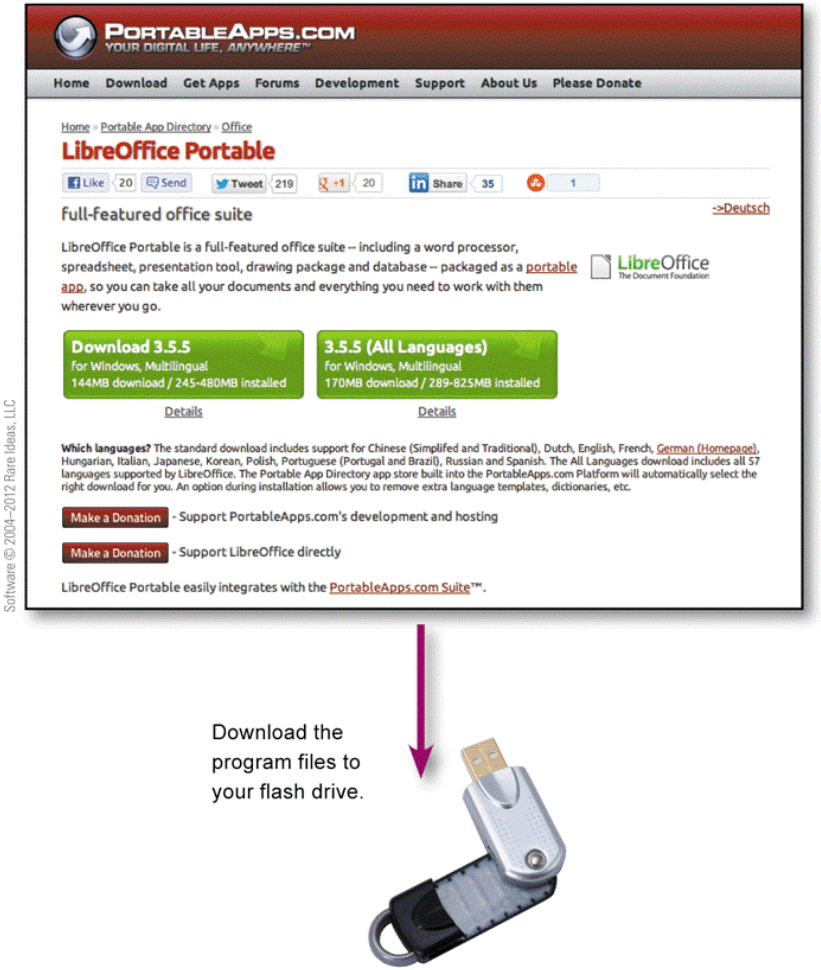


FIGURE 3-42

Portable software is designed so that you can simply copy files to a hard disk or flash drive and run the program without additional installation. Find out how to work with portable software from your USB flash drive.

3 Software Upgrades and Updates

- Periodically, software publishers replace older versions of a software product with a new version that's sometimes referred to as a software upgrade

- A software update is a small section of program code that replaces part of the software you currently have installed
  - Service packs

3 Software Upgrades and Updates

- Many software applications allow you to set your preferences for how you would like to receive notifications and updates
  - Automatically install them
  - Ask before installing them
- It is always a good idea to keep your software up to date.
- install updates &
- service packs

FIGURE 3-43
If you prefer not to have software updates automatically installed, look for an option or preference that lets you choose which updates to install and decide when to install them. Work with the tour to find out how to manually launch updates.

3 Uninstalling Software

- Uninstall routines delete the software's files from the various folders on your computer's hard disk

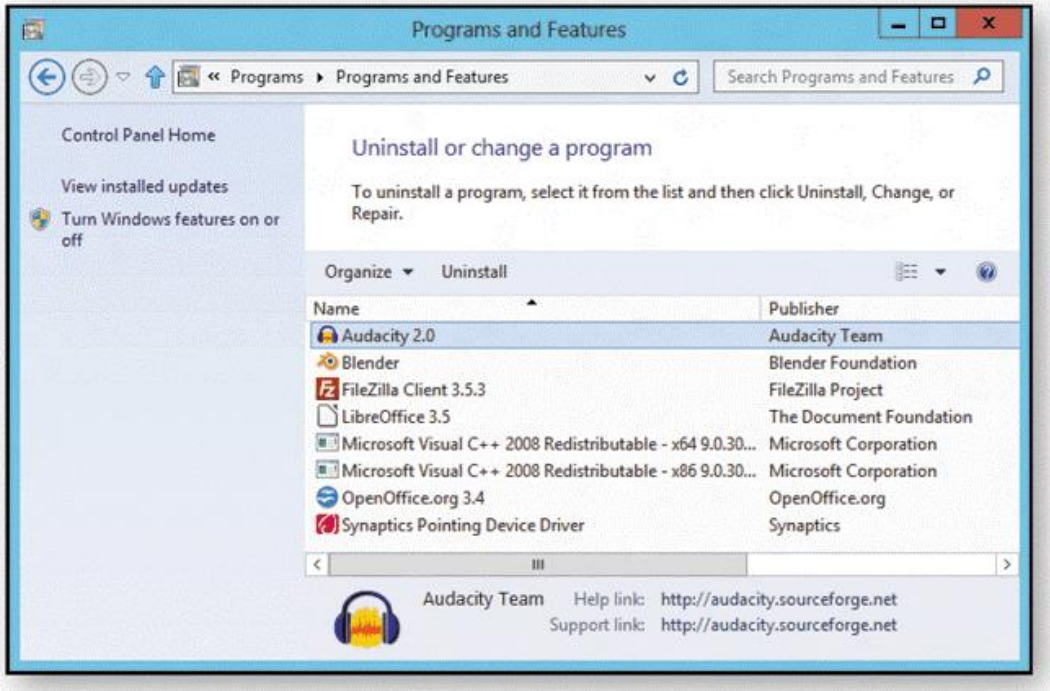


FIGURE 3-44

To make sure all files are properly deleted, always use the Uninstall utility when removing software from a PC. Make sure you know how to uninstall software by watching the tour for this figure in your interactive eBook.

Section D: Buying Software

- Consumer Basics
- Software Copyrights and Licenses

Consumer Basics

- Most operating systems include a handful of small applications and a good variety of useful utility software

Software	Function
Internet Explorer	Browse the Web
File Explorer	Keep track of files and folders; shrink file size
WordPad	Perform basic word processing
Notepad	Perform basic text editing
Calculator	Add, subtract, and calculate basic functions
Paint	Edit bitmap images, such as photos
Sound Recorder	Digitize music and voice input from a microphone
Windows Media Player	Play music and videos
File History	Make backups of hard disk files
Disk Defragmenter	Arrange data on hard disk for optimal efficiency
Windows Defender	Protect your computer from viruses and spyware
Windows Firewall	Block intrusion attempts
Magnifier and Narrator	Improve accessibility
Windows Photo Viewer	View digital photos

FIGURE 3-46

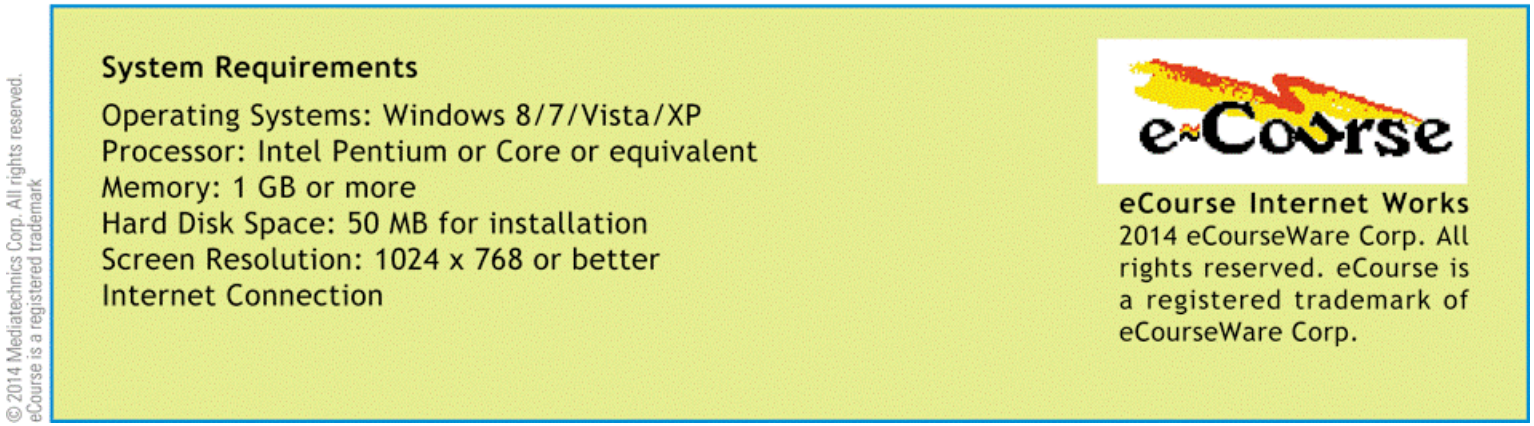
The Windows 8 operating system includes many useful applications and utilities. You can evaluate these offerings before considering whether to supplement them with third-party versions.

Consumer Basics

- System requirements specify the operating system and minimum hardware capacities necessary for a software product to work correctly

FIGURE 3-47

System requirements can be found on the software box or on the download site.



3 Software Copyrights and Licenses

- A copyright is a form of legal protection that grants the author of an original work exclusive rights
  - Copyright notice
- Software licenses, also called license agreements, define the ways in which you may use a computer program
  - Single-user license
  - Site license
  - Multiple-user
  - Shrink-wrap license

3 Software Copyrights and Licenses

- EULA (End-User License Agreement)
- Different types of software licenses
  - Public domain
  - Proprietary
  - Commercial software
  - Demoware
  - Shareware
  - Open source
  - BSD
  - GPL

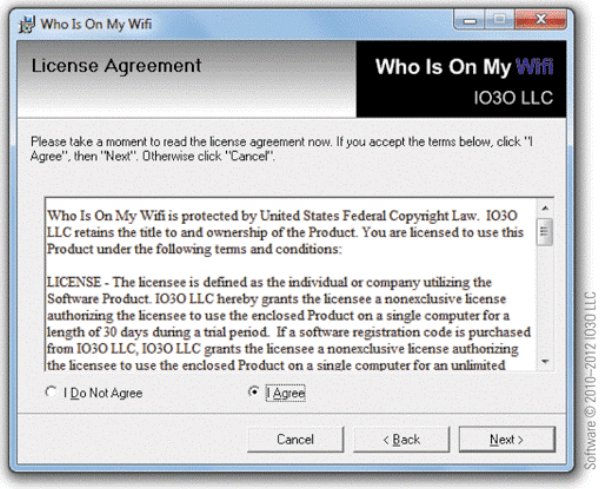


FIGURE 3-48

When you agree to the terms of an on-screen license agreement, you are essentially signing a contract to abide by the terms stated in the agreement.

Software Copyrights and Licenses

FIGURE 3-49

Open source and free software applications are plentiful. Click to find out how to participate in open source software development projects and download free open source software.

© 2006 by the Open Source Initiative

Software	Function
LibreOffice	Productivity
Thunderbird	E-mail
Firefox	Browser
GIMP	Graphics editing
Gallery	Photo viewer
Blender	3-D modeling and game design
Audacity	Sound editing and effects
7-Zip	Compression
FileZilla	FTP download

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FIGURE 3-50

The BSD license for open source software is short and easy to understand.

3 Software Copyrights and Licenses

- Freeware is copyrighted software that is available for free
- Product activation is a means of protecting software from illegal copying by requiring users to enter a product key or activation code before the software can be used
  - A hash value is a unique number derived from encoding one or more data sets, such as names, serial numbers, and validation codes

Section E: Security Software

- Security Software Basics
- Security Suites
- Antivirus Modules

Security Software Basics

- Security software is designed to protect computers from various forms of destructive software and unauthorized intrusions

- The terms malicious software and malware refer to any computer program designed to surreptitiously enter a computer, gain unauthorized access to data, or disrupt normal processing operations

Security Software Basics

- Computer virus
- Computer worm
  - Mass-mailing worm
- Trojan horse
  - Remote Access Trojan (RAT)
- Bot
  - Spider
  - Botnet
- Spyware

Security Software Basics

FIGURE 3-52

Malware Activities

- Display irritating messages and pop-up ads
- Delete or modify your data
- Encrypt your data and demand ransom for the encryption key
- Upload or download unwanted files
- Log your keystrokes to steal your passwords and credit card numbers
- Propagate malware and spam to everyone in your e-mail address book or your instant messaging buddy list
- Disable your antivirus and firewall software
- Block access to specific Web sites and redirect your browser to infected Web sites
- Cause response time on your system to deteriorate
- Allow hackers to remotely access data on your computer
- Allow hackers to take remote control of your machine and turn it into a zombie
- Link your computer to others in a botnet that can send millions of spam e-mails or wage denial-of-service attacks against Web sites
- Cause network traffic jams

Michael D Brown/Shutterstock.com

Security Software Basics

FIGURE 3-53

Symptoms of Infection

- Irritating messages or sounds
- Frequent pop-up ads, at times with pornographic content
- The sudden appearance of a new Internet toolbar on your browser's home page
- An addition to your Internet favorites list that you didn't put there
- Prolonged system startup
- Slower than usual response to mouse clicks and keyboard strokes
- Browser or application crashes
- Missing files
- Your computer's security software becomes disabled and cannot be restarted
- Periodic network activity when you are not actively browsing or sending e-mail
- Your computer reboots itself frequently

Michael D Brown/Shutterstock.com

Security Software Basics

- The term **rootkit** refers to software tools used to conceal malware and backdoors that have been installed on a victim's computer

- A virus *hoax* usually arrives as an email message containing dire warnings about a supposedly new virus on the loose

Security Suites

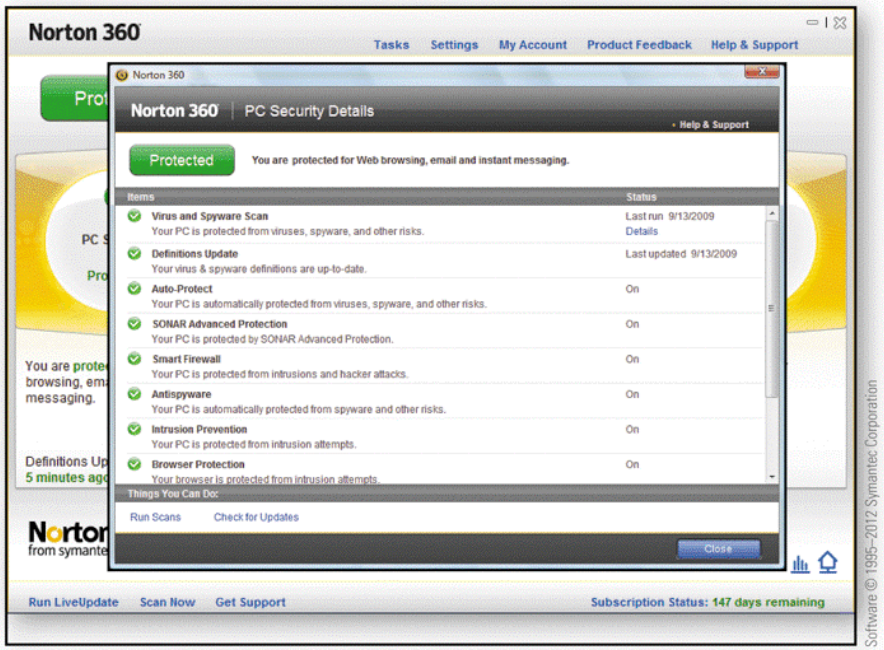
- A security suite integrates several security modules to protect against the most common types of malware, unauthorized access, and spam

- A security suite costs less than purchasing standalone security modules

Security Suites

FIGURE 3-55

The Norton 360 security suite includes modules for scanning viruses, detecting spyware, and activating a firewall against unauthorized intrusions. Take a tour of these modules by using your interactive eBook.



Antivirus Modules

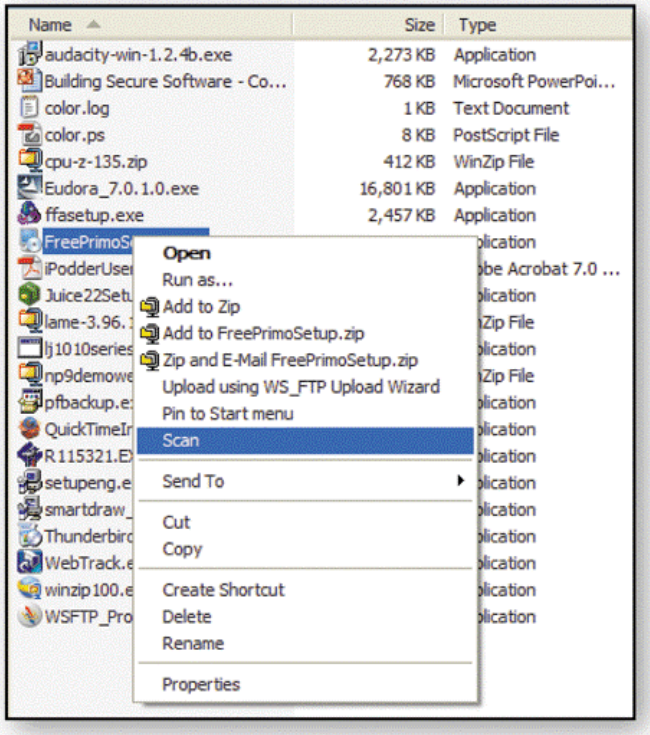
- Antivirus software is a type of utility software that looks for and eradicates viruses, Trojan horses, worms, and bots
  - A virus signature is a section of program code, such as a unique series of instructions, that can be used to identify a known malicious program, much as a fingerprint is used to identify an individual
  - Virus signatures and other information that antivirus software uses to identify and eradicate malware is stored in one or more files usually referred to as virus definitions

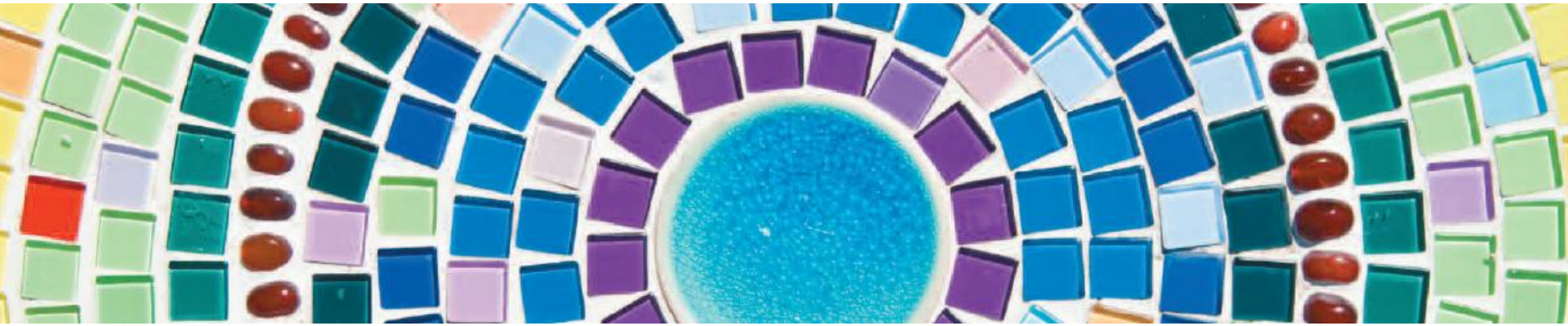
3 Antivirus Modules

- Most experts recommend that you configure your antivirus software to periodically scan all the files on your computer
- If, during the scanning process, your virus protection software identifies a virus, worm, Trojan horse, or bot in a file or attachment, it can try to remove the infection, put the file into *quarantine*, or simply delete the file

FIGURE 3-57

Before installing and running a downloaded file, you can scan it by right-clicking the file name and selecting the Scan option.



Chapter 3 Complete

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