COMPUTERS
UNDERSTANDING TECHNOLOGY

Integrated Multimedia

CD-ROM

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UNDERSTANDING TECHNOLOGY

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The goal of this book, *Computers: Understanding Technology*, is to introduce you to computer technologies and to give you the technical skills that can help improve your personal and professional lives. For millions of people worldwide, the computer and the Internet have become an integral and essential part of life. In the home, we use computers to communicate quickly with family and friends, manage our finances more effectively, enjoy music and games, and much more. In the workplace, computers have become an almost indispensable tool. With them, workers can become more efficient, productive, and creative. This expanded creativity and productivity can be realized on a regular basis through the production of letters and memos, financial reports, numerical analyses, computerized slideshows, or even manufactured items.

The Internet has changed the workplace dramatically. Just 20 short years ago, companies would not have imagined being able to connect almost instantly with suppliers and partners on the other side of the world. In short, computers have wrought remarkable advances in virtually every aspect of human life.

Studying this book will help prepare you for the workplace of today—and tomorrow—in which some level of computer skills is often an essential requirement for employment. Employees who continually try to improve their skills have an advantage over those who do not. Some would even argue that understanding technology has become a survival skill. This book will help you become a survivor.

ABOUT THIS BOOK

The book is organized conceptually into seven groups of chapters.

- Part I is a single introductory chapter that focuses on the information age and our connectedness by means of the Internet and World Wide Web.
- Part II consists of two chapters on computer hardware, covering input, processing, output, and storage devices and media.
- Part III contains two chapters explaining system software and application software.
- Part IV consists of four chapters covering telecommunications and networks, the Internet and World Wide Web, business-to-consumer electronic commerce, and business-to-business electronic commerce.
- Part V consists of two chapters that explain databases, information management, and information systems.
- Part VI consists of two chapters covering applications design, programming languages, multimedia applications, and artificial intelligence.
- The final section consists of three chapters covering computer security, computer ethics, and careers and certification.

USING THE COMPANION CD-ROM

Included with the textbook is a multimedia CD-ROM that adds an experiential and interactive dimension to the learning of fundamental computer concepts. For every chapter, the CD offers

- Videos that illustrate key topics
- Projects that explore leading-edge technologies introduced in the *On the Horizon* sections in the text
- Tutorials that provide hands-on opportunities for learning Windows and Microsoft Office features as well as computer hardware and software elements
- Quizzes to evaluate student comprehension of central concepts in the textbook and in the videos
- Timeline of landmark computer events

The CD may be used as a preview or as a sequel to each chapter—or both. That is, you can watch each chapter's videos to get an overview of what is taught in the book and then study the text chapter before returning to the CD for its enriching content and interactivity. Or, you can complete a chapter and then complete the corresponding chapter on the CD. Either way, you will benefit from working with this integrated multimedia CD-ROM and will find an approach that suits your learning style.

To further address the dynamic and ever-changing nature of computer technology, additional readings, projects, and activities are provided on the **Internet Resource Center** at www.emcp.com. Look for the title of the book under the list of Resource Centers and prepare for some stimulating reading and activities correlated chapter by chapter.

ACCURACY AND CURRENCY

The authors and editors at EMC/Paradigm Publishing have made every effort to ensure that all information in this book is accurate and current. Computer technologies change quickly as new ones are introduced and others become obsolete. Before this book went to press, numerous last-minute changes were made to include information about late-breaking technologies.

ACKNOWLEDGEMENTS AND APPRECIATION

Writing and publishing a book is a complex and expensive task that requires the dedicated efforts of many people. Throughout this project, we authors have had the pleasure and privilege of working closely with the highly skilled and dedicated professionals at EMC/Paradigm Publishing. From the outset, everyone at EMC/Paradigm committed to making this book a state-of-the-art textbook of exceptional quality. We want to express our sincere gratitude to the following individuals.

Tony Galvin, Acquisitions Editor, and Robert Galvin, National Sales Manager, perceived a need for a new entry into the computer concepts market. From their knowledge of the market and their many associations with college and university

instructors, they were convinced this book would be welcomed as an intriguing, highly accessible book that would help students understand classic computer concepts as well as the newest technologies.

Vice President and Publisher George Provol provided us with the all-important financial resources and support needed to complete this project. From the early conception of this work, George was aware of the resources required for such an important project, and he made certain they would be available as needed.

Our work with Senior Editor Sonja Brown has been a pleasure and a privilege. From the beginning of this project to the end, Sonja devoted herself completely to making this book accurate, attractive, timely, and comprehensive. She was an ever-present source of inspiration as she guided this project from beginning to end. Thank you, Sonja, for your dedication and for your many valuable contributions to this textbook.

Janice Johnson, Director of Product Development, offered numerous innovative ideas for teaching and presenting material. Design Coordinator Jennifer Wreisner designed both the cover and the page layout and worked considerable magic in creating the beautiful, easy-to-read pages. Special Projects Coordinator Joan D'Onofrio worked to find just the right art to communicate important and difficult-to-understand concepts. Special thanks, also, to Susan Capecchi for her wide-ranging assistance and her commitment to quality with every detail.

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DEDICATION

The moment I met the young lady who would later become my wife, I knew that my life would be changed forever. And, it has been. She has been my devoted companion, my closest friend, the mother of our children, and my enduring source of encouragement and inspiration. For her devotion to our family and to so many others to whom she has given so freely of her time and energies, I dedicate this book to my wife, **Edith Mizelle Fuller**.

—Floyd Fuller

For all the times the kids climbed on the computer or poured juice on the keyboard, for all the times she took care of things while I typed, and for all the times she was understanding and thoughtful, I dedicate this book to my wife, **Alma Larson**.

—Brian Larson

INTERNET

BROWSING THE WEB USING WEB ADDRESSES

The Internet is a collection of computers around the world connected together through telephone lines, cables, satellites, and other telecommunications media. The World Wide Web, called the Web, is a part of the Internet that contains Web pages consisting of text, sounds, video, and graphics that link to other related Web pages. These links are called hyperlinks. Web pages are stored in a common language called HTML (Hypertext Markup Language) which can be viewed on any computer regardless of the operating system platform (Macintosh, Windows, UNIX, and so on).

CONNECTING TO THE WEB

To connect to the Internet and view Web pages, you will need the following resources:

1. A computer with a modem or a network connection to a server with Internet access.
2. Browser software, such as Internet Explorer or Netscape, that provides the interface for viewing Web pages.
3. An account with an ISP (Internet Service Provider) if you are using a computer that is not connected to a network server. An ISP sells Internet access usually by charging a monthly fee for a set time period. The ISP has the computers, network equipment, and modems to allow multiple users to connect at the same time.

In the steps that follow you will explore Web sites on the Internet using Web addresses and Microsoft's Internet Explorer version 5.5. If you are using another browser or a different version of Internet Explorer, you may need to alter these instructions slightly.

STEPS

1. Click the Launch Internet Explorer Browser button on the QuickLaunch toolbar, or click the *Internet Explorer* icon on the desktop. If there are no icons on your desktop, click the Start button, point to <u>P</u>rograms, and then click *Internet Explorer.*

Step 1

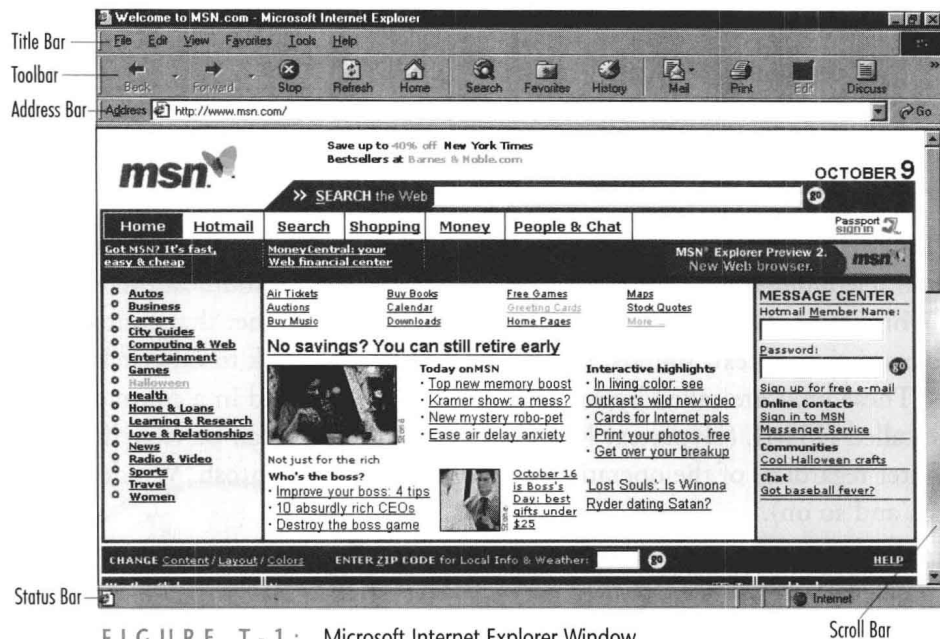Internet Explorer

Start

QuickLaunch Toolbar

FIGURE T-1: Microsoft Internet Explorer Window

Labels: Title Bar, Toolbar, Address Bar, Status Bar, Scroll Bar

If you are completing this tutorial using your computer at home, you may need to enter your password and then click OK to connect through a dial-up connection to your ISP.

The Microsoft Internet Explorer window will appear with a Web page displayed in the window as shown in Figure T-1. (The Web page shown in your window may vary.)

2. Move the mouse pointer over the current entry in the A**d**dress text box, and then click the left mouse button.

Clicking the left mouse button selects the entire address and changes the white arrow pointer to an I-beam, which indicates you can key text and/or move the insertion point using the arrow keys on the keyboard.

3. Key (type) **www.usatoday.com**, and then press Enter.

The USA Today home page will appear in the window. Watch the status bar for messages displaying the status of loading the page. When the page has finished displaying all of its text, graphics, and other components, the status bar will display the word "Done."

A feature called *AutoComplete* is invoked as soon as you begin keying an address. AutoComplete displays addresses visited by you in the past that match with the text as you key it. If one of the addresses offered is the correct address, click the mouse over it.

The entry in the Address text box is called a URL (Uniform Resource Locator). URLs are the addressing method used to identify Web pages. After pressing Enter, notice the browser automatically inserted *http://* in front of the address you typed: *http* stands for Hypertext Transfer Protocol, which is the communications standard used for transferring data within the Web.

4. Move the mouse pointer over the blue underlined headings displayed along the left side of the USA Today page.

Notice the pointer changes shape to a white hand with the index finger pointing upward when it is positioned over underlined text. When the pointer takes this shape, it means you can click the left mouse button to jump to a related Web page (called a *hyperlink*).

5. Click the left mouse button over <u>World</u>.

In a few seconds, the page with the top World news story is displayed.

6. Click the Back button [Back] on the toolbar to return to the previous page.
7. Click the Forward button [Forward] on the toolbar to redisplay the World page (the page viewed prior to clicking Back).

Notice the Back and Forward buttons on the toolbar contain down-pointing triangles. Click the down-pointing triangle, and then click a Web site name in the drop-down list to jump to a page previously viewed.

8. Click the mouse pointer over the entry in the Address text box, key **www.microsoft.com,** and then press Enter.
9. Click one of the hyperlinks on the Microsoft home page to jump to a topic that interests you.
10. Continue exploring Web pages by keying URLs in the Address text box, clicking hyperlinks, the Back button, and the Forward button on the toolbar.
11. When you have finished exploring the Web, click the Close button [X] at the right end of the title bar to exit Microsoft Internet Explorer. If necessary, disconnect from your ISP.

If you want to browse the Web by *topic,* rather than addresses, click the Search button on the toolbar. Click in the Find a Web page containing text box, key the topic you are interested in, and then click the Search button beside the box.

<table>
<tr><td>Home</td></tr>
<tr><td>News</td></tr>
<tr><td>Main Categories</td></tr>
<tr><td><u>News briefs</u></td></tr>
<tr><td><u>Washington</u></td></tr>
<tr><td><u>Editorial/Opinion</u></td></tr>
<tr><td><u>States</u></td></tr>
<tr><td>Step 5 —————— <u>World</u></td></tr>
<tr><td>More News</td></tr>
<tr><td><u>Health</u></td></tr>
<tr><td><u>Science</u></td></tr>
<tr><td><u>Politics</u></td></tr>
<tr><td><u>Offbeat news</u></td></tr>
<tr><td><u>Columnists</u></td></tr>
<tr><td><u>Lotteries</u></td></tr>
<tr><td><u>Talk Today</u></td></tr>
<tr><td>Money</td></tr>
<tr><td>Sports</td></tr>
<tr><td>Life</td></tr>
<tr><td>Tech</td></tr>
<tr><td>Weather</td></tr>
</table>

TUTORIAL 2:
CONDUCTING A SIMPLE SEARCH

In the previous Internet topic, Web sites were explored by keying the Web address (URL) for a specific company. Another method used to find information is by entering a keyword or a phrase and then browsing through a series of Web pages that were found. Several search engines are available to assist users with locating Web sites by *topic*. A search engine is a company that uses specialized software to continually scan the Web to index and catalog the information that is published. These companies have created Web sites where the user begins a search by keying the word or phrase they would like to find information on. The search engine then lists the Web pages that contain the word or phrase as links, which are called *hits*. Some search engines maintain category indices where the user clicks through a series of categories and subcategories until they reach the desired list of Web pages.

In this topic, you will find information on the Web by entering keywords and then conduct another search by browsing through a list of categories.

STEPS

1. Start Internet Explorer. If necessary, connect to your ISP and enter your username and password.

2. Click the Search button [Search] on the Internet Explorer toolbar.

A Search pane opens at the left side of the Internet Explorer window with categories displayed that can be searched and a text box to enter the keyword or phrase to find. The default category selected is Find a Web page. The default search engine that will be used on the computer you are using may vary.

3. Key **space station** in the Find a Web page containing text box and then click the Search button.

In a few seconds, a list of Web pages will be displayed as hyperlinks in the Search pane. These pages are Web sites that the search engine has indexed to the text you specified.

Search

New   Next   Customize

Choose a category for your search:

- ⦿ **Find a Web page**
- ○ Find a person's address
- ○ Find a business
- ○ Previous searches
- ○ Find a map

More...

Find a Web page containing:

space station

Brought to you by MSN Search   [Search]

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4. Click the down-pointing triangle at the bottom of the vertical scroll bar to scroll down the Search pane and view the search results.

5. Click the <u>next>></u> at the bottom of the Search pane to display the next 10 sites.

6. Click one of the links in the Search pane to view the related Web page.

As you position the mouse pointer over a hyperlinked Web page, the name of the link changes color and the URL displays in the Status bar.

7. Scroll the search pane and then click another link to view another related Web page.

Another way to search for information is to use a search engine's category index. In the next steps, you will close the Search pane, key the URL for a search engine, and then browse the category index.

8. Click the Search button on the Internet Explorer toolbar to close the Search pane.

If you prefer to use the full screen for viewing Web pages, close the search pane and then go directly to the search engine's URL.

9. Key **www.yahoo.com** in the A<u>d</u>dress text box and then press Enter.

Yahoo is a popular search engine that maintains category indices and can also be used to search for a topic by keywords.

10. Scroll down the Yahoo Web page and then click <u>Science</u>.

11. Scroll down the Yahoo Science category page and then click <u>Space</u>.

12. Scroll down the Yahoo Space category page and then click <u>Space Stations</u>.

13. Click the <u>Skylab</u> link on the Space Stations category page.

14. Click one of the links on the Skylab page and then view the Web page.

15. Click the Back button on the Internet Explorer toolbar, click another link from the Skylab page, and then view the Web page.

16. Close Internet Explorer. If necessary, disconnect from your ISP.

TUTORIAL 3:

CONDUCTING AN ADVANCED SEARCH

The number of Web sites that an individual will see in a list as the result of a search request can be overwhelming. It is not uncommon to see thousands of hits result from searching by a few keywords. The challenge when searching for information on the Internet is to reduce the number of hits to the smallest possible number. Including a search operator with the keywords refines a search by limiting the sites that are displayed based on where or how the keywords are placed. Search operators vary between search engines so it is best to view the Advanced Search Help for a search engine prior to using operators.

In this topic you will find information on the Web by reading Advanced Search Help and then entering keywords with search operators.

STEPS

1. Start Internet Explorer. If necessary, connect to your ISP and enter your user-name and password.

2. Key **www.lycos.com** in the Address text box and then press Enter.

Lycos, one of the oldest search engine companies, was developed in 1994 at Carnegie Mellon University. It is well known for its extensive categories, easy to use search page, and "Top 50" searches summarized and published each week.

3. Key **endangered species** in the Search for text box and then click Go Get It or press Enter.

Search for: endangered species **Go Get It!**

Step 3
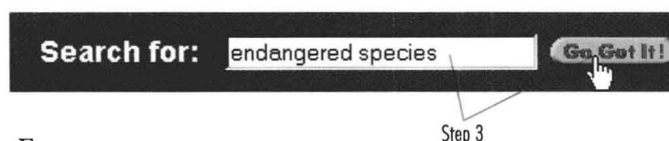
In a few seconds a list of popular Web pages based on user selection history will be displayed and then farther down the screen the total number of sites found from searching the entire Lycos catalog are listed.

4. Scroll down the Results for endangered species page and read the titles of the Web pages found.

In the next steps you will refine the list to display only those pages that contain information about birds that are endangered.

5. Scroll to the top of the page and then click the Advanced Search button.

Results for endangered species **Go Get It!**® ☐ Search within these results

People who did this search also searched for:
Endangered Animals   Endangered   Endedgered Species
Giant Panda   Polar Bear   Siberian Tiger

NEW SEARCH | SEARCH GUARD | **ADVANCED SEARCH**

◆ Find *Science of Conservation Planning* and related books on the environment

Step 5

6. Click <u>Help</u>. Scroll down the Advanced Search Help page and then read the information in the Building a Search Expression section.


Step 6

The information on Boolean Operators is especially useful for narrowing search requests since these operators can be used in the primary search text box instead of using the Advanced Search page.

Step 8
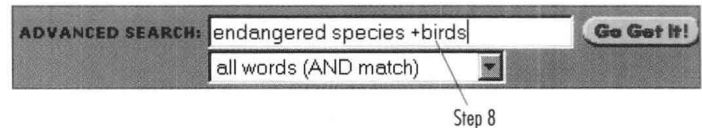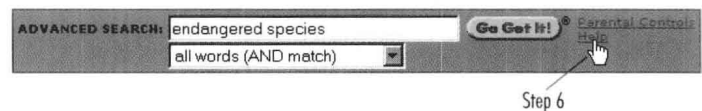
7. Click Back on the toolbar to return to the Advanced Search page.

8. Click in the Advanced Search text box after the text *endangered species,* press the space bar, key **+birds**, and then press Enter.

9. Scroll down the results page. Notice the Web pages found contain all three words: *endangered, species,* and *birds.*

Yahoo provides an advanced search page that can be used to narrow a search based on search operators and the time period information has been published.

10. Key **www.yahoo.com** in the A<u>d</u>dress text box and then press Enter.

11. Click the <u>advanced search</u> link next to the Search text box.

12. Key **endangered species +birds** in the Search text box.

Step 14
Step 12
Step 13
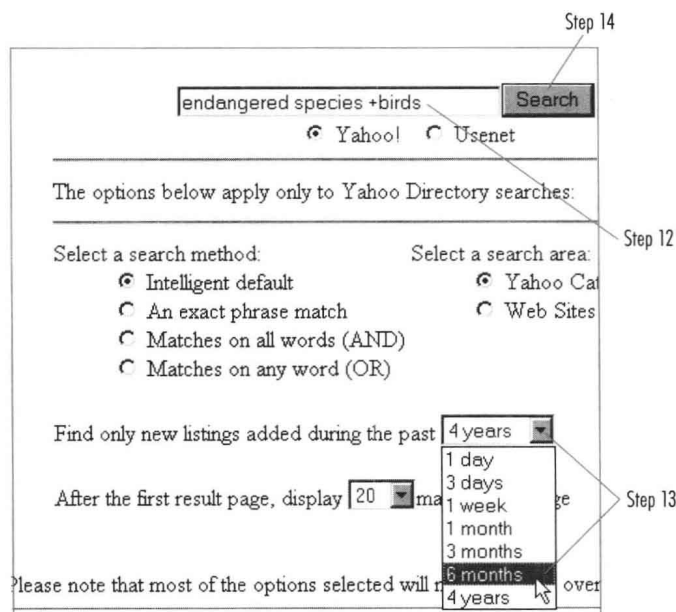
13. Click the down-pointing triangle next to Find only new listings added during the past [ ] and then click *6 months* in the drop-down list.

14. Click Search.

15. Scroll down the list of Web sites found.

16. Close Internet Explorer. If necessary, disconnect from your ISP.

TUTORIAL 4:

CREATING A WEB PAGE IN WORD

Creating a document that can be viewed from a Web site involves storing it in hypertext markup language (HTML). Software programs such as Microsoft FrontPage are dedicated to creating and managing Web sites. Most software applications released in the past few years include a conversion feature that will save the current document on the screen as a Web page. Prior to these conversion utilities, users had to know how to insert HTML "tags" into documents. These tags were the codes that instructed browsers how to display the text. Microsoft Word 2000 includes Web Page wizards, Web Layout view, and several Web formatting options for creating Web pages.

In this topic you will create a Web page in Microsoft Word using the Web Page wizard.

STEPS

1. Click the Start button, point to Programs, and then click *Microsoft Word.*

If necessary, check with your instructor if the steps to open Microsoft Word 2000 on the computer you are using are different than those in step 1.

2. At the blank document screen, click File and then click New.

3. Click the Web Pages tab in the New dialog box and then double-click the Web Page Wizard icon in the list box.

Step 3
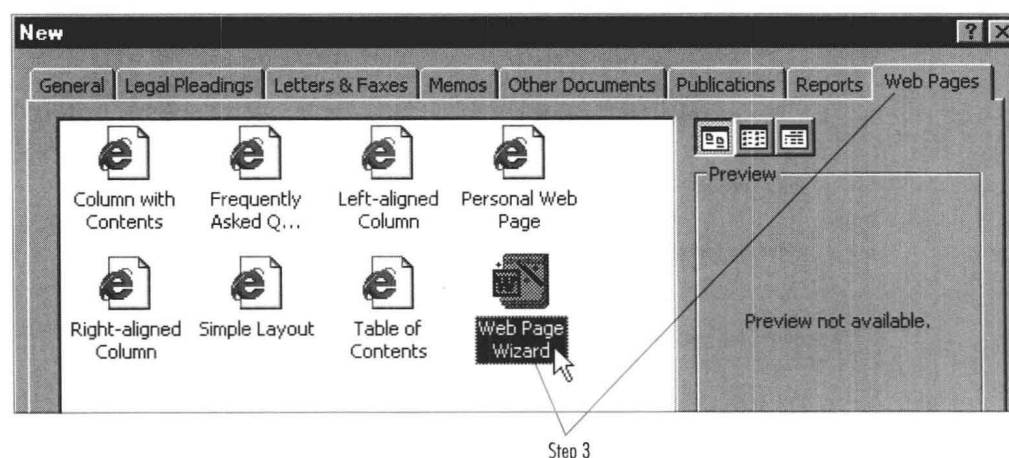
4. Click Next> at the first Web Page Wizard dialog box that describes what the wizard will do.

5. Key **Student Name** (substitute your first and last names for Student Name) in the Web site title text box, and then press Tab to move to the Web site location text box.

6. Key **C:\My Documents** or **A:** in the Web site location text box and then click Next>. Check with your instructor to see where you should save the Web page if you are not sure.

7. Click Next> at the Navigation page in the Web Page Wizard.

What is the title of your Web site?

Web site title:

Step 5 — | Student Name |

Where do you want to save your Web site?

Web site location:

| c:\My Documents ———————————————————— | —Step 6

When a Web site is created, the navigation links are usually displayed in a horizontal or vertical frame. Since our Web site is only one page, we do not need to be concerned with navigation links.

8. With *Blank Page 2* already selected in the Current pages in Web site list box in the Add Pages page of the Web Page Wizard, click Remove Page. Click *Personal Web Page*, click Remove Page, and then click Next>.

This will leave only one page, *Blank Page 1*, in the Current pages in Web site list box.

9. Click Next> at the Organize Pages page in the Web Page Wizard.

If there were multiple pages that we were building for the Web site, we would use the Move Up and Move Down buttons with a Web page selected to move the page to the desired position in the Web site.

10. Click Browse Themes in the Visual Theme page of the Web Page Wizard.

11. Scroll up or down the Choose a Theme list box and then click *Clearday*. (If *Clearday* is unavailable, choose another theme.)

Current pages in Web site:

| Personal Web Page |
| Blank Page 1 |

Step 8 —

| Remove Page |

Most ISPs include space on their Web server for clients to publish personal Web pages. If you want to publish to a Web server, check with your ISP for the correct address to key in the Web site location text box.

A preview of the colors, fonts, bullet style, and horizontal line style for the Clearday theme displays in the Sample preview box. Microsoft Word includes several predefined themes that can be used to create Web pages with a professional appearance. Explore other themes in the dialog box by clicking the theme name and previewing it before continuing.

Theme ? ☒

Choose a Theme: Sample of theme Clearday:

Bubbles
Cactus
Canvas
Capsules
Chalkboard
Checkers
Citrus Punch
Classic
Step 11 — Clearday
Construction Zone
Corporate
Cypress
Downtown
Expedition
Fiesta
Folio
Geared Up Factory
Glacier
Global Marketing
Highway
In Motion
Industrial
Kids

☐ Vivid Colors
☐ Active Graphics
☑ Background Image

Heading 1 style

■ Bullet
■ Bullet

Horizontal Line:

Heading 2 style

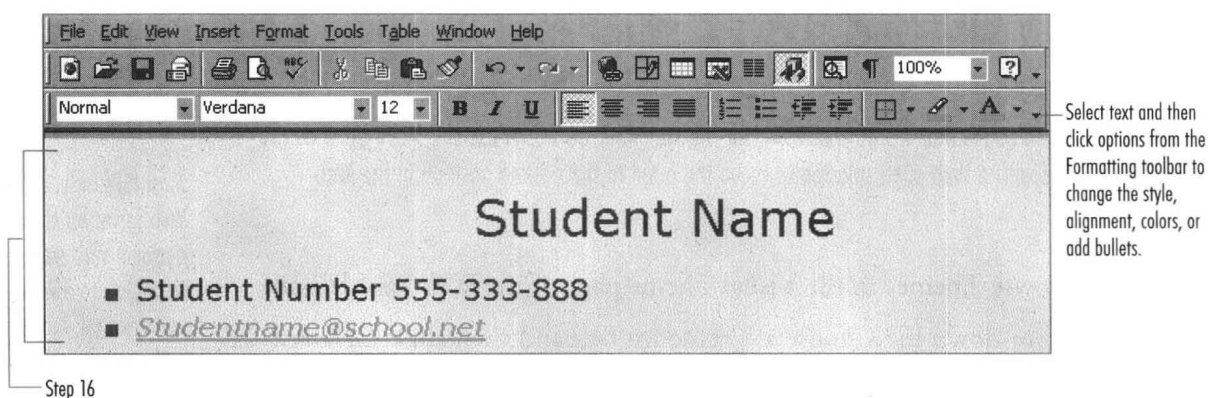Regular Text Sample
Regular Hyperlink
Followed Hyperlink

| OK | | Cancel |

Step 12

12. Click OK to accept the Clearday theme for the Web Page, and then click Next> in the Visual Theme page of the Web Page Wizard.

13. Click Finish at the last page in the Web Page Wizard. Click No when the message appears that your Web site contains only one Web page and asks if you still want to include navigation features.

In a few seconds, a Web page will appear in the Clearday theme with the text *This Web Page is Blank Page 1* at the top left of the document. Microsoft Word is automatically switched to Web Layout view. At this point you would start keying the content for your Web page. Notice the title bar displays the document name *Blank Page 1.htm*.

14. Select the text *This Web Page is Blank Page 1* and then press Delete.

15. Key your first and last names and press Enter. Key your student identification number and press Enter. Key your e-mail address and then press Enter twice.

16. Experiment with formatting options such as styles, center, bold, font colors, or bullets by selecting text and then clicking buttons on the Formatting toolbar.

File   Edit   View   Insert   Format   Tools   Table   Window   Help

Normal   Verdana   12   B I U

Select text and then click options from the Formatting toolbar to change the style, alignment, colors, or add bullets.

Student Name

- Student Number 555-333-888
- *Studentname@school.net*

Step 16

Insert Clipart in a Web page in the same manner you would a Word document. Click the Insert Clip Art button on the Drawing toolbar, or click Insert, point to Picture, and then click Clip Art.)

17. Click the Save button on the toolbar, and then click File and Exit to close Microsoft Word.