INTRODUCING MULTIMEDIA
For the Web

1. Define Multimedia
2. Understand the Benefits of Multimedia
3. Discuss Web-based Multimedia Categories
4. Discover Careers in Web-based Multimedia
Introduction
Welcome to the wonderful world of interactive Web-based multimedia!

Multimedia Web sites are all around you. Chances are you see or interact with one or more Web sites almost daily. Society depends on information, and the Web is an effective way to present it. By providing a consistent, user-friendly interface, the Web browser makes information easily accessible to the multitudes. Adding multimedia to Web sites makes the content accessible, as well as interactive and fun. See Figure 1-1.

In this chapter, you will be introduced to the concept of Web-based multimedia. You will also learn about the media elements that comprise today’s multimedia Web sites and how interactivity is an integral part of a successful online multimedia Web site. You will learn why Web-based multimedia has become so pervasive. You will learn about the four basic categories of multimedia Web sites. In addition, you will see examples of multimedia Web sites and learn about careers in the field.
In a generic sense, multimedia is simply the use of more than one media element. You have encountered multimedia if you have listened to a music clip from an online music store, played interactive games on the Web, or purchased a product or service using an interactive form at an e-commerce Web site. But what exactly is Web-based multimedia? For the purpose of discussion in this book, Web-based multimedia is defined as an online, interactive experience that incorporates two or more media elements including text, graphics, sound, animation, and video. As illustrated in Figure 1-2, a fundamental feature of most Web-based multimedia is interactivity, which gives the user some control over the content.

**FIGURE 1-2**
Multimedia interactivity

**FIGURE 1-3**
Browsers enable the distribution and sharing of information around the world

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**Explain the evolution of multimedia for the Web**

The Internet grew out of a project called ARPANET, which was started by the military in the 1960s. Today, the Internet is a network of networks that connects millions of computers and people around the globe. The World Wide Web (also called the Web), a system that permits the distribution and sharing of information around the world, began in May 1991. Via the Internet, the World Wide Web offers the fastest-growing method for multimedia delivery.

In 1993, Mosaic, the first cross-platform, graphical-user interface Web browser (also called a browser) that fully exploited the Web’s hypermedia capability, was released. Browsers provide a visual interface that interprets and displays the text and other multimedia elements, such as graphics, animation, sound, and video, included and referenced within Web pages. The development of browsers played a key role in influencing the explosive growth of the Web by providing a means to deliver hyperlinked content and multimedia via the Internet. See Figure 1-3.
CONCEPT 1

What You’ll Learn

In this lesson, you will learn about multimedia and interactive multimedia, and how each of these terms is defined. You will understand the meaning of digitized media and will be introduced to the various multimedia elements. You will also get an overview of the different types of search engines.

DEFINE

Multimedia

Multimedia is not new. As a society, people are very accustomed to viewing text combined with graphics and photographs. Movies with sound replaced silent movies more than fifty years ago, but even in their day, silent movies incorporated multiple media by using video and text captions together. Today, we have full-length animated movies for children and adults, and people can view trailers, shorts, and full-length features on Web sites from companies such as Pixar (see Figure 1-4) and Disney.

The growth of Web-based multimedia has exploded over the past few years. There are many reasons for this growth. Computer processing power and technology have improved making it easier and more fun to work with media elements on the computer. People in many industries have found new and beneficial ways of using multimedia applications, thereby creating a demand for multimedia technology. The growth of the Web has spurred the growth of multimedia as more multimedia applications are designed for the Internet and the World Wide Web. Undoubtedly, this growth in Web-based multimedia will continue at a rapid rate as the technology continues to improve and people find more reasons to use it.

At the most basic level, multimedia means using more than one media. It refers to the integration of text, graphics, animation, sound, and video. Today, this integration is accomplished by digitizing different media elements and then manipulating them with computer software.
FIGURE 1-4
Web sites from companies, such as Pixar and Disney, provide opportunities to view trailers and shorts of full-length feature films.

Click to access multimedia shorts and trailers.
Working with media elements that have been **digitized** means the media elements have been captured in a code the computer can understand (see Figure 1-5). People can send and receive media elements across networks, developers can create and modify elements in ways they never dreamed possible, and users can interact and control these media elements for greater personalization. As a result of digitized media elements, a variety of uses for multimedia has been created within a multitude of industries. Consequently, people are surrounded by multimedia Web sites.

Some multimedia Web sites are **linear**. In other words, users start at the beginning and progress through a set sequence of events until they reach the end. Most digital slide shows and plays are examples of linear media. The idea behind the Web, of course, is that the order of events should be left to the discretion of the user. To facilitate this idea, most Web sites use a **nonlinear** approach to navigation. Because there is generally no established or predefined order, users have more control over what they are interested in pursuing, as well as at what point they enter and exit a Web site.

**FIGURE 1-5**

Digitized media elements have been converted to code that can be interpreted by the computer.
Interactive multimedia enables the user to directly respond to and control any or all of the media elements at the Web site. Users of interactive multimedia applications become active participants instead of passive recipients of information. The user determines what content is delivered, when it is delivered, and how it is delivered. Interactivity provides multimedia range and depth because it requires creativity on the part of both the designer and the user. It also frees users by giving them choices.

The Web and multimedia on the Web have grown far beyond anyone’s wildest expectations. Today there are billions of Web sites through which people share information around the world. Web pages are documents that can contain text, graphics, photographs, animation, sound, video, software, applications, and forms for data handling and e-commerce. Web-based multimedia has evolved into a billion-dollar industry, and it is still growing at an incredible rate. Because of increased bandwidth, improved compression, more powerful processors, and better software, it is becoming easier and easier to include multimedia on Web pages.

**Using search engines**

As the number of Web pages has increased into the billions, users often find they need help locating the information they want. Search engines make finding information possible. There are thousands of search engines available today. Although each search engine has its own little quirks and methods for dealing with keywords and performing advanced searches, there are really just three major categories of search engines. A spider-based search engine automatically roams the World Wide Web adding the contents of the Web sites it visits to its database. A directory-based search engine is selective, meaning that humans choose which sites to add to the database. A pay-per-click search engine gives priority placement to sites offering top bidding for keywords.

In order for users to find a Web site, it must usually be registered with search engines. The process of registering a Web site is discussed later in the book.
In this lesson, you will learn how multimedia benefits the user by addressing multiple learning styles, conveying content, reinforcing ideas, creating rich experiences, giving life to flat information, enhancing user enjoyment, improving retention, and enabling user control.

The importance of interactive multimedia can be summarized by the Chinese proverb, “Tell me and I will forget; show me and I may remember; involve me and I will understand.” Why? Because each person learns differently and each person is inspired by something different. The use of multimedia allows Web developers to tap into these differences. For example, some people are visual learners. They learn or are inspired by reading, seeing, or visualizing. Other people are auditory and learn best by listening. And, there are kinesthetic learners who learn by doing. Many people learn through a combination of these learning styles.

Although each person has a preferred learning style, learning experiences for everyone are enhanced when each learning style is accommodated. In fact, research shows that people remember only 20 percent of what they see and 30 percent of what they hear. When they see it and hear it, they remember 50 percent. When they see it, hear it, and interact with it, they remember 80 percent. That is a big difference, which certainly supports the increased use of Web-based multimedia.

Web sites that include multimedia enable Web designers to create rich, multisensory experiences that accommodate multiple learning styles and enhance the user’s enjoyment at a site. In addition, retention improves when people are able to see, hear, and interact with the content.

**FIGURE 1-6**
Benefits of using Web-based multimedia

- Addresses multiple learning styles (visual, auditory, and kinesthetic)
- Provides an excellent way to convey content
- Uses a variety of media elements to reinforce one idea
- Activates multiple senses creating rich experiences
- Gives life to flat information
- Enhances user enjoyment
- Improves retention
- Enables users to control Web experience
An excellent way to convey content is to use a variety of media elements to reinforce one idea. In other words, use multiple media to direct the user’s attention to one concept or idea. Figure 1-7 illustrates this concept as it uses a balance of text, graphics, photographs, and sound to convey information about a particular musical instrument. When designing for the Web, we have to be careful not to overwhelm the user by trying to use multiple media to convey multiple ideas simultaneously. Finding the right balance and relationship between the media elements is critical.

When multiple media are incorporated into an application, more senses are activated. Consequently, one reason to use multimedia is to give life to flat information. Multimedia encourages users to embrace, internalize, and glean more from information because users can undertake the information from multiple directions. In other words, users of multimedia applications have an opportunity to read about information, as well as to see it, hear it, and watch it move. Today, most multimedia Web sites consist primarily of elements that involve the eyes and ears, but this too is changing as research on touch and smell continues to be explored.

In the future, multimedia will provide greater opportunities and options to control the Web environment whether it is for entertainment, research, education, or conducting business. In an effort to accommodate an increasingly mobile society, multimedia will continue to evolve into an extremely rich and powerful information environment that will be easily shared across networks and experienced on hand-held devices that are getting smaller and more portable each day.

**FIGURE 1-7**
All of the different elements on this screen convey information about one idea, the Aeolian wind harp.
In this lesson, you will learn about the role of multimedia Web sites in e-commerce, Web-based training and distance learning, research and reference, and entertainment and games.

What You'll Learn

From e-commerce to distance learning to research to games, multimedia Web sites offer a variety of applications to a range of industries. In the past, the entertainment industry was the primary creator and disseminator of multimedia. However, the surge of activity on the World Wide Web has caused multimedia to become more prevalent via the Internet. The Web has opened the doors of multimedia production to a variety of users and has expanded the application of multimedia outside the world of entertainment.

Once it was considered exemplary simply to have a presence on the Web. Today, in order to get a visitor to return to your Web site, you need more than good content. For this reason and because it is easier to include multimedia on a Web page, multimedia Web sites are becoming increasingly important. Hyperlinks allow users access to resources from around the globe. Graphics and animation convey information, reinforce content, and guide the user. Audio and video clips involve additional senses thus improving understanding and giving depth to a flat page.

Software packages empower users to create multimedia Web sites. These software programs help users create Web pages with multimedia elements for online games, interactive forms, electronic magazines, reference materials, entertainment, and more. As bandwidth issues pose less of a concern, the use of multimedia on the Web will continue to grow.

E-commerce

The Web has caused a revolution in the way most companies do business (see Figure 1-8). E-commerce is one category in which Web-based multimedia plays a critical role. E-commerce involves using the Web to serve clients and customers and is one way to provide solutions for companies, small or large, that wish to sell products or services online. E-commerce is about setting up your business on the Web, giving potential customers access to your Web site, and allowing them to peruse...
a virtual catalog of your products or services online. When customers decide to buy something, they simply add it to their virtual shopping cart. Items can be added to or deleted from the virtual shopping cart until the customer is ready to check out. At the point of checkout, the customer’s total is calculated and the information is securely transmitted.

Companies have moved to e-commerce for a number of reasons. By using the Web to sell and market their products, they can significantly expand their customer base, reaching a larger number of customers from all over the world. Businesses are also able to stay open 24 hours a day, 7 days a week without the burden of maintaining a traditional business operation. By expanding their market and making use of technology to sell products and services, many companies have been able to increase sales significantly. In addition, if they are able to reduce overhead or operate without a traditional storefront they can cut costs, thereby increasing profits. If e-commerce is used effectively, companies can improve the efficiency of order processing, reduce inventory and warehousing expenses, and lower the actual dollar cost of sales transactions, all of which result in higher profit margins.

The use of multimedia elements is helping companies sell their products and services online because multimedia elements are much more likely to grab attention than text alone. Multimedia elements are used extensively in advertising and marketing. Web designers employ multimedia-authoring software to create unique, attention-getting advertisements with animated text and graphics. Animated logos and banners advertising products, services, and links to other sites are everywhere on the Web. E-commerce Web sites rely heavily on multimedia elements, such as a site search feature that visitors use to find products they want and online forms that visitors use to submit their orders.

**FIGURE 1-8**
The ability to buy products and services online has changed the way consumers shop.

**QUICK TIP**
Data handling and security are also important aspects of e-commerce.

Two types of companies do business on the Internet: those companies that augment a traditional business with an online storefront, and those companies that use the Internet exclusively to reach potential customers. This second type of company is one that exists solely on the Internet and does not have a traditional storefront from which to conduct business in a more traditional fashion.
Because the way companies do business has changed, so too has the way consumers shop and buy. Record numbers of businesses are using the Web to market their goods and services online. Electronic catalogs and malls offer users variations to traditional shopping experiences. From name brands to obscure specialty shops and legal services, there really is something for everyone to buy or sell online. As seen previously in Figure 1-8, Amazon.com’s Web site makes it easy to buy books and other products via the Web.

E-commerce is all about using technology to streamline business, increase efficiency, and improve sales. It is about lowering costs and establishing closer, more responsive relationships with customers, suppliers, and partners.

**Web-based Training and Distance Learning**

A second category Web-based multimedia is affecting is education, especially in the areas of **Web-based training** and **distance learning**. The Web offers many options for delivering and receiving education over a distance. Faced with training and retraining millions of workers, businesses around the globe are using Web-based training programs to prepare workers effectively and efficiently. Web-based training is training or instruction delivered over the Internet using a Web browser. The advantages of online distance learning include freedom of location, open entry/open exit, self-paced instruction, immediate feedback, assessment, simulated experiences, and varied learning environments.

The rise of digital media has also transformed higher education. Academic institutions are using Web-based distance learning courseware created by curriculum designers and technicians, and computer-based evaluation and self-assessment to educate and test students. Distance learning has enabled students to take courses, as well as complete certificates and degrees, online. Educational institutions also find Web-based exams useful in ensuring that students have achieved a certain level of mastery before they advance to the next level (see Figure 1-9). Research on distance learning strongly suggests that it is an effective means for delivering instruction. Through online distance learning, professors become facilitators and coaches. Learners interact globally through the Web, which provides an extensive multimedia communications network.

**FIGURE 1-9**

Online exams provide students with the opportunity to test their knowledge

<table>
<thead>
<tr>
<th>Preview Assessment: PhotoShop Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name:</strong></td>
</tr>
<tr>
<td><strong>Instructions:</strong></td>
</tr>
<tr>
<td><strong>Timed assessment:</strong></td>
</tr>
<tr>
<td><strong>Multiple Attempts:</strong></td>
</tr>
<tr>
<td><strong>Force Completion:</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 1</th>
<th>Multiple Choice</th>
<th>4 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>When using the pen tool, these are used to adjust the shape and direction of a curve.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ direction lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ direction points</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ both a and b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ neither a nor b</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 2</th>
<th>Multiple Choice</th>
<th>4 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use this feature to minimize the size of a file without changing the quality or dimensions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ flatten</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ reduce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ resize</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ compress</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Research and Reference
A third category in which Web-based multimedia is expanding is in the area of research and reference. Today, newsletters, newspapers, magazines, books, encyclopedias, and other reference materials are being offered online via the Web. In many cases, they represent “electronic” versions of existing research and reference materials. The challenge to the developer is to make it easy for the user to find the desired information, as well as to use other multimedia elements such as sound, video, and animation to enhance the user experience effectively. Research Web sites and reference Web sites, such as Discovery.com and Nasa.gov (see Figure 1-10), offer full multimedia features including full-text search engines, graphics, audio, and video.

QUICK TIP
Web designers and developers rely on content specialists to ensure that the information on a Web site is accurate. However, there is no guarantee that all of the information on the Web is accurate or reliable. Be sure to verify information you read.

FIGURE 1-10
The NASA Web site offers children and adults a wealth of information
An increasing number of self-help and how-to guides are also being offered as interactive multimedia applications on the Web. Access to online counselors (see Figure 1-11) and psychologists, both real and simulated, are quite popular, as are guides to help you build a deck, repair a car, and plant a perennial garden.

Some advantages to offering reference materials in a Web-based multimedia format follow:

- **Cross-referencing**. Multimedia research and reference materials provide links that give the user immediate access to related information.
- **Expanded search capabilities**. Access to search engines enables users to locate specific topics of interest.

**QUICK TIP**

To hone in on a specific topic or reference requires wisdom, effort, creativity, and diligence. The ability to restrict and expand a search using appropriate keywords as well as advanced search techniques and Boolean operators is of paramount importance to today's information seeker.

- **Multisensory experiences**. By providing information through the use of graphics, sound, animation, and video, the research or reference material comes to life and is often more enjoyable and more memorable than text alone.
Entertainment and Games
A fourth category in which Web-based multimedia is making a significant impact is in Web game and entertainment sites. In fact, when people think of Web-based multimedia, these sites are the first to come to mind because they are examples of some of the most popular and most varied interactive multimedia sites available. Game sites often offer multilevel, multiplayer entertainment that simulates real or imaginary worlds in which characters are controlled, obstacles are encountered, and goals are achieved. From solitaire and dartboards to sites that involve more interactivity, entertainment and game Web sites are bursting with multimedia (see Figure 1-12).

Although the primary purpose of most games is entertainment, many Web sites are designed to educate as well as entertain. Again, examples abound and there is something for everyone. At Crayola.com (see Figure 1-13) kids can, among other things, mix colors and test their color IQ.
In this lesson, you will learn about the varied careers in Web-based multimedia and how to prepare for these careers through the development of a professional portfolio.

As more industries are discovering the value of and creative uses for the Web, consumers are demanding a wider variety of interactive Web-based multimedia products and services. To respond to this demand, industries must employ people who can help them deliver the Web presence consumers want. Opportunities for individuals with Web-based multimedia skills are varied.

Preparing for a career in Web-based multimedia is a bit like trying to hit a moving bull’s-eye. Because the technology changes so rapidly, Web professionals must thrive on change and chaos, love learning, take initiative, and engage actively in self-education. Because Web design and development can be time-consuming, successful Web designers and developers not only must be good at what they do but must also love what they do, or they will quickly tire of it.

**QUICKTIP**

If you are interested in a career in Web-based multimedia, be prepared to be a lifelong learner. Keeping up with the latest technologies by reading, experimenting, and teaching yourself is of paramount importance. Consider doing this through conferences or seminars, which can be expensive, or through free resources such as the Web.

In the past, Web professionals were self-taught and entered the wonderful world of the Web from various backgrounds. Today, many colleges and universities offer classes, certificates, and degrees in Web design and development (see Figure 1-14).

When looking for a job, your most important asset may be your electronic portfolio (also called an ePortfolio). A compelling portfolio of sample work and projects to share with potential clients and employers will provide depth to your interviews (see Figure 1-15). A Web search using the
keyword “portfolio” should provide links to sample portfolios to analyze and review.

As you plan and prepare your portfolio, think about the type of work that you would like to do. If your goal is to write code for a living, then develop a portfolio with an emphasis on Web page development. If your goal is to design original artwork, then ensure that your portfolio emphasizes your abilities as a graphic artist.

**QUICK TIP**

It is helpful to include a list of clients in your portfolio. Testimonials or references lend credibility to your work and prove that you can work with clients to complete a project. Even if the jobs that you have completed thus far are the result of an unpaid internship, they should still be listed.

In addition to developing a compelling portfolio of your work, be prepared to prove yourself on the spot. Many employers are asking prospective employees to prove that they have the requisite skills to complete a job. During the interview process, do not be surprised if you are asked to take a test. Depending on the type of position you are seeking, you may be asked to optimize images, create an intriguing animation, or design a Web site.
A few years after the inception of the Web, there were Web masters who did everything. They designed, developed, and maintained the entire site. Today, very few people are able to do it all alone. Some people work independently and contract with small companies to develop simple Web sites. However, beyond simple Web sites, even people who are independent contractors generally end up developing specialty areas and contracting or subcontracting portions of a job. Regardless of the industry, creating a multimedia Web site is usually a team effort (see Figure 1-16).

**QUICKTIP**

Keep in mind that a project team will rarely include someone for every potential position. At times, the same person will fill several positions within a project. For example, the audio specialist may also be responsible for the video on a project.
As is true in most new industries, the job titles encountered in the Web world are varied and constantly changing. There are position announcements for Web master, Web designer, and Web developer. Within specialty areas there are listings for graphic artists, graphic specialists, graphic designers, animation specialists, animation designers, and directors of animation.

Position titles and job duties vary depending on the industry and even within the same industry. Some of the more common team member categories and their corresponding duties are listed in Figure 1-17 (Note: Careers have been grouped into broad categories and general skills associated with those categories listed). Not all jobs in a category will require all the skills listed and not all skills required are listed, but the information presented in Figure 1-17 provides a broad overview of Web-based multimedia careers.

**FIGURE 1-17**
Categories for careers in Web-based multimedia and their associated skills

<table>
<thead>
<tr>
<th>Category</th>
<th>Sample of skills these jobs require</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management-related positions</td>
<td>Management skills, high-level communication skills, the ability to see the big picture, understanding of Web-based multimedia tools, knowledge of copyright and other laws, negotiation skills, and human resource skills</td>
</tr>
<tr>
<td>Production-related positions</td>
<td>Skills in markup, scripting and programming languages, as well as Web-based multimedia authoring programs; excellent graphic and typography skills; artistic talent and a good understanding of design; good communication skills; and expertise with Web-based multimedia programs and creation tools</td>
</tr>
<tr>
<td>Art-related positions</td>
<td>Good graphic editing skills; a talent for layout and design; expertise in working with various drawing and paint programs; and a basic knowledge of Web authoring tools</td>
</tr>
<tr>
<td>Content-related positions</td>
<td>Excellent writing, editing, and planning skills; research skills; and attention to detail</td>
</tr>
<tr>
<td>Support-related positions</td>
<td>Communication skills; attention to detail; and excellent human relations skills</td>
</tr>
</tbody>
</table>
Production-related positions.

Audio specialist: The audio specialist works with musical scores, sound effects, voice-overs, vocals, and transitional sounds, and is responsible for recording, editing, and selecting voices, sounds, and music. The audio specialist should have an in-depth knowledge of digital sound, skills in sound editing, and knowledge of streaming technologies and multimedia authoring tools.

Computer programmer: The programmer creates the underlying code that makes the Web site interactive and responsive to the user’s actions. Programmers help craft and implement the project by writing lines of code that define the structure, interactions, and technical implications of certain decisions. Computer programmers are the foundation of the project because they help the Web team realize its collective vision.

Video specialist: The video specialist manages the process of capturing and editing original video. Today’s Web-based video specialists need in-depth skills in digital video and video production as well as an extensive knowledge of streaming technologies.

Web designer: The Web designer develops or refines a design process and efficiently creates a cohesive and well-planned Web site from the front-end. The Web designer is both an artist and a technician and needs a talent and eye for creating an effective color scheme and layout. The Web designer must ensure that all of the multimedia elements on the Web site are high quality and consistent with the purpose and goals of the overall theme of the site.

Web developer: The Web developer ensures that the communication between the front-end of the Web site and the back-end of the Web site is working. It is the responsibility of the Web developer to make sure that data input from users is properly verified and transmitted.

Web master: The Web master is responsible for making sure the Web page is technically correct and functional on the Web server and that the Web server remains accessible to the user.

Art-related positions.

Animation specialist: The animation specialist creates two-dimensional and three-dimensional animation by taking a sequence of static images and displaying them in rapid succession on the computer screen. This creates the illusion of motion. The animation specialist must have graphic design skills and skills in the newest animation programs.

Art director: The art director’s responsibility is to coordinate the creation of the artwork for the project. Traditionally, art directors have primarily worked with visual and graphic artwork. However, with interactive media, the art director may also be responsible for sound, animation, and video.

Graphic artist/designer: The graphic artist is responsible for creating and designing all of the graphic images for a project. This includes buttons, bars, backgrounds, type, illustrations, 3-D objects, logos, and photographs. The graphic designer works closely with the interface designer and the Web designer to create a unified and cohesive look for the Web site.

Interface designer: The interface designer is responsible for the look of the Web site’s interface and navigation method. Interface designers create and design icons, buttons, and the other onscreen elements that are used to navigate the site. In addition, this person is responsible for what users hear, touch, and feel.

Interface designers need to understand both the human cognitive process and how to develop intuitive human interfaces. Consequently, these people will generally have a background in psychology with an emphasis on human factors.

Photographer: The photographer shoots and captures appropriate, compelling, and high-quality photos to be used on the Web site.

Videographer: The videographer shoots and captures appropriate, compelling, and high-quality video footage to be used on the Web site.
- **Content-related positions.**

**Content specialist:** The content specialist is responsible for providing authenticity and accuracy to the information on a Web site. Clients often serve as content specialists, particularly when a Web site is being created for an e-commerce business.

**Instructional specialist:** The instructional specialist is an expert in designing instructional projects. This person’s responsibilities include defining learning objectives and outcomes, as well as establishing the delivery and flow of a project around the best educational strategies. Instructional specialists should have a background in educational theory and curriculum development as well as knowledge of the basic principles of multimedia authoring. Most Web-based distance learning packages were designed with the aid of one or more instructional specialists (see Figure 1-18).

**Writers/editors:** Depending on the purpose of the Web site there may be technical writers, scriptwriters, creative writers, or journalists involved in the project. Because most Web sites are interactive and nonlinear, Web writers must learn to bridge the gap between journalistic reporting and traditional writing. Editors work closely with the Web writers to ensure that the text is grammatically correct and that the content flows in a logical fashion.

- **Support-related positions.**

**Production positions:** An entry-level production position may involve tasks such as scanning and cleaning up photographs or optimizing images for the Web. Entry-level production positions provide an excellent learning environment and an opportunity to learn the real-world aspects of the job. In addition, these positions give the company an opportunity to evaluate the work habits and skills of potential employees.

**Quality-assurance:** A tester is responsible for testing the Web site on multiple platforms using different versions of different browsers. Testers also evaluate the design of the site and the intuitiveness of the user interface.

**Sales/marketing:** Sales and marketing people are involved in providing input and feedback on the site. Once the Web site is completed, **customer support personnel** respond to users who have questions and problems.
SUMMARY

Our society depends on information, and the Web has become the most efficient and effective way for users to get it. Adding multimedia to the Web has enabled users to become active participants who can shop, conduct business, research, or simply play a game. Web-based multimedia is all around you. A fundamental feature of Web-based multimedia is interactivity.

The Web has grown far beyond anyone’s wildest expectations and today there are billions of Web sites. Because of increased bandwidth, improved compression, more powerful processors, and better software, it is also becoming easier to include multimedia on Web pages. Multimedia means using more than one media. Today, it implies using the computer to digitize and integrate text, graphics, animation, sound, and video. Multimedia can be linear, but it is more often nonlinear. Interactive multimedia enables users to directly respond to and control these digitized media elements making them active participants in the Web site.

Web sites that include multimedia enable Web designers to create rich, multisensory experiences that accommodate multiple learning styles and enhance the user’s enjoyment at a site. In addition, retention improves when people are able to see, hear, and interact with the content.

Multimedia Web sites are as varied as the users they target and are developed for e-commerce, Web-based training and distance learning, research and reference, as well as entertainment and games. As improvements in technology and bandwidth continue, the use of multimedia on the Web will also grow.

Opportunities for individuals with Web-based multimedia skills are diverse. Position titles and job duties vary depending on the industry and even within the same industry. Regardless of the industry, creating a multimedia Web site is usually a team effort. Careers in multimedia include the following: executive producer, project manager, audio specialist, computer programmer, video specialist, Web designer, Web developer, Web master, animation specialist, art director, graphic artist/designer, interface designer, photographer, videographer, content specialist, instructional specialist, writer/editor, production, quality-assurance, and sales/marketing.

Preparing for a career in Web-based multimedia is a bit like trying to hit a moving bull’s-eye. The successful candidate must be a lifelong learner because Web technologies and tools are constantly changing. In the past, most Web professionals were self-taught and entered the world of the Web from various backgrounds. Today, many colleges and universities offer classes, certificates, and degrees in Web design and development. When looking for a job, your most important asset will likely be your electronic portfolio.

In addition to developing a compelling portfolio of your work, you may be asked to complete a hands-on test during the interview process. Be prepared to prove that you have the requisite skills to complete a job. Do not underestimate the value of soft skills including excellent communication and interpersonal skills, a strong work ethic, and the ability to work with clients and as part of a team. These skills are highly valued by all employers.
KEY TERMS

animation specialist  multimedia
ARPANET  nonlinear
art director  pay-per-click
audio specialist  photographer
computer programmer  portfolio
content specialist  producer
customer support personnel  production manager
digitized  production position
directory-based search engine  project manager
distance learning  quality-assurance
e-commerce  sales/marketing
editor  spider-based search engine
electronic portfolio  tester
ePortfolio  video specialist
executive producer  videographer
graphic artist  Web
graphic designer  Web-based multimedia
hypermedia  Web-based training
instructional specialist  Web browser
interactive multimedia  Web designer
interactivity  Web developer
interface designer  Web master
Internet  World Wide Web
linear  writer
Mosaic
Match each term with the sentence that best describes it.

a. ARPANET  
   b. directory-based  
   c. distance learning  
   d. e-commerce  
   e. interactivity  
   f. interface designer  
   g. Mosaic  
   h. multimedia  
   i. nonlinear  
   j. pay-per-click  
   k. portfolio  
   l. project manager  
   m. spider-based  
   n. tester  
   o. Web developer

1. Search engines that give priority placement to those offering top bidding for keywords.
2. This browser was the first cross-platform, graphical-user interface Web browser that fully exploited the Web's hypermedia capability.
3. Search engines that automatically roam the World Wide Web adding the contents of the Web sites they visit to their database.
4. Most Web sites use this navigation approach, in which there is no established or predefined order for viewing the contents of a Web site.
5. Search engines that are selective, meaning that humans choose which sites to add to the database.
6. This person evaluates the design of the site and the intuitiveness of the user interface.
7. This term describes working with more than one type of digitized media element.
8. This person generally has a psychology background and is responsible for designing the onscreen elements with which the user will interact.
9. This feature gives the user control over the content.
10. Term used to describe solutions for companies, small or large, that wish to sell products or services through the Internet.
11. This person is responsible for forming a project, moving it into production, and overseeing its creation.
12. This is a collection of sample work and projects that can be shared with potential customers and employers.
13. This person ensures that data input from users is properly verified and transmitted.
14. The Internet was a result of this project.
15. This multimedia application allows students to take courses online.

Answer each question either in writing or in a class discussion as directed by your instructor.

1. How does multimedia aid learning?
2. What are four Web-based multimedia categories? How do these categories aid users?
3. In what ways do spider-based search engines, directory-based search engines, and pay-per-click search engines differ?
4. How do Web developers, Web designers, and Web masters differ?
5. What are some practical applications of a portfolio? What should be included in a portfolio?
You have been hired recently by WebsByCT. Your first project will be to design a Web site for The Inn at Birch Bay. Your first task is to review resort Web sites to understand how they are designed. You begin your research for this project by studying the Web site shown in Figure 1-19 and completing the following questions. For each question indicate how you determined your answer.

1. Connect to the Internet, go to www.course.com, navigate to the page for this book, click the Student Online Companion link, then click the link for this chapter.

2. Open a document in a word processor, save the file as Ch1dp1, then answer the following questions:
   a. Whose Web site is this?
   b. What is the purpose of the site?
   c. Who is the target audience?
   d. What multimedia elements are used in this site?
   e. How are the multimedia elements used to enhance this site?
   f. Do you think that the use of multimedia is effective? Why or why not?
   g. What suggestions would you make to further enhance the site using multimedia and why?

FIGURE 1-19
Sample Web site with multimedia elements

A Swiss Inn in the Catskill Mountains

Nestled on a hillside near the base of one of the tallest peaks in the spectacular Catskill Mountain State Park, the Alpine Inn has served for some half a century as a haven for lovers of the outdoors attracted to the diverse enjoyments offered by this unparalleled four-season vacation wonderland.

The Alpine Inn: the place - the philosophy
You are an intern with a company that develops multimedia-rich Web sites for clients. At your intern training you were told that there are numerous companies in the business of developing Web sites for others, and that many of these companies use multimedia in their own Web site to promote themselves, as shown in Figure 1-20. You have been asked to conduct the following research and to write a report of your findings.

1. Use your favorite search engine to locate three of these companies.
2. Open a document in a word processor, save the file as Ch1pb1, then fill in the following information for each company:
   a. Company name
   b. Contact information (address, phone, and so on)
   c. Web site URL
   d. Company mission
   e. Services provided
   f. Sample list of clients
   g. Describe three multimedia elements the company has used in its site. Were these elements effective? Why, or why not?
   h. Describe three applications of multimedia the company included in its portfolios (or showcases or samples). Were these effective? Why, or why not?
   i. Would you work for this company? Why, or why not?
3. Compare your three analyses. Of the three companies you reviewed, name the company you would recommend to develop a multimedia-rich Web site and explain why.

**FIGURE 1-20**
Sample Web site of a company that develops multimedia

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**One Step Beyond**

4. Create a table using a word processing program. Use the column heads: Multimedia element, Description, Advantages, Disadvantages.
5. List the multimedia elements you identified on the three sites you reviewed. Provide a brief description of each element. Then list the advantages and disadvantages of using each element in a Web site.

**Two Steps Beyond**

6. Continue to review Web sites and their use of multimedia elements. Add new elements you find to the table you created in step 4. Include the URL for a site containing a new multimedia element so you can easily revisit the site.
You have strengths in many areas, and so at this time, you are still undecided about which multimedia career path to follow. You decide to use an online job-search Web site to help you research career opportunities in multimedia, including job requirements. You know that a portfolio will be a critical part of your job application, so you also decide to investigate portfolios.

1. Review the job titles listed in this chapter. Select one that you would like to find out more about as a career possibility.

2. Complete an online job search for jobs with the title you selected using a Web placement service such as Monster.com, as shown in Figure 1-21. This particular site allows you to specify an area of interest such as graphic artist; a company, if desired; a location, and an industry category.

3. Open a document in a word processor, save the file as Ch1pb2, then answer the following questions:
   a. What information did you provide in order to conduct your search?
   b. List three jobs listed in your search results and specify why each one interests you.
   c. Describe each job including the job description, title, company, salary, and other useful information.
   d. What are the requirements? (technical skills, soft skills, education, and so on)

4. Conduct an online search for sample portfolios. Choose one that you could use as a template when creating your portfolio, which you might want to include with job applications.
   a. Describe why the portfolio you selected would be a good template.
   b. Take two or more screen shots of the portfolio site and include them as part of this report, or include the Web address of the site in this report.

One Step Beyond

5. Identify one job in multimedia from the three you identified in step 3 that interests you. Write a description of that career. List skills and education required to secure that job. Conduct additional research to provide a comprehensive list of skills.

6. Write a concluding paragraph explaining how your talents are suited for that job. Provide concrete examples.

Two Steps Beyond

7. Begin designing your own portfolio. Based on your research in step 4, identify what you would include in your personal portfolio.

8. Identify items in the list that you have already completed and items that you will be working on as you pursue your career in multimedia.