Understanding Web Applications

IN THIS CHAPTER

- 4.1 Understand Web page development
- 4.2 Understand Microsoft ASP.NET Web application development
- 4.3 Understand Web hosting
- 4.4 Understand Web services
Understand Web page development

**SCENARIO:** Tanja owns a small dance studio and is looking for ways to bring in new customers and improve communications with her existing customers. She is not particularly knowledgeable about web design, but several years ago one of her dance students offered to create a website for the studio. That student has moved on to the university, so Tanja has relied on a few different volunteers to maintain the site. As a result, the site is disorganized and lacks consistency—the volunteers all used different colors and fonts that resulted in a very non-professional website.

Knowing that she can’t fix the site herself, she has asked her nephew, Maxim, to help. Before Maxim creates a page, he wants Tanja to have at least a basic understanding of the technology involved.

1. Which technology uses “tags” to indicate how information should be displayed in a web browser?
   - a. HTML
   - b. XML
   - c. JavaScript

2. Which of the following is a key advantage of using CSS?
   - a. It allows a web page to be interactive.
   - b. It allows a site to incorporate multimedia clips, such as videos and music.
   - c. It simplifies the formatting of multiple pages within a site.

3. What is JavaScript?
   - a. a markup tag that manages various font settings
   - b. a server-side technology for running Java applications
   - c. a client-side technology for making web pages interactive
Answers

1. What uses tags to specify how data should be displayed on a web page?
   a. HTML

2. An advantage of CSS is:
   c. It simplifies the formatting of multiple pages within a site.

3. JavaScript is:
   c. a client-side technology for making web pages interactive

Essential details

- HTML stands for **HyperText Markup Language** and uses markup tags to specify how information should be displayed on a web page.
  - HTML **tags** are surrounded by angle brackets. The `<p>` tag indicates a paragraph.
  - Most HTML tags work in pairs—an opening tag and a closing tag.
- CSS works in conjunction with HTML to indicate how data should be presented, including colors and fonts.
  - Although styles can be defined for an individual page, they can also be defined in a separate document and shared by each web page in a site. That means a developer can make a change to the CSS document and the look of the entire site will change! This makes it easy to ensure that each page in a site looks consistent.
- **JavaScript** is a scripting language that allows developers to write code that goes beyond the markup limitations of HTML.
  - JavaScript is frequently used to make web pages more interactive.
  - Although JavaScript itself is a client-side technology, it is often used in conjunction with server-side technologies such as ASP.NET.

**FAST TRACK HELP**

Understand Microsoft ASP.NET Web application development

SCENARIO: Maxim has spent quite a bit of time talking with his aunt, Tanja, about a new website for her dance studio and he is beginning to get ideas on how to update and improve the site. Tanja’s old site is pretty basic, and Maxim believes he can add a lot of exciting features that will appeal to younger, web-savvy customers.

One of his first priorities is to make the site a little more interactive with buttons that respond to mouse rollovers and a slideshow to display images of the studio. He also wants to implement online shopping for dance apparel. That update would include a “wish list” feature for users to “save” items they’re interested in purchasing at a later time.

1. Maxim’s mouse rollover effect can be accomplished with a client-side script. Which of the following is a client-side technology?
   a. PHP
   b. ASP.NET
   c. JavaScript

2. In a standard HTML site, page information is lost each time the user refreshes a page or moves to a different page. Which of the following allows page information to be retained?
   a. state management
   b. page life cycle
   c. CSS

3. Maxim wants to use cookies to keep track of users’ wish lists. What is a cookie?
   a. text data stored by the users’ web browser
   b. a back-end database for storing user information
   c. a server-side scripting tool for saving session data
Answers

1. A client-side technology is:
   c. JavaScript

2. The process that allows page information to be retained is:
   a. state management

3. A cookie is:
   a. text data stored by the users’ web browser

Essential details

- In a web application, a program or script can be either **client-side** or **server-side**.
  - A client-side script is downloaded by the user’s web browser and executed on that user’s computer (the “client”) when the page is loaded.
  - A server-side script is executed by the web server before the web page is sent to the user’s computer.

- The **event model** in a web application is similar to that of a client application. One significant difference is that an event is **raised** on the client side (for example, when the user clicks a button), but the event is **handled** on the server side.

- When an ASP.NET page runs, the page performs a series of processing steps in what is called the **page life cycle**. These steps include initialization, instantiating controls, restoring and maintaining state, running event handler code, and rendering.

- **State management** refers to the process by which a developer maintains page information over multiple requests for the same or different pages.

FAST TRACK HELP

Understand Web hosting

**SCENARIO:** With plans for Tanja's dance studio website beginning to take shape, it's time for Maxim to think about how he will put the site on the Internet. Maxim doesn't have a lot of experience creating web applications—most of his experience is with traditional Windows applications. He knows that a website is hosted on a server, but he's never worked with a server before. Plus, his aunt doesn't have a lot of money for this project, so he has to keep costs to a minimum until the site brings in some business.

1. **Why is an ISP probably a good choice for Maxim?**
   a. ISPs are always free.
   b. An ISP subscription includes a copy of Windows Server.
   c. The ISP will provide technical support and maintenance.

2. **An employee at a reputable ISP tells Maxim that they use Windows Server and that he needs to understand the basics of Internet Information Services (IIS). Which of the following is NOT a role of IIS?**
   a. to deliver HTML documents to web browsers
   b. to enable server-side scripting, such as ASP.NET
   c. to enable client-side scripting, such as JavaScript

3. **The ISP tells Maxim they support Virtual Directories. What is a Virtual Directory?**
   a. a folder on Maxim's computer that maps to the ISP, so he can easily publish the site
   b. a directory name that maps to the physical location on the server
   c. a listing service that ensures that users can find the site with a search engine
Answers

1. Maxim should use an ISP because:
   c. The ISP provides technical support and maintenance. With an ISP, a developer can focus on developing the site without worrying about setting up or maintaining a server.

2. The following is NOT a role of IIS:
   b. to enable server-side scripting, such as ASP.NET

3. A Virtual Directory is:
   b. a directory name that maps to the physical location on the server

Essential details

• An ISP (Internet Service Provider) is a business that supplies Internet connectivity services, often including web hosting.
• An ISP will generally provide:
  • space on a server
  • maintenance and support
  • email service
  • security and stability
• IIS (Internet Information Services) is a part of Windows Server that delivers content such as web pages by using HTTP over the World Wide Web.
  • IIS provides functionality essential for deploying ASP.NET web applications.
  • IIS also supports other server-side scripting, such as PHP.
• Virtual Directories can be configured in IIS and allow access to folders and files outside of the site’s home folder.

FAST TRACK HELP

• www.iis.net
Understand Web services

**SCENARIO:** Maxim has worked hard to publish an exciting, professional site for Tanja's dance studio. It’s been available for more than a month now and customers have given Tanja great feedback. They love all of the interactive media and the simple consistency of the overall design.

Best of all, the new site has increased Tanja’s income by attracting new students and by allowing customers to purchase items from home. With the extra money, she wants to pay Maxim to put a little more into the site—no major changes, just some catchy additions. She’d like her home page to display the current weather and traffic conditions, and she thinks a Bing search box would help users find information quickly.

Although Maxim has never programmed this type of functionality before, he knows he can use web services to help.

**1. In this context, what is a web service?**
   a. a process for running a script and serving the resulting HTML to a client
   b. a program that enables secure web-based interactions
   c. a system that allows multiple programs to interact via the Internet

**2. When using the Bing API to add search capabilities to a site, what is the web service role of Bing?**
   a. requester
   b. provider
   c. processor

**3. Which of the following is a framework commonly used to access a web service?**
   a. Java
   b. SOAP
   c. ASP.NET
Answers

1. A web service is:
   c. a system that allows multiple programs to interact via the Internet

2. The role of Bing in this implementation is as the:
   b. provider. The dance studio website is the requester.

3. The framework used to access a web service is:
   b. SOAP

Essential details

- **Web services** are frameworks that allow programs (or sites) to communicate with each other via the web.
- **SOAP** (Simple Object Access Protocol) is an XML-based protocol for exchanging structured and typed information via the web.
  - Numerous SOAP services are available, including searches (such as Bing), current weather, stock quotes, traffic conditions, and more.
- **WSDL** (Web Services Description Language) is an XML format that allows for better interoperability among web services and development tools.
  - WSDL uses SOAP to pass messages to the provider and interpret the results.

Fast Track Help