Module 1

Getting Started on the Wireless Web

The Goals of This Module

- Introduce you to the Wireless Web and types of Wireless sites that exist today
- Download and install one or more phone simulators—special programs you can run on your PC that let you access sites on the Wireless Web and display the WML applications you create throughout this book
- Introduce you to Wireless Access Protocol (WAP)
- Create your first Wireless site
For years, computer users have made extensive use of the World Wide Web to find information, send and receive electronic mail, buy and sell stocks, use e-commerce to shop, and more. To “surf” the World Wide Web, users use a browser, such as Internet Explorer or Netscape Navigator, to view the contents of specific Web sites. The Wireless Web extends content much like you find on the traditional World Wide Web to Web-enabled cellular phones and other handheld devices. This module will introduce you to the Wireless Web. Throughout this module you will find, with the exception that you are viewing sites on your cellular phone, that the Wireless Web is very similar to the traditional World Wide Web. To view sites on the Wireless Web, you use a special program called a microbrowser, which resides within a Web-enabled phone. Like sites on the traditional World Wide Web, sites on the Wireless Web have unique addresses, which look very much like traditional Web addresses. If you do not yet have a Web-enabled phone, this module will show you how to download a phone simulator, a program you can run on your PC, that lets you view Wireless Web sites.

What You Need to Access the Wireless Web

To “surf” the Wireless Web, you need a device that contains a microbrowser —special software that is capable of displaying a Wireless Web site. If you have a new cellular phone, your phone quite likely contains a built-in microbrowser. In other words, it is “Web enabled.” If you are shopping for a new phone, you will find that almost all newer phones are Web enabled.

With a Web-enabled phone in hand, you must normally contact your cellular-phone provider to have them turn on (enable) your phone’s access to the Wireless Web. Normally, there is no charge to enable the Wireless Web for your account. However, when you use your phone to surf the Wireless Web, your phone company will charge your account on a per-minute basis, just as if you were placing a voice call using your phone.

If you do not yet have a Web-enabled phone, you can download phone-simulator software to your PC. As shown in Figure 1-1, the phone simulator software behaves as a Web-enabled phone. Thus, using your PC’s connection
to the Internet and the phone simulator, you can traverse the Wireless Web. Later in this module, you will learn how to download and install various phone simulators. As you create your own WML applications, you should test each application using each of the simulators. As your applications become more complex, you will find that different simulators implement various Wireless Markup Language (WML) tags differently. Because users may access your Wireless applications using different phones, you should get into the habit of testing your applications with the various simulators.
1-Minute Drill

- What is a Web-enabled phone?
- What is a microbrowser?

Previewing the Wireless Web

Although the Wireless Web is still very much in its infancy, you can find a variety of useful sites on the Wireless Web today. This section examines several sites you should visit and bookmark.

Wireless Search Engines

Just as you use search engines, such as Yahoo, Google, and Excite, to locate information on the World Wide Web, you will also find various Wireless search engines, as shown in Figure 1-2.

Table 1-1 lists several search engines on the Wireless Web.

<table>
<thead>
<tr>
<th>Search Engine</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>2thumbsWAP.com</td>
<td><a href="http://2thumbswap.com/wap/">http://2thumbswap.com/wap/</a></td>
</tr>
<tr>
<td>Google</td>
<td><a href="http://wap.google.com">http://wap.google.com</a></td>
</tr>
<tr>
<td>Gixom</td>
<td><a href="http://webfront.de/i.wml">http://webfront.de/i.wml</a></td>
</tr>
<tr>
<td>m-find</td>
<td><a href="http://m-find.com">http://m-find.com</a></td>
</tr>
<tr>
<td>Mfinder</td>
<td><a href="http://mfinder.cellmania.com">http://mfinder.cellmania.com</a></td>
</tr>
<tr>
<td>Wapall</td>
<td><a href="http://www.wapall.com">http://www.wapall.com</a></td>
</tr>
<tr>
<td>WapUSeek</td>
<td><a href="http://www.wapuseek.com">http://www.wapuseek.com</a></td>
</tr>
</tbody>
</table>

Table 1-1 Search Engines on the Wireless Web

- A Web-enabled phone is a cellular phone that contains built-in software—a microbrowser—you can use to view sites on the Wireless Web.
- A microbrowser is a program built into a Web-enabled phone that you can use to view a Wireless Web site.
Wireless News and Information Sites

Using a Web-enabled phone, you are only a few clicks away from Wireless sites that provide news and information, as shown in Figure 1-3.

Table 1-2 lists several news and information sites on the Wireless Web.

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Guardian</td>
<td><a href="http://www.guardian.co.uk/wml/">http://www.guardian.co.uk/wml/</a></td>
</tr>
<tr>
<td>NewsAide.com</td>
<td><a href="http://www.newsaise.com/wap/index.wml">http://www.newsaise.com/wap/index.wml</a></td>
</tr>
<tr>
<td>Honolulu Star Bulletin</td>
<td><a href="http://holo.starbulletin.com/">http://holo.starbulletin.com/</a></td>
</tr>
<tr>
<td>Ananova</td>
<td><a href="http://wap.ananova.com/">http://wap.ananova.com/</a></td>
</tr>
<tr>
<td>Excite UK</td>
<td><a href="http://www.excite.co.uk/wap/news/">http://www.excite.co.uk/wap/news/</a></td>
</tr>
</tbody>
</table>

Table 1-2 News and Information Sites on the Wireless Web
Wireless Sports Information Sites

If you are sitting in the stands watching one sporting event, you can use a Web-enabled phone to stay up to date with other games and events via sports information sites on the Wireless Web, as shown in Figure 1-4.

Table 1-3 lists several sports-related sites on the Wireless Web.

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAPaRESULT</td>
<td><a href="http://www.waparesult.com/index.wml">http://www.waparesult.com/index.wml</a></td>
</tr>
<tr>
<td>Home of Formula One</td>
<td><a href="http://wap.homeofformulaone.com/">http://wap.homeofformulaone.com/</a></td>
</tr>
<tr>
<td>NASCAR Fan Site</td>
<td><a href="http://tagtag.com/sites/n/a/f/nascar/0.php3?tagtagrequest=1">http://tagtag.com/sites/n/a/f/nascar/0.php3?tagtagrequest=1</a></td>
</tr>
<tr>
<td>Sports.com</td>
<td><a href="http://mobile.sports.com/">http://mobile.sports.com/</a></td>
</tr>
<tr>
<td>Home of Tennis</td>
<td><a href="http://wap.homeoftennis.com/">http://wap.homeoftennis.com/</a></td>
</tr>
</tbody>
</table>

Table 1-3 Sports Sites on the Wireless Web
Wireless Financial Sites
The financial industry was one of the first to readily adopt the Wireless Web. Using a Web-enabled cellular phone, you can check stock prices, receive alerts regarding your investments, or even make trades, as shown in Figure 1-5.

Table 1-4 lists several finance-related sites on the Wireless Web.

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Smart</td>
<td><a href="http://agsub.stocksmart.com/ss.wml">http://agsub.stocksmart.com/ss.wml</a></td>
</tr>
<tr>
<td>Charles Schwab</td>
<td><a href="http://pocketbroker.schwab.com">http://pocketbroker.schwab.com</a></td>
</tr>
<tr>
<td>CSFBdirect</td>
<td><a href="http://phone.csfbdirect.com">http://phone.csfbdirect.com</a></td>
</tr>
<tr>
<td>TD Waterhouse</td>
<td><a href="http://www.wtdw.com">http://www.wtdw.com</a></td>
</tr>
</tbody>
</table>

Table 1-4  Financial Sites on the Wireless Web
If you need flowers, airline tickets, or a book on wireless protocols, you can order them at mobile-commerce (m-commerce) sites on the Wireless Web, as shown in Figure 1-6.

Table 1-5 lists several sites on the Wireless Web that support m-commerce.

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planetwide Mall</td>
<td><a href="http://wapgoshop.com">http://wapgoshop.com</a></td>
</tr>
<tr>
<td>PriceGrabber</td>
<td><a href="http://www.atpgw.com">http://www.atpgw.com</a></td>
</tr>
<tr>
<td>StoreScanner</td>
<td><a href="http://www.StoreScanner.com">http://www.StoreScanner.com</a></td>
</tr>
<tr>
<td>Edmonds.com</td>
<td><a href="http://wap.edmunds.com">http://wap.edmunds.com</a></td>
</tr>
<tr>
<td>Webswappers</td>
<td><a href="http://wap.webswappers.com">http://wap.webswappers.com</a></td>
</tr>
</tbody>
</table>

Table 1-5 Ways to Spend Money on the Wireless Web
Surfing the Wireless Web

As it turns out, surfing the Wireless Web using your Web-enabled phone, or a phone simulator, is not that much different than traversing the traditional World Wide Web using a browser such as Microsoft Internet Explorer or Netscape Navigator. To surf the Wireless Web, you will use a browser, which users refer to as a microbrowser, to display a site’s contents and to move from one site to another.

Hint

To save you from having to type on the phone’s numeric keypad, most Web-enabled cellular phones let you bookmark the sites you use on a regular basis. After you bookmark a site, you can normally quickly select the site from a menu that appears within your browser.
To visit a Wireless site, you specify the site’s address within the microbrowser. If you are using a phone simulator, you can simply type the address (URL) of the site you desire, using your keyboard. If you are using a Web-enabled cellular phone, you will use your phone’s keypad to enter the address.

**Hint**

Depending on the Web-enabled phone you are using, the steps you must perform to bookmark your commonly used sites will differ. Some of the phone services that let you view your cellular-phone information on your computer using the World Wide Web, also let you type in bookmarks as you customize your account settings. For more information on setting bookmarks for sites on the Wireless Web, contact your cellular provider or visit your provider’s Web site.

**Typing on a Phone’s Numeric Keypad**

To type using your phone’s numeric keypad, you will press the number key that corresponds to the letter you desire. For example, for the letter A, you would press the 2 key one time. Likewise, for the letter D you would press the 3 key one time. For the letter B, which is the second letter listed for the 2 key, you would press the 2 key twice. For the letter C, which is the third letter listed for the 2 key, you would press the 2 key three times.

As you press the keys, your phone will toggle through the corresponding letters. If you happen to press a key too many times, simply continue to press the key until you get back to the letter you desire. To type two successive letters, such as AA, you would press the 2 key one time, pause until the phone advances the cursor to the next letter position, and then press the key a second time for the next letter.

**1-Minute Drill**

- How would you type the letters K and M using a cellular phone’s numeric keypad?

- To type the letter K, press the 5 key twice in quick succession. To type the letter M, press the 6 key once.
Accessing the Wireless Web via a Web-Enabled Phone

To access the Wireless Web using your cellular phone, you will normally select a menu option on your phone that corresponds to the Wireless Web. Most Web-enabled cellular phones will then display a menu of links to news feeds, search engines, and other sites. In addition, many phones provide a “Go to” option you can select, which then lets you type in the URL for the Web site you desire. After you type in the address using your phone’s keypad, the microbrowser will display the corresponding site.

**Hint**

As more companies move to the Wireless Web, many will use the same URL for their traditional and Wireless Web sites. For example, using the URL http://www.WirelessLookup.com, you can view the WirelessLookup.com Web site using a traditional browser, such as Internet Explorer, or a microbrowser within a Web-enabled phone.

Traversing Wireless Links

As you view a site from a microbrowser, you may encounter links to other pages on the site, as well as links to other sites. By selecting the link, you can quickly move from one page or one site to another. For example, the left image in Figure 1-7 illustrates the links within the Go2 site at http://www.Go2.com.

**Figure 1-7** Using a link to move from one Wireless site to another
If, for example, you highlight the Restaurants link and press the phone’s accept button, the browser will load and display a page from which you can select the type of food you desire, as shown in the right image in Figure 1-7.

**Downloading a Phone Simulator**

To simplify your WML development and to better test your applications, you should download phone-simulator software that you can use to view Wireless sites and to run the WML applications you create. Across the World Wide Web, you can download phone simulator software for various types of phones. In general, you will likely pick one simulator that you use on a regular basis. However, before you place your applications on the Wireless Web, you should use each simulator to test your applications. As you will learn, each phone simulator behaves slightly differently for various WML statements. By testing your applications within each simulator, you will reduce the errors users may encounter as they view your Wireless site using a variety of Web-enabled phones.

**Downloading the Phone.com Software Development Kit**

The most commonly used microbrowser is that produced by Openwave (the simulator was previously available from Phone.com). Throughout this book, the examples will use the Openwave simulator to display the output of the sample programs. To download the phone simulator, visit the Openwave Web site, at http://www.Openwave.com, shown in Figure 1-8. From within the site, download the software development kit.

After you download the phone simulator software, run the program to install the phone simulator on your system. Then, to run the simulator, select Start | Programs | UP.SDK. Windows, in turn, will display a submenu of options. Within the submenu, select the UP.Simulator option to display the
Openwave simulator, as shown in Figure 1-9. Using this simulator, you can type in the addresses of the Wireless sites this lesson presents, as well as the filenames of the WML applications you create throughout this book.

Figure 1-8  The Openwave Web site, where you can download the Phone.com simulator
Within the cellular-phone industry, Nokia is one of the most widely known cellular-phone manufacturers. Like Phone.com, Nokia provides a software development kit you can use to run WML-based applications on your PC. Figure 1-10, for example, shows an application running with the Nokia phone simulator.

To download the Nokia software development kit, visit http://www.Nokia.com and register as a developer. Then, you can download the Nokia WAP Toolkit. After you download the Toolkit, use the WinZip utility to unzip the file, and then perform the software installation. After the installation is completed, you can start the simulator from the Start | Programs submenu.

Like Nokia, Ericsson, which is also a well-known cellular-phone manufacturer, provides a software development kit you can use to create and test WML applications.
applications. To download the Ericsson software development kit, visit http://www.ericsson.com, join the developer’s zone, and then download the software. Figure 1-11 shows the Ericsson phone simulator.

**Note**

WML & WMLScript: A Beginner’s Guide

Figure 1-11 Using the Ericsson phone simulator to run a WML application

Ask the Expert

Question: What is WAP?

Answer: WAP stands for Wireless Access Protocol. In general, WAP, like any set of protocols, provides a standard set of rules that programs must follow. In the case of WAP, the rules specify how programs will communicate across the Wireless Web. One rule, for example, might specify how much information one program can transfer to another at one time. Another might specify how the program should organize the information it sends. For example, to send a large amount of information, the program may break the program into smaller pieces of information, called packets. Within WAP, programmers will find rules that tell them how to format data within each packet. By following such rules, a
Within the Wireless Web, WAP is very much like TCP/IP (the Transmission Control Protocol/Internet Protocol), which governs the rules programs follow to send and receive information across the Internet and World Wide Web. Think of WAP as a set of layers, each of which performs a specific function. The bottom layer, for example, is responsible for data transmission (which usually occurs via satellite links or over fiber-optic cables). At the topmost layer sits the WML applications you will create. Because WML sits on top of WAP, the applications you create do not have to worry about such issues as packets, data transmission errors, or communication speeds, just as HTML Web site developers do not have to worry about such issues on the Internet. Instead, the software that makes up the various layers of WAP perform these functions behind the scenes. Thus, when you create WML applications, you normally do not have to worry about WAP. Instead, you can focus on your WML statements, which sit above, yet take advantage of, WAP.

Question: Are there protocols other than WAP?
Answer: Yes. Within the United States and Europe, the Wireless Access Protocol is the most widely used protocol for Wireless applications. In contrast, in Japan, the most widely used protocol is I-MODE, whose use is driven by NTT DoCoMo. Today, nearly 20 million Wireless users in Japan access I-MODE sites.

To create a WAP-based site, developers normally use languages such as WML. To create an I-MODE site, developers use cHTML (compact HTML), a subset of HTML, which Web developers use to build sites on the World Wide Web.

Technically I-MODE sits on top of NTT DoCoMo’s mobile voice system. While the voice system is circuit-switched, which means you dial your calls, I-MODE is packet-switched, which means that I-MODE is essentially always on. When a user selects an I-MODE item on the phone’s menu, the microbrowser within the phone can immediately download the corresponding data, without having to first dial in to the Wireless Web. In addition, because I-MODE is packet-switched, I-MODE users pay for the data they transfer, as opposed to paying a flat connection time. Today, NTT DoCoMo is aggressively positioning I-MODE for use within Europe. In the future, you should expect to find I-MODE–based phones that support cHTML and WML.
Understanding WML—the Wireless Markup Language

To create a site on the traditional World Wide Web, developers use HTML (the Hypertext Markup Language). In contrast, to build a site on the Wireless Web, developers often use WML (the Wireless Markup Language). Like HTML, WML provides several different tags you can use to format data. For example, to format a paragraph of text, you would use the WML start and end paragraph tags `<p>` and `</p>`, as shown here:

```
<p>WML is the Wireless Markup Language</p>
```

Within a paragraph, you might use the start and end bold text tags `<b>` and `</b>` or the start and end italics tags `<i>` and `</i>` to highlight text, as shown here:

```
<p><b>WML</b> is the <i>Wireless Markup Language</i></p>
```

Throughout this book, you will learn how to use the various WML tags. To create a WML application, you create a file, to which you assign the .wml extension. Within the file, you will place WML tags that format your text, as well as WML tags that direct the microbrowser to perform specific operations, such as getting input from the user or branching to another application or Wireless site.

**Note**

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Ask the Expert

**Question:** What is WMLScript and how does it differ from WML?

**Answer:** To create high-end sites on the traditional World Wide Web, developers often use either the JavaScript or VBScript programming languages. Using these languages, the developer can extend the site’s capabilities beyond those provided by HTML. In a similar way, Wireless Web site developers often use WMLScript to extend a site’s functionality. Using WMLScript, you can add conditional processing to your applications to let the application make decisions—perform if-then processing. In addition, using WMLScript, your applications can perform iterative processing, employing loops to repeat a set of operations a specific number of times or until a specific condition is met. WMLScript is a very powerful programming language. You will learn how to use WMLScript in Module 7.

Note

In Module 7, you will learn how to use WMLScript to perform conditional and iterative processing within a WML application. In addition, you will learn how to create WMLScript functions that perform specific tasks. Before you begin, you may want to download the WMLScript specification from the WAP Forum Web site at http://www.WAPForum.com.

Where to Place Your Wireless Site

Throughout this book’s modules, you will create a myriad of WML applications. Making a WML application available on the Wireless Web is much the same as making an HTML application available on the traditional World Wide Web. To start, you must place the application’s files on a server that is connected to the World Wide Web.
Ask the Expert

Question: How does a Wireless site really differ from a traditional Web site?

Answer: In general, the primary difference between a Wireless Web site and a traditional site on the World Wide Web is the language the developer uses to create the site. Normally, to create a Wireless site, the developer will use a language such as WML. In contrast, to create a traditional site on the World Wide Web, the developer will use HTML. Just as you place the files for a traditional Web site on a server that is connected to the Internet, the same is true for a Wireless site—you place your WML files on a server connected to the Internet. In fact, it is quite likely that your server will eventually serve both HTML and WML applications.

If you already have a traditional Web server, you simply need to create a folder on the server within which you can place your WML files. If you do not have a Web server, you can use a simple server program, such as the Windows Personal Web Server, to make your applications available to other users.

If you want your Wireless application to be available to users 24 hours a day, 7 days a week (24/7), you can create an account at a commercial site, such as http://www.WirelessLookup.com, which will house your applications for a small fee.

Creating Your First Wireless Site

On the World Wide Web, you will find several sites that will provide templates you can use to quickly create your own Wireless site. Table 1-6 lists several such template sources. Before you start creating your own WML applications, you may want to visit one of these sites to create your own Wireless account, which you can then display using a phone simulator or a Web-enabled cellular phone. Figure 1-12, for example, shows the WirelessLookup.com Web site, which you can use to create a free personal or business site on the Wireless Web. After you create your site, you can view its content using a Web-enabled phone, a phone simulator, or a handheld device such as one that runs the Palm OS, as shown in Figure 1-13.
Module 1: Getting Started on the Wireless Web

Table 1-6 Web Sites You Can Use to Create a Site on the Wireless Web

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAPdrive</td>
<td><a href="http://www.wapdrive.com">http://www.wapdrive.com</a></td>
</tr>
<tr>
<td>Beaker</td>
<td><a href="http://www.beaker.net">http://www.beaker.net</a></td>
</tr>
<tr>
<td>Wappy</td>
<td><a href="http://www.wappy.to">http://www.wappy.to</a></td>
</tr>
<tr>
<td>Webforwireless</td>
<td><a href="http://www.webforwireless.com">http://www.webforwireless.com</a></td>
</tr>
</tbody>
</table>

Figure 1-12 Creating a Wireless site at WirelessLookup.com
Ask the Expert

**Question:** What languages, other than WML, do developers use to create Wireless Web sites?

**Answer:** To create Wireless Web pages, developers use such languages as WML, HDML (Handheld Device Markup Language), XML (Extensible Markup Language), cHTML, Basic XHTML (Extensible Hypertext Markup Language), and XSL (Extensible Stylesheet Language). Different microbrowsers support different languages. Within the United States, most microbrowsers support WML and HDML. In Japan, most support cHTML.

In the future, as the processing and storage capabilities of cellular phones increase, you will encounter microbrowsers that support a wide range of languages. Today, unfortunately, to provide universal support for an application, developers must often replicate their programs using several different programming languages.
Project 1-1: Surfing the Wireless Web

Across the Wireless Web there are a myriad of sites, each of which offers different information and capabilities. To find many of these sites, you can use common search engines, such as Yahoo or Google on the traditional World Wide Web. In this project, you will use various sources to locate Wireless sites.

Step-by-Step

1. If you have not already done so, download a phone simulator that you can use to view Wireless sites from your PC.

2. If you have not already done so, connect to the Internet and run your phone simulator program.

3. Using your traditional Web browser, such as Internet Explorer, connect to the following search engines and search for “WML Wireless Sites Wireless Portals”:
   - http://www.yahoo.com
   - http://www.excite.com
   - http://www.google.com
   - http://www.lycos.com

4. Using your phone simulator, try visiting the addresses of the WML sites the search engine displays.

5. Using your phone simulator, visit the following Wireless search engines and search for topics such as News, Sports, Business, Finance, and WML:
   - http://wap.google.com
   - http://webfront.de/i.wml
   - http://m-find.com
   - http://www.wapuseek.com

Question: How do applications written for a Palm OS device differ from WML applications?

Answer: To create applications for the Palm OS, developers normally use the C and C++ programming languages to create programs with a set of tools (application programming interfaces—APIs) that are specific to the Palm. Programs written for the Palm OS will not execute on a cellular phone. Recently, Palm developers have started using a subset of HTML to create “Web clippings,” which a browser built into the Palm can display. In the future, you should expect the Palm’s browser to support languages such as WML.
Mastery Check

1. What is a Web-enabled cellular phone?

2. How do you specify a site on the Wireless Web?

3. What is a phone simulator?

4. Why should you use more than one phone simulator?

5. How does WML differ from WAP?

6. What is m-commerce?

7. What is a fast and easy way to create a Wireless site?

8. How do you host a Wireless site?