Chapter 1

Getting Started

Before you begin writing Web software programs, you need a copy of HTML/OS. The HTML/OS engine is installed on the Web server where your applications are hosted. For learning purposes, HTML/OS can be installed on a local PC. No software is required on the browser computers that access your application. The first part of this chapter explains how to try HTML/OS. Then it looks at the HTML/OS desktop, File Manager, and Web tools. It also takes a quick look at the Web Shell, a command-line alternative to the graphical user interface described in this book.

Trying HTML/OS

There are four ways to try HTML/OS:

- Download H_2O
- Purchase HTML/OS
- Have your hosting provider install H_2O for you

To download H_2O, a free version of HTML/OS, visit `http://h2o.aestiva.com`, click Free Downloads, and follow the instructions provided. If you are running a stand-alone PC you will want to download the copy of H_2O titled *H_2O for MS Windows Desktop*. The version is delivered as a self-extracting zip file. To install H_2O, run the file. The installer will create an H_2O shortcut on your desktop. You will use this shortcut to launch H_2O. When it runs, it will put you on H_2O's browser-based login screen. The default password is: YIPPEE.

Other versions of H_2O are installed into standard hosting accounts. For help, see the section below titled, *Installing HTML/OS Yourself* and read the install instructions available in the Free Downloads area for the particular version of H_2O you wish to run.

To purchase HTML/OS visit `http://www.aestiva.com`. The Web site includes information for professionals interested in using and purchasing HTML/OS. Purchase includes customer support and installation help from staff trained in over a dozen different platforms.

If you have a Web site hosted by a third party company, ask your hosting service to install a copy of H2O into your hosting account. If your host is not familiar with H2O, direct your hosting provider to the `http://www.h2o.aestiva.com` Web site. To run H2O, your hosting service needs to be able to run standard CGI programs. Most hosting accounts support CGI execution and, therefore, can run H2O.

Installing HTML/OS Yourself

This section discusses how HTML/OS is installed. To understand this section you should know how Web servers work, how to set cgi-bin folders, and how to set file permissions. If you do not know this, skip this section. It is not mandatory reading.

First, make sure you have a computer with a live Web server, such as IIS or Apache, and a working cgi-bin. The procedure for installing the engine is as follows:

1. Copy the HTML/OS asetup program to a live cgi-bin folder of a hosting account. The account may be virtual, or not.
2. Make sure asetup runs under that account.
3. Run asetup from the browser.
4. Follow the instructions provided.

The asetup program is provided to you upon purchase. On Windows systems, the program is named asetupXX.exe. On Unix, Linux, and Mac OS X systems, the program is named asetupXX.cgi.

The name of your cgi-bin folder can vary from system to system. On Windows systems, it is often called scripts or cgi-bin. In theory, it can be set up with any name you want.

The IIS server may not have a cgi-bin enabled. If it does not have one set up, you can use IIS to set one up, or you can opt to install and run an Apache Web server on your Windows machine. Apache Web servers are the most secure and most popular in the industry. For information on running apache servers visit `http://www.apache.org`.

If you are running Linux, BSD, Sun, or Mac OS X, chances are an Apache Web server is already running. You may also already have a cgi-bin set up. If not, or if you wish to create your own cgi-bin folder for the engine, follow the instructions provided for Apache to set that up. (See accompanying note, "Learning about Web Servers.")

Learning about Web Servers

Need to learn about cgi-bins, file permissions, document roots, and all that jazz? Look at Apache Server 2 Bible *by Kabir (John Wiley & Sons), March 2002* or Teach Yourself Apache 2 in 24 Hours *by Ridruejo, Kalleh, et al. (Sams), June 2002.*

After copying asetup to the cgi-bin folder, make sure it runs under your own account. On Unix, Linux, and Mac OS X systems, you want to have it owned by the account, and the file permissions set to 755 or 4744. Use `chmod` to set the permissions if they are not set properly. On Windows system, you will want to make sure the executable has read, write, and delete permissions.

After setting the file permissions, run the installer from a browser's URL line. The URL needed to install the engine is the one needed to run the asetup program from the location line of a browser. To do this, enter a URL similar to the following:

```
http://www.yourdomain.com/cgi-bin/asetup
```

Figure 1.1: The HTML/OS Setup page.

Of course, your URL may vary. The components of the URL line include the domain name, the cgi-bin name (the cgi alias), and the name of the asetup program. Because all these elements can vary, your URL will be different from the one shown. Upon entering the correct URL, you'll get a screen like that shown in Figure 1.1.

Figure 1.2: Mission accomplished: HTML/OS is installed.

This is where the HTML/OS installer takes over. The installer is an intelligent agent that auto-installs your engine. If it encounters a problem, it accesses a Web-based knowledge base and offers you solutions. Installation allows you to set the following:

Domain Name—The registered or temporary domain name, including any preceding `www` or secondary domain prefix.

Document Root—The name of the directory in which your `index.html` file is located. This is auto-generated for you by the HTML/OS installer.

Private Document Root—The name of the directory in which HTML/OS stores database files and private HTML documents. This should preferably be a folder outside of the document root.

In general, values on this screen auto-populate. Review and press Complete Install. Installation takes a few seconds. When done, you'll be able to link to the HTML/OS Login page shown in Figure 1.2. Bookmark your Login page for future use.

Configuration Independence

The HTML/OS Installer and the Aestiva Control Panel, discussed later in this chapter, contain server-specific settings so your application does not. This ensures that products you develop install the same way regardless of server configuration.

The HTML/OS Application Platform

You now have a copy of HTML/OS. Log into your copy to see the HTML/OS desktop shown in Figure 1.3. The desktop is a Web-based administrative area that resembles a computer desktop. It has an Options Bar that sits on top of an Icon menu bar.

Figure 1.3: Your HTML/OS Desktop.

The desktop consists of icons of the currently selected menu. Icons are preceded by icon markers that look like globes or diamonds. Globes tell you the icon is a link to a Web site. Diamonds tell you the icon is a link to a Web software application. If the diamond marker is red, the public has remote access to the application. It's a security warning that tells you the application can be accessed with a URL. That URL, known as a Start-link, is discussed in the accompanying note titled, "Start-links."

Start-links

Start-links are URLs that can be placed in static Web pages or used over the Web. They launch the HTML/OS engine and run a specified Web page. When using HTML/OS on a Web site, whether for the entire site or only an application in a site, a Start-link accesses the first page in

HTML/OS. For security reasons, Start-links cannot be used until they're enabled in the Control Panel or in your application. You should add an enable/disable access feature to the products you build. That topic is discussed in Chapter 8, "Sample Links."

The HTML/OS desktop can be accessed via the standard Login page or via an HTTPS connection. To access the desktop using HTTPS, see the "Secure Login" note. HTML/OS provides built-in mechanisms for using HTTPS to access the desktop or any HTML/OS application. Few if any programming changes are required to support both access methods. For information and examples on how to program Web pages and applications so that they can be accessed via HTTP or HTTPS, see Aestiva's HTML/OS Knowledge Base at `http://www.aestivas.com/support`.

Secure Login

To log into HTML/OS with SSL-level security (HTTPS) replace the word `login.html` with `slogin.html` in the Start-link to your Login page. If you have a secure server set up, you enter HTML/OS in secure mode. For information on how to set this up see the appropriate help file in the HTML/OS Control Panel.

The next sections review HTML/OS applications used in Web software construction. In particular, we examine the following:

- File Manager
- Control Panel
- Packit!
- Bundle Bee
- Web Shell

File Manager

The File Manager gives you the ability to navigate the directories in your system, edit and run HTML documents, perform uploads and downloads, and perform multifile searches. To launch it, click the File Manager link on your desktop's Options Bar.

The File Manager includes an online help utility, a search utility, and text editor. (See Figure 1.4.) Files are preceded by file type markers. These tell you whether the file is an HTML document, database, image, audio file, and so forth. Clicking a file, database, or image launches the viewer appropriate for that file type. File types and their "viewers" are defined in the HTML/OS Control Panel.

Figure 1.4: Use the File Manager to edit, run, and test your programs.

Using the File Manager, you can perform tasks on single files or entire groups of files. The Options Bar, located at the top of the screen, has links for creating new files and folders, uploading files, and finding files. You'll also find a link to an online help utility and a link to show or hide options. When options are hidden, the options area, just below the Options Bar, is not shown on the screen.

The options area includes a New Location box and buttons to copy, move, download, and obtain information on selected files or folders. Buttons in the options area perform tasks on one file or on all the files and directories you check.

Your current directory path is listed just below the options area. Below that is your file and directory list. To copy, move, download, or obtain information on one or more items, place a checkmark beside the items and click the button for the action you want to perform. To create a new file or folder or upload a file, use the appropriate link in the Options Bar.

Multifile Tasks

As mentioned in the preceding section, the File Manager can copy, move, download, and display information on multiple files and directories. For example, if you want to copy or move some files and directories into the directory `/mywork`, you place a checkmark beside the files and directories to copy or move, type `/mywork` in the New Location box, and click the Copy or Move button. All the files and directories copy or move across. Note that the File Manager, when it copies or moves directories, copies or moves the entire directory tree, meaning all files and directories inside the specified directory, and all files and directories inside that, and so on.

If you need to download or display information on multiple files, place a checkmark beside the files, and click Download or Info. When downloading multiple files, a download list is provided to you. Click the name of each file you want to download. When getting information on multiple files, each information section is listed, one after the next, on the same screen.

Navigation

The File Manager gives you access to the files in your Web site. The root directory of your Web site is called `Home` or `/`. It can contain files and other directories, which can contain other files and directories, and so on. To view the contents of a directory, click the directory name on your screen. To exit a directory, click any directory link in the current directory path.

File Info

To retrieve information on one or more files and directories, select them and click the Info button in the options area. You see a screen similar to that shown in Figure 1.5. The following information is provided for each file requested:

File Path—The full path to your selected file or directory. The file path is the full location and name of the document. For example, the full path of `index.html` is `/index.html`. The full path of a file called `cart.html` located in the directory apps is `/apps/cart.html`.

File Size—The size of your file.

Type of Document—A document type, such as image or database. The type of document tells you whether HTML/OS recognizes your file as an image, HTML document, or a special file.

Figure 1.5: Use the Info button to view file details.

Last Modified—The date and time the file was last changed.

File Area—The internal storage area of the file (Public, Private, or Mirror). The File Area tells you where your file is located in the `PUBLIC` or `PRIVATE` tree of the server. See explanation in the accompanying "Internal Files Areas" note.

Start-link Access—A security setting (Allowed or Not Allowed). Start-link Access tells you whether the public has access to your Web page. Start-link URL is the URL used to launch HTML/OS and run the page. See the proceding "Start-links" note.

Start Link—The URL to run the document (if Start-link Access is allowed).

Internal File Areas

HTML/OS uses a Web File System (WFS) that's a subdirectory of the server's file system. When using HTML/OS from the Web, you don't need to think about the underlying directory structure of the server. However, if you work directly on the server, you should know that a single directory in HTML/OS has two directories on the server. One is in the Public tree and the other is in the Private tree. Files are stored in either side, but directories are mirrored in both sides. The Public tree is usually the server's DocumentRoot (where the `index.html` *file is located). The Private tree is a directory outside the DocumentRoot. When HTML/OS creates a new directory, two directories on the server are created, one on the Public side and one on the Private side. You*

can move documents between these two directories by using the Info option. A conventional Web site has only a single directory tree, called the DocumentRoot, which causes file security problems, because all files are, by default, open and public. In HTML/OS, most files are private. Specifically, if the extension used by a file is in the HTML/OS Private Extensions list, which is defined in the Control Panel, it is private. Otherwise it is Public. All database files, text files, and HTML files are, by default, private. GIFs and JPEGs are, by default, public. A technical description of the WFS can be found in the Knowledge Base on Aestiva's Web site.

Find It

The File Manager's Options Bar includes the Find It link. Click this to find a file. Multiple search options are provided. Searches can be case-sensitive; they can span the content of all files, or only filenames; and you can restrict searches to files with specific extensions. This feature is particularly useful when debugging and programming.

For example, suppose you need to find all files containing a specific function. Find It finds those files, lists them, tells you how many matches of the function name it found in each file, and marks the files so that you can edit one or all of the files, as needed, all at the same time. Figure 1.6 shows Find It's search screen.

Figure 1.6: FindIt is a useful programming tool for searching and editing files.

Web Editor

The Web editor used by the File Manager is a text editor for your HTML documents and any kind of text document. The Web editor is launched when you click a filename. It has options to save, reload, and run your Web page. If you're working over the Web, you'll be using this editor for much of your work.

Text Box Resizing

Before using the Web editor, you'll want to adjust it for your computer screen. To resize the text area, click the Resize icon at the bottom right under the text box. A window will appear giving you options to change the width and height of the text area. (See Figure 1.7.) The following table shows the recommended settings:

Monitor Size	Recommended Columns and Rows Settings
640 x 460	Width 73, Height 12
800 x 600	Width 92, Height 20
1024 x 768	Width 120, Height 20

Figure 1.7: Your Web editor is used to edit HTML documents and try them out.

Running a Page

The HTML/OS Web editor includes a Save/View button. Use this to run your page. Clicking the Save/View button saves your data and runs it. Click the Back button in your browser to return to your editor after running your page. The Save/View button gives you the ability to make a change to a page, test it, and return to edit the page in a few clicks.

If you want to run your page in one window and edit it in another, do the following:

1. Edit the preferences for your File Manager's icon.
2. Set it to launch as a new window.
3. Click the File Manager icon twice to launch two windows.

Also note that you can view (run) any HTML document from the File Manager by clicking the icon to the left of the document's name. You can also configure the Web-Editor so that it launches a new window when clicking Save/View. When new windows are launched, a new user session is forked. See the note, "Forking vs. Execution."

Forking vs. Execution

When the Save/View button is configured to place results in a pop up window, the pages are forked. In other words, the pop-up page gets a new user session distinct from its parent. When results are displayed in the page, execution stays in the pop-up window's user session. This distinction is important when following the behavior of an application. For a thorough discussion of forking see Chapter 2, "The HTML/OS Language."

Control Panel

Your Control Panel is where you install new applications, change or view your system settings, set up networking, and manage your copy of HTML/OS. Control Panel options are organized as follows:

Email—Configure outgoing e-mail settings and defaults.

Install—Install, register, and uninstall products.

System—Change or view system settings.

Security—Set up access and database security settings.

Network—Configure Web networking.

Database—Access special files and logs used by databases.

E-mail

This is where you can test and configure outgoing e-mail defaults. HTML/OS mail tags use the information defined in this section, if not redefined by your application.

Install

HTML/OS applications bundled with Bundle Bee are installed here. This section includes the following options:

Install Product—Used to install bundled applications, also known as BB files. Install from file or upload. As a convention, product developers set their default install folders to be a subdirectory of `/apps`. Bundling products is discussed in Chapter 12, "Final Touches with Bundle Bee."

Registration—Used if a product needs to be registered. As a product developer, you have the ability to detect whether the user of your application has registered a product. See Chapter 9, "Setup."

Product Uninstall—Use this to uninstall a product.

History—Use this to review products you have installed or uninstalled.

System

System-wide settings are stored in this section—the most important being the password to your HTML/OS desktop. Step through each element with Help turned on to learn about each system-wide option.

Security

Unlike standard Web sites, where pages are accessible from the Web until you make them inaccessible, HTML/OS keeps everything inaccessible from the Web until you explicitly make them accessible from the Web or from a page (by typing a hypertext link or an HTML form) that is already accessible. This Security category contains access lists for Start-links and variables, secure server (HTTPS) access information, settings related to Web-network security, and other security measures.

Network

This category has options for setting your node identity (*a node* is a copy of HTML/OS), and configuring the nodes that can access you. The HTML/OS network is a peer-style wide-area network. There is no central point of failure. Every node has full control over what it can see and who can see it. This category also includes a network error log and testing utilities that come in handy when setting up Web networks.

Database

This category contains miscellaneous database options. An error log that logs problem database requests and an option to set up database handles (aliases to databases) are provided. For further information on database error logging or database handles, see the on-line help included in this section or the knowledge base on Aestiva's Web site.

Pack It

If you've heard of Stuffit on the Macintosh, Zip on Windows, or Tar on Unix or Linux, you already know what Pack It does. This utility allows you to pack multiple files into a single file for storage or transfer. Pack It is shown in Figure 1.8.

Figure 1.8: Pack It is a useful tool for backing up files and directories.

Packing files is accomplished through an easy-to-use wizard. First, you select a directory from which to extract files. All files in your pack file will be specified relative to this directory. Then you select the files and subdirectories you want to place in your pack file. Then you pack it. Pack files can be e-mailed and copied from one location of the Web to another. They can be unpacked on any copy of HTML/OS.

Because HTML/OS applications are server and configuration independent, they can be developed and packed up on one system and unpacked and run on another.

Bundle Bee

This program is similar to Pack It except it's specifically made for packaging commercial Web applications. Bundle Bee packs your files and attaches to them an icon, default install folder, and install and upgrade rules. It can copy-protect them, too. Bundle Bee is discussed in Chapter 12, "Final Touches with Bundle Bee."

Aestiva Shell

The Aestiva Shell is a Web-based version of the shells that have become the primary command-line interface for Unix and Linux systems. If you prefer command-line interfaces to point-and-click interfaces, you'll enjoy this shell. (See Figure 1.9.)

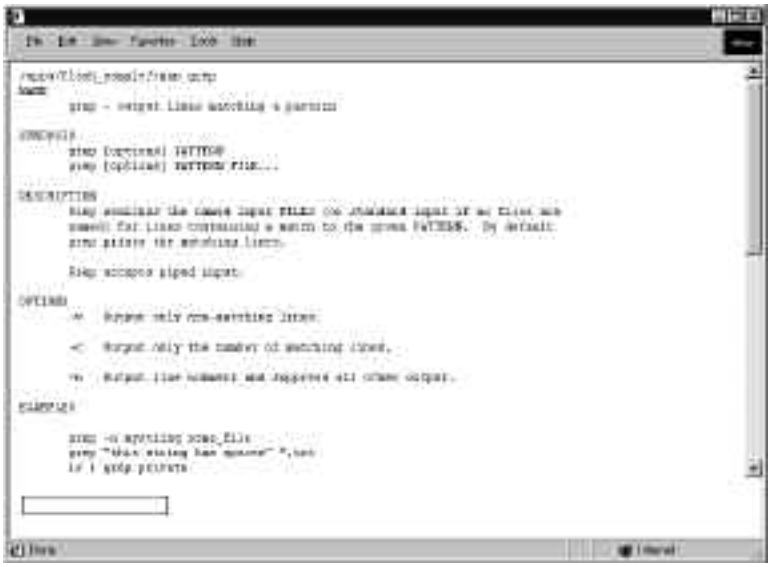

Figure 1.9: The Aestiva Shell is an alternative way of accessing HTML/OS.

The Aestiva Shell supports many of the features found in Unix and Linux shells including the following:

- Online help
- Redirection and pipes
- Command aliasing
- Program execution
- Command history

Aestiva Shell supports over 20 popular commands, such as `ls`, `cat`, `diff`, `cp`, `mv`, `mvdir`, `rm`, `rmdir`, and `help`. Unlike standard shells, it can do command-line file transfer and switch back and forth between GUI-like interfaces and commands. The Aestiva Login page includes a check box for setting the default environment to the Web Shell. For further information on the Aestiva Shell see the book, *Learning the Web Shell*, by Pablo Collins (Aestiva Press) January 2005.

Chapter Summary

In this chapter, you got a first look at the HTML/OS environment. You learned that HTML/OS is a rich environment complete with backup utilities, file managers, editors, and database managers.

You learned HTML/OS is much like the PC world, only everything is Web-based. Of course, unlike the PC world, all of these applications were written in HTML/OS. The applications run the same whether the Web server is Windows, Linux, or Mac OS X. They run the same whether you're in the office or at home. If your computer fails, you just access your program from another computer. Isn't this what the Web is about?

Now, if only you could flick a switch and—presto!—know how to build such applications, that would be grand. Well, in a short time you'll be on your way. In the next two chapters, you get down and dirty and learn how to program with HTML/OS. Chapter 2 is a crash course on HTML/OS programming. We cover the HTML/OS language in one chapter. How can we do that? We assume you know a bit of scripting, and HTML/OS is so advanced, it's easy to learn. Why drag things out?

The chapter after that is a crash course on HTML/OS database programming. Again, why drag things out? The HTML/OS database engine is so advanced it too is easy. In no time, you'll have the essentials needed to build commercially salable Web software products.