



Appendix F

Working with FTP

(NOTE: check the textbook Web site for the latest version of this tutorial.)

The **File Transfer Protocol (FTP)** is a standard Internet protocol designed to facilitate file transfer and file management operations between computers over the Internet. For example the FTP protocol allows you to copy files from one computer to another, and to **create, rename, copy, or delete** files or folders remotely.

You do not need to use FTP as long as you are developing your Web applications on a **locally-installed** standalone server. In this case you can just save your files to folders located under the **xampp/htdocs** folder on your local disk drive.

Sooner or later however you will want to make your Web pages and programs available on the Web and at that time you will need to connect to a “live” Web server (usually provided by a Web hosting service), and will then need to familiarize yourself with FTP in order to transfer files to and from the server. Even before you take that step you can learn to use FTP: your **xampp** installation actually includes an FTP server (currently a product named **Filezilla** if you installed xampp on **Windows**, or **ProFTPD** if you installed on **macOS** or **Linux**). This means that you can explore FTP and become familiar with the interface on your local computer, just as you have been doing with the standalone Web server. The following instructions will help you get started, just remember that the procedures you are learning here are the same as if you were connecting to, and exchanging files with, a remote FTP server provided by a Web hosting service.

Starting your FTP Server

You can start your FTP server at the same time that you start your Apache Web server: just follow your usual procedure when you start your Web server and be sure to also start the FTP server.

FTP Server Accounts

Although your FTP server is running you will need a user account in order to be able to log in (the log in process will be explained below). FTP user accounts are granted specific access privileges to files and folders located under the **htdocs** folder of your





Web server. An account can be granted **full** privileges to **all** folders under the **htdocs** folder, or may be restricted to specific sub-folders and/or actions.

If you installed **xampp** under **macOS** or **Linux**, your FTP server is already configured with a default user account with full privileges, so you can use this account. The default username should be **daemon** with password **xampp** (if this doesn't work, try username **nobody** with password **xampp**).

If you are using **Windows**, you will need to create a user account yourself. Instructions to do this are provided in the next section (macOS and Linux users can skip the next section).

NOTE: These instructions are correct at the time of publishing; be sure to check the textbook Web site for the latest updates and instructions if you run into any problems or would like to know more about setting up additional user accounts on any operating system.

Setting up your local FTP server in Windows (Filezilla)

(macOS and Linux should skip this section and continue to **Installing an FTP Client**.)

If you are running Windows the FTP server that comes with **xampp** is called **Filezilla**. To start your FTP server running, start the **XAMPP Control Panel** and click **Start** for the **Filezilla** module. To manage your FTP server, click **Admin** (also for the **Filezilla** module). You will first be asked to create an **admin** password: use any password you wish (**but be very careful to type this correctly and be sure to record it!**)

Next you will want to create a **user account** (which you can use to connect to the FTP server), and assign **permissions** to this user:

Click the **Edit** menu and choose **Users**.

Click **Add** under **Users**. Type a username, which can be any name you want, and click **OK**. With the user highlighted in the User window, click the **Password** checkbox and type a password for this user. Be sure to remember the username and password you have chosen.

You can now define which directories and permissions this user can access on your Web server. This is important since you can restrict different users to only have ftp access to specific folders or actions.

Click the **Shared** folder page, then click **Add** under **Shared** folders.

To get started just choose **htdocs** to allow this user to have ftp access to all your Web server's folders and files (if you wanted to restrict privileges for this user you might for example choose the **htdocs/webtech/coursework** folder to restrict access to this folder, and its sub-folders).

Now set the type of access you are providing to this user: check the **Read**, **Write**, **Delete**, and **Append** boxes so that this user has a full range of permissions. Also check boxes to allow the user to **create**, **delete**, **view** (**list**) directories.



If you click **Set as home dir** then the selected folder (for example **htdocs**) will be the one that is first displayed when this user connects to the FTP server.

Note that in cases where you wanted to restrict a user's access to certain folders you can add multiple folders and set the access levels to each of these to completely customize access privileges.

When you are done click the **OK** button.

Installing an FTP Client

(Remember you will be connecting to the FTP server as if it is running remotely and not on your local computer, for this reason we will refer to the FTP server as a **remote** server). Now that your FTP server is running and you have a user account, you are ready to connect to the server. To do this you need an **FTP client** program, just as you need a Web browser (which is a Web client) to communicate with your Web server. There are many FTP clients available; we will use the **Filezilla** client which is available for Windows, macOS, and Linux, and which will communicate with any FTP server, including **Filezilla** and **ProFTPD**. If you prefer not to use a client with a graphical user interface, you can also issue your FTP commands directly from the command line (Google "FTP command line" for a list of common commands).

Go to <https://filezilla-project.org/> to download and install the Filezilla FTP client; be sure to download the correct version for your own operating system.

Using Your FTP Client to Connect to your FTP Server

When you run your FTP client you will see that most of the interface is composed of two file system windows. The left window shows you the contents of a default folder on your local file system (probably the **root** folder of your local user account). The right window is empty; it will show your Web server's files and folders once you make a connection.

At the top of the page, below the menu, you will see "**Quick Connect**" input boxes for **Host**, **Username**, **Password**, and **Port**. Filezilla needs this information to connect to an FTP server:

Host: this is the domain name of the FTP server. If you were connecting to a remote server the FTP host name would have been provided to you by your Web hosting service. In our case we are connecting to our local server, so the name is just **localhost** (or **127.0.0.1**).

Username: macOS and Linux users, use **daemon**. Windows users, use the username for the FTP account that you created.



Password: macOS and Linux users, use **xampp**. Windows users, use the password for the FTP account that you created.

Port: the port number is 21, unless you changed this.

Once your FTP client has connected to the FTP server the window on the right will display files and folders from the remote site. Usually the root folder will have been defined by your hosting provider, however since we are connecting to our local server, the root will be the **xampp/htdocs** folder.

Getting to Know Your FTP Client Interface

You are now looking at local files and folders on the left and “remote” files and folders on the right. You can click through folders on either side to navigate to specific folders on either system. Because your “remote” server is actually local, you could actually navigate to the **xampp/htocs** folder in the left panel and see the same files and folders that are displayed in the right panel! Just keep in mind that the right panel will usually show the contents of a server in a different location, while the left panel shows your local file system.

Here are a few exercises to get used to using the Filezilla FTP client interface.

Navigate through the folders in the **left** panel to find your **Documents** folder. When the contents of your Documents folder are displayed, right click in this window and choose **Create Directory**. Create a folder with the name **testarea**. When you do this you will see a new folder named **testarea** appear in the list of folders under **Documents** (if you don't see it, go to the **View** menu in FileZilla and click **Refresh**). Now click on **testarea** so that you are looking inside this folder; it will be empty except for a small folder icon followed by two periods, which symbolizes the previous folder, you can click this to return to the **Documents** folder. If you try this, return again to the **testarea** folder.

Now navigate through the folders in the **right** panel to find your **coursework** and **samples** folders (inside the **webtech** folder). Drag and drop a few files from these folders into the **testarea** folder in your **left** panel. Don't worry about which ones, you are **copying** these files not **moving** them and this is just to get used to the interface.

In the **right** panel, navigate to the root folder (the **htdocs**) folder. In your left panel, go back to the Documents folder. Now drag the **testarea** folder over to the right panel. The **testarea** folder and its contents will be copied to your “remote” server. Note that you now have **two** copies of this folder, the first copy is located under your local Documents folder, the new copy is located under your Web server. If your Web server is running you can view the files under your Web server using a URL, just like any other files inside your **htdocs** folder, for example if you have a file in **testarea** called **welcome.html** you can view it using the URL: **http://localhost/testarea/welcome.html**.

Now use your text editor to open one of the files in your **Documents/testarea** folder (left panel). Make some changes to this file and save it in the same location with the



same name. Back in Filezilla, drag and drop the modified file to the `testarea` folder on your Web server. Since there is already a file with this name you will be asked if you want to replace it. Go ahead and replace the file. If you view this file in your Web browser you will see the changes that you made.

Back in the left panel right-click the same file and select **Rename** from the drop down. Change the name of the file. Now drag the renamed file over to the `testarea` folder of your Web server. This time the file will be copied without a warning since it is not replacing an existing file.

This is a typical work process: you work on files on your local computer, and when you are ready (usually when they have been thoroughly tested), you move the files to the live Web server where they will be publicly visible.

Experiment a little to get a feel for using the interface but be careful only to make changes inside the `testarea` folders in either location, you don't want to make changes to your coursework or samples folders! As you do this consider the power of FTP: although you are working locally for now, usually these operations involve moving and managing file and folders between remote computer systems anywhere in the world.

Closing Your FTP Connection

When you are have finished working with the FTP server, you may wish to delete the `testarea` folders under your `Documents` folder (left window) and `htdocs` folder (right window), or you may want to keep these folders for further experimentation at a later date.

To disconnect your FTP client from the FTP server, click the **Server** menu in your Filezilla client application and choose **Disconnect**. You can then quit the application by choosing **Exit** from the **File** menu.

Note that these steps disconnected your FTP **client** but the FTP **server** is still running. Be sure to stop the FTP server, you will do this in the same way that you stop your Web server.

Summary

FTP provides a powerful file management resource when working between two file systems that are remote from one another. Web developers often use FTP to transfer files and folders between a local computer and a remote Web server. Here are some some standard operations you can perform with FTP:

- File and folders can be copied from one system to another.
- Files and folders can be created, copied, deleted, and renamed on either system.
- When a folder is copied, the copy operation includes all files and sub-folders inside the folder. This means that an entire Web site can be easily copied by drag-





ging the root folder to the local or remote system. This makes it easy to create a **backup** or **mirror** of a Web site.

- Operations on files and folder in the local or remote system do not change anything on the other system. You must explicitly transfer files and folders for changes made in one location to apply to the other system.

This is just a brief introduction to FTP. Check the version of the tutorial on the textbook Web site for the latest new information related to setting up and using your stand-alone FTP server.

