CMPSCI 120 Fall 2011
Lab #3
Professor William T. Verts

Setting Up (PC)

Go to the link for the encrypted telnet program PuTTY (Simon Tatham's site in the UK at **`http://www.chiark.greenend.org.uk/~sgtatham/putty/`**). Click on his "Download" link, and then click to download `putty.exe` for Windows (the topmost and leftmost link in the table). Save it to your desktop or flash drive. There is no installation required; the single `.exe` file that you download is all that is needed. Scan it for viruses before you run it (I doubt you will find any problems).

If you do not already have WinSCP installed and have a machine where you can install it, go to the link for WinSCP (**`http://winscp.net/eng/download.php`**) and download the Installation package to an empty folder on your computer. I recommend that you get the last "released" package and not the beta version. Scan for viruses the `.exe` you downloaded, and then run it to install WinSCP on your computer. Installation will put new entries in the Programs menu and will also place a quick-launch icon on the Windows Desktop. If you cannot do this on your own computer, for this assignment you may use WinSCP in the campus labs run by OIT.

PuTTY is a Windows package that implements a secure (encrypted) version of telnet, and WinSCP is a Windows package that implements a secure (encrypted) version of ftp. If you already have preferred secure telnet and ftp programs you may use them, but all the instructions in this document will refer specifically to PuTTY and WinSCP.

Setting Up (Mac)

Macintosh users do not need an encrypted telnet program such as PuTTY because there are enough tools already built-in to do this job. It will be necessary, however, for Mac users to download and install Fugu to use for their encrypted ftp tasks. Go to the link for Fugu (in Michigan at **`http://rsug.itd.umich.edu/software/fugu/`**) and click on the "Download" link. In the page that pops up, click on the topmost link to the English install-package (use **`Fugu-1.2.0-English.dmg`** unless you need one of the international versions), download it, and install it. In that same page you may wish to download the `.PDF` file of the documentation. There is also a beta version for Mac Lion.

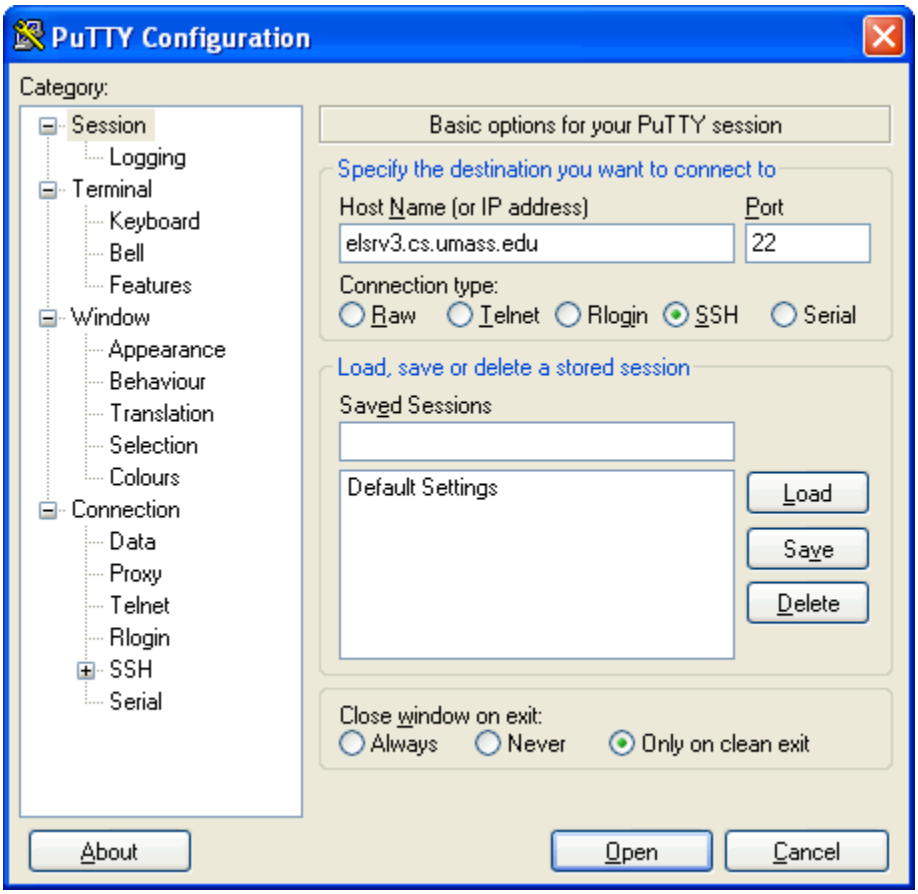
Mac users running Windows under Bootcamp or Parallels can use PuTTY and WinSCP.

Host Address

For all tools, whether PC or Mac, the "host name" for the server used by our class will always be **`elsrv3.cs.umass.edu`** (notice that the leftmost part of the host name is `elsrv3`, and not `elserv3`).

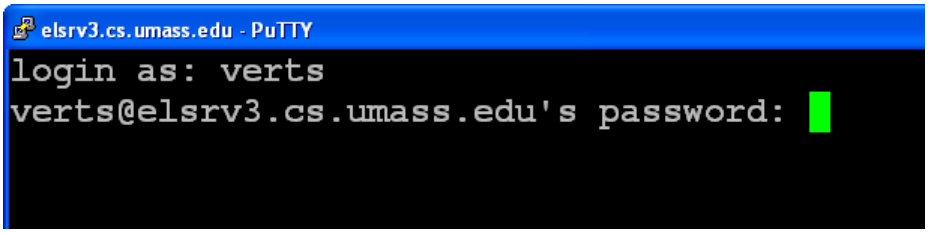
Logging In for the First Time (PC)

Run PuTTY. You will initially see a Configuration screen as shown below. For this class the Host Name will always be **`elsrv3.cs.umass.edu`** and the Connection Type will always be SSH (secure shell):



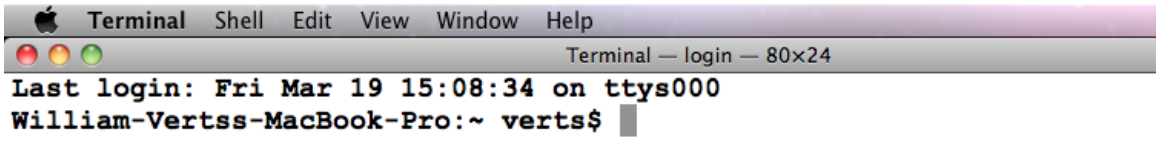
Click the Open button to attempt the connection. If you get any message about the server's host key not being known, click the button that accepts the key and lets you proceed (once accepted you should not get this message again). Maximize the Window.

You will next get a challenge from the remote server. In the challenge, you will be asked for your username. This will be the same as the username you use for UMail. When you hit Enter↵, the server will ask for your password, which initially will be of the form **`ELxxxaaa`**, where `xxx` is the last three digits of your SPIRE ID number and `aaa` is the first three letters of your username. **You will not see the password as you type it in.**

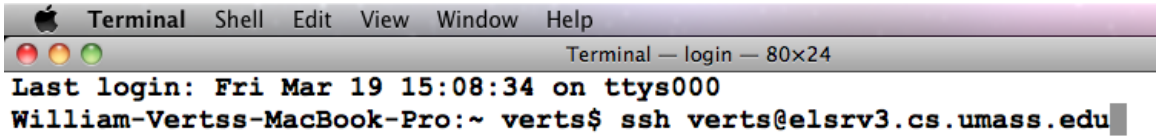


Logging In for the First Time (Mac)

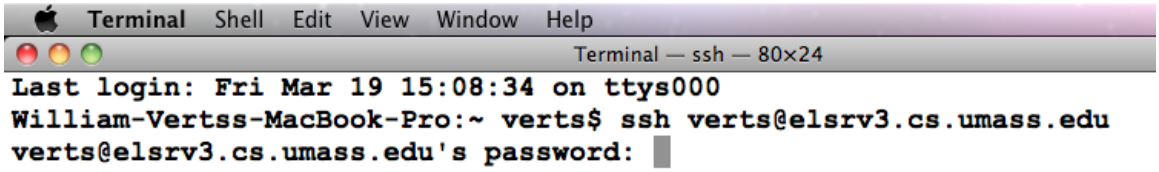
In Finder, click on Applications-Utilities-Terminal. If this is the first time you've ever used Terminal the text will be tiny – I strongly recommend that you click Terminal-Preferences in the menu to bring up the Settings dialog, and in the Text tab change the Font for the Basic (Default) theme to **`Courier New Bold`**, with a point size somewhere between 12 and 18 points. If you wish, maximize the window (click the green button with the + in the upper left corner). You will see a screen similar to the following, with your name instead of mine in the appropriate places.



This is a view of the underlying UNIX operating system of the Mac, but it is not the UNIX server that we will use for our Web pages. To connect to the remote server, type in **`ssh _____@elsrv3.cs.umass.edu`** with your UMail username in the slot. This is shown below. (Don't use my username, use your own!)



The remote server will ask for your password, which initially will be of the form **`ELxxxaaa`**, where `xxx` is the last three digits of your SPIRE ID number and `aaa` is the first three letters of your username. **You will not see the password as you type it in.**



When you enter your password and hit Enter↵, you should see the challenge accepted by the server. You will follow this process every time you wish to log in.

Changing your UNIX Password

The first time you successfully log in to the UNIX server, from either a PC or a Mac, you will be prompted to change your password. Select something that contains both letters (uppercase and lowercase) and digits, is 6 to 8 characters in length, but not based on any dictionary word or any sequence of letters or digits. If you forget or lose this password I cannot retrieve it for you, but I can set your password to a new value if necessary. To change your password yourself at a later time, use the **`passwd`** command in UNIX.

PART 1: Building a Basic Web Page

At the UNIX prompt type in the following commands, in order. When done correctly, these steps need be performed only once. Pay close attention to case: all UNIX commands are entered in lower case. Students concurrently in CMPSCI 105 may skip the first three steps (`chmod`, `mkdir`, `chmod`) as they have already done them in the other class.

1. **`chmod 755 .`** — This sets the permissions on your home account to allow folks from outside to get in. DO NOT MESS UP ON THIS ONE and DO NOT FORGET THE DOT. It is possible to lock yourself out of your own account. If you do, you will need to send me an email to ask me to fix the permissions remotely.

2. **`mkdir public_html`** — This creates the "nest" for your Web pages. Notice that the name contains an underscore character.

3. **`chmod 755 public_html`** — This sets the permissions on `public_html` to allow outside Web requests.

4. **`cd public_html`** — This opens the `public_html` folder.

5. **`mkdir cmpsci120`** — This creates a subfolder for our class in the `public_html` folder, called `cmpsci120`. (Any students who are also in CMPSCI 105 will be using the same `public_html` folder – by creating a subfolder we guarantee that the two sets of files will not get in each other's way.)

6. **`chmod 755 cmpsci120`** — This sets the permissions on `cmpsci120` to allow outside Web requests.

7. **`cd cmpsci120`** — This opens the `cmpsci120` folder.

8. **`pwd`** — This prints the current working directory. Don't proceed to the next step unless the response you get from this command ends with the following (with your username in the blank):

    … … …/`____`/`public_html/cmpsci120`

9. **`emacs index.html`**

This starts the emacs text editor with a new file called `index.html` (it is new because there are no files at all in this folder). Type in the following simple Web page, putting your name in the blank. Please follow my indentation and capitalization pattern as closely as possible (I indent 4 spaces per single level, or one Tab⇆ every two levels).

```
<HTML>
    <HEAD>
        <TITLE>________</TITLE>
    </HEAD>

    <BODY BGCOLOR="#00FFFF">
        <CENTER>
            Welcome to _________
            Web page!
        </CENTER>
    </BODY>
</HTML>
```

When complete, hit Ctrl X Ctrl C to exit emacs and save your page.

10. **`chmod 644 index.html`**

This sets the permissions on the `index.html` file so that it is visible on the Web.

11. **`ls –al`**

This shows the files in the current directory. You should see `index.html` with the permissions:

```
rw-r--r--
```

Do not proceed unless this is correct.

12. **`logout`**

This terminates the connection and closes the PuTTY or `ssh` connection. If using PuTTY from a PC, the PuTTY program window will automatically close. On a Mac, you will also need to type **`logout`** a second time to close the local Terminal session, and then quit the Terminal program.

At this point your page should be visible on the Web, at either of the following addresses (with your username in the blank:

`http://elsrv3.cs.umass.edu/~_______/cmpsci120/`
`http://elsrv3.cs.umass.edu/~_______/cmpsci120/index.html`

Verify that your Web page works and is visible in a browser.

Editing Your Page (As Needed)

If everything works you will not need to perform this section at this time, but you will need to do this in the future. You *may* need to follow this procedure if you need to fix something for this assignment.

1. Log back in.	Use PuTTY (PC) or `ssh` from within Terminal (Mac) to connect back to `elsrv3`. Use your regular username and your new password.
2. **`cd public_html`**	Open the `public_html` folder.
3. **`cd cmpsci120`**	Open the `cmpsci120` folder.
4. **`emacs index.html`**	Use the emacs text editor to edit your Web page. Exit emacs with Ctrl X Ctrl C.
5. Load the page in the browser.	Point your browser at your Web page and test it. If there are any problems go back to step 4.
6. **`logout`**	Close everything down.

If You Get Stuck

If you miss any of the instructions, you may need to go back and fix certain things. Possible problems include misspelling or miss-capitalizing folder names, setting or omitting certain file permissions, or creating the `index.html` file in the wrong place. Please email me or the TA if you need help.

PART 2: Building a Button

In this section we will be designing a button to put on our Web page.

PC: Bring up Windows Paint (Start-All Programs-Accessories-Paint). Yes, I know it is the world's most brain-dead painting package, but it is free, so humor me. As you follow the steps below, remember that you can undo up to the last three drawing commands with either Edit-Undo or Ctrl Z.

Mac: There is no equivalent program on the Mac by default, but you can download a free clone of Windows Paint from **`http://paintbrush.en.softonic.com/mac`** called Paintbrush. Install the Paintbrush program into your Applications folder. Use Edit-Undo or Command-Z to undo the last three drawing commands.

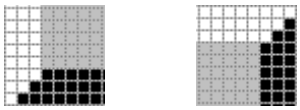
1. **Start a new image and set its size to exactly 200 pixels wide by 50 pixels tall.**

2. **Zoom the image to a large size so that you can see the pixels as large squares with a surrounding grid.**

3. **Flood the body of the button with a light gray color.**

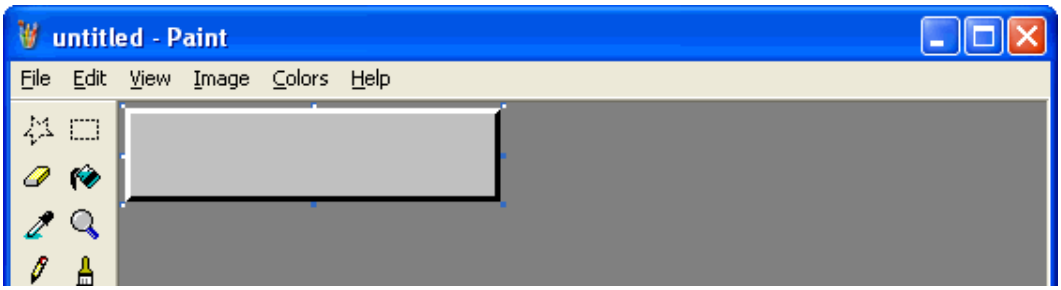
4. **Draw 3-pixel wide white lines on top and left, and 3-pixel black lines on right and bottom.**

   At the lower-left and upper-right corners make sure that the white and black lines join in a diagonal pattern. If necessary, you may need to use the Pencil tool to fine-tune the diagonal. The corner diagonals should look *exactly* as follows:



5. **Bring the button back to normal size.**

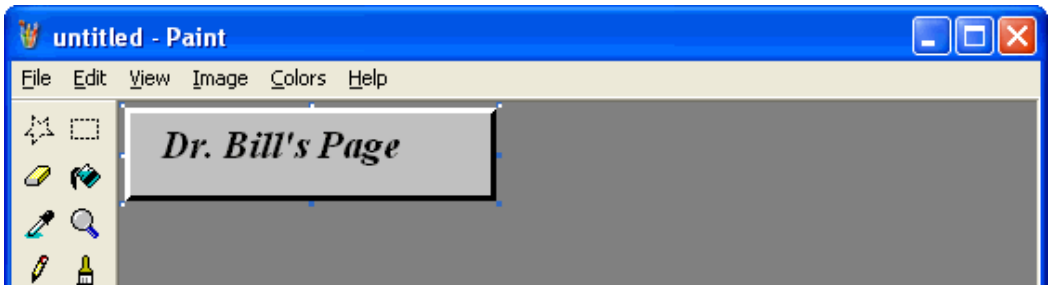
   The button should look exactly like the following image, in the 2003 version of Windows Paint:



Do not proceed until you get the button set up correctly.

6. Add the text "Dr. Bill's Page" to the center of the button.

The button may now look something like this:



Center the text in the button as best you can:

To finish up the button, select the same light gray you used earlier and flood-fill any new white areas generated by moving the text. This is the final version of the button (the view in Paintbrush will be similar):

7. Save the button as `Button_Dr_Bill.png` to an appropriate folder.

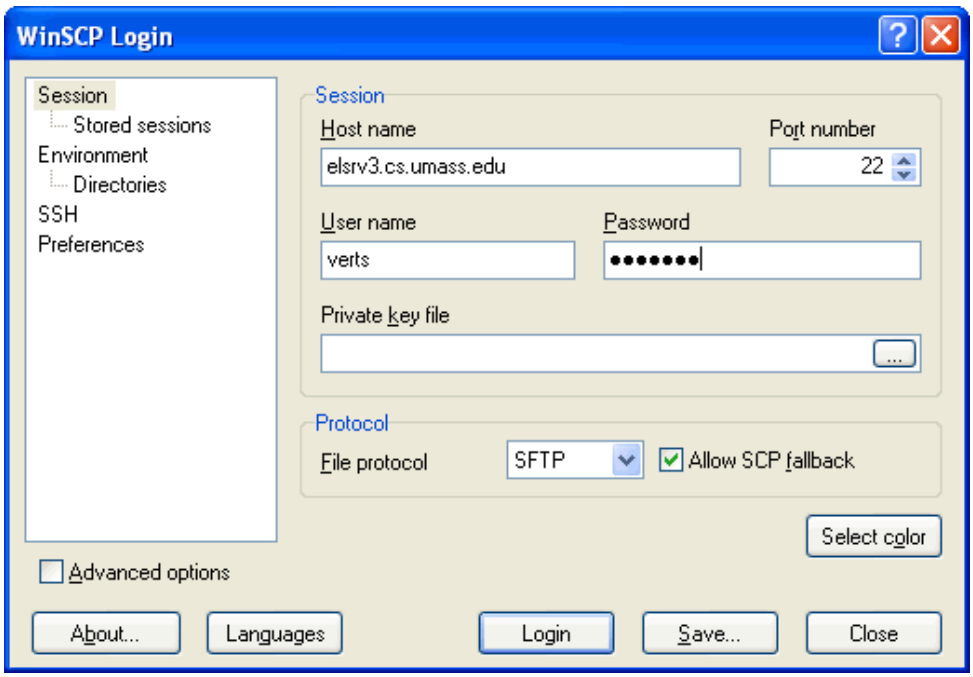
Don't use the `.gif` format in Windows Paint, as the program will dither the gray background, making it useless. Look in the folder where you saved the buttons. You should now have a file stored there called **`Button_Dr_Bill.png`** (a little over 1K bytes in size).

When you are done, close the Paint or the Paintbrush program, as appropriate.

PART 3: Copying the Button

In this section we will be copying the button (created in the previous step) over to the UNIX server. If you are on a PC, you will have needed to download and install WinSCP. If you are on a Mac, you will have needed to download and install Fugu. Do not proceed until the appropriate program has been installed on your system.

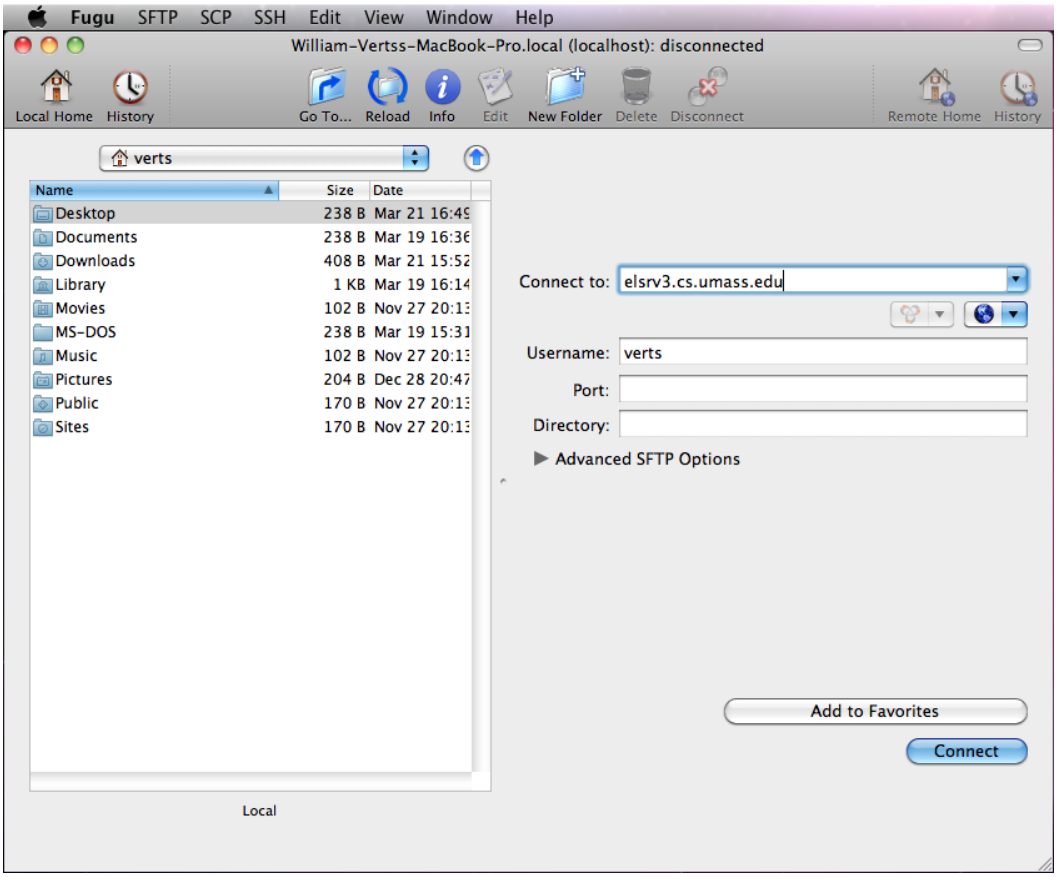
PC: Launch WinSCP. In the login dialog, type in the same host name that you used with PuTTY to connect to your UNIX account, type in your username, and type in your password. I have done this for my account, below (notice that the password is obscured). Make certain that the File Protocol is set to SFTP, and that the Allow SCP fallback checkbox contains a checkmark.



Click the Login button.

If everything works correctly, you will see a view of your local machine in the panel on the left, and a view of the remote UNIX account in the panel on the right. If you do not see this, it is time to ask for help.

Mac: Launch Fugu. Type in the same host name that you used with `ssh` under Terminal to connect to your UNIX account into the Connect to box, type in your username in the Username box, and leave both Port and Directory blank. I have done this for my account, below.



When you click the Connect button, the right side of the panel will change to show a password box. Type in your password (which will be obscured), and click the Authenticate button.

If everything works correctly, you will see a view of your local machine in the panel on the left, and a view of the remote UNIX account in the panel on the right. If you do not see this, it is time to ask for help.

If you completed the previous part of the assignment correctly, one of the folders that you will see on the right will be `public_html` (the folder that you created to host your Web page). Double-click `public_html` to open the folder. Inside, you should see the `cmpsci120` folder; double-click it as well to open it. The only file that you should see inside `public_html/cmpsci120` should be the `index.html` file you created in the previous assignment.

In the left panel, find the folder on your local machine where you placed the buttons.

PC: Click on the **`Button_Dr_Bill.png`** file to select it. Click on the Copy button in WinSCP. Make sure the file is copied over in binary mode. Copy the file. It should appear in the right panel, next to the `index.html` file.

Click the **`Button_Dr_Bill.png`** file in the right panel, and then click the Properties button in WinSCP. In the dialog that appears, make sure that the permissions are set to **`rw-r--r--`**, and then click OK

Mac: Click-drag the **`Button_Dr_Bill.png`** file from the left pane to the right pane.

Click the **`Button_Dr_Bill.png`** file in the right panel, and then click the Info button in Fugu. In the dialog that appears, make sure that the permissions are set to **`rw-r--r--`**, and then click Apply.

When this is all correct, close WinSCP or Fugu, as appropriate. We will need these programs again in a future assignment.

PART 4: Connecting the Button

Using PuTTY (PC) or `ssh` from Terminal (Mac) as you did in a previous section, log in to your account on the UNIX server. Change into the correct directory as follows:

1. **`cd public_html`** (Change into the Web nest)
2. **`cd cmpsci120`** (Change into the inner folder)
3. **`ls -al`** (See what files are there)

At this point, the only files you should see are `index.html` (created earlier) and the new file `Button_Dr_Bill.png` (moved over with WinSCP or Fugu). Do not proceed unless you see both files.

Start up the emacs text editor on the `index.html` file:

4. **`emacs index.html`**

You will see the text created in the previous assignment.
Change the body text as follows to add the new text (in red below):

```
…
…
<CENTER>
    Welcome to _________
    Web page!
    <BR>
    <A HREF="http://www.cs.umass.edu/~verts">
        <IMG SRC="Button_Dr_Bill.png">
    </A>
</CENTER>
…
…
```

Save your page and exit emacs with Ctrl x Ctrl c (and answer Y when it asks if you wish to save the changes).

Test your page. Make sure to hit the Refresh button on the browser to load the copy containing the reference to the button. Make sure that clicking the button correctly jumps to my page.

Use emacs to correct any mistakes.

Log out when you are finished.

If You Get Stuck

If you miss any of the instructions, you may need to go back and fix certain things. Possible problems include misspelling the name of the `.png` file in the Web page, setting or omitting certain file permissions, or copying the `Button_Dr_Bill.png` file into the wrong place. Please email me or the TAs if you need help.

What To Turn In

When your page is correct and visible on the Web, and contains the button which correctly links to my page when clicked, send an email message to the graduate TA **and** to the **`literacy@cs.umass.edu`** account. The subject line must be set to the exact phrase **CMPSCI 120 ASSIGNMENT #3** and the body of the message must contain your name, your username, and the URL of your page. For example, I would send as the message body:

```
William T. Verts
Username: verts
URL: http://elsrv3.cs.umass.edu/~verts/cmpsci120
```

The next assignment will depend on you successfully completing this one.