Using SSH to connect to your deepblue account outside of the Camosun Lab room.

1. Installing SSH on your home computer

From your home computer obtain the SSH program in one of the following ways:

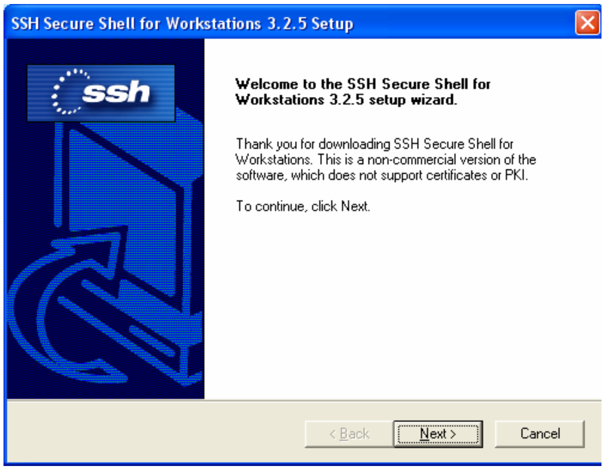
a) Open this URL in your browser:

```
http://www.cs.camosun.bc.ca/~langs/utils/SSHSecureShellClient-3.2.9.exe
```

then click on Open button when the File Download window appears. This will run the install directly from the browser. You may see a security window appear; if you do, click OK to confirm the install.

Installing SSH

The first window in the install process prompts you to continue.



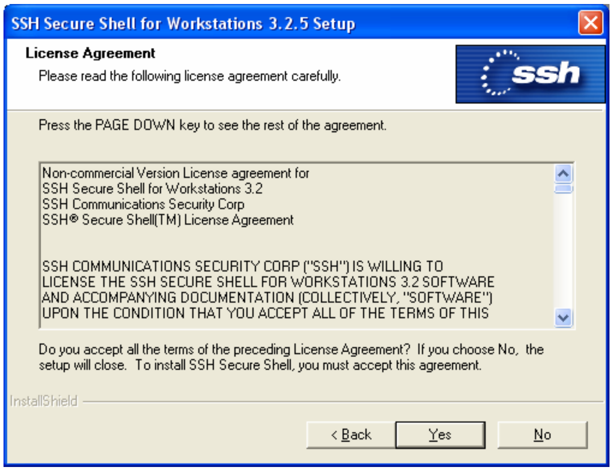
SSH Secure Shell for Workstations 3.2.5 Setup

Welcome to the SSH Secure Shell for Workstations 3.2.5 setup wizard.

Thank you for downloading SSH Secure Shell for Workstations. This is a non-commercial version of the software, which does not support certificates or PKI.

To continue, click Next.

Click Next



SSH Secure Shell for Workstations 3.2.5 Setup

License Agreement

Please read the following license agreement carefully.

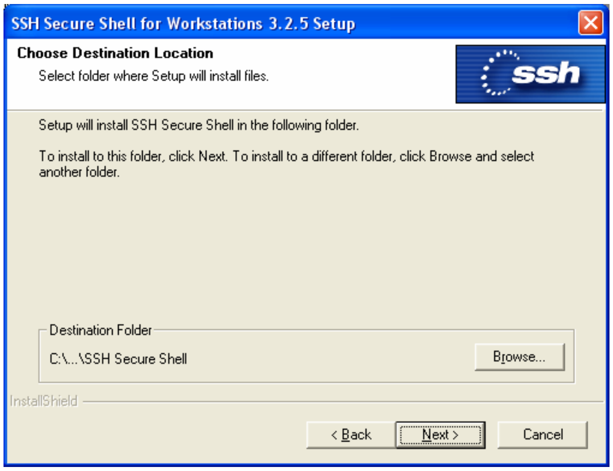
Press the PAGE DOWN key to see the rest of the agreement.

Non-commercial Version License agreement for
SSH Secure Shell for Workstations 3.2
SSH Communications Security Corp
SSH® Secure Shell(TM) License Agreement

SSH COMMUNICATIONS SECURITY CORP ("SSH") IS WILLING TO LICENSE THE SSH SECURE SHELL FOR WORKSTATIONS 3.2 SOFTWARE AND ACCOMPANYING DOCUMENTATION (COLLECTIVELY, "SOFTWARE") UPON THE CONDITION THAT YOU ACCEPT ALL OF THE TERMS OF THIS

Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install SSH Secure Shell, you must accept this agreement.

Click Yes



Choose Destination Location

Select folder where Setup will install files.

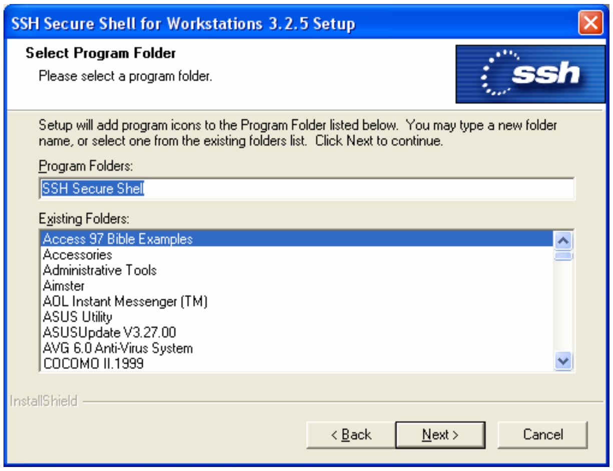
Setup will install SSH Secure Shell in the following folder.

To install to this folder, click Next. To install to a different folder, click Browse and select another folder.

Destination Folder

C:\...\SSH Secure Shell

Click Next



Select Program Folder

Please select a program folder.

Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue.

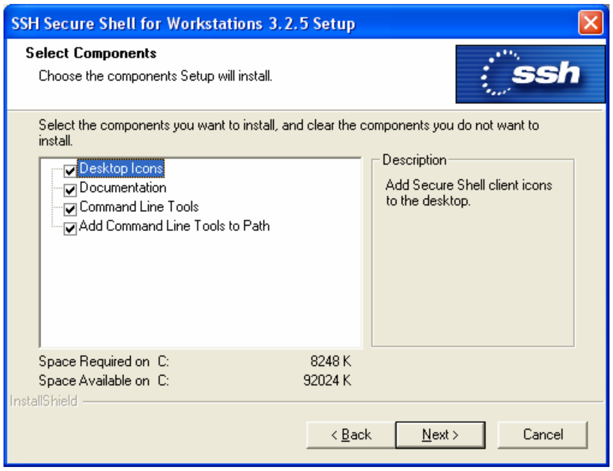
Program Folders:

SSH Secure Shell

Existing Folders:

- Access 97 Bible Examples
- Accessories
- Administrative Tools
- Aimster
- AOL Instant Messenger (TM)
- ASUS Utility
- ASUSUpdate V3.27.00
- AVG 6.0 Anti-Virus System
- COCOMO II.1999

Click Next



Select Components

Choose the components Setup will install.

Select the components you want to install, and clear the components you do not want to install.

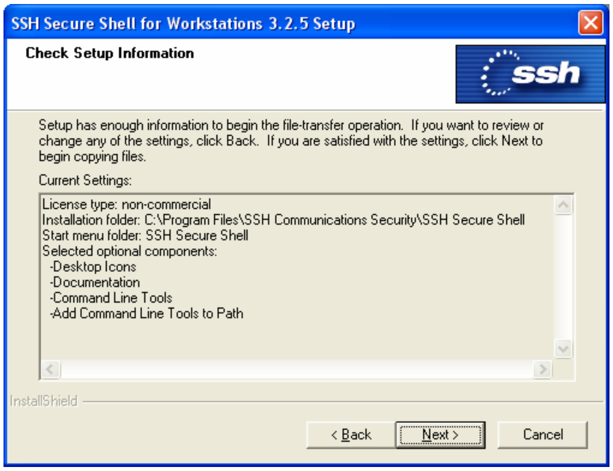
- ☑ Desktop Icons
- ☑ Documentation
- ☑ Command Line Tools
- ☑ Add Command Line Tools to Path

Description

Add Secure Shell client icons to the desktop.

Space Required on C:	8248 K
Space Available on C:	92024 K

Click Next



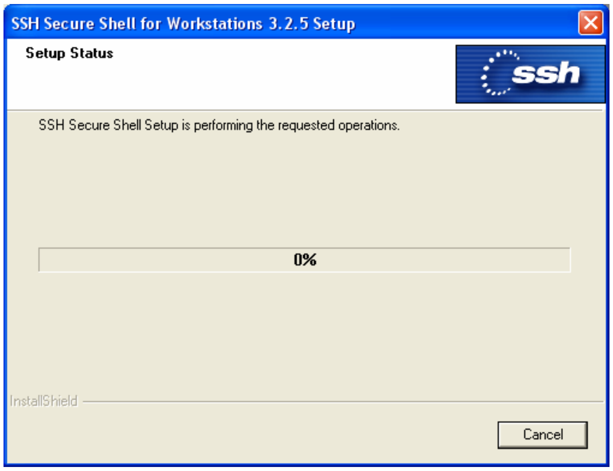
Check Setup Information

Setup has enough information to begin the file-transfer operation. If you want to review or change any of the settings, click Back. If you are satisfied with the settings, click Next to begin copying files.

Current Settings:

```
License type: non-commercial
Installation folder: C:\Program Files\SSH Communications Security\SSH Secure Shell
Start menu folder: SSH Secure Shell
Selected optional components:
 -Desktop Icons
 -Documentation
 -Command Line Tools
 -Add Command Line Tools to Path
```

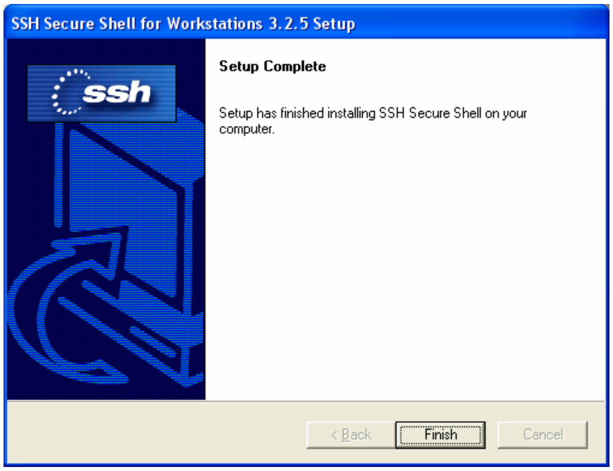
Click Next



Setup Status

SSH Secure Shell Setup is performing the requested operations.

Wait for setup to complete….

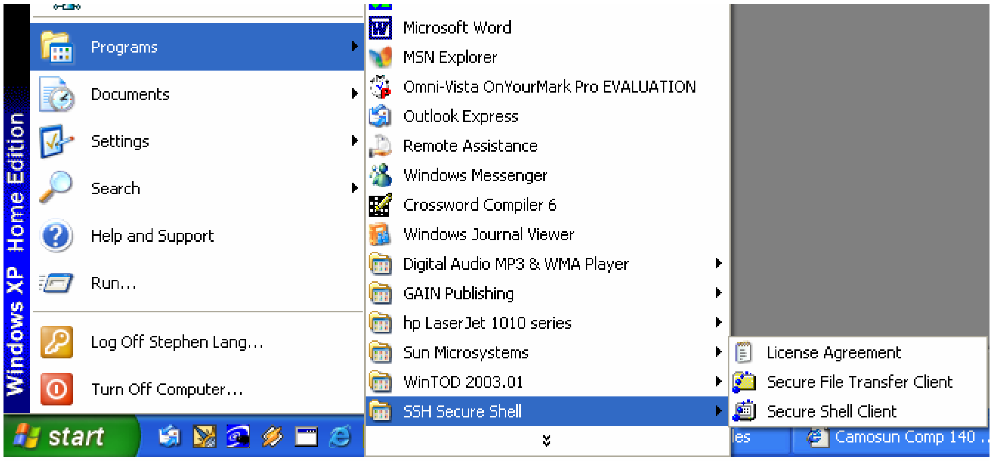


Setup Complete

Setup has finished installing SSH Secure Shell on your computer.

Click Finish. Install is compete.

You should have a SSH Secure Shell program group that looks like this.



2. Using SSH File Transfer

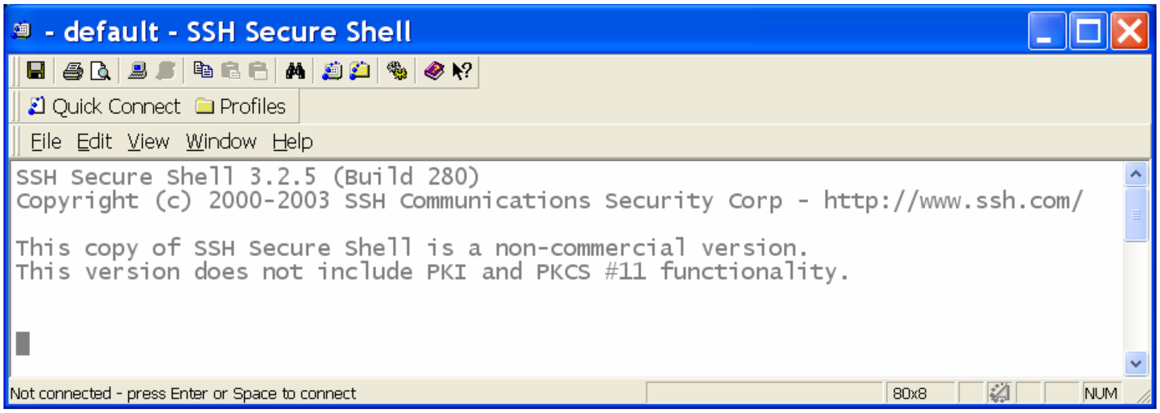
This process brings up a window similar to Windows Explorer. In this window you can select files to transfer between your local (C:) drive or CST server (U:) over to your deepblue account. This is necessary when you create html files on the local drive to test, then move them to deepblue to make them internet-accessible.

The SSH File Transfer is essentially an FTP (secure FTP) application.

If you already have SSH terminal (Telnet mode) open, then click on the folder icon (the folder having blue circles) near the top toolbar.

If not, then click on the Windows Start and select All Programs, then select SSH Secure Shell, then select Secure File Transfer Client.

Click on the Quick Connect button in the top toolbar to start a remote session:

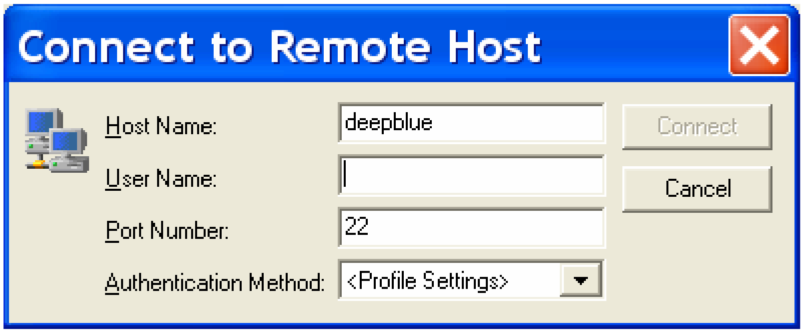


```
SSH Secure Shell 3.2.5 (Build 280)
Copyright (c) 2000-2003 SSH Communications Security Corp - http://www.ssh.com/

This copy of SSH Secure Shell is a non-commercial version.
This version does not include PKI and PKCS #11 functionality.
```

Not connected - press Enter or Space to connect

Enter Host Name value **deepblue.cs.camosun.bc.ca** (only use **deepblue** when at Camosun College). Enter your deepblue account as User Name (e.g. **cst0xxxx**)



Host Name: deepblue

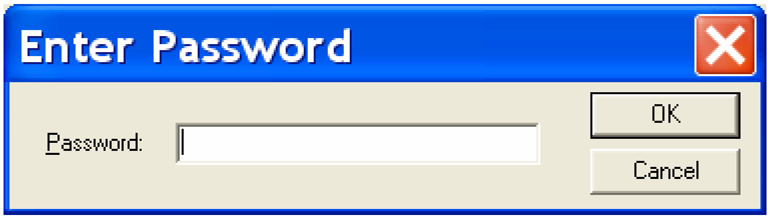
User Name:

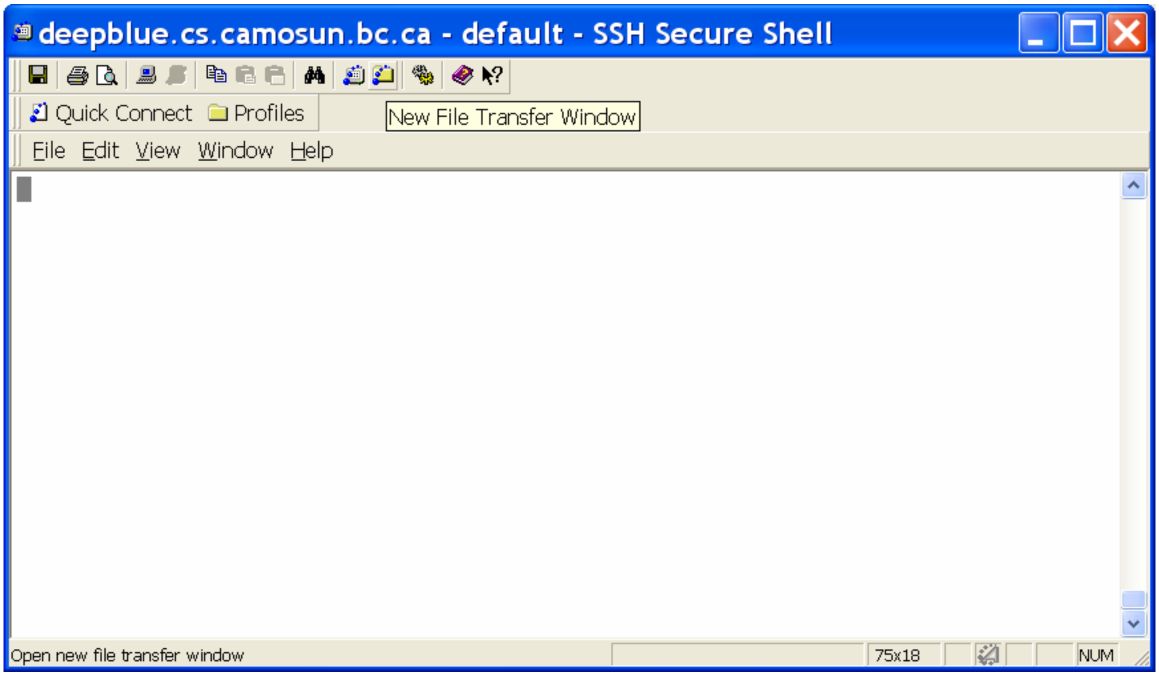
Port Number: 22

Authentication Method: <Profile Settings>

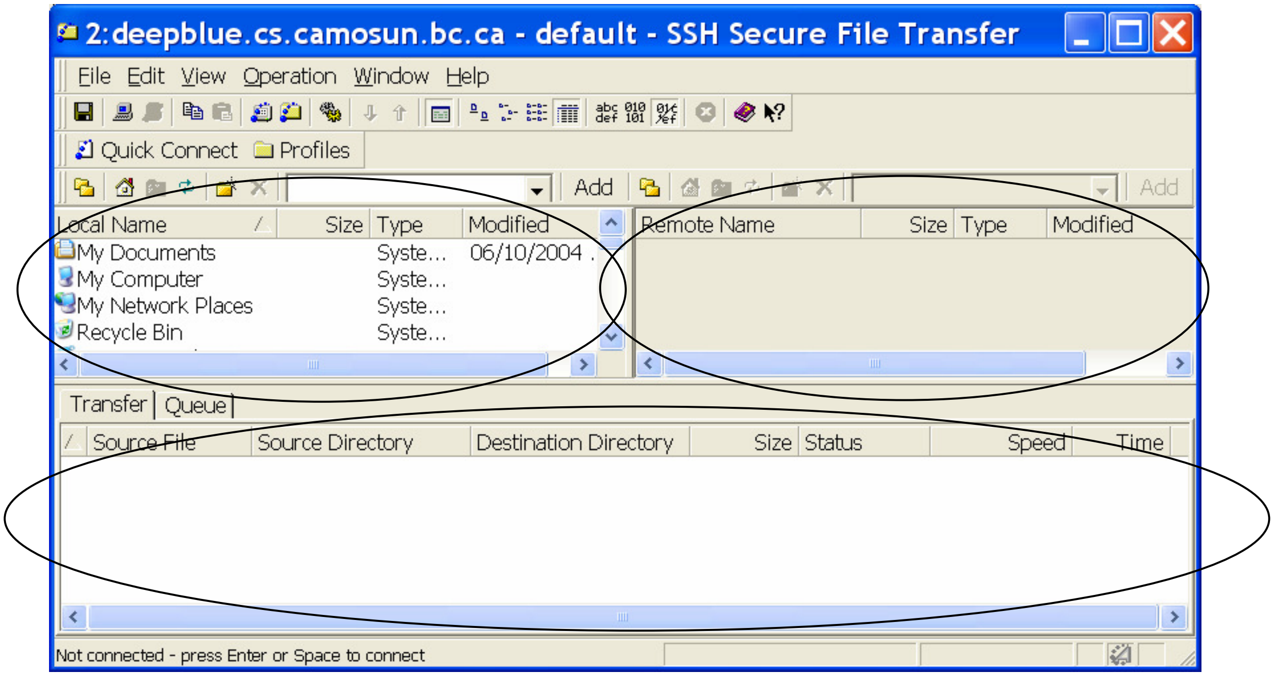
Leave the Port Number at 22. This is the default port value for a secure telnet session.
Leave the Authentication Method as <Profile Settings>
Click on Connect to continue the connection.

Enter your login password that you use for your **cst0xxxx** account. Click OK




deepblue.cs.camosun.bc.ca - default - SSH Secure Shell
Quick Connect
Profiles
New File Transfer Window
File
Edit
View
Window
Help
Open new file transfer window
75x18
NUM

The Secure File Transfer window appears with three basic panels. The panel on the left shows a file tree of the local computer. The panel on the right shows a file tree of the remote host (not connected to deepblue so nothing appears there yet). The panel on the bottom shows the files that have been transferred between the local computer and the remote host.


2:deepblue.cs.camosun.bc.ca - default - SSH Secure File Transfer
File Edit View Operation Window Help
Quick Connect
Profiles
Add
Add
Transfer
Queue

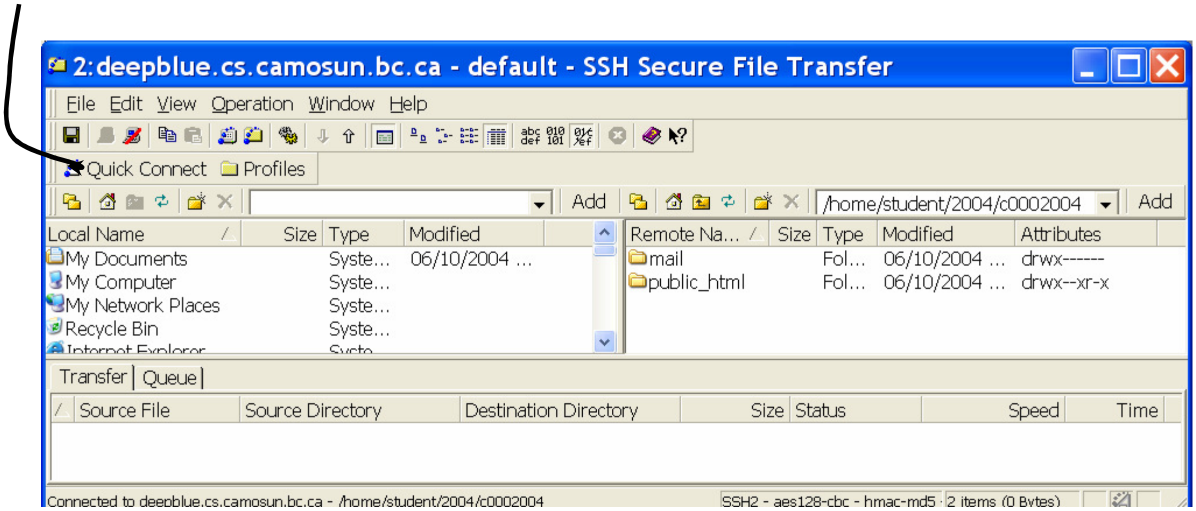
Local Name	Size	Type	Modified
My Documents		Syste...	06/10/2004 .
My Computer		Syste...	
My Network Places		Syste...	
Recycle Bin		Syste...	

Remote Name	Size	Type	Modified

Source File	Source Directory	Destination Directory	Size	Status	Speed	Time

Not connected - press Enter or Space to connect

Click on the Quick Connect near the top of the toolbars. Logon to the deepblue host. Once the logon has been successfully established, the file tree to the home directory for student c0002004 appears in the panel on the right.


2:deepblue.cs.camosun.bc.ca - default - SSH Secure File Transfer
File Edit View Operation Window Help
Quick Connect
Profiles
Add
Add
Transfer
Queue

/home/student/2004/c0002004

Local Name	Size	Type	Modified
My Documents		Syste...	06/10/2004 ...
My Computer		Syste...	
My Network Places		Syste...	
Recycle Bin		Syste...	
Internet Explorer		Syste...	

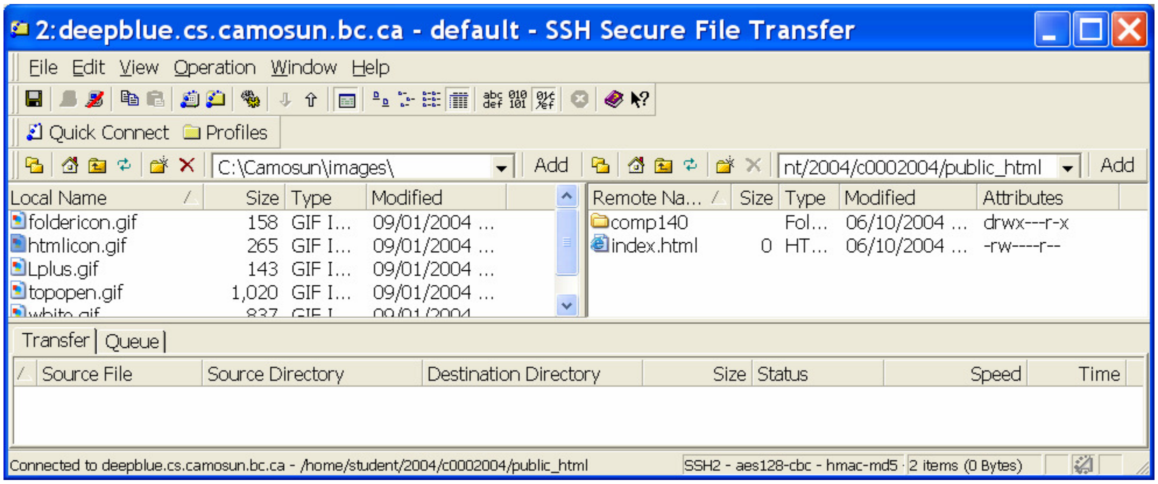
Remote Na...	Size	Type	Modified	Attributes
mail		Fol...	06/10/2004 ...	drwx------
public_html		Fol...	06/10/2004 ...	drwx--xr-x

Source File	Source Directory	Destination Directory	Size	Status	Speed	Time

Connected to deepblue.cs.camosun.bc.ca - /home/student/2004/c0002004 SSH2 - aes128-cbc - hmac-md5 2 items (0 Bytes)

Since we want to transfer files directly into the public_html folder on the deepblue host, we can double click on the public_html folder as shown on the right panel. The subdirectory comp140 and file index.html are shown as the sole residents of public_html.

Say we want to copy the file c:\Camosun\images\htmlicon.gif to public_html on the remote host. We find the htmlicon.gif file on the left panel file tree, left click and *hold* on it while dragging it over to the right panel, then release the mouse button to confirm the copy.


2:deepblue.cs.camosun.bc.ca - default - SSH Secure File Transfer
File Edit View Operation Window Help
Quick Connect
Profiles
Add
Add
Transfer
Queue

C:\Camosun\images\

nt/2004/c0002004/public_html

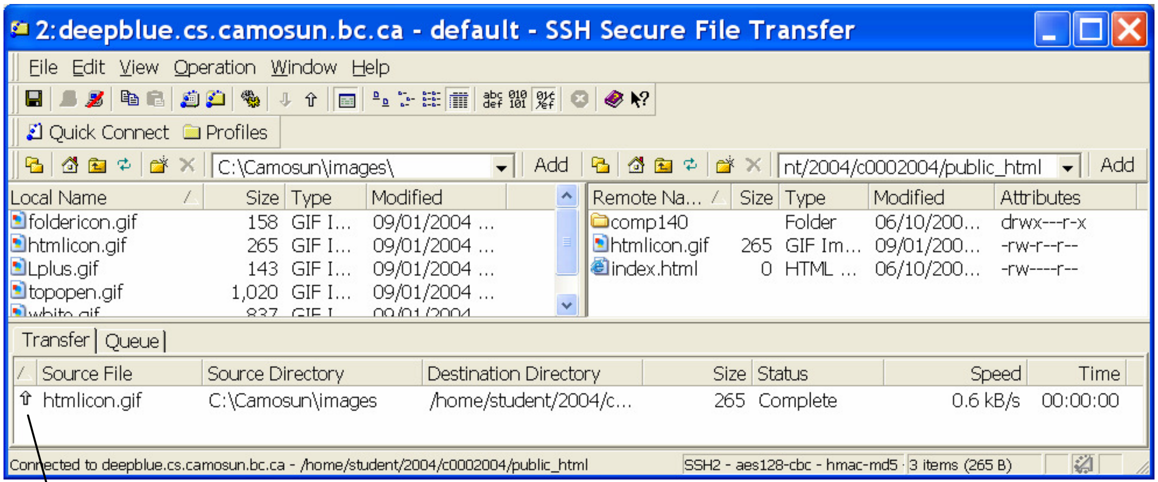
Local Name	Size	Type	Modified
foldericon.gif	158	GIF I...	09/01/2004 ...
htmlicon.gif	265	GIF I...	09/01/2004 ...
Lplus.gif	143	GIF I...	09/01/2004 ...
topopen.gif	1,020	GIF I...	09/01/2004 ...
white.gif	837	GIF I...	09/01/2004 ...

Remote Na...	Size	Type	Modified	Attributes
comp140		Fol...	06/10/2004 ...	drwx---r-x
index.html	0	HT...	06/10/2004 ...	-rw----r--

Source File	Source Directory	Destination Directory	Size	Status	Speed	Time

Connected to deepblue.cs.camosun.bc.ca - /home/student/2004/c0002004/public_html | SSH2 - aes128-cbc - hmac-md5 | 2 items (0 Bytes)

The results of the file transfer appear in the bottom panel. Note that the freshly copied file htmlicon.gif on the public_html folder has the appropriate read privilege enabled for others. It's ok that the read privilege has been enabled to "group" as well.


2:deepblue.cs.camosun.bc.ca - default - SSH Secure File Transfer
File Edit View Operation Window Help
Quick Connect
Profiles
Add
Add
Transfer
Queue

C:\Camosun\images\

nt/2004/c0002004/public_html

Local Name	Size	Type	Modified
foldericon.gif	158	GIF I...	09/01/2004 ...
htmlicon.gif	265	GIF I...	09/01/2004 ...
Lplus.gif	143	GIF I...	09/01/2004 ...
topopen.gif	1,020	GIF I...	09/01/2004 ...
white.gif	837	GIF I...	09/01/2004 ...

Remote Na...	Size	Type	Modified	Attributes
comp140		Folder	06/10/200...	drwx---r-x
htmlicon.gif	265	GIF Im...	09/01/200...	-rw-r--r--
index.html	0	HTML ...	06/10/200...	-rw----r--

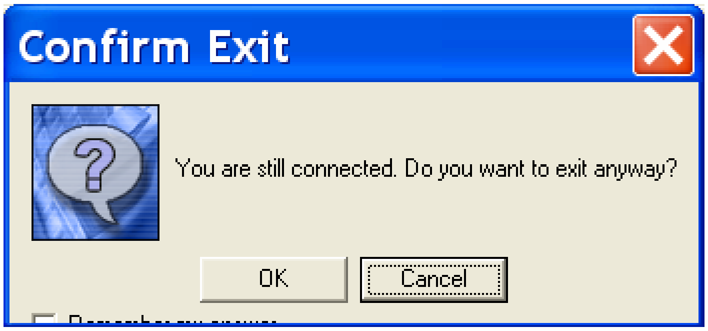
Source File	Source Directory	Destination Directory	Size	Status	Speed	Time
⇧ htmlicon.gif	C:\Camosun\images	/home/student/2004/c...	265	Complete	0.6 kB/s	00:00:00

Connected to deepblue.cs.camosun.bc.ca - /home/student/2004/c0002004/public_html | SSH2 - aes128-cbc - hmac-md5 | 3 items (265 B)

An arrow pointing up indicates an upload activity. A file moved from the local computer "up" to the remote host (deepblue). If the arrow points down, a file was "downloaded" from the remote host to the local computer.

Files and folders can be transferred between the local and remote computers. Take care that you do not accidentally overwrite recent work.

To end the Secure File Transfer session, click on File, then select Exit. If the Confirm Exit window appears, click on the OK button.



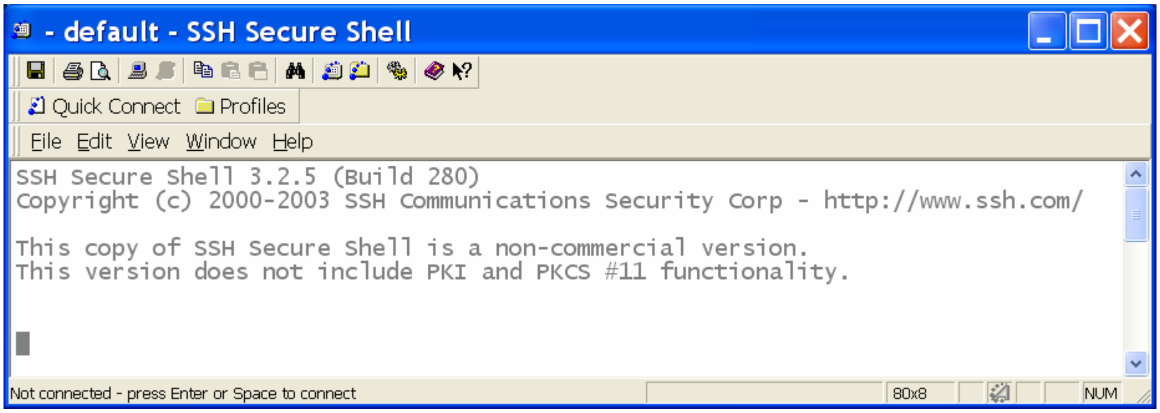
You are still connected. Do you want to exit anyway?

3. Using SSH in Telnet mode

This process brings up a window in which you may enter Unix commands for deepblue to act upon. This is also called terminal emulation because you are emulating (faking) the appearance that you are physically at the deepblue server.

Click on the Secure Shell Client. This starts a remote session to a remote host computer (in this case it will be the host computer named `deepblue.cs.camosun.bc.ca`).

Click on the Quick Connect button in the top toolbar to start a remote session and follow the deepblue login sequence described in the File Transfer section.

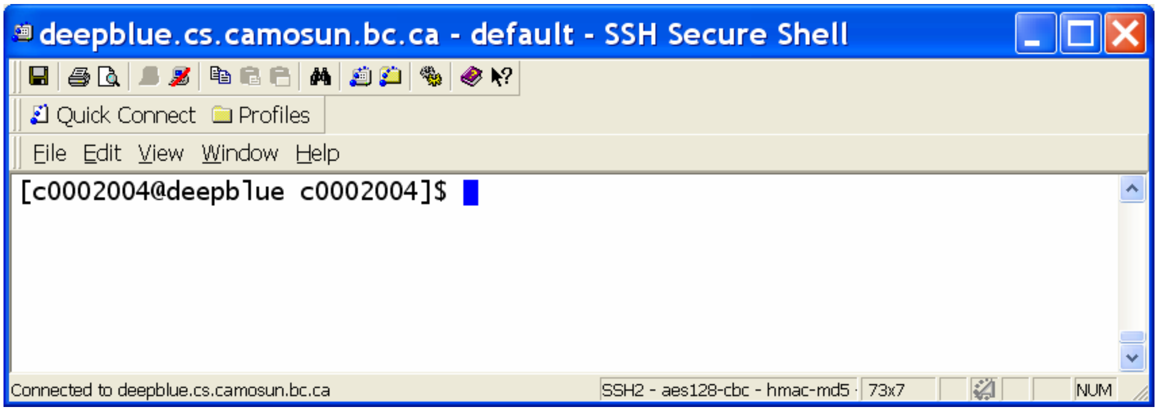


```
SSH Secure Shell 3.2.5 (Build 280)
Copyright (c) 2000-2003 SSH Communications Security Corp - http://www.ssh.com/

This copy of SSH Secure Shell is a non-commercial version.
This version does not include PKI and PKCS #11 functionality.
```

Not connected - press Enter or Space to connect

After logging on to deepblue the session window appears:


deepblue.cs.camosun.bc.ca - default - SSH Secure Shell
Quick Connect
Profiles
File Edit View Window Help
Connected to deepblue.cs.camosun.bc.ca
SSH2 - aes128-cbc - hmac-md5
73x7
NUM

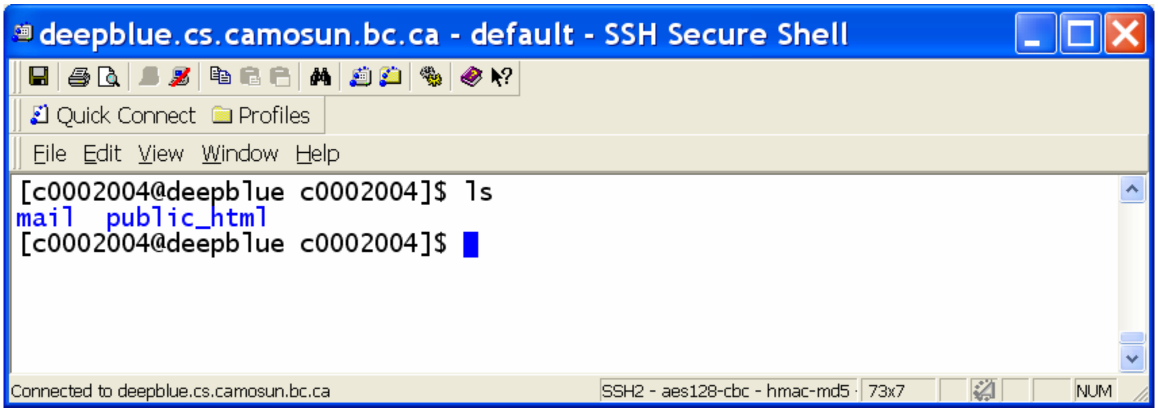
```
[c0002004@deepblue c0002004]$
```

The prompt **[c0002004@deepblue c0002004]$** which appears in the session window will be different for your account.

A telnet session will not respond to mouse events on the local computer. This is a text-based, command-line environment – there are no icons here! You need to enter specific, correctly stated Unix commands at the prompt using the keyboard.

You can use the mouse to select, cut and copy text that appears on the screen and save it elsewhere.

At the deepblue prompt enter the Unix command **ls** (the letter "l" followed by the letter "s") to list the files and directories (folders) in the current directory. To do this, type **ls** on the keyboard, then press the Enter key. The remote host (deepblue) will not respond to any command input until you press the Enter key. The information from the **ls** command as shown below indicates that only two directories exist in the home directory of account c0002004. We know they are directories because they will appear in blue in the screen. The prompt returns for the next command to be entered.


deepblue.cs.camosun.bc.ca - default - SSH Secure Shell
Quick Connect
Profiles
File Edit View Window Help
Connected to deepblue.cs.camosun.bc.ca
SSH2 - aes128-cbc - hmac-md5
73x7
NUM

```
[c0002004@deepblue c0002004]$ ls
mail   public_html
[c0002004@deepblue c0002004]$
```

The Unix command **cd** will change the current directory. In this case we want to make the current directory public_html (where we must keep all our web materials), so enter

```
cd public_html
```

the prompt will change to **`[c0002004@deepblue public_html]$`** to indicate this.

When we enter the Unix command **`ls -l`** to view details on the current directory, the only file that appears is called index.html. Note that it currently shows privileges of

`-rw-------` should be viewed in sections as: **`- rw- --- ---`**

The first hyphen is a code indicating what this is ("**`-`**" for file, "**`d`**" for directory).

The next set of three codes (here: **`rw-`**) indicates the privileges for the user of this file. The user is the one who owns this file. The user currently has read (**`r`**) and write (**`w`**) privileges enabled but not execute (**`x`**). Since this html file is a text file, it does not make sense to enable execute privilege on it so it has a hyphen where an **`x`** would appear.

The second set of three codes (here: **`---`**) indicates the privileges for the group level. The hyphens mean that the group has no read, no write and no execute privileges on this file.

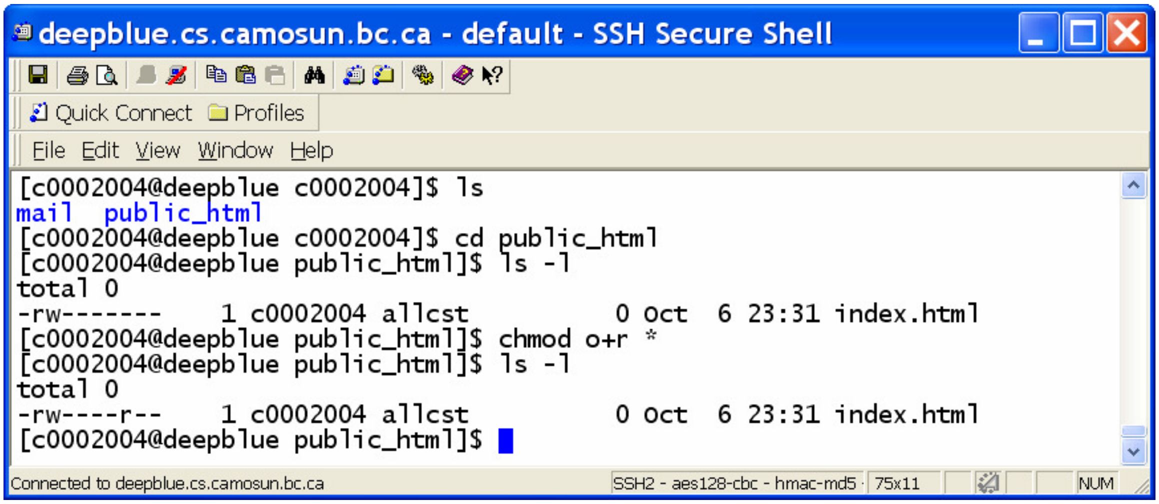
The third and last set of three codes (here: **`---`**) indicates the privileges for all others. The hyphens mean that nobody else has read, write or execute privileges on this file. For the file to be accessible via the browser, it must have the read privilege. For directories to be accessible via the browser, they must have at least execute privilege and maybe read privilege as well.

Since we need to modify the index.html privileges so that others can read it, we use the Unix command **`chmod`** as follows:

```
chmod o+r *
```

which enables the read privilege for others to all files in the current directory. If we don't enable the read privilege on the file, then the browser will return an error message when it attempts to read it via the web server.

The display output of the command **`ls -l`** confirms that the read privilege has been enabled correctly to others.

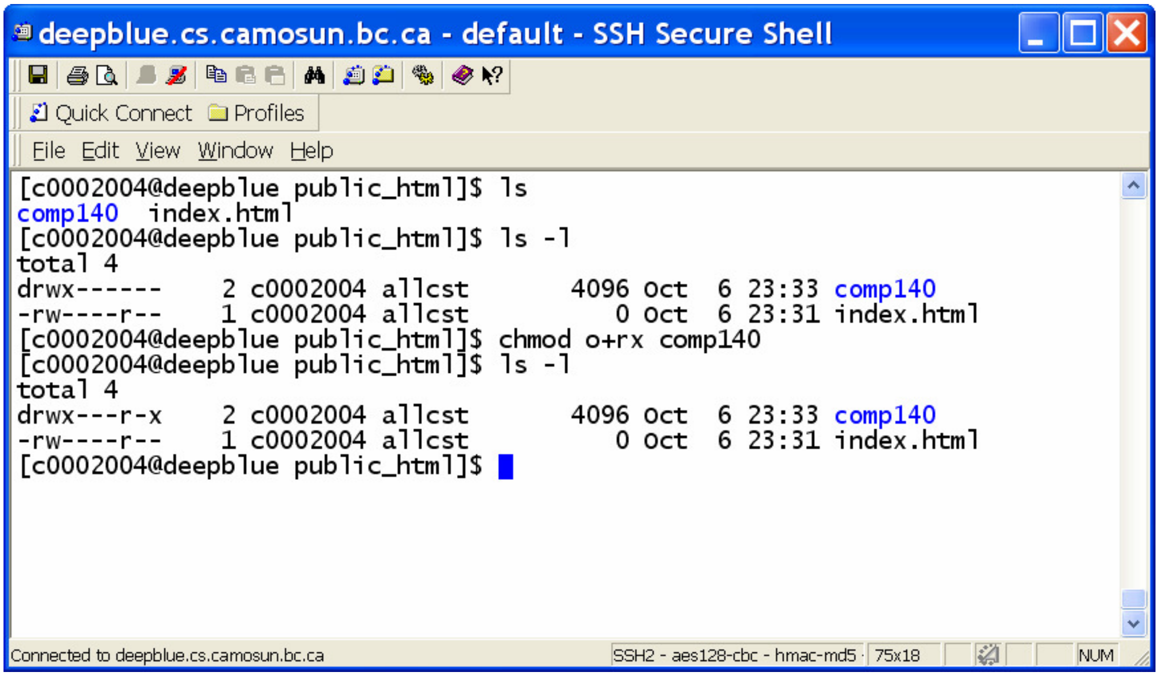

deepblue.cs.camosun.bc.ca - default - SSH Secure Shell
Quick Connect
Profiles
File Edit View Window Help
Connected to deepblue.cs.camosun.bc.ca
SSH2 - aes128-cbc - hmac-md5
75x11
NUM

```
[c0002004@deepblue c0002004]$ ls
mail  public_html
[c0002004@deepblue c0002004]$ cd public_html
[c0002004@deepblue public_html]$ ls -l
total 0
-rw-------    1 c0002004 allcst          0 Oct  6 23:31 index.html
[c0002004@deepblue public_html]$ chmod o+r *
[c0002004@deepblue public_html]$ ls -l
total 0
-rw----r--    1 c0002004 allcst          0 Oct  6 23:31 index.html
[c0002004@deepblue public_html]$
```

In this example we need to enable the read and execute privilege to others for the directory named comp140. The Unix command

chmod o+rx comp140

accomplishes this. The comp140 folder is now accessible to the browser via the internet. Any new files copied to the comp140 folder may need to have the read privilege enabled using the **chmod** command.


deepblue.cs.camosun.bc.ca - default - SSH Secure Shell
Quick Connect
Profiles
File Edit View Window Help
Connected to deepblue.cs.camosun.bc.ca
SSH2 - aes128-cbc - hmac-md5
75x18
NUM

```
[c0002004@deepblue public_html]$ ls
comp140  index.html
[c0002004@deepblue public_html]$ ls -l
total 4
drwx------    2 c0002004 allcst       4096 Oct  6 23:33 comp140
-rw----r--    1 c0002004 allcst          0 Oct  6 23:31 index.html
[c0002004@deepblue public_html]$ chmod o+rx comp140
[c0002004@deepblue public_html]$ ls -l
total 4
drwx---r-x    2 c0002004 allcst       4096 Oct  6 23:33 comp140
-rw----r--    1 c0002004 allcst          0 Oct  6 23:31 index.html
[c0002004@deepblue public_html]$
```

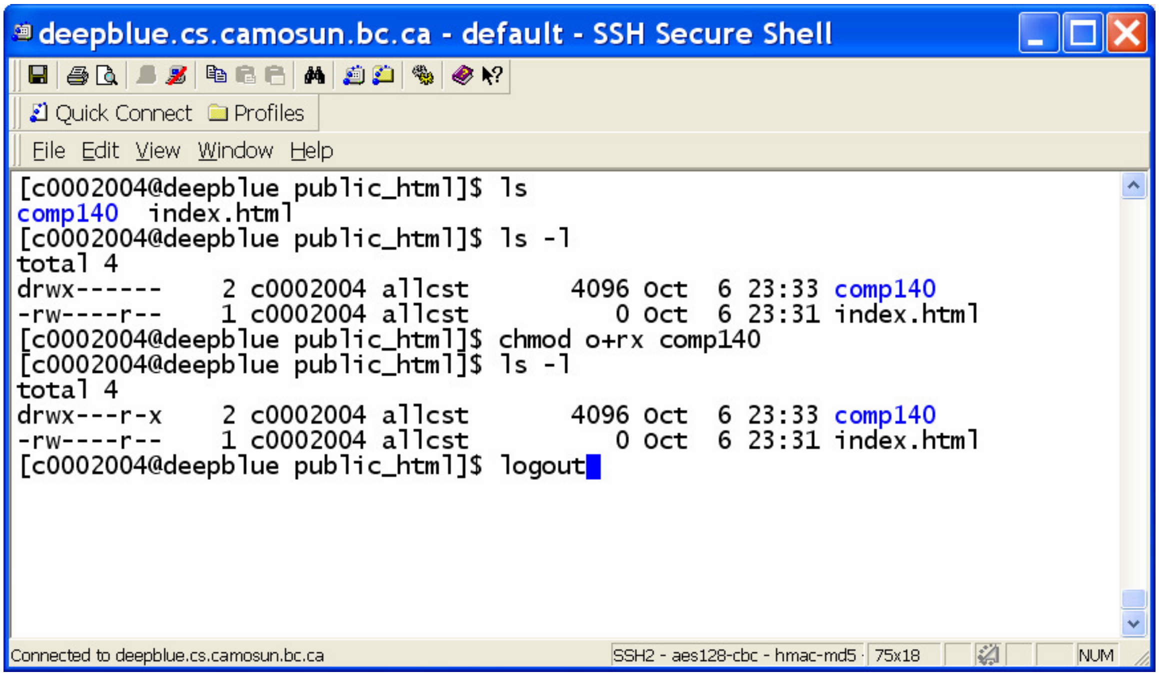
The option **+R** to the chmod command directs the host to apply the privilege changes recursively to any and all subdirectories.

chmod -R o+r *

will make all files and subfolders and all files in the subfolders readable to others.

To end the telnet session, enter the command

`logout`



```
[c0002004@deepblue public_html]$ ls
comp140  index.html
[c0002004@deepblue public_html]$ ls -l
total 4
drwx------    2 c0002004 allcst       4096 Oct  6 23:33 comp140
-rw----r--    1 c0002004 allcst          0 Oct  6 23:31 index.html
[c0002004@deepblue public_html]$ chmod o+rx comp140
[c0002004@deepblue public_html]$ ls -l
total 4
drwx---r-x    2 c0002004 allcst       4096 Oct  6 23:33 comp140
-rw----r--    1 c0002004 allcst          0 Oct  6 23:31 index.html
[c0002004@deepblue public_html]$ logout
```

Connected to deepblue.cs.camosun.bc.ca
SSH2 - aes128-cbc - hmac-md5
75x18
NUM