

# Princeton University

## COS 217: Introduction to Programming Systems

### A Minimal COS 217 Computing Environment

## **1. Fetching the SSH Software**

### **1.1. Using your own Microsoft Windows computer:**

#### 1.1.1. Download the SSH software.

Use a web browser to visit the page <ftp://ftp.ssh.com/pub/ssh/>.

Download file SSHSecureShellClient-3.2.9.exe to your computer.

#### 1.1.2. Install the SSH software.

In Windows Explorer, double-click on file SSHSecureShellClient-3.2.9.exe to launch the SSH software installer.

Choose the default directory as the installation destination.

Note:

- The SSH software consists of two Microsoft Windows applications: a “SSH Secure Shell Client” and a “SSH Secure File Transfer Client.” You will use the File Transfer Client to download files from the “hats” computer cluster to your computer, and to upload files from your computer to hats. You will use the Shell Client for all other work.
- You need not fetch the SSH software to use the computers in the Friend Center 016 or 017 labs.
- The SSH software is pre-installed on Microsoft Windows computers purchased through Princeton.
- See the page <http://helpdesk.princeton.edu/kb/display.plx?ID=4104> for more information about the SSH software.

## **2. Conducting a Hats Terminal Session**

*Note: **Hats** is a cluster of computers that is administered by OIT. It consists of three computers (**fez**, **fedora**, and **boater**) which share a file system. You should do all COS 217 assignments on the hats cluster.*

### **2.1. Using your own Microsoft Windows computer:**

#### 2.1.1. Launch the SSH Secure Shell Client.

Double-click on the SSH Secure Shell Client desktop icon.

#### 2.1.2. Log into hats.

In the SSH Secure Shell Client...

Click on the “File | Quick Connect...” menu item.

In the “Connect to Remote Host” dialog box:

For “Host Name” type “hats.princeton.edu”.

For “User Name” type your Princeton user name.

For “Port Number” type “22”.

For “Authentication Method” choose “Password”.

Click on the “Connect” button.

In the “Enter Password” dialog box...

Type your Princeton UNIX password.

Confirm that the SSH Secure Shell Client window displays a UNIX shell prompt.

#### 2.1.3. Use hats via the SSH Secure Shell Client as desired.

#### 2.1.4. Log off of hats.

In the SSH Secure Shell Client...

Issue the “logout” (or “exit”) command to disconnect the client from hats.

#### 2.1.5. Exit the SSH Secure Shell Client

### **2.2. Using a Dell Computer in the Friend Center 017 Lab:**

#### 2.2.1. Log into the Dell Computer

In the “Log On to Windows” dialog box:

Type your user id.

Type your Windows NT password.

Choose “PRINCETON” as the domain.

Click on the “OK” button.

#### 2.2.2. Launch the SSH Secure Shell Client.

Click on the “Start” | “All Programs” | “SSH Secure Shell” | “Secure Shell Client” menu item.

#### 2.2.3. Log into hats.

In the SSH Secure Shell Client...

Click on the “File | Quick Connect...” menu item.

In the “Connect to Remote Host” dialog box:

For “Host Name” type “hats.princeton.edu”.

For “User Name” type your Princeton user name.

For “Port Number” type “22”.

For “Authentication Method” choose “Password”.

Click on the “Connect” button.

If a “Host Identification” dialog box appears, click on the “Yes” button.

In the “Enter Password” dialog box...

Type your Princeton UNIX password.

Confirm that the SSH Secure Shell Client window displays a UNIX shell prompt.

#### 2.2.4. Use hats via the SSH Secure Shell Client as desired.

#### 2.2.5. Log out of hats.

In the SSH Secure Shell Client...

Issue the “exit” or “logout” command.

#### 2.2.6. Exit the SSH Secure Shell Client.

Click on the “File” | “Exit” menu item.

#### 2.2.7. Log out of the Dell computer.

Click on the “Start” | “Log Off” menu item.

### **2.3. Using an iMac Computer in the Friend Center 016 Lab:**

#### 2.3.1. Log into the iMac computer.

Type your user id and LDAP password, and click the “Log In” button.

#### 2.3.2. Open a Terminal window.

Click on the “Terminal” button at the bottom of the screen; its icon is a video display with a cursor.

#### 2.3.3. Log into hats.

In the terminal window...

Type “ssh hats”.

If an SSH-related message appears, type “yes”.  
Type your UNIX password.

2.3.4. Use hats via the terminal window.

2.3.5. Log out of hats.

In the terminal window...

Issue the “exit” or “logout” command.

2.3.6. Close the terminal window.

Issue the “exit” or “logout” command.

2.3.7. Log out of the iMac computer.

On the menu, choose AppleSymbol | “Log Out”.

Click on the “Log Out” button in the dialog box.

### **3. Making Bash Your Login Shell**

*Not required but highly recommended, one time only...*

3.1. Log into hats.

3.2. Issue these commands to copy reasonable bash startup files to your home directory:

```
cd
cp /u/cos217/.bash_profile .
cp /u/cos217/.bashrc .
```

(Note the period at the end of each cp command. The period specifies “the current directory” as the destination of the file copy operation.)

3.3. Suggestion: Examine the .bashrc and .bash\_profile files.

3.4. Log out of hats.

3.5. Use a Web browser to visit the page <http://www.princeton.edu/account>.

3.6. Click on the “Enable your Unix Account” anchor.

3.7. In the “Enter Network Password” dialog box, type your user name and password, and click on the “OK” button.

3.8. Under the “Advanced settings” heading, click on the “/bin/bash - GNU Bash (/bin/bash)” radio button.

3.9. Click on the “Submit Change” button.

3.10. Wait 5 minutes for the change to take effect.

3.11. Log into hats.

3.12. Issue the command “printenv SHELL” and confirm that the output is /bin/bash.

## **4. Configuring the Xemacs Editor**

*Not required but highly recommended, one time only...*

4.1. In a hats terminal session, issue these commands to copy a reasonable xemacs configuration file to your home directory:

```
cd  
cp /u/cos217/.emacs .
```

(Again, note the period at the end of the cp command. It specifies “the current directory” as the destination of the file copy operation.)

4.2. Suggestion: Examine the .emacs file.

## **5. Subscribing to the COS217 Listserv**

*Required, one time only...*

5.1. Use a Web browser to visit the page <https://lists.cs.princeton.edu/mailman/listinfo/cos217>.

5.2. In the section entitled “Subscribing to COS217”...

- Type your e-mail address.
- Type your name.
- Choose and type a password.
- Reenter the password.
- Click on the “Subscribe” button.

(The listserv management software will send you an e-mail message to confirm your subscription request.)

5.3. Use any e-mail client to reply to that e-mail message, keeping the Subject header intact.

5.4. Use a Web browser to visit (again) the page <https://lists.cs.princeton.edu/mailman/listinfo/cos217>.

5.5. In the section entitled “COS217 Subscribers”...

- Type your e-mail address.
- Type your password.
- Click on the “View Subscriber List” button.
- Confirm that your e-mail address appears on the resulting web page.

*Then, throughout the course, to send a message to the listserv...*

5.6. Use any e-mail client to send a message to [cos217@lists.cs.princeton.edu](mailto:cos217@lists.cs.princeton.edu).  
The message will be sent to all other subscribers, and will be archived.

*Then, throughout the course, to browse through the archive of listserv messages...*

5.7. Use a Web browser to visit the page <https://lists.cs.princeton.edu/mailman/listinfo/cos217>.

5.8. Click on the “COS217 Archives” anchor.

5.9. In the resulting Web page, click on the “Thread”, “Subject”, “Author”, or “Date” anchor.

## **6. Printing a Text File**

### **6.1. Using your own Microsoft Windows computer:**

#### 6.1.1. Launch the SSH Secure File Transfer Client.

Double-click on the SSH Secure File Transfer desktop icon.

#### 6.1.2. Log into hats via the SSH Secure File Transfer Client.

As you would log in via the SSH Secure Shell Client.

#### 6.1.3. Download the file to your local file system.

In the SSH Secure File Transfer Client...

In the left pane, expand the directory tree to display the local directory to which files should be downloaded.

In the right pane, expand the directory tree to display the remote files to be downloaded.

Drag and drop the remote files to the local directory.

Wait for the download to complete.

#### 6.1.4. Log out of hats.

In the SSH Secure File Transfer Client...

Click on “File” | “Disconnect”.

#### 6.1.5. Exit the SSH Secure File Transfer Client.

#### 6.1.6. Print the local file, as you would any other local file.

### **6.2. Using a Computer in the Friend Center 017 Lab:**

#### 6.2.1. In a hats terminal session, issue one of these commands:

```
lpr -P xefriend017d filename (for ordinary printing)
```

```
enscript -2rC -P xefriend017d filename (for “2-up” printing with line numbers)
```

Note: You can omit the “-P xefriend017d” option if the PRINTER environment variable is set to xefriend017d.

#### 6.2.2. On the Print Release Station (i.e. the computer located near the printer)...

Type your user id and Windows NT password, and click on the “Log on” button.

In the list box, select a file from your print queue.

Click the “Print” button.

Click the “Logoff” button.

### **6.3. Using a Computer in the Friend Center 016 Lab:**

#### 6.3.1. In a hats terminal session, issue one of these commands:

```
lpr -P xefriend016d filename
```

```
enscript -2rC -P xefriend016d filename (for “2-up” printing with line numbers)
```

Note: You can omit the “-P xefriend016d” option if the PRINTER environment variable is set to xefriend016d.

#### 6.3.2. On the Print Release Station (i.e. the computer located near the printer)...

Type your user id and Windows NT password, and click on the “Log on” button.

In the list box, select a file from your print queue.

Click the “Print” button.

Click the “Log Off” button.