Princeton University
COS 217: Introduction to Programming Systems
A Minimal COS 217 Computing Environment

1. Activating Your University Computing Account

One time only…

1.1. Use a Web browser to visit the page http://support.princeton.edu/oitsetup/.

1.2. Perform the five steps listed in the first section of the page to set your security profile.

1.3. Click on the "Enable your Unix account" anchor in the second section of the page.

1.4. In the resulting "Unix: How do I enable/change the default Unix shell on my account?" page (http://helpdesk.princeton.edu/kb/display.plx?ID=5216), click on the "Enable Unix Account" anchor.

1.5. In the resulting dialog box, type your user id and password, and click the "OK" button.

1.6. In the resulting "Update your Unix account" page (https://sweb2.princeton.edu/cgi-bin/Shell/nview.pl):

1.6.1. Select the "Enable my Unix account" radio button.

1.6.2. Click on the "Enable my Account" button.

2. Making Bash Your Login Shell

One time only, continued from the previous section…

2.1. In the "Update your Unix account" page (https://sweb2.princeton.edu/cgi-bin/Shell/nview.pl):

2.1.1. Under the "Advanced settings" heading, select the "/bin/bash – GNU Bash (/bin/bash)" radio button.

2.1.2. Click on the "Submit Change" button.

2.1.3. Wait approximately 5 minutes for the change to take effect.

3. Conducting a Hats Terminal Session

Notes:
- Hats is a cluster of computers that is administered by OIT.
- The hats cluster consists of two computers, fez and fedora, which share a file system.
- The first time you login to hats, you will be using an impoverished computing environment. Only after you have configured the Bash shell (see the "Configuring the Bash Shell" section of this document) will your programming environment be reasonable.
- The local computer communicates with hats via a terminal emulation program that can use the SSH protocol. Two such programs are PuTTY[1] (for MS Windows) and Terminal (for Mac OS X).

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[1] See the web page http://helpdesk.princeton.edu/kb/display.plx?ID=4104 for information on PuTTY.

Repeatedly throughout the semester as required…

3.1. Using a Lab Computer Running Microsoft Windows

3.1.1. Log into the computer
        In the "Welcome to an OIT Cluster Mac" box, click on the "Windows" icon.
        Type the Control-Alt-Delete key combination.
        Type your user id in the "Username" text box.
        Type your password in the "Password" text box.
        Click on the right arrow button.

3.1.2. Launch PuTTY.[2]
        From the "Start | All Programs | PuTTY" menu, click on PuTTY.

3.1.3. Log into hats.
        In PuTTY...
                Click on the "Window | Colours" Category, and make sure the "Use system colours" checkbox is checked.
                Click on the "Session" Category.
                In the "Host Name (or IP address)" text box, type "hats.princeton.edu".
                Make sure that the "Port" text box contains "22".
                Make sure the "Connection type" radio button panel is set to "SSH".
                Make sure the "Close window on exit" radio button panel is set to "Only on clean exit".
                Click on the "Open" button.
        In the resulting PuTTY window…
                In response to the "login as:" prompt, type your user id followed by the Enter key.
                In response to the "password:" prompt, type your password followed by the Enter key. (The password will not echo as you type.)
                Confirm that the PuTTY window displays a Unix shell prompt.

3.1.4. Use hats via PuTTY as desired.

3.1.5. Log out of hats.
        In PuTTY, issue the "logout" (or "exit") command to disconnect the client from hats.
        (PuTTY will exit automatically.)

3.1.6. Log out of the computer.
        Type the Control-Alt-Delete key combination.
        Click on the "Log Off" button.

3.2. Using a Lab Computer Running Mac OS X:

3.2.1. Log into the computer.
        In the "Welcome to an OIT Cluster Mac" box, click on the "Mac OS X" icon.
        In the Mac OS X window, type your user id and password, and click on the "Log In" button.
        (Be patient if a reconfiguration occurs.)

3.2.2. Open a Terminal window.
        Click on the "Terminal" button at the bottom of the screen; its icon is a video display with a cursor.
3.2.3. Log into hats.

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[2] If you're using your own computer running Microsoft Windows and did not purchase your computer through Princeton in recent years, then you may need to download and install PuTTY. To do that, use a web browser to visit the page http://www.putty.org/. Click on the "You can download PuTTY here" anchor. In the resulting page, click on the "putty.exe" anchor. In the "File Downloading" dialog box, click on the "Save" button. In the "Save As" dialog box, choose some appropriate location in your local file system. Then launch PuTTY by double-clicking on the putty.exe file via Windows Explorer.

In the terminal window...
>Issue the command "ssh *yourUserId*@hats.princeton.edu".
>If an SSH-related message appears, type "yes".
>Type your password, followed by the Enter key.

3.2.4. Use hats via the terminal window as desired.

3.2.5. Log out of hats.
>In the terminal window...
>Issue the "exit" or "logout" command.

3.2.6. Close the Terminal window.
>Issue the "exit" or "logout"command.

3.2.7. Log out of the Mac OS X computer.
>On the menu, choose AppleSymbol | "Log Out".
>Click on the "Log Out" button in the dialog box.

4. Configuring the Bash Shell

One time only...

4.1. Log into hats.

4.2. Issue the command "printenv SHELL", and confirm that the output is "/bin/bash". If that is not the case, then redo the steps in the "Making Bash your Login Shell" section of this document.

4.3. 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 working directory" (alias "the current directory") as the destination of the file copy operation. Also note the space immediately preceding each of those periods.

4.4. Suggestion: Use the "cat" command to examine the contents of the .bashrc and .bash_profile files:
```
cat .bashrc
cat .bash_profile
```

4.5. Log out of hats.

5. Configuring the Emacs Editor

One time only...

5.1. In a hats terminal session, issue these commands to copy a reasonable Emacs configuration file to your home directory:
```
cd
cp /u/cos217/.emacs .
```

Again, note the period at the end of the cp command, and the space immediately preceding it.

5.2. Suggestion: Use the "cat" command to examine the contents of the .emacs file
```
cat .emacs
```

6. Configuring the Splint Source Code Checker

One time only...

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

```
cd
cp /u/cos217/.splintrc .
```

Again, note the period at the end of the cp command, and the space immediately preceding it.

6.2. Suggestion: Use the "cat" command to examine the contents of the .splintrc file:

```
cat .splintrc
```

7. Mapping a Drive to the Hats File System

Notes:
- Mapping a drive to the hats file system allows you to access files and folders/directories in the hats file system just as if they were in your local computer's file system.
- Doing so is handy for printing files, as described in the "Printing a Text File" section of this document.
- Doing so is handy for copying files and folders/directories between hats and your computer.
- Computers purchased through Princeton are pre-configured such that a drive (on Microsoft Windows, the H drive) is mapped to the hats file system.

7.1. Using your own computer running Microsoft Windows:

Perform the instructions on this web page: http://helpdesk.princeton.edu/kb/display.plx?id=9347.

7.2. Using your own computer running Mac OS X:

Perform the instructions on this web page: http://helpdesk.princeton.edu/kb/display.plx?ID=9268.

8. Printing a Text File

Repeatedly throughout the semester as required…

8.1. Using your own computer:

8.1.1. Map a drive to the hats file system, as described in the "Mapping a Drive to the Hats File System" section of this document.

8.1.2. Print the file as you would any other local file.

8.2. Using a lab computer:

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

```
lpr –P printqueuename filename  (for ordinary printing)
enscript –2rhC –E –P printqueuename filename  (for fancy printing of code)
```

where *printqueuename* is either all_clusters_s (for single-sided printing) or all_clusters_d (for double-sided printing).

Note: You can omit the "–P *printqueuename*" option if the PRINTER environment variable is set to *printqueuename*.

8.2.2. On the Print Release Station (i.e. the computer located near the printer)...
    Type your user id and password, and click on the "Logon" button.
    In the list box, select a file from your print queue.
    Click the "Print" button.
    Click the "Log Off" button.

9. Subscribing to COS217 in Piazzza

One time only...

9.1. Use a Web browser to visit the page http://www.piazzza.com (yes, that's three zs!).

9.2. In the middle of the screen, click on "Join or Create Your Class Now". Then, in the "Search Schools" box, type in Princeton University (it will be a unique result after "Pr"). Then, in the "Search Classes" box, type in COS 217 (or just type "COS" and select 217 from the list). The "Joining as a Student" button will already be activated, so all you have to do is fill in your Princeton.edu email address. And click the "Continue" button.

9.3. Check your Princeton.edu email, click on the "Get Started" link in the "Welcome to Piazzza – Activate Your Account" email, and fill in the appropriate information. Please use your real name when signing up – it's much easier to respond to a person we know from our class lists than to "xSnookie1746x".

9.4. Look through the 7-slide introduction to Piazzza, and the Piazzza 101 tutorials to acquaint yourself with the system. It's new to us this semester as well, so experiment and see what it can do!

Then, throughout the course, to communicate with the class ...

9.5. Post questions and comments (that comply with the course communication policies) to Piazzza via the http://www.piazzza.com/class#cos217 website. Posts will be available to all other subscribers and will be archived and searchable from within Piazzza.