

Princeton University

COS 217: Introduction to Programming Systems

A Minimal COS 217 Computing Environment

1. Subscribing to the Fall 2015 COS 217 Account in Piazza

One time only...

- 1.1. Use a Web browser to visit the page <http://www.piazza.com>.
- 1.2. Navigate through the Piazza website to enroll in the "Fall 2015" term of the "COS 217" course at "Princeton University". Please enroll using **your real first and last names** (no nicknames please) and your **Princeton e-mail address of the form `yourloginid@princeton.edu`** (and not, for example, a Gmail address). Feel free to ask your preceptor for help if you get stuck.

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

- 1.3. Post questions and comments (that comply with the course communication policies) to Piazza via the <http://www.piazza.com/class#fall2015/cos217> website. Posts will be available to all other subscribers and will be archived and searchable from within Piazza. Remember to check Piazza often, especially while working on assignments and preparing for exams.

2. Activating Your University Computing Account

One time only...

- 2.1. (If you're working off-campus) Perform the instructions on this web page to use SRA (secure remote access): <http://helpdesk.princeton.edu/kb/display.plx?ID=6023>
- 2.2. Use a Web browser to visit the "OIT Account Activation Page" at <http://helpdesk.princeton.edu/kb/display.plx?ID=9973>
- 2.3. Perform the five steps listed in the "Next, you must activate your University netID..." section of the page to set your security profile.
- 2.4. In the "After you have activated your account" section of the page, click on the "Enable your Unix account" link.
- 2.5. In the resulting "Unix: How do I enable/change the default Unix shell on my account?" page, click on the "Enable Unix Account" link.
- 2.6. In the resulting dialog box, type your login id and password, and click the "OK" button.
- 2.7. In the resulting "Update your Unix account" page:
 - Select the "Enable my Unix account" radio button.
 - Click on the "Enable my Account" button.

3. Making Bash Your Login Shell

One time only, continued from the previous section...

- 3.1. In the "Update your Unix account" page:

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

Click on the "Submit Change" button.
Wait about 5 minutes for the change to take effect.

If you enroll in the COS 217 course after the start of the semester, then there will be a delay – typically a day or two – before you are authorized to perform the following steps.

4. Conducting a FC010 Terminal Session

- *The COS 217 course uses the FC010 computer cluster. The cluster consists of 23 computers named fc010-labpc-01 through fc010-labpc-23 (and maybe more). All use the same file system.*
- *The FC010 cluster is located in Friend Center 010. You can visit Friend Center 010 and use any FC010 computer directly. However the more common option is to use your computer to communicate with a FC010 computer. This document describes only that more common option.*
- *The first time you log into a FC010 computer, you will be using an impoverished computing environment. Only after you configure the Bash shell (see the "Configuring the Bash Shell" section of this document) will your environment be reasonable.*
- *Your computer communicates with a FC010 computer via any terminal application that can use the SSH (secure shell) protocol. Two such programs are PuTTY (for MS Windows) and Terminal (for Mac OS X).*
- *To conduct a FC010 terminal session, you must log into the labpc-proxy computer, and then log into a FC010 computer from the labpc-proxy computer.*

Repeatedly throughout the semester as required...

4.1. Option 1: Use a computer running Microsoft Windows.

(If you're working off-campus) Perform the instructions on this web page to use SRA (secure remote access): <http://helpdesk.princeton.edu/kb/display.plx?ID=6023>

Install PuTTY.

If your computer is running Microsoft Windows and you 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" link.

In the resulting page, click on the "putty.exe" link.

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.

Launch PuTTY.

Using Windows Explorer, double-click on the putty.exe file.

Log into the labpc-proxy computer.

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 "labpc-proxy.cs.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.

If a "PuTTY Security Alert" dialog box appears, click on the "Yes" button.

In the PuTTY window:

In response to the "login as:" prompt, enter your login id. If an "Access denied" message appears, ignore it.
In response to the "password:" prompt, enter your password. (The password will not echo as you type.)
Confirm that the PuTTY window displays a Unix shell prompt.

Log into a FC010 computer.

In the PuTTY window:

Issue the command `ssh fc010-labpc-XX`, where *XX* is any one of 01, 02, ... 23.
More precisely, when you login to the labpc-proxy computer it displays a list of computers that are available to you at that time. Choose any one of them.

If an SSH-related message appears, enter "yes".

In response to the "password:" prompt, enter your password. (The password will not echo as you type.)

Confirm that the PuTTY window displays a Unix shell prompt.

Use the FC010 computer via PuTTY as desired.

Log out of the FC010 computer.

In the PuTTY window, issue the `exit` command to disconnect from the `fc010-labpc-XX` computer.

Log out of the labpc-proxy computer.

In the PuTTY window, issue another `exit` command to disconnect from the labpc-proxy computer.

(PuTTY will exit automatically.)

4.2. Option 2: Use a computer running Mac OS X.

(If you're working off-campus) Perform the instructions on this web page to use SRA (secure remote access: <http://helpdesk.princeton.edu/kb/display.plx?ID=6023>)

Open a Terminal window.

Launch Spotlight by clicking on the magnifying glass icon at the right side of the menu bar. Type "Terminal" in Spotlight. In the resulting pop-up list click on "Terminal".

Log into the labpc-proxy computer.

In the Terminal window:

Issue the command `ssh yourloginid@labpc-proxy.cs.princeton.edu`.

If an SSH-related message appears, enter "yes".

Enter your password. (The password will not echo as you type.)

Log into a FC010 computer.

In the Terminal window:

Issue the command `ssh fc010-labpc-XX` where *XX* is any one of 01, 02, ..., 23.
More precisely, when you log into the labpc-proxy computer it displays a list of computers that are available to you at that time. Choose any one of them.

If an SSH-related message appears, enter "yes".

Enter your password. (The password will not echo as you type.)

Use the FC010 computer via the Terminal window as desired.

Log out of the FC010 computer.

In the Terminal window, issue the `exit` command.

Log out of the labpc-proxy computer.

In the Terminal window, issue the `exit` command.

Close the Terminal window.

In the Terminal window, issue the `exit` command.

Click on the red button at the upper left of the Terminal window.

5. Configuring the Bash Shell

One time only, in a FC010 terminal session...

5.1. 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.

5.2. Issue these commands to copy reasonable bash configuration files to your home directory:

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

Reply to the `cp: overwrite '.bash_profile'?` question by typing `y` and the Enter key.

```
cp /u/cos217/.bashrc .
```

Reply to the `cp: overwrite '.bashrc'?` question by typing `y` and the Enter key.

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.

5.3. Suggestion: Issue the `cat .bashrc` and `cat .bash_profile` commands to examine the contents of the `.bashrc` and `.bash_profile` files.

The changes take effect during your next FC010 terminal session.

6. Configuring the Emacs Editor

One time only, in a FC010 terminal session...

6.1. 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.

6.2. Suggestion: Issue the `cat .emacs` command to examine the contents of the `.emacs` file.

7. Configuring the Splint Source Code Checker

One time only, in a FC010 terminal session...

7.1. 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.

7.2. Suggestion: Issue the `cat .splintrc` command to examine the contents of the `.splintrc` file.

8. Copying Files between FC010 and Your Computer

- *The FileZilla application uses SFTP (the secure file transfer protocol) to copy files between the FC010 file system and your computer's file system.*

One time only...

8.1. Download the FileZilla client from <http://filezilla-project.org/> and install it.

Repeatedly throughout the semester as desired...

8.2. (If you're working off-campus) Perform the instructions on this web page to use SRA (secure remote access): <http://helpdesk.princeton.edu/kb/display.plx?ID=6023>

8.3. Launch the FileZilla client application.

8.4. In the FileZilla client application:

In the "Host" text field type "labpc-proxy.cs.princeton.edu".

In the "Username" text field type your login id.

In the "Password" text field type your password.

In the "Port" text field type "22".

Click on the "Quickconnect" button.

8.5. In the FileZilla client application:

Repeatedly click in the left-side pane to navigate through your computer's file system.

Repeatedly click in the right-side pane to navigate through the FC010 file system.

Drag-and-drop the name of the desired file from the right pane to the left pane, thus copying the file from the FC010 file system to your computer's file system. Or drag-and-drop the name of the desired file from the left pane to the right pane, thus copying the file from your computer's file system to the FC010 file system.

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