Assignment 1: UNIX intro

cs341
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Allen B. Downey
Computer Science Department

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The purpose of this assignment is to introduce you to the UNIX environment we will be using, to get you to practice using some of the common UNIX commands, and to do some housekeeping on your UNIX accounts.

Log in

The machines we are using for this class are in the Linux Lab (and there is one in SCI 173). The ones we can use have a tag on them that says "puma host."

I am writing these instructions with the assumption that you are sitting at one of the machines in the Lab. You can also log in remotely from a Macintosh, Wintel or other Linux machine, but if you are doing that, you are on your own.

1. If things have gone well, you should already have an account and know your password. If not, see me.

2. Log in to the machine. It will ask you for your login and password and then give you a UNIX prompt. You can use the computer in this mode (called "console mode"), but most of the time you will want to use the windowing environment, which is called X. To start the window manager, type `startx`. The default window manager is called KDE.

3. There are a number of ways to get help. KDE has a built-in help mechanism. Also, you can use both `info` and `man`.

   In general, info pages are easier to read than man pages, but you will often want to read or print both. Both sets of pages are organized as an alphabetical list of options and commands, which is less than useful when you are trying to figure out how to do something.

   In general this semester I will tell you the names of the commands you want to use and leave it up to you to find out about them.

   The KDE desktop includes a column of icons along the left side of the screen and a row of control widgets across the bottom. I will leave it up to you to explore them at your leisure.

4. One of the icons in the toolbar at the bottom of the screen is a shell. Pressing it creates a window called a shell, or console, where you can type UNIX commands in "command line mode."

5. To logout, click the KDE icon in the lower left and select logout from the menu. KDE often does not shut down cleanly; it may spew some error messages. Regardless, it should put you back in text mode. To logout, you have to type `logout` at the prompt.

Change your password

Many existing passwords are too easy to guess, because they contain entirely (or almost entirely) lower case letters and not enough wacky things like `!@#$%^&*()`. You should choose a password that is at least 8 characters long and that does not contain all letters or all numbers. It should contain at least one wacky character. On the other hand, it should also be something you can remember.

You can use the same password you use on IS machines if you want, although you should be aware that that means the security of the two systems are then linked. If one gets broken, so does the other.

1. Type `passwd`. It will ask you to type your current password and then the new password twice.

Run netscape

1. In a terminal window, type `netscape &` to start a web browser in the background. After a few seconds, the browser window will appear. Load the following URL:

   ```
   http://rocky.wellesley.edu/cs341
   ```

   This is the class web page, which contains all the handouts and some of the code I will distribute along with homeworks. You might want to bookmark it.

Learn a text editor

1. In a shell, type `emacs &` to create a window for the emacs editor. In the new window, type type Control-h followed by a `t`. A document will appear that will teach you how to use emacs.

2. There is an emacs quick-reference sheet, in Postscript, on the cs341 web page.

   ```
   http://rocky.wellesley.edu/cs341/handouts/emacs.ps
   ```

   If you click on it, netscape will ask where you want to put the file. Put it in your home directory, then print it using `lpr`.

   By default, things you print go to the printer named `minil`, which is also known as `psci1l`, which is in the mini-focus. Other printers the Linux machines know about are:

   ```
   Name            Official name          Location
   minil           psci1l                 mini-focus
   minir           psci1r                 mini-focus
   e101            psci1m                 outside SCI E101
   e111            psci1h                 across from SCI E111
   ```

   To send the output to a particular printer, use the `-P` flag:

   ```
   lpr -Pe111 filename
   ```

Use ps

The UNIX command `ps` prints information about processes that are currently running.

To get information about ps, type

```
man ps
```

If you give `man` the `-t` flag, it produces Postscript. You can then use the pipe symbol, `|`, to "pipe" the output from `man` as input into `a2ps`.

```
man -t ps | a2ps
```

`a2ps` arranges the output into two columns and sends the result to the default printer (or you can give `a2ps` the `-P` flag to chose another printer).

Now that you have printed documentation of `ps`, read it to see what kinds of information UNIX gives you about processes.

1. Run `ps`

   ```
    PID TTY          TIME CMD
   9492 pts/0    00:00:00 bash
   9643 pts/0    00:00:00 ps
   ```

   By default, you get only the processes created in the current window, which in this case are the shell `bash` and the `ps` command you just ran.

2. Run `ps -e`.

   The `-e` flag tells `ps` to print *all* the processes running on the machine. These include your processes, the processes of other users, and the processes the system is running to perform OS services.

   To keep the output of `ps` from running off the screen, you can pipe the output into `more`

   ```
   ps -e | more
   ```

   `more` allows you to scroll from one screenful of output to the next using the space bar.

3. As a challenge, try to print all the processes in long format, sorted according to start time. What is the name of the process that started at the earliest time?

   The point of this exercise is to demonstrate how really horrible man pages are.

   Of course, the other point is to make you familiar with `ps` and the view that it gives you of running processes.