Unix/Linux Skills	**Homework 4**
CSE 399/004 Spring 2006	**DUE: Mon. 2 February 2006**

In this homework, you will need to work on the eniac-l.seas.upenn.edu server. If you need help logging in to this machine see the following webpage: http://www.seas.upenn.edu/cets/answers/remote.html (note: you need to swap eniac-l.seas.upenn.edu for eniac.seas.upenn.edu).

You should do all work for this assignment using emacs. In some questions below, you will be asked to enter some command with some set of arguments. Depending on the command, there may or may not be output generated. For each command, you should use your mouse to highlight the command (including the prompt) and the output (if there is any) and use emacs to copy it to a separate text file. Obviously, when you make mistakes, you should not copy the text. You should also copy the question to the text file as well.

This homework requires some very basic html coding. Html is not very difficult to learn. If you need a primer, then either google "html tutorial" or check out the following site: http://www.davesite.com/webstation/html/. If you have questions, you can also send me email.

When you are finished with the assignment, attach the text document to an email and send to *mcorliss@cis.upenn.edu*. The subject of the email should be "cse399 - hw4" (without the quotes). The homework is due by the beginning of Monday's class. Total points: 50.

1. Preliminary.

   (a) Change your location to the 'cse399' directory you created in homework 1 (or create it again if you deleted it). Copy the directory /home1/m/mcorliss/teaching/cse399/hw4 and all its subcontents to your current location. Change your location to this new directory (hw4).

2. [12 Points] Emacs.

   (a) In this exercise you are going to build a webpage. On SEAS, webpages go in the directory ∼/html. The tarfile webpage.tar.gz contains a directory called webpage with files 'index.html' and 'picture.jpg'. Untar this file and move the directory to ∼/html/ (if ∼/html doesn't exist then create it). Change the permissions of ∼/html and ∼/html/webpage to 'rwxr-xr-x'. Change the permissions of ∼/html/webpage/index.html and ∼/html/webpage/picture.jpg to 'rw-r–r–'. Now use a web browser and go to http://www.seas.upenn.edu/∼<username>/webpage/. You should see a webpage with my name ("Marc Corliss") on it. Open the file index.html in emacs. You will modify this file. Search for tags "<!– Start –>" and "<!– End –>". Between these tags are strings you should change. For example, change "Marc Corliss" to "<your name>" and "Graduate Student" to "Undergraduate Student". Describe in the text document your solution.

   (b) Open ∼/html/webpage/index.html in emacs if it is not already open. Use emacs "replace-string" to remove all start (<– Start –>) and end (<– End –>) tags. Describe in the text document your solution.

   (c) Change your location to ∼/cse399/hw4. Open data.txt in emacs. Using replacement with regular expressions, swap the second and third columns.

   (d) Search and replace with regular expressions is a powerful feature in emacs. But emacs has support for an even more powerful feature called macros. In emacs, you can use C-x (and C-x) to define a new macro. Type C-x (, then some set of commands, and then C-x). Then type C-x e, and the commands are repeated. You can also execute a macro *n* times, by typing C-u *n* C-x e, where *n* is a number. Split the window in two and in one buffer open a new empty file 'data-2.txt'. Define a macro to copy just column 2 to the new file, one line at a time. Use the macro to copy all of column 2 to data-2.txt and then save the file. Describe your solution.

3. [8 Points] *if* and *for*.

   (a) Change your location to ∼/cse399/hw4/sim-files/. In the interactive shell (*i.e.*, not in a script), write a *for* loop to change the names of the files to end with .txt rather than .test. Your solution should leverage the *sed* command.

(b) Repeat the previous exercise, except this time change the file endings back to .test. In addition, you should use an *if* construct within the *for* loop to avoid renaming files that begin with "mcf".

4. [30 Points] Scripting.

   (a) Change location to ∼/cse399/hw4/sim-files/. In homework 3, problem 4(b), you were asked to write a command to extract the 3rd occurrence of a statistic in a simulation output file. In this exercise, you will write a script to generalize that command. Your script will be called 'get-sim-stat.sh' (make sure it has executable permission set). 'get-sim-stat.sh' takes three arguments: a number, a statistic name, and a filename (which may contain wildcards and represent multiple files). './get-sim-stat.sh 3 sim_num_insn *.txt' should return the third occurrence of sim_num_insn (see homework 3) in all files that end in *.txt. When you are finished, use the script to run the command from homework 3, problem 4(b). Then copy the output and your script to the text document and describe how it works.

   (b) The program iPhoto on Mac OS X allows users to export their photos to a webpage, which iPhoto generates. Untar hpca05.tar.bz2 and wassa04.tar.bz2, which contain directories and files generated by iPhoto. Move the directory hpca05 and wassa04 to ∼/html. You can view them by going to http://www.seas.upenn.edu/∼<username>/hpca05/hpca05.html (similar url for wassa04). In this exercise, you should write a script called 'convert-iphoto.sh', which moves the main file 'hpca05.html' (or 'wassa04.html') to 'index.html' and patches all links. Your script should leverage sed.

5. About this assignment.

   (a) Approximately, how long did it take you to complete this homework?

   (b) Would you classify this assignment as easy, straight-forward, or difficult?