CSE/ISE 337 Assignment 4 (Spring 2014)
Due date: Monday, April 28, at 11:55pm

Important! Must read: (a) When doing assignments, you **must** use the techniques that are described in the lecture notes. You may **not** use methods, modules, packages that were not covered in lectures. (b) Your assignment submission **must** be entirely your own. You **must** first read the lecture slides "0-Course-Overview.pdf" available in Blackboard – Documents – Lecture Slides, especially Slides 0-9 to 0-13, and follow them. (c) Use the three allvXX machines that we announced in class to do this assignment. (d) To earn full credit, you **must** provide the **complete** commands used to answer a question and the commands' output to support your answers.

1. **Intro. to operating systems (OS) and system administration (SysAdm)** (8pts)

   (1) What is the difference between multiuser and multitasking when describing an OS? Is Linux a multiuser OS? How can you tell? (3pts)

   (2) Name two *systems* programs and two *application* programs on one of your home computer. What OS does this computer use? (2pts)

   (3) Name three different UNIX variants. Name three different Linux distributions. (3pts)

2. **Simple UNIX commands** (8pts. 2pts each)

   Login to one of the allvXX.all.cs.stonybrook.edu machines. Indicate which one.

   (1) What shell variety are you using?

   (2) How to find the current time in your shell?

   (3) Find the day of your birth date.

   (4) What's the command to use to remotely login to another allvXX machine?

3. **UNIX file system access** (20pts)

   Login to one of the allvXX machines. Indicate which one.

   (1) How many sub-directories are there in the `/usr` directory on your machine? What are they? (3pts)

   (2) Go to your home directory. Create three subdirectories and three files. What are the file access permissions on these subdirectories and files? What do they mean? (8pts)

   (3) What is a command to display the content of a file? What is a command to display the content of two files? (2pts)

   (4) Consult the man page for the `ls` command, display the contents of your home directory in long format, order the contents by the time when each content was last *modified*, with the oldest content on the top and the newest content on the bottom. (3pts)

   (5) Go into one of the two subdirectories that you created in part (2). Create a subdirectory in it. What is the *relative* pathname of the new subdirectory created? What is its *absolute* pathname? (2pts)

   (6) Repeat part (4) but order the content by the time when the content was last *accessed* instead. (2pts)

4. **More UNIX utilities** (14pts)

(1) How many entries are there in the `/bin` directory on your machine? How about the `/usr/bin` directory? Be sure to include hidden contents as well. (4pts)

(2) Try the command `find . -maxdepth 1 -type d -print`, and consult the man page for `find`, what does the command do? How about command `find . -maxdepth 1 -type f -print`? (4pts)

(3) Write a shell command that processes a file that is at least 300 lines long. It outputs the number of those lines within lines 50 through 249 (inclusive) that contain the character string "hello". Hint: use pipe and grep. (6pts)

(4) (Bonus question) Write a shell command that outputs the number of lines in the lines range 50..249 that contain "hello " but NOT followed by "world". (2pts)

5. **Simple scripting** (8pts)

(1) Write a simple script to do the following: go into your home directory; use redirection to create a file called "homecontent" that first contains the current time and date, then the content of the directory in long format, then a separator line such as 20 dashes, then the content of one file in your home directory. Run the script and verify its correctness. (8pts)

(2) (Bonus question) Write a Perl or Python script that goes through a directory and finds all those files whose file names do not contain the suffix `.html` and are at least 20 lines long. (5pts)

Deliverables

Your assignment submission should include one plaintext file called a4-answers.txt that contains answers to all questions. Each answer must be clearly labeled with its corresponding question and part numbers. **Include adequate explanation on how your command and its output answered the question asked**. (2pts)

If you completed the last bonus question, question 5(2), submit the script as a separate file. In that case, however, your written submission must include the description of a test case to show what it does.

Total: 60 points

Submission instructions

The handing-in will be through Blackboard Assignment. The submission instructions are at: http://it.stonybrook.edu/help/kb/creating-and-managing-assignments-in-blackboard.
You **must** read the submission instructions very carefully, and check to make sure your assignment has been submitted correctly **before** the deadline.

You can only submit once! However you can save your work by clicking "Save" as many times as you like. Only click "Submit" after you have checked and are certain that all requirements are followed.

Late submissions will not be accepted. The due date is **11:55pm on Monday, April 28.**