CMSI 387-01

OPERATING SYSTEMS

Spring 2013

Assignment 0205

This assignment seeks to give you a bunch of command line practice.

Outcomes

This assignment will affect your proficiency measures for outcomes *1a–1e* and *4d–4f*.

For Submission

Process Survey

Login to any computer that has *bash* and *ps* and answer the following questions as they stand for that particular session:

1. What *root*-owned processes are running?
2. What processes are running on *your* account?
3. Run a typical working set of applications (e.g., web browser, chat program, text editor, etc.). Which application is using the most real memory? The most virtual memory?
4. Login to *my.cs.lmu.edu*. Who else, other than *root* and you, has processes running at that time?

For your response to each question, include:

(a) Your answer

(b) The command(s) entered to obtain this answer (including any commands that you invoked to figure out what to do), and

(c) A screen or text dump showing the computer's responses to these command(s).

I/O and File "Gymnastics"

Perform the following I/O and file activities (except for #3 and #4) on a computer of your choice (which has the needed tools, of course), and for all of them, **state the command(s) used to perform the task** and supply the additional requested artifacts as evidence of your activities:

1. Create an *ssh* tunnel from this computer to a service that is visible from another *ssh*-capable computer (but, of course, not necessarily visible from the computer you're using). Then, access that service from your computer through *localhost* and the tunneled port number.
   - Submit a screenshot of your successful connection to the remote service via the tunnel.
2. Run something lengthy (*ping*, *vm_stat*/*vmstat*, looooooong download, finding the quadrillionth prime number…) inside *screen*; logout of that computer entirely, login again, and reconnect to *screen* to prove to yourself that the process has continued to run without interruption.
   - Submit screenshots of your long-running command before you logged out, then after you reconnected to it.
3. Learn how to use *du*, which tells you how much disk space you're using in a given directory.
   - Which first-level subdirectory in ~ is taking up the most space? Submit the command that includes this information in as little output as possible.
   - Submit a command that displays *only* the disk usage of directories matching some regular expression. *Hint:* |.
4. On a Keck lab machine, create a file within ~. Run *ls -i* to determine that file's inode number. Move this file to another directory inside ~, then move it to */tmp*, then move it back to your home directory. After each move, use *ls -i* to see its inode number.
   - Submit the output of *ls -i* both right after you created the file and after each file move.
   - Submit the piped commands that you would type in order to filter out all lines of *ls -i*'s output *except* for the file that you created.
5. Pop a few storage devices (CD, DVD, flash drive, network drive, etc.) into your computer. Figure out the mount points for each device.
   - Submit the output provided by the command (or a screenshot showing the information, if you used a GUI tool).

Commit your answers as a document in any widely readable format under *homework/shell-gymnastics*.