CSCI 211: Unix Lab

Homework 5 Solutions

Note:

1. You must rely on UNIX commands only to solve the problems. No manipulation on Windows is allowed (such as scrolling the PuTTY screen).
2. A line of commands involving pipe ('|') or with ';' is not considered a single command.
3. You must preform the check-in and check-out operation for each problem as specified below. Without that, no credit will be given.

Before doing the homework:

Run the command "source /lab5/quiz/prep.sh" exactly once.

Before doing EACH problem:

Run the command "source /lab5/quiz/checkin.sh <n>" exactly once, where <n> is the problem number.

After doing EACH problem:

Run the command "source /lab5/quiz/checkout.sh <n>" exactly once, where <n> is the problem number.

After finishing all the problems:

1. Run the command "source /lab5/quiz/wrapup.sh" exactly once.
2. Submit this file with your answers.

   Save this file as yourlastname_yourfirstname_Lab5.rtf and then submit online at http://www.networks.howard.edu/lij/courses/2016/211/

Problems:

All the following operations should be performed in the directory tree rooted at '~/lab5' unless specified otherwise.

1. **(2 pt)** Create two symbolic links named 'weed' and 'herb' respectively, to the file named 'grass' under the 'yard' directory.

   Command(s) used:

   ln –s yard/grass weed
   ln –s yard/grass herb

2. **(2 pts)** Find out the average number of characters per line in the file 'weed'.

   Command(s) used:

   wc -lc weed

   Average number of characters per line:

   2055 / 50 = 41.1

3. **(3 pts)** Using one single command, find the programs of which the name starts with 'b' and ends with 'g'

   Command used:

   find . -name "b*g" -print

   The absolute paths of the programs:

   ~/lab5/lawn/bag
   ~/lab5/yard/stick/stick2/stick3/stick4/brig
   ~/lab5/yard/stick/stick1/bg
   ~/lab5/yard/hole/hole2/big

4. **(2 pts)** Run the programs found in the previous step in background.

   Commands used:

   ~/lab5/lawn/bag &
   ~/lab5/yard/stick/stick2/stick3/stick4/brig &

~/lab5/yard/stick/stick1/bg &
~/lab5/yard/hole/hole2/big &

5. **(3 pts)** Show the process id of the programs invoked in the previous step.

   Command(s) used:

   ps -u $USER -o pid,comm | grep -E "b.*g"

   Process id and name of the programs:

   (Example)
   17321 bag
   19334 brig
   19460 bg
   19565 big
   24502 bag

6. **(4 pts)** In order to make the file 'bluegrass' match the file 'ryegrass' (both under the 'lawn' directory), what changes need to be made?

   Command used to find the difference:

   diff lawn/bluegrass lawn/ryegrass

   Changes to be made (Use your own words to explain. Do not paste the command output here.)

   Change 1:
   - Change the 5th line in 'bluegrass'
     - windowLess, 32859568, REFUGIO, LOTTO
   - To
     - windowless, 32859568, REFUGIO, lOTTO

   Change 2:
   - Delete the 15th line in 'bluegrass'

   Change 3:
   - Add the following line after the 10th line in 'bluegrass'
     - stuffy, 52036771, diagnosed, SIDLE

7. **(4 pts)** Find out how many lines have duplicates in the 'turf' file.

Command(s) used:

```
sort turf | uniq -d | wc -l
```

Number of lines with duplicates:

```
6
```

8. **(2 pts)** Pick the unique lines from the 'turf' file and save them to the 'newturf' file.

   Command(s) used:

   ```
   sort turf | uniq > newturf
   ```

9. **(2 pts)** Sort the file 'newturf' by the first field alphabetically and case-insensitively. Show the third line in the sorted result.

   Command(s) used:

   ```
   sort –k 1f newturf | more
   ```

   Third line in the sorted result:

   ```
   CHINESE; 36465759; hijackers; STODDARD
   ```

10. **(3 pts)** Sort the file 'newturf' by the second field numerically, ignoring the leading spaces and the first two non-space characters, and then by the first field alphabetically and case-insensitively in the reversed order. The delimiter is ';'. Show the third line in the sorted result. (Hint: the delimiter needs to be enclosed by quotes.)

    Command(s) used:

    ```
    sort -t';' -k 2.3nb,1fr newturf | more
    ```

    Third line in the sorted result:

    ```
    windowLess; 32859568; REFUGIO; LOTTO
    ```

11. **(1 pt)** Terminate all the background processes invoked in the previous steps.

    Command(s) used:

    ```
    kill -9 17321 19334 19460 19565 24502
    ```

12. **(1 pt)** Remove all the symbolic links in the previous steps.

    Command(s) used:

    rm weed herb