Lab 01: Linux Commands Overview

This lab is about the different commands of Linux for personal use. Editing, compiling and executing the C programs.

1. In your home directory create the subdirectory ~/cse302/labs/lab1 . (Use multiple mkdir commands or consult the -p option for mkdir in the man page for mkdir).
    1. cd ~/cse302/labs/lab1
    2. Copy or create a file named **myfile** into ~/cse302/labs/lab1 (if you create it, type something into it). For information on how to create a quick empty file, man touch.
    3. Create a soft link **soft_link** and a hard link **hard_link** to that file.
    4. Based on the output returned by stat and ls commands (using all relevant options), explain in detail (but briefly) the differences between the three files.

2. Read the man pages for the following commands:
    1. script
    2. finger, who, w
    3. touch
    4. top
    5. mkdir
    6. umask: umask [value] (shell built in command)
    7. text utilities: sort, uniq, tr, expand, unexpand, cut, grep .
    8. vi, gcc
    9. history

    The objective of this exercise is to demonstrate in a reasonably small (the smaller the better) number of commands that you understood how to use the commands above and when they are useful.

Create a transcript that shows you understand the commands listed above. By transcript, I mean a file that shows the output of your session.

See the following example of transcript.

Script started on Mon Jun 17 22:36:49 CDT 2002
hangao@gawaine:CSE302% finger
Login Name Tty Idle Login Time Office Office Phone
hangao Han Gao pt Jun 10 21:55 (:0.0)
hangao@gawaine:CSE302% who am i
gawaine.cs.uchicago.edu!hangao pts/0 Jun 10 21:55 (:0.0)

```
hangao@gawaine:CSE302% jobs
[1]  + Running                 CXterm
[3]  - Running                 netscape
[4]    Running                 gv lecture.2.ps
[5]    Running                 emacs index.html
[6]    Running                 emacs lab1.html
[7]    Running                 emacs anda_lab1.log
[8]    Running                 emacs log.html
hangao@gawaine:CSE302% ps
  PID TTY STAT TIME COMMAND
  717  ?  S    0:01 -csh
  745  ?  S    6:32 /opt/cxterm/default/bin/cxterm -name cxterm -fh hanzigb16fs
  750  p1 S    0:00 -csh
 4700  ?  S    0:00 gv lecture.2.ps
10187  p1 S    0:00 pine
10922  ?  S    0:22 gs -sDEVICE=x11 -dNOPAUSE -dQUIET -dSAFER /home/hangao/html/
11153  ?  S    0:03 emacs index.html
11286  ?  S    0:00 emacs lab1.html
11303  ?  S    0:00 emacs anda_lab1.log
11308  ?  S    0:00 emacs log.html
11313  ?  R    0:00 ps
17189  ?  S    0:00 /bin/sh /usr/local/bin/netscape
17190  ?  S    2:12 /opt/netscape/netscape-communicator-default/netscape
17191  ?  S    0:00 (dns helper)
hangao@gawaine:CSE302% finger hangao
Login: hangao                   Name: Han Gao
Directory: /home/hangao             Shell: /usr/bin/tcsh
On since Mon Jun 10 21:55 (CDT) on pts/0 from :0.0
Last login Mon Jun 17 11:20 (CDT) on pts/1 from vanadium.mcs.anl.gov
Mail last read Mon Jun 17 22:25 2002 (CDT)
No Plan.
Script done on Mon Jun 17 22:40:46 CDT 2002
```

Yours will be longer. You can use the script **command to create the transcript, or you can cut and paste, whatever works for you. In your transcript file please show: How many John's (first name) have user accounts on the department's computers [a single pipeline of 3 processes]. Hint: use** grep, **also look at** wc**.**

1. Change your file permission mask such that by default your colleagues do not have read permissions for your newly created files. Please show in the transcript file the following:
   - the initial mask
   - how you changed it
   - show that people in your user group don't have read permissions for a new file you're creating.
     Change the umask permanently by placing the umask ... command in your .bash_profile file.
2. List the PIDs of all processes running as root on your computer on a line, separated by commas. E.g.,: 1,2,3,4,5,657,658, ... Use pipes to create a one-line command that accomplishes this. You'll need some of the text processing tools presented in class. Hint: man ps (-a and -x flags), man tr.

3. List the usernames and names of the people logged on 192.168.2.139 . (NOTE: you may find the command option of ssh helpful.) The list returned should be sorted, should not contain duplicates (e.g., same user listed multiple times) and should have the following format:

```
1 <username1> <name1>
2 <username2> <name2>
3 <username3> <name3>
...
```

Hints: use the "nl" command to number lines.

3. Explain what information you can get about ~mark/pub/51081 using all (and only) relevant options of ls and stat commands: (is it a file? a directory? how large? permissions? access info? etc.) Indicate the fields that reveal these pieces of information.