CS699 Lab 1 Exercises - Unix CLI

Things to try in the lab:

1. Use **script** command to save the work in a file named ***<yourrollnumber>-lab1-inlab.script***. Do a man script first before you do this to check how it works. You will eventually submit the script output, so you MUST do this task first. This command will start a session in which everything you type on the terminal will be recorded. It will return with a command prompt. Continue with the next instruction below. Note that the script command will only record what you do in that terminal window (or shell session) only. So, ensure that you do all your work in that window alone. Else you will lose your work.
   Note: All the data required for the inlab assignment is given in Data.tar.gz

2. Go to your home directory using **cd or cd ~/**. Use **mkdir** command to make two directories *lab1* and *assignment1*, *lab1* should be ***in*** *assignment1* and do this with one command.

3. Use **cd** command to navigate into the directories and use **touch** command to make 3 files in the *lab1* directory named *lab1_1.txt*, *lab1_2.doc, lab1_3.odt* and in the *assignment1* directory named *assignment1_1.txt*, *assignment1_2.doc, assignment1_3.odt*

4. Use the **cat** command to copy the content of the given file *iit.txt* file into all the files of *assignment1* directory and *lab1* directory.

5. In the *lab1* directory, use **ls** command to display only the .txt files, then only the .doc file and then only the .odt files.

6. Use **pwd** command to print the full path of the *lab1* directory. Understand the concept of full vs relative paths.

7. Make a file named commands.txt inside *assignment1* directory using **cat** command and write "ls" command in it. Do NOT use any editor to do this. Make it executable *for user and group only* using **chmod** and then execute it.

8. Use **cat** command to create a file called *names.txt* in the *assignment1* directory and copy the contents of the given file *find.txt* in to it.

9. use the **head** command to display the first 15 lines of the *names.txt* file

10. use the **tail** command to display the last 15 lines of *names.txt* file

11. use **more** and **less** command to display the contents of the *names.txt* file

12. copy the file *names.txt* into the lab1 directory using the **cp** command

13. make a new directory named *moved_content* inside *assignment1* directory using **mkdir** command and use **mv** command to move *names.txt* file into it

14. Use **grep** command to search the word “the” in all the .txt files of the *assignment1* directory, also use the **grep** command to search the word “the” in all the files in the *assignment1* directory.

15. Move the given file named *info.txt* to the *lab1* directory and then use the **grep** command to count the occurence of the number “5” in the file.

16. Display only the “the” word in all the files in *assignment1* directory without displaying the entire line using **grep** command.

17. Display all the “the” without considering the case sensitivity in all the files in the *assignment1* directory using **grep** command.

18. Display the file name of all the files that contains the word “the” in all the files in *assignment1* directory using **grep** command.

19. Be in the home directory and use **find** command to find the file *lab1_1.txt* in the *assignment1* directory

20. Make an empty file named *empty.txt* inside the *lab1* directory using **touch** command, then return to home directory and use **find** command to search for a file having 0 bytes size

21. Use **find** command to display the files that were accessed 0.0002 days ago in the *assignment1* directory

22. Display the space of the disks *in GB* using the **df** command

23. Create a sleep job for 5 minutes as a background job using **sleep** command and list the jobs running in the background using **jobs** command

24. Use **fg** command to bring the sleep job in the foreground and stop it using ^z. Display all the stopped jobs using the jobs command

25. Use **bg** command to run the sleep job in the background and display all the running jobs using the jobs command

26. Get the process ID of ***all*** the running processes on the machine using the **ps** command

27. Write a command to display all the running processes using **ps** command, pipeline it with **grep** command to search for “bash” processes. Understand the concept of pipes in Unix. You will use this later.

28. remove the file commands.txt from the *assignment1* directory using **rm -i**.

29. use **rm** command to first empty the *lab1* directory and then use **rmdir** command to remove the directory.

30. Use **rm** to delete *assignment1* directory(non empty)

31. list the file operations using the **ls -l** command

32. Use **uptime, w , finger, uname** command to see the output that it displays.

33. Using **whereis** command, find out the source, binary, and manuals sections for **grep, ls, man** command.

34. Using **which** command, locate the full path of the executable associated with **dpkg, ls, sudo** command.

35. Use **man** command to see the detail of function **ping, fgrep, rpm, tee** command. Use **tee** command to append the text “I love my India” into the blank file test.txt

36. **skip*** Run **rpm** command to check whether **MySQL** has been installed in the system or not.

37. Get your ip address of your neighbor’s system and then test its network connectivity using **ping** command. Use **ifconfig** to determine the IP address of your system.

38. Using **wget** command down the pdf from **http://linux-training.be/linuxfun.pdf**

39. Given the large text file **sample.txt** in Data folder, using emacs editor perform the following tasks:-
    a. Jump to the first line
    b. Delete 5th character from line 60.

    c. Add a new line after line 70 and input the text “line 60 was edited”
    d. Find the entry of word “imperdiet”
    e. Replace all the words “non” with “changed”
    f. Save the file as tmp-1
40. Do all emacs exercises listed in slides 113/114 of the Unix CLI presentation. Become really familiar with Emacs since its much much more than a editor - its an environment where you can program, compile, check mail, browse the web and do anything you want to with a computer.
41. As you know Vi (or Vim) is another popular editor on Linux/Unix. Do all the exercises listed on slides 101/102 for Vi. Vi is the default editor present on every variant of Linux or Unix. So, its useful to be familiar with all the shortcuts in Vi/Vim.

Submission Instructions for the in-lab work.

1. Exit the script session you started in the very first instruction of the in lab portion. Do this using ^D. This will save the entire session into a file whose filename you specified as an argument to the script command in the first instruction. and exit the script session.
2. Compress the file using gzip. You will end up with the script file having the .gz extension.
3. Upload this on Moodle.

Take Home assignment (feel free to do as much as you can in the lab)

1. Unzip the file named **Data.tar.gz** from moodle, it contains the directory named *students* which contains as many files as there are students with the naming convention of the file as follows:-
    a. roll number followed by character "_" followed by college id which is unique for each college followed by "_",
    b. followed by month(2 digit) and year(4 digit) of college graduation.

    For example:- The file name *17405_iitg_05_2013.txt* denotes the record of student with roll number 17405, college id iitg & graduation date May 2013.

    Your task is to:-
    a. extract out all the files of students corresponding to college code "iitb"
    b. store it in separate directory named iitb.
    c. Among these records, if student with graduation year is after 2015, then append the end of the file the following message, "please apply for phd before Jan 2019"
    d. followed by the calendar of Jan 2019.

2. Make a directory named *iit*, make 3 files named *iit1.txt, iit2.doc, iit3.odt* and copy the contents of the given file *info.txt* into all the three files. Copy text from line number 2 to 6 from *iit1.txt* and paste it into a file named *temp.txt* in the *iit* directory
3. Use **touch** command to make a file called *names.txt* in the *iit* directory, and use **cat** command to copy the contents of the (given) file *find.txt* in to it. Then display the names in sorted order. Also display the contents of all the files in the *iit* directory with a single command.
4. Display the contents of the *iit* directory in ascending order of their names. Then display the same according to most recent modified first. Then display the same in ascending order of their size. Then do all of the above but in descending order.
5. Count the total number of lines in all the files in the *iit* directory.
6. Create a cron job to delete all the .txt files older than 30 minutes in the folder Data/students on every Wednesday after 17:00. Write the cron command as well as the shell command to delete the files older than 30 minutes. Register the crontab file and watch its effect. Then unregister the crontab file.

    Submission instructions for the take home part of Lab 1.
    1. For each of the 6 problems described above, your job is to create a sequence of unix cli commands that accomplish the task. Write down this sequence of commands in a file named <your roll number>-lab1-takehome-problem<problemnumber>.solution[1]
    2. Create a tar archive of all these *.solution files in <your roll number>-lab1-takehome-solutions.tar
    3. Gzip the tar file.
    4. Upload on Moodle.

[1] BE VERY CAREFUL WITH THESE NAMES. We will grade using a script and if it does not find the specific file, you will not be awarded any points.