LAB-I / EXERCISE-I (10%) / 2021-22
Date Delivery via Eclass: 5-12-2021

1. Create in the current directory the file 'ask1.txt' with the following contents (first name, last name, username, postal code, region, phone), and then display it on the screen, with its lines numbered.

   George Pappas george2 12136 Peristeri -------
   Nick Nikolaoy nick23 12232 Aigaleo 5314555
   George Georgioy george583 11132 Athens -------
   Helen Georgioy helen3 12136 Peristeri 5748456
   Nick Pappas nick4 11223 Aigaleo 5324123
   Helen Ioannoy helen367 13222 Athens -------
   Helen Thanoy helen36 11132 Peristeri 9718345
   Vasilis Mamalis vas32 12345 Dafni 9738383

2. Run the command cal -3 > calfile.txt and explain what exactly it does.

3. Merge the files calfile.txt and ask1.txt into a file named full.txt

4. Display the five most recently modified files in your directory.

5. Create a directory named 'mydir1'. Go to it and then copy there (without changing directory) the file 'full.txt' (from the parent directory). Then rename it to 'new.txt'.
   Return to parent directory. Delete the directory 'mydir1' and its contents.

6. Issue the commands that will display: (a) all files in the /usr directory with inode information and their size in blocks. (b) all the contents of the tree of directories and subdirectories (recursively) under the /usr directory, with full information about each of them and displayed incrementally, page by page.

7. Create a directory named 'testdir1'. Go to it and create a hard link there (named 'ask1link') to the 'ask1.txt' file in the parent directory. Make sure (by giving the appropriate command and explaining what you see) that it has been created and that it is not a symbolic (soft) link.

8. Go into the 'ask1link' file and delete its last line. Then make sure that the change this has also been done in the file 'ask1.txt'.

9. Create a directory kat1 and inside it two files, file1 and file2, containing the word 'one' and explain the result. one and the word 'two' the other. Run (inside the kat1 directory) the command 'cp *'
   Then run the command 'mv *' and explain the result.

10. Display the lines of the file 'ask1.txt' which end with one or more consecutive digits.

11. Display the lines in the file 'ask1.txt' which contain the pattern 'Pap' but do not contain the 'Aig' template.

12. Display the lines of the file 'ask1.txt' which do not start with 'G' or 'N' and contain then (somewhere in their contents) the templates 'Geo' and 'Per' in that order.'

13. How many users whose username does not start with 'ls1' are connected to the system?

14. Display all user (change) processes currently running on the system.

15. How many user (change) processes are running on the system and their name ends with 'sh'?

16. What processes (of any kind) are currently running from the administrator account?

17. How many files in your current directory (only the current directory - not its subdirectories) have permissions 'rw' from everyone and 'x' from no one ?

18. Find the system directories whose name starts with 'b'.

19. Find and display on screen with full information all files with name starting with tty and are located in the /dev directory.

20. Sort the contents of the file 'ask1.txt' by username in descending order.

21. Sort the '.c' files in the directory you are working in by size.

22. Sort the files in your permissions 644 account by size.

23. Sort all the contents of the /dev directory first by owner and second by to group and save the output to the file 'binfiles.txt'.

24. Make a file that will contain information only for the logged in users that username them starting with 'ls1', sorted by their login date and time.

25. In the file 'ask1.txt' change the name 'Nick' (where it occurs) to 'Nickolaos'.

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26. Let the following file system items have protection strings: (a) '-rwxr-x--x', (b) 'drwxr-x--- ' and (c) 'drwx--x--x. Explain what kind of items they are and what the user, group and others access rights are to them.

27. Change the permissions of all files in the 'testdir1' directory so that only the owner has execute and write permissions, while everyone has read permissions.

28. Change the permissions of the directory 'testdir1' so that only the owner and the users of the same group have access rights, while the rest of the users do not (assume that the current permissions of the directory are 755).

29. Create a new user in your system with username 'myfriend'. Then change the owner of the 'ask1.txt' file to 'myfriend' and move it to his working directory. Finally, limit the available disk space for that user to 10MB.

30. Create the files f1, f2, f3, f4, f5, f6, f7 with the following permissions:
    f1, 757
    f2, 313
    f3, 010
    f4, 642
    f5, 551
    f6, 133
    f7, 111

    Using the ls –l command and feeding its results to the egrep command find the files where:

    a. The group has rx rights.
    b. The user and others have exactly the same rights
    c. The user, group and others have the same rights to write
    d. The user, group and others have the same rights for write and execute
    e. The group and the others have the same rights for read and execute

TRY TO ANSWER AS MANY AS YOU CAN!

ATTENTION: You should give your answers in a plain text file according to the instructions in the accompanying file **'OS1_lab_guidelines.pdf'** (it is posted in Eclass in the same directory as the file of this speech).

Note: As part of the laboratory part of the course, another Exercise will be given (EXERCISE-II, 20% rate, on shell scripts), which will be announced on 28/11/2021 and will have a delivery date after holidays).

Good Success!