

UNIX File System & Permissions

1: Give the execute permission for the user for a file chap1.

```
chmod u+x chap1
```

2: Give execute permission for user, group and others for a file add.c

```
chmod a+x add.c
```

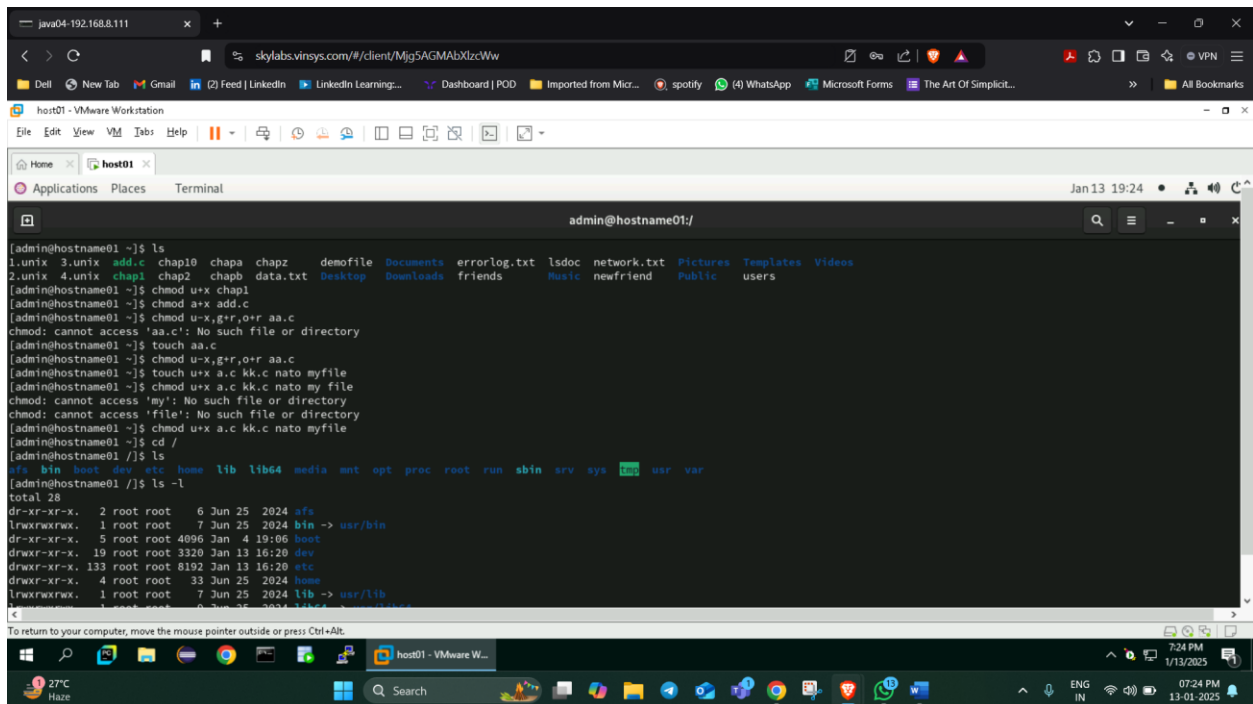
3: Remove the execute permission from user, give read permission to group and others for a file aa.c

```
chmod u-x,g+r,o+r aa.c
```

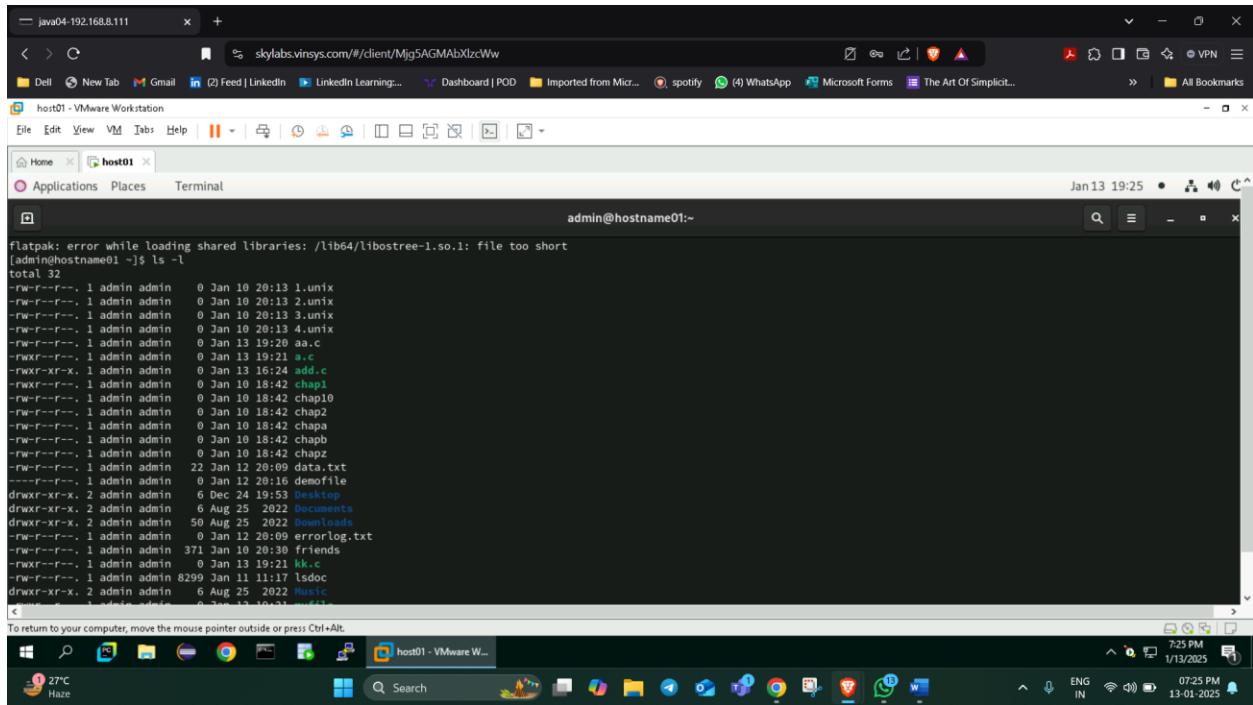
4: Give execute permission for users for a.c, kk.c, nato and myfile using single command.

```
chmod u+x a.c kk.c nato myfile
```

5: Change the directory to root directory. Check the system directories, like bin, etc, usr etc.



```
admin@hostname01:~$ ls
1.unix 3.unix add.c chap10 chapa chapz demofile Documents errorlog.txt lsdoc network.txt Pictures Templates Videos
2.unix 4.unix chap1 chap2 chapb data.txt desktop Downloads friends Music newfriend Public users
[admin@hostname01 ~]$ chmod u+x chap1
[admin@hostname01 ~]$ chmod a+x add.c
[admin@hostname01 ~]$ chmod u-x,g+r,o+r aa.c
chmod: cannot access 'aa.c': No such file or directory
[admin@hostname01 ~]$ touch aa.c
[admin@hostname01 ~]$ chmod u-x,g+r,o+r aa.c
[admin@hostname01 ~]$ touch u+x a.c kk.c nato myfile
[admin@hostname01 ~]$ chmod u+x a.c kk.c nato my file
chmod: cannot access 'my': No such file or directory
chmod: cannot access 'file': No such file or directory
[admin@hostname01 ~]$ chmod u+x a.c kk.c nato myfile
[admin@hostname01 ~]$ cd /
[admin@hostname01 /]$ ls
bin boot dev etc home lib lib64 media mnt opt proc root run sbin srv sys usr var
[admin@hostname01 /]$ ls -l
total 28
dr-xr-xr-x. 2 root root 6 Jun 25 2024 afs
lrwxrwxrwx. 1 root root 7 Jun 25 2024 bin -> usr/bin
dr-xr-xr-x. 5 root root 4096 Jan 4 19:06 boot
drwxr-xr-x. 19 root root 3320 Jan 13 16:20 dev
drwxr-xr-x. 133 root root 8192 Jan 13 16:20 etc
drwxr-xr-x. 4 root root 33 Jun 25 2024 home
lrwxrwxrwx. 1 root root 7 Jun 25 2024 lib -> usr/lib
lrwxrwxrwx. 1 root root 8 Jun 25 2024 lib64 -> usr/lib64
```



Using Pipes and Filters

Here are the commands in front of each respective question:

1. Redirect the content of the help document ls, into a file called lsdoc.

Command: `ls > lsdoc`

2. Display the content of the lsdoc page-wise.

Command: `less lsdoc`

3. Display only the first 4 lines of the lsdoc file.

Command: `head -n 4 lsdoc`

4. Display only the last 7 lines of the file lsdoc.

Command: `tail -n 7 lsdoc`

5. Remove the file lsdoc.

Command: `rm lsdoc`

6. There will be B'day celebration from the friends file, find how many B'day parties will be held.

Command: `sort friends | uniq -c | grep 'B'`

7. Display the lines starting with "Ma" in the file friends.

Command: `grep '^Ma' friends`

- 8. Display the lines starting with "Ma", ending with "i" or "id", in the file friends.**

Command: `grep '^Ma.*\(|id\)$$' friends`

- 9. Print all the files and the directory files from the current directory across all the subdirectories, along with its path.**

Command: `find . -type f`

- 10. Print only the Directory files.**

Command: `find . -type d`

- 11. Display the files starting with "chap", along with its path.**

Command: `find . -type f -name 'chap*'`

- 12. Sort the file friends in ascending order of names.**

Command: `sort friends`

- 13. Display the contents of the file friends in uppercase letters.**

Command: `cat friends | tr 'a-z' 'A-Z'`

- 14. Store the contents of your home directory in a file called dir.**

Command: `ls ~ > dir`

- 15. From the above file dir, display the file permissions and the name of the file only.**

Command: `ls -l dir | awk '{print $1, $9}'`

- 16. From the same dir file, store only the file names in a file called files.**

Command: `ls -l dir | awk '{print $9}' > files`

- 17. From the same dir file, store only the permissions of files in a file called perms.**

Command: `ls -l dir | awk '{print $1}' > perms`

- 18. From the same dir file, store only the file sizes in a file called sizes.**

Command: `ls -l dir | awk '{print $5}' > sizes`

- 19. Display the file names, sizes, and permissions from your directory in that order.**

Command: `ls -l dir | awk '{print $9, $5, $1}'`

- 20. Display the number of users working on the system.**

Command: `who | wc -l`

- 21. Find out the smallest file in your directory.**

Command: `ls -S | tail -n 1`

22. Display the total number of lines present in the file friends.

Command: `wc -l friends`

23: Create the following fixed record format files (with “|” delimiter between fields) with the structure given below, and populate them with relevant data use these files to solve following questions

emp.lst: Empid(4),Name(18),Designation(9),Dept(10),Date of Birth(8),Salary(5)

dept.lst: Dept.Code (2), Name (10), Head of Dept's id(4)

desig.lst: Designation Abbr.(2), Name (9)

Here are the commands for the 23rd question without answers:

1. Find the record lengths of each file.

Command: `awk -F'|' '{print length($0)}' emp.lst | sort -nu`

2. Display only the date of birth and salary of the last employee record.

Command: `tail -n 1 emp.lst | cut -d'|' -f5,6`

3. Extract only employee names and designations. (Use column specifications). Save output as cfile1.

Command: `cut -d'|' -f2,3 emp.lst > cfile1`

4. Extract Emp.id, dept, dob, and salary. (Use field specifications). Save output as cfile2.

Command: `cut -d'|' -f1,4,5,6 emp.lst > cfile2`

5. Fix the files cfile1 and cfile2 laterally, along with the delimiter.

Command: `paste -d'|' cfile1 cfile2 > fixed_output`

6. Sort the emp.lst file in reverse order of Emp. Names.

Command: `sort -t'|' -k2,2r emp.lst`

7. Sort the emp.lst file on the salary field, and store the result in file srtf.

Command: `sort -t'|' -k6,6n emp.lst > srtf`

8. Sort the emp.lst file on designation followed by name.

Command: `sort -t'|' -k3,3 -k2,2 emp.lst`

9. Sort the emp.lst file on the year of birth.

Command: `sort -t'|' -k5,5n emp.lst`

- 10. Find out the various designations in the employee file. Eliminate duplicate listing of designations.**

Command: `cut -d'|' -f3 emp.lst | sort | uniq`

- 11. Find the non-repeated designation in the employee file.**

Command: `cut -d'|' -f3 emp.lst | sort | uniq -u`

- 12. Find the number of employees with various designations in the employee file.**

Command: `cut -d'|' -f3 emp.lst | sort | uniq -c`

- 13. Create a listing of the years in which employees were born in, along with the number of employees born in that year.**

Command: `cut -d'|' -f5 emp.lst | cut -c7-10 | sort | uniq -c`

- 14. Use nl command to create a code table for designations to include designation code (Start with dept. code 100, and subsequently 105, 110 ...).**

Command: `cut -d'|' -f3 emp.lst | sort | uniq | nl -v 100 -s'|' -w 4 -n ln`

24: PCS has its offices at Pune, TTC and Mumbai. The employees' data is stored separately for each office. Create appropriate files (with same record structure as in previous assignment) and populate with relevant data.

- 1. List details about an employee 'Manu Sharma' in the Mumbai office.**

Command: `grep 'Manu Sharma' mumbai.lst`

- 2. List only the Emp.Id. and Dept. of Manu Sharma.**

Command: `grep 'Manu Sharma' mumbai.lst | cut -d'|' -f1,4`

- 3. List details of all managers in all offices. (O/P should not contain file names.).**

Command: `grep 'Manager' *.lst | cut -d'|' -f2-`

- 4. Find the number of S.E. in each office.**

Command: `grep 'S.E.' *.lst | wc -l`

- 5. List only the Line Numbers and Employee names of employees in 'H/W' in Pune file.**

Command: `grep -n 'H/W' pune.lst | cut -d': ' -f1,2`

- 6. Obtain a listing of all employees other than those in 'HR' in the Mumbai file and save contents in a file 'nonhr'.**

Command: `grep -v 'HR' mumbai.lst > nonhr`

- 7. Find the name and designation of the youngest person who is not a manager.**

Command: `grep -v 'Manager' *.lst | sort -t'|' -k5,5n | head -n 1 | cut -d'|' -f2,3`

- 8. Display only the filename(s) in which details of employee by the name 'Seema Sharma' can be found.**

Command: `grep -l 'Seema Sharma' *.lst`

- 9. Locate the lines containing 'saxena' and 'saksena' in the Mumbai office.**

Command: `grep -i -e 'saxena' -e 'saksena' mumbai.lst`

- 10. Find the number of managers who earn between 50000 and 99999 in the Pune office.**

Command: `awk -F'|' '$3 == "Manager" && $6 >= 50000 && $6 <= 99999' pune.lst | wc -l`

- 11. List names of employees whose id is in the range 2000–2999 in Pune Office; in all offices.**

Command: `grep -E '^[2][0-9]{3}' pune.lst *.lst`

- 12. Locate people having the same month of birth as the current month in Pune office.**

Command: `awk -F'|' -v month=$(date +%m) '$5 ~ month' pune.lst`

- 13. List details of all employees other than those of HR and Admin in file F1.**

Command: `grep -v -e 'HR' -e 'Admin' F1.lst`

- 14. Locate for all Dwivedi, Trivedi, Chaturvedi in Pune file.**

Command: `grep -E 'Dwivedi|Trivedi|Chaturvedi' pune.lst`

- 15. Obtain a list of people in HR, Admin, and Recr. depts. sorted in reverse order of the dept.**

Command: `grep -E 'HR|Admin|Recr.' *.lst | sort -t'|' -k4,4r`

- 25: Write a command sequence that prints out date information in this order: time, day of week, day number, month, year :**

13:44:42 IST Sun 16 Sept 1994

Command: `date "+%H:%M:%S %a %d %b %Y"`

- 26: Write a command sequence that prints the names of the files in the current**

directory in the descending order of number of links.

Command: `ls -l | sort -k2 -n`

27: Write a command sequence that prints only names of files in current working directory in alphabetical order.

Command: `ls | sort`

28: Write a command sequence to print names and sizes of all the files in current working directory in order of size.

Command: `ls -lS`

29: Determine the latest file updated by the user.

Command: `ls -lt | head -n 1`