UNIX File System & Permissions

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

- [admin@sushil Desktop]$ chmod u+x chap1

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

- [admin@sushil Desktop]$ chmod a+x add.c

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

- [admin@sushil Desktop]$ chmod u-x,go+r,o+r aa.c

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

- [admin@sushil Desktop]$ 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@sushil /]$ cd ~

[admin@sushil /]$ ls -d /bin /etc /usr

/bin /etc /usr

Using Pipes and Filters

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

- [admin@sushil ~]$ ls > lsdoc

2: Display the content of the lsdoc page wise.

- [root@sushil ~]# more lsdoc

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

- [admin@sushil ~]$ head -n 4 lsdoc

Desktop

Documents

Downloads

first.unix

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

- [admin@sushil ~]$ tail -n 7 lsdoc

lsdoc

Music

Pictures

programs

Public

Templates

Videos 5: Remove the file lsdoc.

- [admin@sushil ~]$ rm lsdoc

6: There will be B'day celebration from the friends file, find how many B'day parties will be held. If two of the friends have the B'date on the same day, then we will be having one party on that day.

- [admin@sushil ~]$ cut -d ' ' -f 2 friends | sort | uniq | wc -l

7: Display the lines starting with Ma, in the file friends.

- [admin@sushil ~]$ grep "^ma" friends

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

- [admin@sushil ~]$ grep -E "^ma.*(i|id)$" friends

9: Print all the files and the directory files from the current directory across all the sub directories, along with its path

- [admin@sushil ~]$ find . -type f

./.mozilla/firefox/77o4snp9.default-default/times.json

./.mozilla/firefox/77o4snp9.default-default/.parentlock

10: Print only the Directory files.

- [admin@sushil ~]$ find . -type d

.

./.mozilla

./.mozilla/extensions

11: Display the files starting with chap, along with its path.

- [admin@sushil ~]$ find . -name "chap"

./chap

12: Sort the file friends in ascending order of names.

- [admin@sushil ~]$ sort -k1,1 friends
- Alice 01-02-2000
- Charlie 01-02-2001
- David 04-02-1995
- Eve 03-02-1999
- Maven 03-02-1998

13: Display the contents of the file friends in uppercase letters.

- [admin@sushil ~]$ cat friends | tr 'a-z' 'A-z'

ALICE 01-02-2000

MAVEN 03-02-1998

CHARLIE 01-02-2001

DAVID 04-02-1995

EVE 03-02-199914

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

- [admin@sushil ~]$ ls -l ~ > dir

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

- [admin@sushil ~]$ awk '{print $1, $9}' dir

total

d---------. demo

-r--rw----. demofile

drwxr-xr-x. Desktop

-rw-r--r--. dev

-rw-r--r--. dir

drwxr-xr-x. Documents

drwxr-xr-x. Downloads

-rw-r--r--. first.unix

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

- [admin@sushil ~]$ awk '{print $9}' dir > files

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

- [admin@sushil ~]$ awk '{print $1}' dir > perms

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

- [admin@sushil ~]$ awk '{print $5}' dir > sizes

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

- [admin@sushil ~]$ awk '{print $9, $5, $1}' dir

total

demo 21 d---------.

demofile 23 -r--rw----.

Desktop 184 drwxr-xr-x.

20: Display the number of users working on the system.

- [admin@sushil ~]$ who | wc -l

2

21: Find out the smallest file in your directory.

- [admin@sushil ~]$ ls -ls | tail -n 1

0 drwxr-xr-x. 2 admin admin 6 Aug 25 2022 Videos

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

- [admin@sushil ~]$ wc -l friends

6 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)

1. **Find the record lengths of each file.**
   - [admin@sushil ~]$ awk '{print length}' emp.lst | uniq

   59

```
[admin@sushil ~]$ awk '{print length}' dept.lst | uniq
20
[admin@sushil ~]$ awk '{print length}' desig.lst | uniq
14
12
11
13
```

2. **Display only the date of birth and salary of the last employee record.**
   - [admin@sushil ~]$ tail -n 1 emp.lst | awk -F '|' '{print $5, $6}'

     19920818 58000

3. **Extract only employee names and designations. (Use column specifications). Save output as cfile1.**
   - [admin@sushil ~]$ cut -c6-23,25-33 emp.lst > cfile1

4. **Extract Emp.id, dept, dob and salary. (Use field specifications). Save output as cfile2.**
   - [admin@sushil ~]$ cut -d'|' -f1,4,5,6 emp.lst > cfile2
5. **Fix the files cfile1 and cfile2 laterally, along with the delimiter.**
   - [admin@sushil ~]$ paste -d'|' cfile1 cfile2 > fixed_file
6. **Sort the emp.lst file in reverse order of Emp. Names.**
   - [admin@sushil ~]$ sort -t'|' -k2,2r emp.lst

```
1005|Eve Thompson     |HR       |HR       |19920818|58000
1004|David Williams   |SE       |IT       |19930715|52000
1003|Charlie Brown    |MGR      |FINANCE  |19850824|75000
1002|Bob Smith        |TL       |HR       |19891210|60000
1001|Alice Johnson    |SE       |IT       |19950512|50000
```

7. **Sort the emp.lst file on the salary field, and store the result in file srtf.**
   - [admin@sushil ~]$ sort -t'|' -k6,6n emp.lst > srtf
8. **Sort the emp.ls t file on designation followed by name.**
   - [admin@sushil ~]$ sort -t'|' -k3,3 -k2,2 emp.lst

1005|Eve Thompson |HR |HR |19920818|58000

1003|Charlie Brown |MGR |FINANCE |19850824|75000

1001|Alice Johnson |SE |IT |19950512|50000

1004|David Williams |SE |IT |19930715|52000

1002|Bob Smith |TL |HR |19891210|60000

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

- [admin@sushil ~]$ sort -t'|' -k5,5 emp.lst

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

- [admin@sushil ~]$ cut -d'|' -f3 emp.lst | sort | uniq

HR

MGR

SE

TL

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

→[admin@sushil ~]$ cut -d'|' -f3 emp.lst | sort | uniq -u

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

- [admin@sushil ~]$ cut -d'|' -f3 emp.lst | sort | uniq -c

1 HR

1 MGR

2 SE

1 TL

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

- [admin@sushil ~]$ cut -d'|' -f5 emp.lst | cut -c1-4 | sort | uniq -c

1 1985

1 1989

1 1992

1 1993

1 1995

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

- [admin@sushil ~]$ cut -d'|' -f3 emp.lst | sort | uniq | nl -v100 -i5

  100 HR

  105 MGR

  110 SE

  115 TL

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.**
   - [admin@sushil ~]$ grep "Manu Sharma" mumbai.lst

     5001|Manu Sharma |Engineer |H&W |19939830|72000
2. **List only the Emp.Id. And Dept. of Manu Sharma.**
   - [admin@sushil ~]$ grep "Manu Sharma" mumbai.lst | awk -F'|' '{print $1, $4}'

     5001 H&W
3. **List details of all managers in all offices. (O/P should not contain file names.).**
   - admin@sushil ~]$ grep -i "manager" * | cut -d':' -f2-
4. **Find the number of S.E. in each office.**
   - [admin@sushil ~]$ grep -i "S>E" * | cut -d':' -f1 | sort | uniq -c
5. **List only the Line Numbers and Employee names of employees in 'H/W' in Pune file.**
   - [admin@sushil ~]$ grep -r -n "H/W" , | grep "pune" |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'.**

- [admin@sushil ~]$ grep -v "HR" mumbai.lst > nonhr

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

- [admin@sushil ~]$ grep -v "manager" mumbai.lst | sort -t'|' -k6,6n | head -n 1 | awk -F'|' '{print $2, $3}'

Manu Sharma Engineer

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

- [admin@sushil ~]$ grep -l "seema sharma" *.lst

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

- [admin@sushil ~]$ grep -i "saxena\|saksena" mumbai.lst

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

- [admin@sushil ~]$ grep -i "Manager" pune.lst | awk -F'|' '$6 >= 50000 && $6 <= 99999 {print $0}' | wc -l

  1

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

- [admin@sushil ~]$ grep -r -E "^[2][0-9]{3}" *.lst | awk -F'|' '{print $2}'

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

- [admin@sushil ~]$ cuurent_month=$(date +%m) grep "pune" pune.lst | awk -F'|' -v month="$current_month" '{if(substr($5,6,2) == month) print $2, $3}'

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

- [admin@sushil ~]$ grep -v -E "HR|Admin" F1.lst

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

- [admin@sushil ~]$ grep -i -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.

- [admin@sushil ~]$ grep -i -E "HR|Admin|Recr." *.lst | sort -t'|' -k4,4r

pune.lst:3002|Sushil Mahtre |Manager |admin |19939320|35460

[admin@sushil ~]$

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

- [admin@sushil ~]$ date "+%T %A %d %b %Y"

  00:24:54 Friday Jan 2025

26: Write a command sequence that prints the names of the files in the current directory in the descending order of number of links.

- [admin@sushil ~]$ ls -l | sort -k2 -n -r | awk '{print $9}'

Desktop

Videos

Templates

Public

Pictures

Music

Documents

Downloads

programs

lsdoc

friends

dir

dept.lst

desig.lst

emp.lst

fixed_file

cfile2

cfile1

first.unix

chap

sizes

networrk.txt

pune.lst

ttc.lst

nonhr

mumbai.lst

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

- [admin@sushil ~]$ ls -l | sort

drwxr-xr-x. 2 admin admin 150 Jan 31 23:17 programs

drwxr-xr-x. 2 admin admin 50 Aug 25 2022 Downloads

drwxr-xr-x. 2 admin admin 6 Aug 25 2022 Documents

drwxr-xr-x. 2 admin admin 6 Aug 25 2022 Music

drwxr-xr-x. 2 admin admin 6 Aug 25 2022 Pictures

drwxr-xr-x. 2 admin admin 6 Aug 25 2022 Public

drwxr-xr-x. 2 admin admin 6 Aug 25 2022 Templates

drwxr-xr-x. 2 admin admin 6 Aug 25 2022 Videos

drwxr-xr-x. 3 admin admin 4096 Jan 30 20:56 Desktop

-rw-r--r--. 1 admin admin 0 Feb 1 00:54 chap

-rw-r--r--. 1 admin admin 0 Jan 28 02:22 first.unix

-rw-r--r--. 1 admin admin 140 Feb 1 01:07 cfile1

-rw-r--r--. 1 admin admin 735 Feb 1 00:57 dir

-rw-r--r--. 1 admin admin 86 Feb 1 00:49 friends

-rw-r--r--. 1 admin admin 93 Feb 1 00:43 lsdoc

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

- [admin@sushil ~]$ ls -lS | awk '{print $9, $5}'

Desktop 4096

dir 735

emp.lst 300

fixed_file 295

cfile2 155

programs 150

cfile1 140

lsdoc 93

29: Determine the latest file updated by the user.

- [admin@sushil ~]$ ls -1t | head -n 1

  fixed_file