04/09/2024

Command to list files & directories

1. List all files and directories in the current directory:
➔ ls

2. List files with detailed information (permissions, size, modification date):
➔ls -l

3. List all hidden files in the current directory
➔ls -a

4. List files in current directory
➔ls -lS

5. List files in directory sorted by modification time:
➔ls -lt

6. Recursively list all files and directories under current directory
➔ls -R ls -lt

7. Display file sizes in human-readable format in current directory
➔ls –lh

8. List only directories in current directory:
➔ ls -d

9. List all .txt files in current directory
➔ls *.txt

10. List files in current directory starting with "photo"
➔ls /c/Users/DELL/Desktop/Pushpa/Documents/Photo*

11. Display inode numbers of files in /home/user/pictures
➔ ls -i /home/user/pictures

12. Show file permissions in octal format in /etc:
➔stat -c '%a' data.csv (for single file)

13. List files with no group in current directory
➔find -nogroup

14. Sort files by type in current directory
➔ls -lX

15. List files in /var/www with multiple options (detailed, hidden, sorted by time)
➔ls -lat

Copying Files and Directories

16. Copy gmail.txt from /c/Users/DELL/Desktop/Pushpa to /c/Users/DELL/Desktop/Pushpa/Documents
➔ cp -r /c/Users/DELL/Desktop/Pushpa/gmail.txt /c/Users/DELL/Desktop/Pushpa/Documents/

17. Copy file1.txt, file2.txt, and file3.txt to /home/user/archive:
➔cp file1.txt file2.txt file3.txt /home/user/archive/

18. Copy the entire projects directory to /home/user/backup:
➔cp -r /home/user/projects /home/user/backup/

19. Copy data.csv to /home/user/archive while preserving attributes:
➔cp -p data.csv /home/user/archive/

20. Copy report.txt to /home/user/backup, creating a backup of any existing file:
➔cp --backup=numbered report.txt /home/user/backup/

21. Copy config.yaml to /etc/backup, prompting before overwriting:
➔cp -i config.yaml /etc/backup/

22. Copy images/ directory to /home/user/pictures, showing the progress:
➔cp -r --progress images/ /home/user/pictures/

23. Copy symbolic links from /home/user/links to /home/user/archive:
➔cp -r --preserve=links /home/user/links /home/user/archive/

24. Copy project/ directory to /home/user/backup using archive mode
➔cp -a /home/user/project/ /home/user/backup/

25. Copy files from /home/user/work to /home/user/backup, updating only newer files
➔cp -u /home/user/work/* /home/user/backup/

26. Copy all files from /home/user/documents to /home/user/archive excluding .log files
➔rsync -av --exclude='*.log' /home/user/documents/ /home/user/archive/

27. Copy docs/ to backup/, preserving attributes and displaying the operation
➔cp -a -v docs/ backup/

28. Copy all files larger than 500MB from /var/logs to /home/user/archive
➔find /var/logs -type f -size +500M -exec cp {} /home/user/archive/ \;

29. Copy and rename draft.txt to final.txt in /home/user/docs
➔cp /home/user/docs/draft.txt /home/user/docs/final.txt

30. Recursively copy /home/user/projects to /backup, excluding the tmp folder
➔rsync -av --exclude='tmp/' /home/user/projects/ /backup/

Moving and Renaming Files and Directories

31. Move notes.txt from /home/user/documents to /home/user/backup:
➔mv /home/user/documents/notes.txt /home/user/backup/

32. Rename old_report.txt to new_report.txt in /home/user/reports:
➔mv /home/user/reports/old_report.txt /home/user/reports/new_report.txt

33. Move file1.txt, file2.txt, file3.txt to /home/user/archive:
➔mv file1.txt file2.txt file3.txt /home/user/archive/

34. Move data.csv to /home/user/archive, overwriting existing files:
➔mv -f data.csv /home/user/archive/

35. Move the projects directory to /home/user/backup
➔mv /home/user/projects /home/user/backup/

36. Rename old_photos to archive_photos in /home/user/pictures
➔mv /home/user/pictures/old_photos /home/user/pictures/archive_photos

37. Move all .jpg files from /home/user/downloads to /home/user/images
➔mv /home/user/downloads/*.jpg /home/user/images/

38. Move draft.txt to a new directory /home/user/work_archive
➔mkdir -p /home/user/work_archive && mv draft.txt /home/user/work_archive/

39. Create a backup of database.db before moving it to /var/backups
➔cp database.db database.db.bak && mv database.db /var/backups/

40. Move all files and directories from /home/user/temp to /home/user/final
➔mv /home/user/temp/* /home/user/final/

41. Move config.yaml to /etc/backup, prompting before overwriting
➔mv -i config.yaml /etc/backup/

42. Simulate moving important.docx to /home/user/trash and then move it back
➔mv -n important.docx /home/user/trash/
➔mv /home/user/trash/important.docx /home/user/

43. Move video.mp4 from drive C: to an external drive
➔mv /mnt/c/video.mp4 /mnt/external_drive/

44. Move and rename file.txt to /home/user/docs/new_file.txt
➔mv file.txt /home/user/docs/new_file.txt

45. Move projects/ directory to /backup, showing each file being moved
➔mv -v projects/ /backup/

Tail Commands for Viewing Logs

46. Display the last 10 lines of log.txt in /var/log
➔tail -n 10 /var/log/log.txt

47. Continuously monitor system.log for new entries
➔tail -f /var/log/system.log

48. Display the last 20 lines of messages.log in /var/log
➔tail -n 20 /var/log/messages.log

49. Monitor access.log and error.log in real-time
➔tail -f /var/log/access.log /var/log/error.log

50. Display the last 50 lines of output.log in /home/user/logs
➔tail -n 50 /home/user/logs/output.log

51. Show the last 10 lines of file1.txt, file2.txt, and file3.txt:
➔tail -n 10 file1.txt

05/09/2024

Find command

1. Search for file Java.txt in above dir.
➔find /c/Users/DELL/Desktop/Pushpa -name "Java.txt"

2.Search for all files ending with .log in the above directory
➔ find /c/Users/DELL/Desktop/Pushpa/linux-content -name "*.log"

3.Find files larger than 10MB in the given directory
➔ find /c/Users/DELL/Downloads -size +10M

4.Find files in /c/Users/DELL/Desktop/Pushpa modified in the last 7 days.
➔ find /c/Users/DELL/Desktop/Pushpa -mtime -7

5. Find empty files in the above directory.
➔find /c/Users/DELL/Desktop/Pushpa -type f –empty

6.Search for directories in the /c/Users/DELL/Desktop/Pushpa directory
➔ find /c/Users/DELL/Desktop/Pushpa -type d

7. Find and delete all .tmp files in the /c/Users/DELL/Desktop/Pushpa directory.
➔find /c/Users/DELL/Desktop/Pushpa -name "*.tmp" –delete

8. Find files in /c/Users/DELL/Desktop/Pushpa with permissions set to 755 (read=2, write=4, execute=1 for owner; read and execute for group and others).
➔find /c/Users/DELL/Desktop/Pushpa -perm 755

9. Find files in /c/Users/DELL/Desktop/Pushpa owned by the user Dell.
➔find /c/Users/DELL/Desktop/Pushpa -user Dell

10. Write the command that would find all .sh files in the /c/Users/DELL/Desktop/Pushpa directory and make them executable by adding execute permissions.
➔find /c/Users/DELL/Desktop/Pushpa -name "*.sh" -exec chmod +x {} \;

11. Search for a file by its inode number in /c/Users/DELL/Desktop/Pushpa.
➔find /c/Users/DELL/Desktop/Pushpa -inum 3377699720921428

12. Find files in /c/Users/DELL/Desktop/Pushpa that match the regular expression for filenames containing "config".
➔find /c/Users/DELL/Desktop/Pushpa -regex ".*/config.*"

13. Find files in /c/Users/DELL/Desktop/Pushpa that have been accessed in the last 10 days.
➔find /c/Users/DELL/Desktop/Pushpa -atime -10

14. Find .jpg files in /c/Users/DELL/Desktop/Pushpa/Documents and move them to the /Resume directory.
➔find /c/Users/DELL/Desktop/Pushpa/Documents -name "*.jpg" -exec mv {} /Resume \;

15.Find .txt files in /c/Users/DELL/Desktop/Pushpa, but exclude the /c/Users/DELL/Desktop/Pushpa/linux-content directory
➔find /c/Users/DELL/Desktop/Pushpa -name "*.txt" -not -path "/c/Users/DELL/Desktop/Pushpa/linux-content*"

Grep command:

1. Search for the string "assets" in the /var/log/system.log file.
➔grep "assets" /c/Users/DELL/Desktop/Pushpa/linux-content/access.log"

2. Recursively search for "TODO" in Python files (*.py) inside /c/Users/DELL/Desktop/Pushpa/linux-content.
➔grep -r "TODO" /c/Users/DELL/Desktop/Pushpa/linux-content --include="*.py"

3. Case-insensitive search for "Pushpa" in the command.csv
➔grep -i "Pushpa" command.csv

4. Count the number of occurrences of the string "Pushpa" in command.csv
➔grep -c "Pushpa" command.csv

5. Search for "Viju" in command.csv and display the line numbers where it occurs.
➔grep -n "Viju" command.csv

6. Search for "PUSHPA" in command.csv and display 3 lines of before and after each match.
➔grep -C 3 "PUSHPA" command.cs

7. Search for all lines in class.txt that do not contain the word "class".
➔grep -v "class" Java.txt

8. Search for the whole word "class" in Java.txt
➔grep -w "class" Java.txt

9. Search for lines in Java.txt that start with "The".
➔grep "^The" Java.txt

10. Search for lines in Java.txt that contain either "class" or "cat" using extended regex.
grep -E "class|cat" Java.txt

11. Search for the string "class" in Java.txt and highlight matches with color.
➔grep --color=auto "class" Java.txt

12. Search for the string "Pushpa" in both command.csv and bridge.csv files.
➔grep "Pushpa" command.csv bridge.csv

13. Search for the string "timeout" in .conf files in /etc and list only the filenames containing the match.
➔grep -l "timeout" /etc/*.conf"

14. Filter the output of the netstat command(display information about network) for lines containing "assets".
➔netstat | grep "assets"

15. Search for lines containing "class" in Java.txt, but exclude lines that also contain "teacher".
➔grep "class" Java.txt | grep -v "teacher"

Environment Variables:

1. prints the current environment variables and filters the output to show only the PATH variable
➔env | grep "PATH"

2. used to remove the EDITOR environment variable and then print its value.
➔unset EDITOR && env | grep "EDITOR"

3. Specify the interpreter for the script(to use the Bash shell to execute the script.)
➔#!/bin/bash

4. Prints the value of the environment variable HOME
➔echo $HOME

5. Set the USER environment variable to guest and starts a new Bash shell to execute the command echo $USER
➔env USER=guest bash -c 'echo $USER'

6. Runs a new Bash shell in the current environment. All environment variables from the current session will be inherited by the new shell.
➔env bash

09/09/2024

Data analysis/Manipulation(usig awk command)

1. Print Employee name & TotalPay who has basePay greater than 10000
➔awk -F',' '$4 > 10000 {print $2, $7}' data.csv

2. Read data file data.csv and extract rows which have BasePay>10000
➔awk -F',' '$4 > 10000' data.csv

3.What is the aggregate TotalPay of employee whose job title is 'CAPTAIN'
➔awk -F',' '$3 == "CAPTAIN" {sum+=$7} END {print sum}' data.csv

4.Extract TotalPay and calculate sum. print the result
➔awk -F',' '{sum+=$4} END {print sum}' data.csv

5.Print JobTitle and OverTimePay who has OverTimePay is Between 7000 and 10000
➔awk -F',' '$5 >= 7000 && $5 <= 10000 {print $3, $5}' data.csv

6.Read file data.csv and extract BasePay values and calculate its average
➔awk -F',' '{sum+=$4; count++} END {if (count > 0) print $4,sum/count}' data.csv

17/09/2024

File Management commands

1. Display the maximum file with human readable file size
➔ls –lhS | head –n 2

2.Create multiple hard links to file.txt called file_link1, file_link2, and file_link3
➔ln file.txt file_link1 file_link2 file_link3

3.Adds execute permission for the owner of file.txt
➔chmod u+x file.txt

4.Removes write permission for the group of file.txt
➔chmod g-w file.txt

5.Sets read permission for others on file.txt
➔chmod o=r file.txt

6.Identify all files in '/var/log' that are larger than 500MB and modified in the last 30 days, move them to a backup directory '/backup/logs/'
➔find /var/log -type f -size +500M -mtime -30 -exec mv {} /backup/logs/ \;

7.Copy the entire directory to another directory
➔cp –a <path_dir1_copy> <path_dir2_move>

8.Recursively change the permissions of all files in current directory to 644
->find -type f -exec chmod 644 {} \;

9.Find all the files in the '/Resume' directory which are older than 3 days and move to the 'tmp' directory.
➔find /Resume –type f –mtime -3 -exec mv {} /tmp \;

10.Create 3 nested folders
➔mkdir abc/pqr/def

11. List all hidden files and directories in current dir, sorted by modification time in reverse order
➔ls –latr

12.List only files in current directory, excluding directories
➔ls –p|grep –v

13.Find total size of files larger than 10MB in / current directory
➔find -type f -size +10M –exec du -ch {} + | grep total$

14.Display disk usage of all subdirectories in current directory and sort them by size
➔du -h --max-depth=1 | sort –rh

15.Find the files with permission 777
➔find -type f -perm 777

16.Search for log files in current directory and remove (delete) them in single command
➔find -type f -name “*.log” -exec rm {} \;

17. Change the date on specific file to match yesterday's date(16/09/2024)
➔touch -d “16/09/2024” <file name>

18.List the files based on their modification time & display oldest one
➔ls –lt |tail –n 1

19.List files modified in last 24 hours(1day)
➔find -type f -mtime -1 -exec ls-lh {} \;

20.Display maximum 5 files based on their disk usage
➔du -h | sort -rh | grep -v ‘/$’ |head -n 5

21. Rename all .txt files in ‘/home/user/’ reports to ‘.backup’
➔find /home/user/reports -type f -name "*.txt" -exec rename 's/.txt$/.backup/' {} \;

22. Find the total disk usage of /var and list the top 5 largest directories
➔du -ah /var | sort -rh | head -n 5

23. Find and delete .log files in /var/log that haven’t been modified in the last 90 days:
➔find /var/log -type f -name "*.log" -mtime +90 -exec rm {} \;

24. Display the disk usage of each file individually in the /data directory, sorted by size.
➔find /data -type f -exec du -h {} + | sort –rh

25. Search for the string "Pushpa" in both command.csv and bridge.csv files.
➔grep "Pushpa" command.csv bridge.csv

26.Find all files larger than 500MB in current directory, then sort them by size in descending order
➔find -type f -size +500M -exec ls -lh {} + | sort -k 5 –rh

27. Find all files in current directory that have permissions 777 (read, write, and execute) and change their permissions to 755
➔find -type f -perm 0777 -exec chmod 755 {} \;

28. Find files owned by admin in current directory and change their ownership to developer?
➔find -type f -user admin -exec chown developer {} \;

29. Display the disk usage of the top 10 largest directories under current root directory
➔du -h | sort -rh | head -n 10

30. Find the total disk usage of files in current directory modified in the last 7 days
➔find -type f -mtime -7 -exec du -ch {} + | grep total$

31. Find and display the disk usage of files larger than 10MB in the current directory
➔find -type f -size +10M -exec du -h {} \;

32.Compare two files(file1.txt & file2.txt) and only show the first 10 differences
➔diff file1.txt file2.txt | head -n 20

33. Copy only files from '/projects/' to '/backup/projects/' modified in the last 7 days?
➔find /projects/ -type f -mtime -7 -exec cp {} /backup/projects/ \;

Assignment 1 – File System Management

1) List out 5 files in your system which consuming most of the disk space
   -> find -type f -exec du -h {} \;|sort -rh | head -n 5

```
ubuntu@ip-172-31-16-213: ~
ubuntu@ip-172-31-16-213:~$ find -type f -exec du -h {} \;|sort -rh | head -n 5
12K     ./gmail.txt
12K     ./.bash_history
4.0K    ./pushpa.txt
4.0K    ./log_files.txt
4.0K    ./hardlink.txt
ubuntu@ip-172-31-16-213:~$
```

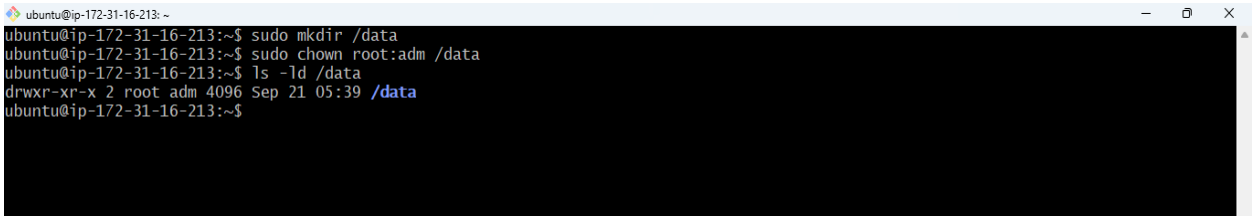
2) Create one common folder in such a way that anyone can create files inside that independently and should not be able to delete other users' files from that common folder.
   ->mkdir /pushpa
   ->chmod 1777 /pushpa

```
ubuntu@ip-172-31-16-213: ~
ubuntu@ip-172-31-16-213:~$ sudo mkdir /devOps
ubuntu@ip-172-31-16-213:~$ sudo chmod 1777 /devOps
ubuntu@ip-172-31-16-213:~$ ls -lh /devOps
total 0
ubuntu@ip-172-31-16-213:~$ touch /devOps/myfile.txt
ubuntu@ip-172-31-16-213:~$
```

3) Create user name "shubham" and add that user in the group "adm"
   ->sudo adduser shubham
   ->sudo addgroup adm
   ->sudo usermod –aG adm shubham

```
ubuntu@ip-172-31-16-213: ~
ubuntu@ip-172-31-16-213:~$ sudo adduser shubham
info: Adding user `shubham' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `shubham' (1019) ...
info: Adding new user `shubham' (1019) with group `shubham (1019)' ...
warn: The home directory `/home/shubham' already exists.  Not touching this directory.
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for shubham
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] Y
info: Adding new user `shubham' to supplemental / extra groups `users' ...
info: Adding user `shubham' to group `users' ...
ubuntu@ip-172-31-16-213:~$ sudo groupadd adm
groupadd: group 'adm' already exists
ubuntu@ip-172-31-16-213:~$ sudo groupdel adm
ubuntu@ip-172-31-16-213:~$ sudo groupadd adm
ubuntu@ip-172-31-16-213:~$ sudo usermod -aG adm shubham
ubuntu@ip-172-31-16-213:~$ getent group adm
adm:x:2662:shubham
ubuntu@ip-172-31-16-213:~$
```

a) Create folder /data , change owner and group as "root:adm
->sudo mkdir /data
->sudo chown root:adm /data



b) Change /data permission such a way that user can able to write data in this folder and ownership of files or folder which you creates in this folder should be same as parent folder i.e /data folder permission (root:adm)

->sudo chmod 2777 /data