Linux Filesystem

1. **Which directory in Linux contains user home directories by default?**
   a) /root
   b) /home
   c) /usr
   d) /var
   Answer: b) /home
   Explanation: By default, Linux stores user home directories in the `/home` directory.
2. **What is the purpose of the `/etc/fstab` file?**
   a) To store network configuration
   b) To store bootloader configuration
   c) To define filesystems to be mounted at boot time
   d) To store user account information
   Answer: c) To define filesystems to be mounted at boot time
   Explanation: The `/etc/fstab` file contains information about filesystems and their mount points.
3. **Which command is used to check the disk usage of a filesystem?**
   a) du
   b) df
   c) lsblk
   d) fdisk
   Answer: b) df
   Explanation: The `df` command displays the disk space usage of filesystems.
4. **What is the default filesystem used by most modern Linux distributions?**
   a) FAT32
   b) NTFS
   c) ext4
   d) Btrfs
   Answer: c) ext4
   Explanation: ext4 is the most commonly used filesystem in Linux due to its stability and performance.
5. **Which command is used to create a new filesystem?**
   a) fsck
   b) mkfs
   c) mount
   d) umount
   Answer: b) mkfs
   Explanation: The `mkfs` command is used to create a new filesystem on a partition.

Directory Management

6. **Which command is used to create a new directory?**
   a) touch

b) mkdir
c) rm
d) chmod
Answer: b) mkdir
Explanation: The `mkdir` command is used to create a new directory.

7. **How do you remove an empty directory?**
   a) rm
   b) rmdir
   c) deldir
   d) deltree
   Answer: b) rmdir
   Explanation: The `rmdir` command removes empty directories.
8. **What does the `-p` option do with the `mkdir` command?**
   a) Prints the directory path
   b) Creates parent directories as needed
   c) Deletes the directory
   d) Changes the permissions of the directory
   Answer: b) Creates parent directories as needed
   Explanation: The `-p` option allows the creation of parent directories that do not exist.
9. **What is the effect of the `cd ..` command?**
   a) Changes to the parent directory
   b) Changes to the root directory
   c) Displays the current directory
   d) Deletes the current directory
   Answer: a) Changes to the parent directory
   Explanation: The `..` represents the parent directory in Linux.
10. **Which command lists all files, including hidden ones?**
    a) ls
    b) ls -l
    c) ls -a
    d) ls -h
    Answer: c) ls -a
    Explanation: The `-a` option with `ls` lists all files, including hidden files.

User and Group Management

11. **Which file stores user account information in Linux?**
    a) /etc/passwd
    b) /etc/shadow
    c) /etc/group
    d) /etc/login
    Answer: a) /etc/passwd
    Explanation: The `/etc/passwd` file contains basic user account information.
12. **Which command is used to add a new user?**
    a) useradd

b) adduser
c) passwd
d) usermod
Answer: a) useradd
Explanation: The `useradd` command is used to create a new user account.

13. **What is the purpose of the `/etc/shadow` file?**
    a) To store encrypted passwords
    b) To store user groups
    c) To store home directories
    d) To store shell settings
    Answer: a) To store encrypted passwords
    Explanation: The `/etc/shadow` file contains encrypted passwords and account expiry details.
14. **How do you add a user to a group?**
    a) groupadd
    b) usermod -a -G
    c) useradd -g
    d) groupmod
    Answer: b) usermod -a -G
    Explanation: The `usermod -a -G` command appends a user to a group.
15. **Which command is used to delete a user?**
    a) deluser
    b) userdel
    c) rmuser
    d) deleteuser
    Answer: b) userdel
    Explanation: The `userdel` command deletes a user account.

ACL (Access Control Lists)

16. **Which command is used to set ACLs on a file?**
    a) setfacl
    b) getfacl
    c) chmod
    d) chown
    Answer: a) setfacl
    Explanation: The `setfacl` command is used to configure ACLs on files and directories.
17. **How do you view the ACL of a file?**
    a) getacl
    b) aclshow
    c) getfacl
    d) lsacl
    Answer: c) getfacl
    Explanation: The `getfacl` command retrieves the ACLs of a file or directory.

18. **What does the `-m` option in `setfacl` do?**
    a) Modifies an ACL
    b) Removes an ACL
    c) Displays ACLs
    d) Creates a default ACL
    Answer: a) Modifies an ACL
    Explanation: The `-m` option modifies or adds an ACL entry.
19. **How do you remove an ACL from a file?**
    a) setfacl -r
    b) setfacl -b
    c) setfacl -x
    d) setfacl -d
    Answer: b) setfacl -b
    Explanation: The `-b` option removes all ACL entries from a file or directory.
20. **Which option with `ls` shows ACLs on files?**
    a) -l
    b) -a
    c) -R
    d) -e
    Answer: d) -e
    Explanation: The `-e` option displays extended attributes, including ACLs.

Basic Commands

21. **Which command displays the current working directory?**
    a) pwd
    b) whoami
    c) ls
    d) cd
    Answer: a) pwd
    Explanation: The `pwd` command prints the current working directory.
22. **Which command is used to display the contents of a file?**
    a) view
    b) cat
    c) edit
    d) open
    Answer: b) cat
    Explanation: The `cat` command outputs the contents of a file.
23. **How do you search for a pattern in a file?**
    a) find
    b) locate
    c) grep
    d) search
    Answer: c) grep
    Explanation: The `grep` command searches for patterns in files.

24. **Which command copies a file?**
    a) mv
    b) cp
    c) copy
    d) rsync
    Answer: b) cp
    Explanation: The `cp` command copies files and directories.
25. **What does the `chmod 755 file` command do?**
    a) Gives full permissions to all users
    b) Assigns read, write, execute to the owner and read, execute to others
    c) Removes all permissions
    d) Grants write permission to the group
    Answer: b) Assigns read, write, execute to the owner and read, execute to others
    Explanation: In `755`, the owner gets full permissions, and the group and others get read and execute permissions.

Linux Filesystem (Continued)

26. **What is the purpose of the `/proc` directory?**
    a) Stores temporary files
    b) Contains virtual files representing system processes
    c) Stores binary commands
    d) Contains user home directories
    Answer: b) Contains virtual files representing system processes
    Explanation: The `/proc` directory is a virtual filesystem that provides information about running processes and kernel parameters.
27. **Which command checks the integrity of a filesystem?**
    a) fsck
    b) mount
    c) blkid
    d) umount
    Answer: a) fsck
    Explanation: The `fsck` command is used to check and repair filesystems.
28. **Which of the following is not a valid Linux filesystem?**
    a) ext3
    b) ZFS
    c) NTFS
    d) FAT16
    Answer: c) NTFS
    Explanation: NTFS is a Windows filesystem. Linux supports ext3, ZFS, and FAT16.
29. **Which directory is used to store logs in Linux?**
    a) /var/log
    b) /etc/log
    c) /usr/log
    d) /log

Answer: a) /var/log
Explanation: System and application logs are typically stored in the `/var/log` directory.

30. **What is the inode in a filesystem?**
    a) A block of data in a file
    b) A unique identifier for a file or directory
    c) The size of a file
    d) The name of a file
    Answer: b) A unique identifier for a file or directory
    Explanation: An inode stores metadata about a file or directory, including its unique ID.

Directory Management (Continued)

31. **Which command renames a directory?**
    a) rename
    b) mv
    c) cp
    d) dirmv
    Answer: b) mv
    Explanation: The `mv` command can rename directories by moving them to a new name.
32. **How do you list directories only in the current path?**
    a) ls -d */
    b) ls -l
    c) ls -a
    d) lsdir
    Answer: a) ls -d */
    Explanation: The `-d */` option with `ls` lists only directories in the current path.
33. **Which command changes the ownership of a directory?**
    a) chmod
    b) chown
    c) chgrp
    d) dirown
    Answer: b) chown
    Explanation: The `chown` command changes the ownership of files and directories.
34. **How do you navigate to the previous working directory?**
    a) cd /
    b) cd ..
    c) cd -
    d) cd ~
    Answer: c) cd -
    Explanation: The `cd -` command switches to the previous working directory.
35. **Which command lists subdirectories recursively?**
    a) ls -l

b) ls -R
c) dir -a
d) ls -d
Answer: b) ls -R
Explanation: The `-R` option with `ls` lists files and directories recursively.

User and Group Management (Continued)

36. **Which file contains group information?**
    a) /etc/shadow
    b) /etc/group
    c) /etc/passwd
    d) /etc/login.defs
    Answer: b) /etc/group
    Explanation: The `/etc/group` file contains group-related information.
37. **How do you lock a user account?**
    a) passwd -d username
    b) usermod -L username
    c) passwd -l username
    d) both b and c
    Answer: d) both b and c
    Explanation: Both `usermod -L` and `passwd -l` lock a user account.
38. **What is the default shell assigned to a user during creation?**
    a) /bin/bash
    b) /bin/zsh
    c) /bin/sh
    d) /bin/csh
    Answer: a) /bin/bash
    Explanation: Most Linux distributions use `/bin/bash` as the default shell for users.
39. **How do you delete a group in Linux?**
    a) groupdel
    b) delgroup
    c) rmgroup
    d) groupremove
    Answer: a) groupdel
    Explanation: The `groupdel` command deletes a group.
40. **Which command is used to switch to another user's account?**
    a) su
    b) sudo
    c) switch
    d) changeuser
    Answer: a) su
    Explanation: The `su` command switches to another user's account.

ACL (Access Control Lists - Continued)

41. **What does the `-x` option do in the `setfacl` command?**
    a) Displays the ACL
    b) Removes a specific ACL entry
    c) Removes all ACLs
    d) Sets execute permissions
    Answer: b) Removes a specific ACL entry
    Explanation: The `-x` option removes a specific ACL entry for a file or directory.
42. **What is the maximum number of ACL entries that can be set on a file?**
    a) 1
    b) 5
    c) 32
    d) Unlimited
    Answer: d) Unlimited
    Explanation: The number of ACL entries is limited by the underlying filesystem, but practically it can be large or unlimited.
43. **What does a default ACL apply to?**
    a) Only files
    b) Only directories
    c) Newly created files and directories within a directory
    d) All files in the system
    Answer: c) Newly created files and directories within a directory
    Explanation: Default ACLs apply to files and subdirectories created in a directory.
44. **How do you restore ACLs from a backup file?**
    a) getfacl -r
    b) setfacl --restore
    c) setacl -i
    d) restorefacl
    Answer: b) setfacl --restore
    Explanation: The `setfacl --restore` command restores ACLs from a backup file created using `getfacl`.
45. **How do you remove the default ACL from a directory?**
    a) setfacl -k
    b) setfacl -d
    c) setfacl -b
    d) setfacl -r
    Answer: a) setfacl -k
    Explanation: The `-k` option removes the default ACL.

Basic Commands (Continued)

46. **Which command moves a file?**
    a) mv
    b) cp

c) rename
d) move
Answer: a) mv
Explanation: The `mv` command moves files or directories.

47. **What does the `head` command do?**
    a) Displays the last lines of a file
    b) Displays the first lines of a file
    c) Displays all lines in a file
    d) Displays only the file name
    Answer: b) Displays the first lines of a file
    Explanation: The `head` command shows the first few lines (default 10) of a file.
48. **Which command compresses a file?**
    a) gzip
    b) zip
    c) tar
    d) All of the above
    Answer: d) All of the above
    Explanation: All these commands can compress files, though they work differently.
49. **Which command finds files in a directory hierarchy?**
    a) locate
    b) find
    c) search
    d) grep
    Answer: b) find
    Explanation: The `find` command searches for files in a directory hierarchy.
50. **What does the `echo` command do?**
    a) Displays text on the terminal
    b) Prints file contents
    c) Searches for text in files
    d) Edits files
    Answer: a) Displays text on the terminal
    Explanation: The `echo` command outputs text or variables to the terminal.

Advanced Command Practice

51. **How do you find all files in `/var` larger than 100MB and list them in human-readable sizes?**
    a) `find /var -size +100M -print`
    b) `find /var -type f -size +100M | ls -lh`
    c) `find /var -type f -size +100M -exec ls -lh {} \;`
    d) `find /var -size +100M -exec du -sh {} \;`
    Answer: d) `find /var -size +100M -exec du -sh {} \;`
    Explanation:
    - The `-size +100M` option finds files larger than 100MB.

- `-exec du -sh {} \;` calculates the size in human-readable format for each file.
- This approach combines file filtering (`find`) with size display (`du`).

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52. **You need to change the ownership of all files in `/data` to user `amit` and group `staff`. Which command achieves this?**
    a) `chown amit /data`
    b) `chown -R amit.staff /data`
    c) `chown -R amit:staff /data`
    d) `chown amit:staff -R /data`
    Answer: c) `chown -R amit:staff /data`
    Explanation:
    - The `-R` option ensures the operation is recursive, applying to all files and subdirectories.
    - `amit:staff` specifies the user (`amit`) and group (`staff`).

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53. **How would you recursively grant read and execute permissions to all users for files in `/shared` while keeping existing permissions intact?**
    a) `chmod 755 /shared`
    b) `chmod -R a+rx /shared`
    c) `chmod -R 775 /shared`
    d) `chmod -R u+rx /shared`
    Answer: b) `chmod -R a+rx /shared`
    Explanation:
    - The `a+rx` ensures that read (`r`) and execute (`x`) permissions are added for all users without removing any existing permissions.
    - The `-R` option applies the changes recursively.

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54. **A file, `project.txt`, has the following ACL entries: `user:amit:rwx`, `group:staff:rw-`, and `other::r--`. Which command modifies this to give user `raj` read permissions without altering others?**
    a) `chmod u+rw raj project.txt`
    b) `setfacl -m u:raj:rw project.txt`
    c) `setfacl -m u:raj:r project.txt`
    d) `setfacl -m g:raj:rw project.txt`
    Answer: c) `setfacl -m u:raj:r project.txt`
    Explanation:

- The `-m` option modifies ACLs, and `u:raj:r` adds read (`r`) permissions for the user `raj`.
- This operation doesn't impact existing entries.

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55. **You want to compress the `/backup` directory into a `.tar.gz` file while preserving symbolic links. Which command achieves this?**
    a) `tar -cvf backup.tar.gz /backup`
    b) `gzip -c /backup > backup.tar.gz`
    c) `tar -czvf backup.tar.gz /backup`
    d) `tar -cvf /backup backup.tar.gz`
    Answer: c) `tar -czvf backup.tar.gz /backup`
    Explanation:
    - The `-c` option creates an archive, and `-z` compresses it using gzip.
    - The `-v` provides verbose output, and `-f` specifies the output file.
    - This command preserves symbolic links and compresses the directory.