Linux Interview Questions and Answers

1. **What is Linux, and why is it widely used?**

   Linux is an open-source operating system based on Unix. It's widely used for its stability, security, and flexibility. It is especially popular in server environments and cloud infrastructure.

2. **What is the Linux file structure or directory hierarchy?**

   The Linux file system has a hierarchical structure, with directories like /home for user files, /etc for configuration files, /var for variable files, /bin for essential user commands, and /root for the root user's home directory.

3. **Explain the role of the kernel in Linux.**

   The kernel is the core component of Linux that manages system resources, including the CPU, memory, and I/O devices. It facilitates communication between hardware and software.

4. **How do you check the current working directory?**

   To check current working directory we use pwd. PWD stands for "print working directory" and displays the path of the current directory.

5. **How do you list all files, including hidden ones, in a directory?**

   ls -a

   The -a option in the ls command shows all files, including those that start with a dot (.), which are hidden files in Linux.

6. **How do you view the contents of a file?**

   cat filename, less filename, or more filename

   cat prints the file contents directly to the screen, while less and more allow for paginated viewing.

7. **What command would you use to copy a file from one directory to another?**

   cp source_file destination_directory/

   cp stands for "copy." You can specify a source file and destination directory or path.

8. **How do you move or rename a file?**

   mv old_filename new_filename

   The mv command is used for moving or renaming files. Moving a file to a new directory without changing its name also renames it.

9. **How do you delete a file or directory?**

   rm filename for files, rm -r directory_name for directories

   rm is used to remove files, and the -r option allows recursive deletion of directories and their contents.

10. **How do you search for a specific word in a file?**

    grep "word" filename

    grep searches for patterns within files. You can specify a word or pattern and the filename to search in.

11. **How can you find your system's IP address?**

    ifconfig or ip addr

    Both commands display network information, including IP addresses.

12. **How do you check disk usage for all directories in the current path?**

    du -h

    du shows disk usage, and -h displays the results in a human-readable format (like MB or GB).

13. **How can you view running processes?**

    ps

    ps shows a snapshot of running processes.

14. **What is the command to check free memory and CPU usage?**

    free -h for memory, top or htop for CPU usage

    free -h shows memory usage, while top or htop gives real-time CPU and memory stats.

15. **How do you create an empty file?**

    touch filename

    touch creates an empty file or updates the timestamp of an existing file.

16. **How do you change file permissions?**

    chmod

    example: chmod 755 filename

    chmod changes file permissions. Here, 755 gives the owner full rights and others read/execute rights.

17. **How do you schedule a job using cron?**

    Explanation: cron jobs are scheduled tasks in Linux. Use crontab -e to edit the crontab file and schedule commands.

18. **What is the command to compress files?**

    tar -cvf example.tar directory/

    tar combines multiple files into tar files. Here, -cvf creates a .tar compressed file.

    zip example.zip directory

    compressing multiple files into zip file.

19. **How do you add a new user in Linux?**

    Sudo adduser username

    adduser creates a new user, and sudo provides administrative permissions if required.

20. **Explain the difference between sudo and su.**

    sudo allows a permitted user to run commands as the superuser or another user, while su switches the user to the superuser or another account entirely.

21. **How can you check system uptime?**

    uptime

    The uptime command shows how long the system has been running since the last boot.

22. **What is the difference between a hard link and a soft (symbolic) link?**

    A hard link is a duplicate reference to the same file data on disk, meaning it points directly to the inode (the data structure that contains the file metadata and location on disk). Hard links have the same inode number as the original file because they directly reference the same data.

    While a soft link (or symbolic link) is a pointer to the original file's path rather than the actual data on disk. Soft links have their own inode because they only store the path to the original file, not the actual data.

23. What are Different Os have you familiar with and worked on?

I am familiar with Linux and Windows operating systems.

- Linux

Linux is an open-source operating system based on the Unix architecture. It is known for its robustness, security, and flexibility.

Distribution Variety: There are numerous distributions (distros) of Linux, such as Ubuntu, CentOS, Debian, and Fedora. Each serves different user needs and preferences.

Usage: I have worked extensively with Linux for server management, software development, and deployment. It is commonly used in cloud environments, data centers, and for programming tasks.

Command-Line Interface (CLI): Linux relies heavily on the command line, which provides powerful tools for managing the system. Common commands include ls, cd, mkdir, and chmod.

Package Management: Most Linux distributions come with package managers (like apt for Debian-based systems and yum for Red Hat-based systems) that simplify the installation and management of software.

- Windows:

Windows is a operating system developed by Microsoft, widely used in personal computing and business environments.

User Interface: Windows offers a graphical user interface (GUI) that is user-friendly and intuitive, making it accessible for non-technical users.

Software Ecosystem: A vast range of applications is available for Windows, including office suites, graphic design software, and games. Windows is often the preferred platform for many enterprise applications.

Command Prompt and PowerShell: While Windows emphasizes the GUI, it also includes command-line tools like Command Prompt and PowerShell for scripting and automation tasks.

Updates and Support: Windows has a more centralized update mechanism, and users typically receive regular feature and security updates.

24. Which Linux version you used in your project?

In my projects, I've primarily worked with **Ubuntu** and **Amazon Linux**, each of which has specific advantages based on the project needs.

Amazon Linux is a distribution provided by Amazon Web Services (AWS), optimized for use on Amazon EC2 instances. It is designed for security, performance, and seamless integration with other AWS services. I used Amazon Linux for cloud-based projects, especially for applications hosted on AWS EC2 instances, as it’s tailored for AWS infrastructure. Amazon Linux receives regular security updates, ensuring a secure environment for applications.

Ubuntu is a popular, Debian-based Linux distribution known for its user-friendly design, extensive community support, and wide range of available software packages.

I used Ubuntu primarily for development environments, web servers, and applications that required a stable, easy-to-configure OS. Uses apt (Advanced Package Tool) for easy installation and management of software packages.

25. Why we used Linux OS Rather than Windows and any other?

Linux is often chosen over Windows or other operating systems for specific types of projects and environments because of its unique advantages, especially in terms of flexibility, security, and performance.

Free and Open Source: Linux is open source, meaning it's free to use, modify, and distribute. This reduces licensing costs, especially for organizations with a large number of servers.

Community Development: The open-source nature of Linux allows for contributions from a global community, which accelerates innovation, security updates, and software improvements.

Long Uptime: Linux systems are known for their stability and can run for extended periods without needing a reboot, making it ideal for servers that need high uptime.

Resilience: Linux is less prone to crashes, memory leaks, and slowdowns compared to some other operating systems, ensuring better long-term performance.

Command-Line Efficiency: The Linux command-line interface (CLI) provides powerful commands for managing the system, automating tasks, and scripting, which often makes system administration more efficient than on GUI-centric operating systems like Windows.

Developer Tools: Linux supports a wide range of development tools, programming languages, and libraries, making it a preferred platform for developers.

Server and Cloud Environments: Linux is widely used in server environments and is the OS of choice for cloud providers (such as AWS, Azure, and Google Cloud), due to its reliability, performance, and compatibility with server software.