Some Linux questions with examples

Basic Level:

1. What is Linux?
- Linux is an open-source operating system kernel that powers various distributions (distros) such as Ubuntu, CentOS, Debian, etc.

2. Differentiate between Unix and Linux.
- Unix refers to a family of multitasking, multiuser operating systems. Linux is a Unix-like operating system kernel. One key difference is that Linux is open source, while Unix has various proprietary versions.

3. Explain the file system hierarchy in Linux.
- The file system hierarchy in Linux follows a standard defined by FHS. For example:
  - `/bin`: Contains essential binaries (e.g., ls, cp).
  - `/etc`: Contains system configuration files.
  - `/home`: Houses user directories.
  - `/var`: Holds variable data (e.g., logs, caches).

4. How do you change file permissions in Linux?
- Using 'chmod':
  ```bash
  chmod 755 filename # Give read, write, execute permissions to the owner and read/execute permissions to group and others
  ```

5. What is the purpose of the 'grep' command in Linux?
- 'grep' searches for patterns within files. For instance:
  ```bash
  grep "search_term" filename # Searches for "search_term" in a file
  ```

6. Explain the difference between soft link and hard link in Linux.
- Soft link:
  ```bash
  ln -s /path/to/original /path/to/link # Creates a symbolic link
  ```
- Hard link:
  ```bash
  ln /path/to/original /path/to/link # Creates a hard link
  ```

7. How do you find system information in Linux?
- Commands like 'uname -a', 'cat /etc/os-release', 'hostnamectl', and 'lscpu' provide system information.

Intermediate Level:

8. Explain the role of the 'chmod' command in Linux.
- 'chmod' modifies file permissions. Example:
  ```bash
  chmod u+x filename # Grants execute permission to the file owner
  ```

9. What are the different runlevels in Linux?
- Runlevels control the system state. For instance:
  ```bash
  runlevel # Displays the current runlevel
  ```

10. Explain the differences between vi and vim.
- Vi is a basic text editor, while Vim is an improved version. For example:
  ```bash
  vi filename # Opens a file in vi
  vim filename # Opens a file in vim
  ```

11. How do you find and kill a process in Linux?
- 'ps' to find a process and 'kill' to terminate it. Example:
  ```bash
  ps aux | grep process_name # Find the PID of a process
  kill PID # Terminate the process using its PID
  ```

12. Describe the usage and importance of 'sudo' and 'su' commands.
- 'sudo' allows authorized users to execute commands as another user:
  ```bash
  sudo command # Execute a command with elevated privileges
  ```
- 'su' switches to another user account:
  ```bash
  su - username # Switch to another user account
  ```

13. What is a shell in Linux? Differentiate between a shell and a terminal.
- A shell is a command-line interface that interprets user commands. A terminal is the actual interface where users interact with the shell.

Advanced Level:

14. Explain the purpose of the 'awk' command in Linux and provide an example.
- 'awk' is used for text processing. For example:
  ```bash
  awk '{print $1}' filename # Prints the first column of a file
  ```

15. Describe how to set up and configure a firewall in Linux.
- Using 'iptables' to configure a firewall:
  ```bash
  iptables -A INPUT -p tcp --dport 22 -j ACCEPT # Allows SSH connections
  ```

16. Explain the usage of 'cron' in Linux for scheduling tasks.
- 'cron' schedules tasks at specified intervals:
  ```bash
  crontab -e # Edit the cron table
  ```

17. What is RAID in Linux? Describe different levels of RAID.

- RAID (Redundant Array of Independent Disks) provides data redundancy and performance. For example:
  ```bash
  mdadm --create /dev/md0 --level=1 --raid-devices=2 /dev/sda1 /dev/sdb1 # Creates a RAID 1 array
  ```

18. Explain the concept of kernel modules in Linux.
- Kernel modules extend kernel functionality. For example:
  ```bash
  modprobe module_name # Loads a kernel module
  ```

19. How do you troubleshoot network connectivity issues in Linux?
- Using commands like 'ping', 'ifconfig', 'ip', 'traceroute', 'netstat', and checking log files in '/var/log/' for network-related issues.

20. Explain how to set up and configure LVM (Logical Volume Management) in Linux.

- Configuring LVM involves creating physical volumes, volume groups, and logical volumes.

Example:

```bash
pvcreate /dev/sdb1 # Creates a physical volume
vgcreate my_volume_group /dev/sdb1 # Creates a volume group
lvcreate -L 10G -n my_logical_volume my_volume_group # Creates a logical volume
```

These examples aim to provide practical insights into various Linux commands and concepts, illustrating their usage in real-world scenarios. Adjust these examples according to your experience and the specific requirements of the role you're applying for.