LINUX INTERVIEW PREPARATION

✅ MODULE 3: System Access and File System

🔹 Theory & Commands

1. What is PuTTY and why do we use it?
    - Putty is used for accessing remote connection over an linux machine using the ip address , username and password
    - This is used to make connection to the users that are being created in the machine environment
2. How do you connect to a remote Linux server using SSH?
    - First we have to get the machine ip using the command ifconfig and then copy the command
    - If you want to login as the main user take the username and password
    - Now login into the putty machine and then login with the username and password
3. Explain the Linux directory structure. What are `/etc`, `/var`, `/tmp`, and `/home` used for?
    - /etc – the file used to store password and authentication files of the users and group
    - /var – they are used to store the programming files and the programming library files
    - /tmp – they are used to store temporary files such as log files and etc
    - /home – they are the home directory that are used to store the personal files and directories
4. Difference between absolute and relative paths?
    - Absolute paths are using to be started with / and give out the full path
    - Relative paths doesn't start with the / and they go on defining the paths one by one
5. List and explain any five file navigation commands.
    - Cd
    - Mkdir
    - Touch
    - Vi
    - Ls

🔹 Practical Tasks

6. Create a directory `/opt/devops/files` and two files inside it.

    - mkdir /opt/devops/files && touch file{1..2}

7. Use `find` and `locate` to search for `passwd` file.

    - Cd /path/to/directory – find passwd – used to find passwd file in the currect directory [find /etc -name passwd]
    - locate passwd – this is used to find all the passwd file along with the path

8. Change the password for the current user.

    - passwd <username> - if you are in an root user
    - sudo passwd <username> - if you are an main user

9. Use wildcards to list all `.conf` files in `/etc` that start with "a".

    - Ls -ltr /etc/a*.conf

🔷 Real-Time

10. A developer says he can't find his config file but remembers part of its name. How would you help?

    - Get the part of the name he know for example the file starts with abc then use the locate command
    - locate abc*.conf
    - if you know the part of the file and the directory the are in then you use the command find - find/etc -type f -name "abc*.conf"

11. Explain how hard links work. What happens when the original file is deleted?

    - Hard links are the type of links created for the files that have been linked to the inode , so when the original file is deleted the link is not deleted because they are linked to the inode also
    - When the original file is deleted without knowledge then , we can copy from the hardlinks that are present

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☑ MODULE 4: Linux Fundamentals

🔷 Syntax & Permissions

12. How do you change file permissions using `chmod`? Give examples using symbolic and numeric modes.

    - chmod <numeric or symbolic > filename
    - numeric permissions – chmod 755 filename – 7 owner all permissions , groups and other only read and exec permmissions
    - symbolic permissions – chmod u+r filename – giving the users read permmissions

13. What's the difference between `chown` and `chgrp`?

    - Chown is used to change the ownership of the file that are present
        - chown root filename
    - chgrp is used to change the group of the file that are present
        - chgrp root filename
    - to change them both same time – chown user:groups filename

14. What command would you use to view the first 10 lines of a file? Last 10?

    - head -n 10 filename – first 10 lines
    - tail -n 10 filename – last 10 lines

15. How do pipes work in Linux?

    - Pipes are used to combine multiple commands to each other but the first command always gives an output and the second command always depends on the output of the first command

🔷 Text Processing

16. Use grep to find all lines containing "error" in a log file.

    - grep "error" /var/log/checklog.log

17. Use sort, uniq, and wc to count unique words in a file.

    - Sort command is used to sort the files on alphabetical order
    - Uniq is used to remove the duplicate if present
    - Wc is called word count they are used to count number of likes are etc
    - Command is = sort filename | uniq -c | wc - l

18. Compare two files and print differences.

    - Tee cmp file1 file2 > comparefile.txt

19. Compress a directory /opt/logs and extract it.

    - tar -cvf /tmp/logs_backup.tar.gz /opt/log

🔷 Scenario

20. A large .log file contains both normal and error lines. How would you extract only the lines with "ERROR"?

    - grep "error" /var/log/logfile.log

✅ MODULE 5: System Administration

🔷 User Management

21. How do you create a new user and assign it to a group?

    - Useradd newuser1
    - groupadd newgroup
    - usermod -aG newuser newgroup

22. What is the difference between `su`, `sudo`, and `su -`?

    - Su and su – are both the command which are used to switch to root users but su -I is used to preserve the environment of the root
    - Sudo command is used to create an root permissions in the home directory

23. How do you check all users logged into the system?

    - user

◆ Service Management

24. How do you restart the Apache service?

    - systemctl restart httpd

25. What is the difference between `systemctl start` and `enable`?

    - Enable makes the services to become active and be there and start makes the command to work

26. View all running processes for the user `tom`.

    - Login into the user and use the command ps aux

◆ System Health & Info

27. What does `free -h` show?

    - Show how many spaces are free in the disk in an human readable way

28. Use `df -h` to find disk usage. What if a disk is 100% full—how would you clean it?

    - List all the high space files, check and find the unwanted files and clear them , then check for the library cache and clean them and remove them
    - Remove the services which are not in use
    - Clean the package managers
    - Set an limit warning using scripts and mail alerts

29. How do you change the hostname of the machine?

    - hostnamectl set-hostname <new_hostname>

🔷 Practical Scenario

30. A cron job isn't running, but the script works fine manually. How would you troubleshoot?

    - Check the path of the cron file
    - Then check whether the created script file has the permissions to execute if not then change the permission using chmod a+x filename to allow all exec
    - Check of cron is active if not enable them

☑ MODULE 6: Shell Scripting

🔷 Scripting Concepts

31. What is the purpose of `#!/bin/bash`?

    - To let the script know we are using bash script for the commands

32. Write a script to display your current username and date.

    - #!/bin/bash
    - Clear
    - a=$(whoami)
    - b=$(date)
    - echo "the name is $a and the date is $b"

33. Write a script to print numbers 1 to 10 using a `for` loop.

    - #!/bin/bash
    - Clear
    - for i in {1..10}
    - do
    - echo "$i"
    - done

34. What is the difference between `if` and `case` statements?

    - If case command are used to deploy the output once the condition of the if statement is met
    - Case statement contain different choices we can make and we can choose any cases and forward with the process

🔷 Real-Time Scripting Challenges

35. Monitor Apache every 5 minutes and log the status.

- #!/bin/bash
- Clear
- TIMESTAMP=$(date %y-%m-%d %H-%M-%S)
- read -p"$(whoami) what is your username so we can check your system apache logs" USERNAME
- MONITORFILE="/var/log/monitorfile.log"
- echo "[TIMESTAMP] THE RECENT APACHE LOGS ARE RECORDED"
- tail -n 10 /var/log/httpd/access_log >> $MONITORFILE
- echo " [TIMESTAMP] THE LOGS ARE RECORDED"

now give the script exec permissions name of the script monitorscript.sh

chmod a+x monitorscript.sh

now create an cron job for running the script every 5 mins

crontab -e

5 * * * * monitorscript.sh

36. Write a script that zips and archives `/etc` if free space drops below 15%.

- #!/bin/bash
- Clear
- USED=$(df / | grep / | awk '{print $5}' | tr -d "%")
- FREE=$((100-USED))
- TIMESTAMP=$(date %y-%m-%d %H-%M-%S)
- BACKUPFILE="/tmp/etc_backup_$(date).tar.gz"
- LOGFILE="/var/log/etc_monitor.log"
- mkdir -p /var/log
- echo "[TIMESTAMP] Logging the DiskFree Space : $(FREE)" >> $LOGFILE
- if["$FREE" -lt 15]; then
- echo "[TIMESTAMP] the free space iis low archive the file " >> $LOGFILE
- tar -cvf "$BACKUPFILE" /etc 2>> $LOGFILE
- if [$? -eq 0] ; then
- echo "[TIMESTAMP] the backup file exist : $BACKUPFILE" >> $LOGFILE
- else
- echo "[TIMESTAMP] the backup file $BACKUPFILE doesn't exist " >> LOGFILE
- fi
- else
- echo "[TIMESTAMP] free space is there , these is no need to archive " >> $LOGFILE
- fi

now as this script is created it cannot just check automatically so we have to create an cron job

chmod a+x etc_backup.sh

crontab -e

making the cron job run every week on Friday night 10

0 22 * * 5 etc_backup.sh

37. Schedule a script to check for high CPU usage and email an alert.

- #!/bin/bash
- Clear
- THRESHOLD=85
- TIMESTAMP=$(date %y-%m-%d %H-%M-%S)
- CPU_USAGE=$(top -bn1 | grep "CPU(s)" | awk '{print 100 - $8}')
- LOGFILE="/var/log/cpuusage.log"
- TO="admin@example.com"
- SUBJECT="CPU alert at $(HOSTNAME)"
- If (($(echo "$CPU_USAGE > THRESHOLD" | bc -l))); then
- echo "[TIMESTAMP] the cpu usage is at ${CPU_USAGE} % (Threshold: ${THRESHOLD}%)"
- echo -e "High CPU usage alert !\n\nTimestamp: $TIMESTAMP\n CPU_USAGE: $CPU_USAGE%\n\nHostname : $(HOSTNAME)" \ | mail -s "$SUBJECT" "$TO"
- else
- echo "[TIMESTAMP] CPU usage is normal " >> $LOGFILE
- fi

chmod a+x cpuusage.sh

crontab -e

0 22 * * 5 cpuusage..sh

✅ MODULE 7: Networking, Servers, and System Updates

🔷 Network Basics

38. What does ping, ifconfig, and netstat do?

- Ping is used to check for the internet connectivity in the machine

- Ifconfig is the command used to check for the ip address, mac address, interfaces etc
- Netstat is used to display the network gateway, interface , and other network related information

39. Use ethtool to check NIC speed and status.

- Ethtool <interface> and nmcli device status

40. What is the difference between wget and curl?

- Wget is used to download the content from an web link just by putting the link on the command will get you to download it
- Curl command is an advance download process which is used to download files with protocols and they can be used for api transfer

🔷 SSH & Telnet

41. How do you copy a file from one server to another using SCP?

- scp filename user@<IP> /home/user
- then enter username and password

42. What is the purpose of SSH keys? How do you generate and use them?

- Ssh keys are used for an login with an secure way of login
- Ssh key pair are used for private secure login
- Which we can use in the putty to login

🔷 DNS & NTP

43. Difference between nslookup and dig?

- nslookup and dig is used to look for ipaddress of certain ip of the website

44. What is NTP and why is time synchronization important?

- NTP or network timing protocol - which is used to sync time between two servers
- Service that is used for systemctl start ntpq and port is 123

🔷 Apache & Services

45. How do you check if Apache is running?

- systemctl status httpd – check the status of the service

46. Where is the default Apache log file located?

- /var/log/httpd/access_log or error_log

47. How do you change the port Apache listens on?

    - Port number of apache is 80

🔷 Package Management

48. What is the difference between `yum` and `rpm`?

    - Yum and rpm, yum is an linux package manager , rpm is the redhat package manager that is used to download packages on the machine
    - Rpm is used to download package in the machine but the progress is we cannot download the dependencies in the machine we have to manually download every dependency
    - Yum on the we can download the libraries same as the rpm but they automatically download all the dependencies for the libraries

49. How do you list all installed packages?

    - Yum list installed

50. How would you roll back a broken update?

    - List the history of yum and get uid you have
    - Yum history undo <UID>
    - Yum clean all

💼 Real-World Scenarios (Interview Favorites)

51. A user can't log in via SSH. Machine is up. What steps will you take?

    - Check the service is active or not – systemctl status sshd , if inactive enable and start the service
    - grep username /etc/passwd – if there is an nologin stated then we have to change the nologin – usermod -s /bin/bash user
    - manually edit /etc/passwd – vi /etc/passwd

52. `/tmp` is full. How do you identify and remove space hogs?

    - Identity the disk of every file in the directory – du -ah /tmp | sort -rh | top -n 10
    - find /tmp -type f -size +100M -exec ls -lh {} \;
    - find /tmp -type f -mtime +2 -exec ls -lh {} \;

53. Root partition is 100% full. How do you safely clean it?

    - cd ~ go to the root
    - du -ah | sort -rh | top -n 10

- check the files which have the highest space occupation and delete them of you dontt want them or else archive them and store them [tar , gzip]
- check the /var/logs , /tmp , /var/cache
- clean the package manager – yum clean all
- lsof | grep deleted

54. Apache service fails to start. What logs do you check?

- check the /var/log/httpd/error_log.log
- check whether the port of the apache 80 is already occupied
- command to check netstat -tulnp | grep :<PORT>

55. You accidentally removed `/etc/passwd` using `rm`. What now?

- Always have an backup of all the important files – create an hardlink for the file and when the original file is deleted then we can copy from the hardlink

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🧠 Behavioral + HR-Oriented Linux Knowledge

56. What is the difference between Windows and Linux in terms of system admin roles?

- Windows – gui based patterns they allow low level authorisation and they use powershell for scripting and use gui tools for manage, update and users.
- Linux – is more secure and have the process to have an secure design for automation and cloud operations

57. How do you handle a situation where a critical service went down during off-hours?

- First system check status of the service – systemctl status <service_name>
- Check the log file using jounalctl command and check /var/logs
- Second if the the system is safe for restart then I will restart the service
- Then check for the port conflicts using the netstat -tulnp and check the disk usage df -h or check the top usage of resource top free -m
- Then send the reports with the logs and causes and steps taken to the team to let them know