Step 1: Create, Extract, Compress, and Manage tar Backup Archives

1. Command to **extract** the TarDocs.tar archive to the current directory: **tar xf TarDocs.tar**

2. Command to **create** the Javaless_Doc.tar archive from the TarDocs/ directory, while excluding the TarDocs/Documents/Java directory:**sudo tar -cvf javaless_doc1.tar --exclude="~/Projects/TarDocs/Documents/java" TarDocs.tar**

3. Command to ensure Java/ is not in the new Javaless_Docs.tar archive: **tar tf javaless_doc1.tar | grep java**

Bonus

- Command to create an incremental archive called logs_backup_tar.gz with only changed files to snapshot.file for the /var/log directory:

Critical Analysis Question

- Why wouldn't you use the options -x and -c at the same time with tar? You wouldn't use both options because both options are main operations.

Step 2: Create, Manage, and Automate Cron Jobs

1. Cron job for backing up the /var/log/auth.log file:**0 18 * * wed sudo tar cvf /auth_backup.tgz /var/log/auth.log && gzip auth_backup.tgz**

Step 3: Write Basic Bash Scripts

1. Brace expansion command to create the four subdirectories: **mkdir ~/backups/{freemem,diskuse,openlist,freedisk}**

Paste your system.sh script edits below:

#!/bin/bash

#checks available memory and sends output to freemem dir

free -h > ~/backups/freemem/free_mem.txt

#checks disk usage and sends output to diskuse dir

df -h > ~/backups/diskuse/disk_usage.txt

#list all open files and sends output to openlist dir

lsof > ~/backups/openlist/open_list.txt

#checks all free disk storage and sends output tp freedisk dir

df -h > ~/backups/freedisk/free_disk.txt

2. Command to make the system.sh script executable: **chmod +x system.sh**

Optional

- Commands to test the script and confirm its execution: **sudo ./system.sh && cat ~/backup/freedisk/free_disk.txt**

```
cat ~/backup/freemem/free_mem.txt
cat ~/backups/diskuse/disk_usage.txt
cat ~/backups/openlist/open_list.txt
cat ~/backups/freedisk/free_disk.txt
```

Bonus

- Command to copy system to system-wide cron directory: **0 12 * * 6 ~/system.sh**

```
sudo cp system.sh /etc/cron.weekly
```

Step 4. Manage Log File Sizes

1. Run sudo nano /etc/logrotate.conf to edit the logrotate configuration file.

   Configure a log rotation scheme that backs up authentication messages to the /var/log/auth.log.

   - Add your config file edits below:

/var/log/auth.log {

Missingok

```
weekly
    rotate 7
    notifempty
    delaycompress
}
```
