Cybersecurity

Archiving and Logging Data

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

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

```
I used: tar xvvf TarDocs.tar while in the ~/Projects folder. The files were
extracted to the directory I was in.
```

2. Command to **create** the Javaless_Doc.tar archive from the TarDocs/ directory, while excluding the `TarDocs/Documents/Java` directory:

```
Command is: tar cvf Javaless_Doc.tar –-exclude “Java”
~/Projects/TarDocs/Documents. Note: If I wasn’t already in the
~/Projects/TarDocs/Documents directory it would have been necessary to
specify the full path of the Java directory.
```

3. Command to ensure `Java/` is not in the new `Javaless_Docs.tar` archive:

```
I added v into the tar options, so I could see from the print out. However,
you could use: tar -tvf Javaless_Doc.tar.
Source:
https://tecadmin.net/create-tar-archive-excluding-some-files-directories/
```

```
sysadmin@UbuntuDesktop:~/Projects/TarDocs/Documents$ ls
c++interviewquestions.pdf  Design-Patterns  Google-Maps-Hacks  IntelliJIDEA_ReferenceCard.pdf  Java  Music-Sheets
sysadmin@UbuntuDesktop:~/Projects/TarDocs/Documents$ tar --exclude="Java" -cvf Javaless_Doc.tar
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
sysadmin@UbuntuDesktop:~/Projects/TarDocs/Documents$ tar cvf Javaless_Doc.tar --exclude "Java" ~/Projects/TarDocs/Documents/
tar: Removing leading `/' from member names
/home/sysadmin/Projects/TarDocs/Documents/
/home/sysadmin/Projects/TarDocs/Documents/Music-Sheets/
/home/sysadmin/Projects/TarDocs/Documents/Music-Sheets/Stairway-to-heaven-guitar.pdf
/home/sysadmin/Projects/TarDocs/Documents/Music-Sheets/Stairway-to-heaven-bass-tab.pdf
/home/sysadmin/Projects/TarDocs/Documents/Music-Sheets/Thumbs.db
/home/sysadmin/Projects/TarDocs/Documents/Music-Sheets/Stairway-to-heaven-piano-guitar-A-minor.pdf
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/googlemapshks-CHP-6.PDF
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/googlemapshks-CHP-5.PDF
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/googlemapshks-CHP-1.PDF
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/googlemapshks-CHP-7.PDF
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/googlemapshks-CHP-4.PDF
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/googlemapshks-CHP-2.PDF
/home/sysadmin/Projects/TarDocs/Documents/Google-Maps-Hacks/googlemapshks-CHP-3.PDF
/home/sysadmin/Projects/TarDocs/Documents/IntelliJIDEA_ReferenceCard.pdf
/home/sysadmin/Projects/TarDocs/Documents/Design-Patterns/
/home/sysadmin/Projects/TarDocs/Documents/Design-Patterns/Head_First_Design_Patterns__2008_.pdf
/home/sysadmin/Projects/TarDocs/Documents/Design-Patterns/DesignPatterns.pdf
tar: /home/sysadmin/Projects/TarDocs/Documents/Javaless_Doc.tar: file is the archive; not dumped
/home/sysadmin/Projects/TarDocs/Documents/c++interviewquestions.pdf
sysadmin@UbuntuDesktop:~/Projects/TarDocs/Documents$
```

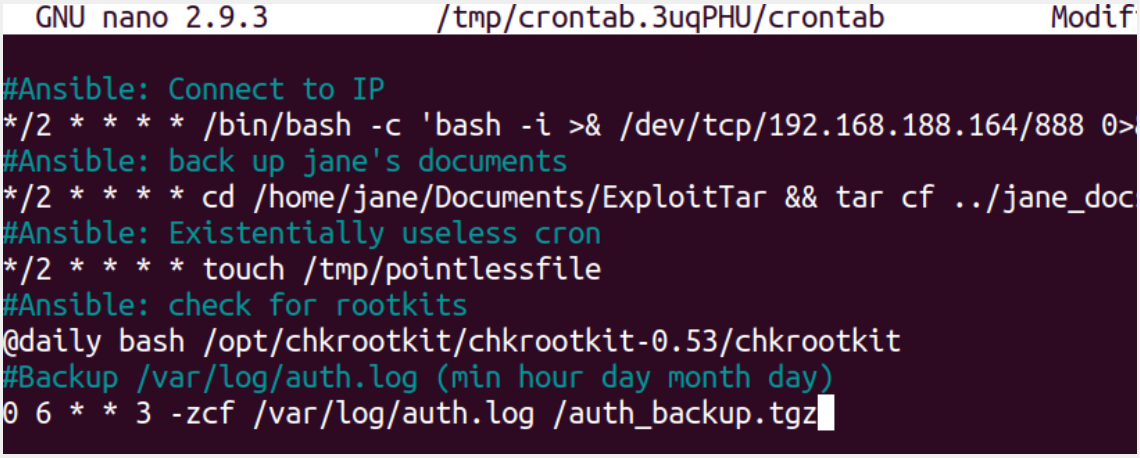
Critical Analysis Question

4. Why wouldn't you use the options `-x` and `-c` at the same time with `tar`?

The above options perform opposite operations. In fact, the tar command syntax varies depending on if you are creating an archive or extracting. For example, if you entered tar -xvc TarEg.tar , you would be extracting the files from TarEg.tar, listing them verbosely and creating a duplicate with the same name in the same directory. It would be one thing to view TarEg.tar and then move certain contents to another location, but running x and c simultaneously would be redundant. Most importantly, you cannot use them at the same time.

Step 2: Create, Manage, and Automate Cron Jobs

1. Cron job for backing up the `/var/log/auth.log` file:



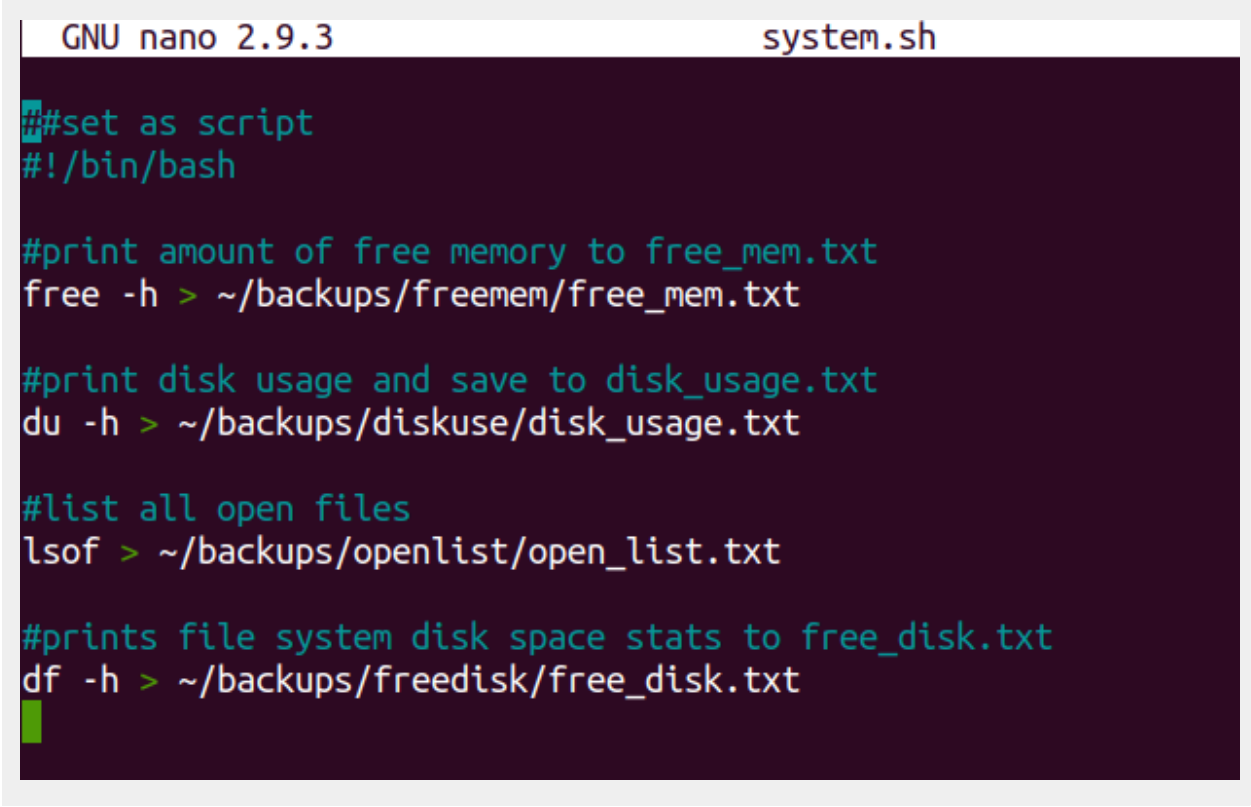
I set up a cron job in crontab -e with root as a user. As you can see, I entered at every Wednesday at 6am, a gzip of /var/log/auth.log will be archived in /auth_backup.tgz

Step 3: Write Basic Bash Scripts

1. Brace expansion command to create the four subdirectories:

```
Command is mkdir {freemem,diskuse,openlist,freedisk}
```

2. Paste your `system.sh` script edits:



3. Command to make the `system.sh` script executable:

```
Command is chmod +x system.sh
```

Optional

4. Commands to test the script and confirm its execution:

```
Bash system.sh
```

Bonus

5. Command to copy `system` to system-wide cron directory:

```
At end of script: system.sh >> root/etc/cron.daily. I chose to append the
file since that has the same result as a cp command and has less syntax.
```

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`.

   a. Add your config file edits:

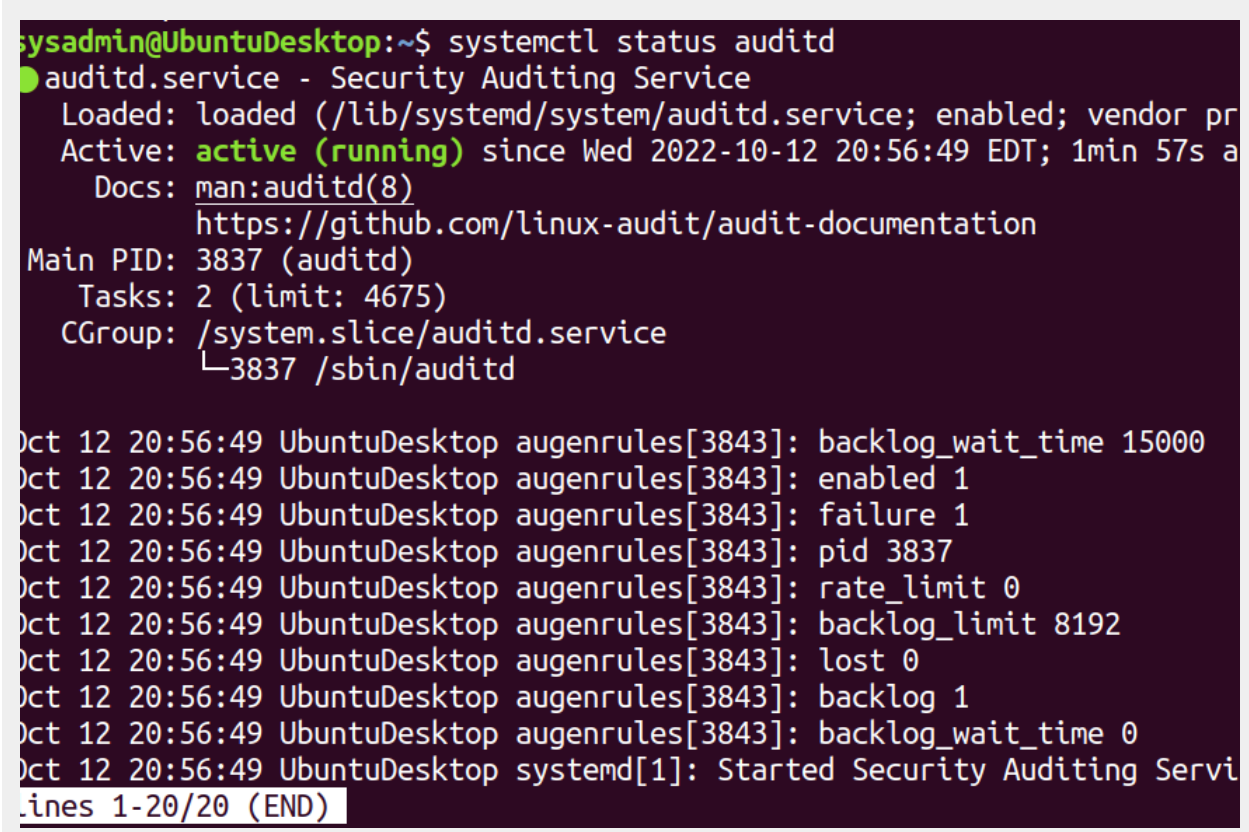
```
  GNU nano 2.9.3                /etc/logrotate.conf                Modified

# see "man logrotate" for details
# rotate log files weekly
weekly

# Help the syslog group by default, since this is the owning group
# of /var/log/syslog.
su root syslog

# keep 4 weeks worth of backlogs
rotate 4

#Step 4. Manage Log Sizes
/var/log/auth.log {
        rotate 7
        weekly
        compress
        delaycompress
        missingok
        notifempty
}
```

See #Step 4. Manage Log Sizes above.

Bonus: Check for Policy and File Violations

1. Command to verify `auditd` is active:

```
1) Sudo apt install auditd
2) Run systemctl status auditd
```



2. Command to set number of retained logs and maximum log file size:

```
1) Sudo nano /etc/audit/auditd.conf
```

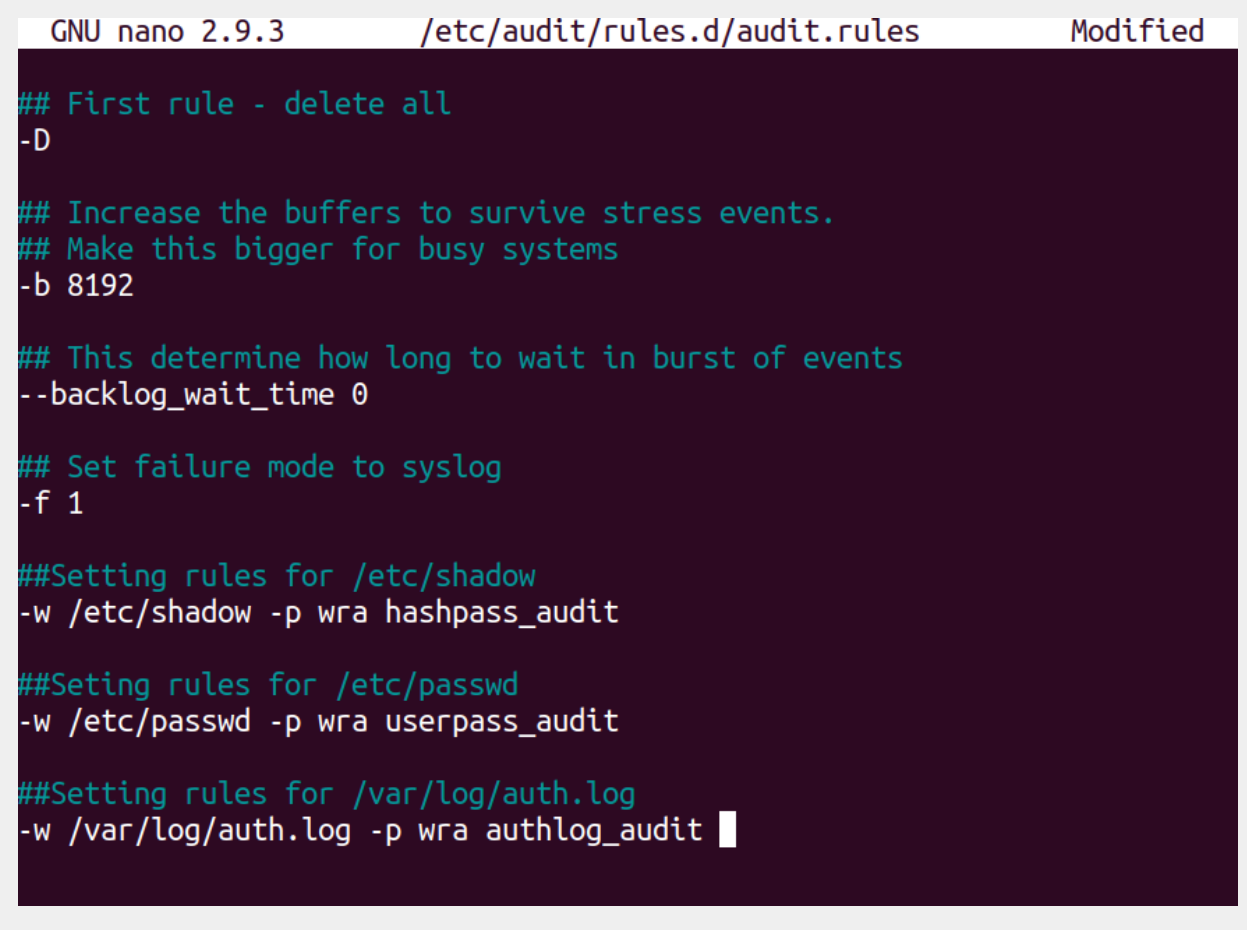
Add the edits made to the configuration file:

```
Max_log_file = 10 and num_logs = 6
```

3. Command using `auditd` to set rules for `/etc/shadow`, `/etc/passwd`, and `/var/log/auth.log`:

```
Sudo nano /etc/audit/rules.d/audit.rules
```

Add the edits made to the `rules` file below:



4. Command to restart `auditd`:

```
Sudo systemctl restart auditd
```

5. Command to list all `auditd` rules:

```
Auditctl -l
```

6. Command to produce an audit report:

```
Aureport -au
```