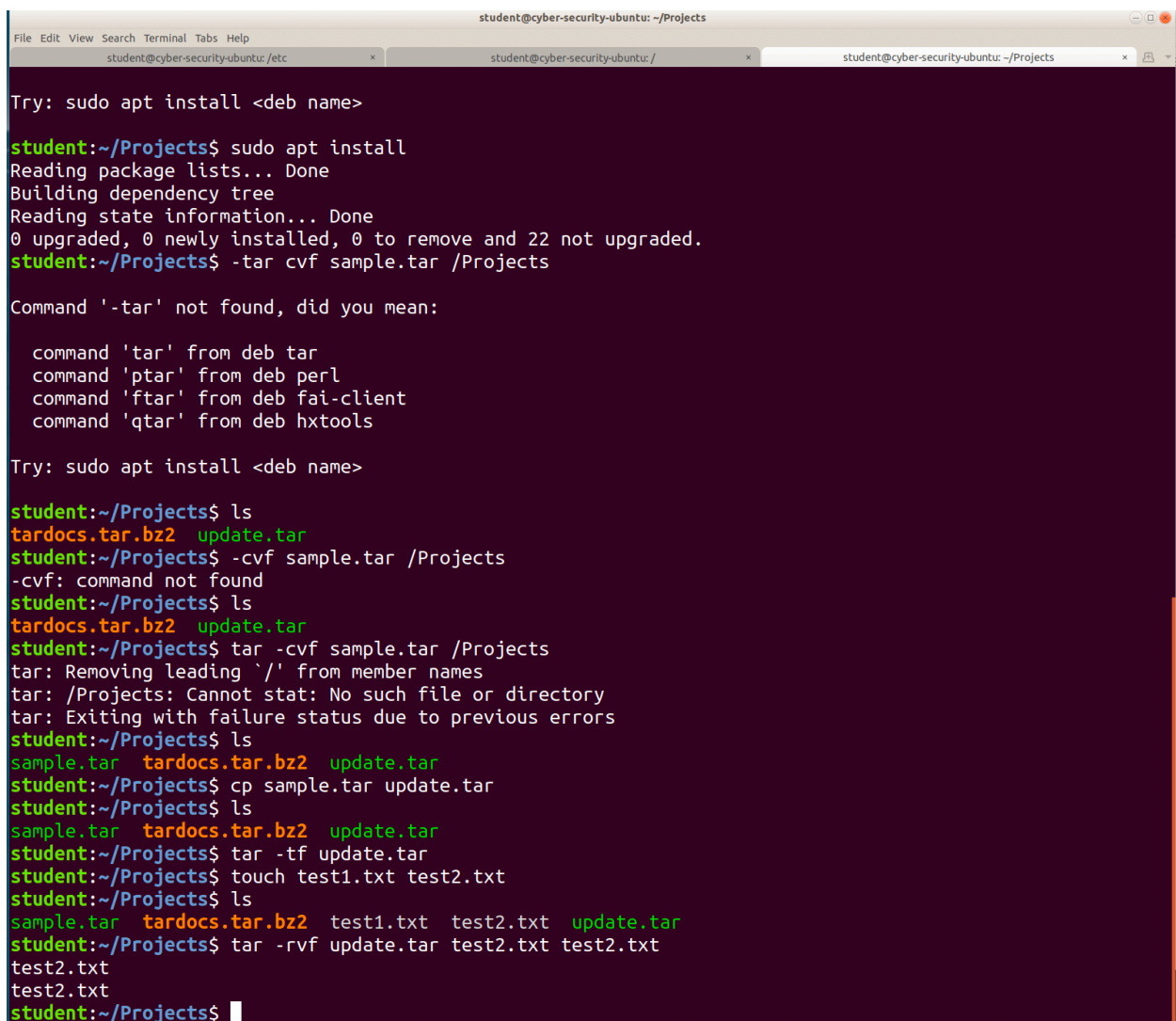


Linux SysAdmin 3 – Homework Assignment 10

- Incremental backups with tar
- Extracting individual files with tar's `--strip-components` flag
- Managing and backing up cron files

Exercise 1- Modifying Archives

- Add files with `-r: tar rvf <existing archive> <new filename>`
- Update files with `-u: tar uvf <existing archive> <updated file>`
- Update files with `-d` or `--delete: tar -f <existing archive> --delete <file to delete>`

A terminal window titled 'student@cyber-security-ubuntu: ~/Projects' with three tabs. The first tab shows the command 'Try: sudo apt install <deb name>'. The second tab shows the command 'student:~/Projects\$ sudo apt install', followed by output: 'Reading package lists... Done', 'Building dependency tree', 'Reading state information... Done', '0 upgraded, 0 newly installed, 0 to remove and 22 not upgraded.', and 'student:~/Projects\$ -tar cvf sample.tar /Projects'. The third tab shows the error 'Command '-tar' not found, did you mean:' followed by a list of commands: 'command 'tar' from deb tar', 'command 'ptar' from deb perl', 'command 'ftar' from deb fai-client', and 'command 'qtar' from deb hxttools'. The terminal then shows 'Try: sudo apt install <deb name>'. The first tab shows 'student:~/Projects\$ ls' with output 'tardocs.tar.bz2 update.tar'. The second tab shows 'student:~/Projects\$ -cvf sample.tar /Projects' with output '-cvf: command not found'. The third tab shows 'student:~/Projects\$ ls' with output 'tardocs.tar.bz2 update.tar'. The first tab shows 'student:~/Projects\$ tar -cvf sample.tar /Projects' with output 'tar: Removing leading '/' from member names', 'tar: /Projects: Cannot stat: No such file or directory', and 'tar: Exiting with failure status due to previous errors'. The second tab shows 'student:~/Projects\$ ls' with output 'sample.tar tardocs.tar.bz2 update.tar'. The third tab shows 'student:~/Projects\$ cp sample.tar update.tar'. The first tab shows 'student:~/Projects\$ ls' with output 'sample.tar tardocs.tar.bz2 update.tar'. The second tab shows 'student:~/Projects\$ tar -tf update.tar'. The third tab shows 'student:~/Projects\$ touch test1.txt test2.txt'. The first tab shows 'student:~/Projects\$ ls' with output 'sample.tar tardocs.tar.bz2 test1.txt test2.txt update.tar'. The second tab shows 'student:~/Projects\$ tar -rvf update.tar test2.txt test2.txt'. The third tab shows 'test2.txt' and 'test2.txt'.

```

student:~/Projects$ tar -f update.tar --delete test1.txt
student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ cat update.tar
test2.txt000064400017570001757000000000013610146447012630 0ustar  studentstudenttest2.txt000064400017570
0017570000000000013610146447014431 1test2.txtustar  studentstudenttest2.txt00006440001757000175700000000
0013610146554012627 0ustar  studentstudentstudent:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -tf update.tar
test2.txt
test2.txt
test2.txt
student:~/Projects$ tar -f update.tar --delete test2.txt
student:~/Projects$ tar -tf update.tar
student:~/Projects$ tar -tf update.tar
student:~/Projects$ tar -f update.tar --delete test2.txt
tar: test2.txt: Not found in archive
tar: Exiting with failure status due to previous errors
student:~/Projects$ tar -f update.tar --delete test2.txt
tar: test2.txt: Not found in archive
tar: Exiting with failure status due to previous errors
student:~/Projects$ tar -tf update.tar
student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -tf update.tar
student:~/Projects$ cat update.tar
student:~/Projects$ sudo tar -tf update.tar
student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -uvf update.tar test1.txt
test1.txt
student:~/Projects$ tar -tf update.tar
test1.txt
student:~/Projects$ tar -f update.tar --delete test1.txt
student:~/Projects$ tar -tf update.tar
student:~/Projects$

```

Exercise 2 – Update timestamp of test.2txt

```

student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -rvf update.tar test2.txt test2.txt
test2.txt
test2.txt
student:~/Projects$ touch test2.txt
student:~/Projects$ tar -uvf update.tar test2.txt
test2.txt
student:~/Projects$

```

Exercise 3

```

student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -uvf update.tar test1.txt
test1.txt
student:~/Projects$ tar -tf update.tar
test1.txt
student:~/Projects$ tar -f update.tar --delete test1.txt
student:~/Projects$ tar -tf update.tar
student:~/Projects$

```

```
student:~/Projects$ tar -f update.tar --delete test1.txt
student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ cat update.tar
test2.txt000064400017570001757000000000013610146447012630 0ustar  studentstudenttest2.txt000064400017570
0017570000000000013610146447014431 1test2.txtustar  studentstudenttest2.txt000064400017570001757000000000
0013610146554012627 0ustar  studentstudentstudent:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -tf update.tar
test2.txt
test2.txt
test2.txt
student:~/Projects$ tar -f update.tar --delete test2.txt
student:~/Projects$ tar -tf update.tar
student:~/Projects$ tar -tf update.tar
student:~/Projects$ tar -f update.tar --delete test2.txt
tar: test2.txt: Not found in archive
tar: Exiting with failure status due to previous errors
student:~/Projects$ tar -f update.tar --delete test2.txt
tar: test2.txt: Not found in archive
tar: Exiting with failure status due to previous errors
student:~/Projects$ tar -tf update.tar
student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -tf update.tar
student:~/Projects$ cat update.tar
student:~/Projects$ sudo tar -tf update.tar
student:~/Projects$ ls
sample.tar  tardocs.tar.bz2  test1.txt  test2.txt  update.tar
student:~/Projects$ tar -uvf update.tar test1.txt
test1.txt
student:~/Projects$ tar -tf update.tar
test1.txt
student:~/Projects$ tar -f update.tar --delete test1.txt
student:~/Projects$ tar -tf update.tar
student:~/Projects$
```

Incremental Backups

Exercise 1

Snapshot file – is a list of all files that have changed since the last incremental backup

Backup level – the “count” of how many incremental backups you’ve taken since your starting point

Level 0 backup – is your first full backup; this is the “base” for all of your preceding incremental backups

Exercise 2 – Creating a Level 0 Backup

```
student:/home$ sudo touch test1.txt test2.txt
student:/home$ ls
Andy   asgard      bobby  instructor Louise   new_girl poseidon Teddy   Tina
apollo athena      Gene   Jimmy   new_file.1 new_user professor test1.txt zeus
ares   backup.tar.gz hera    loki    new_file.2 Ollie   student  test2.txt
student:/home$ cp /var/log/home.snar /var/log.snar-1
cp: cannot stat '/var/log/home.snar': No such file or directory
student:/home$ tar --create --listed-incremental=/var/log/home.snar.gz
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
student:/home$ ls
Andy   asgard      bobby  instructor Louise   new_girl poseidon Teddy   Tina
apollo athena      Gene   Jimmy   new_file.1 new_user professor test1.txt zeus
ares   backup.tar.gz hera    loki    new_file.2 Ollie   student  test2.txt
student:/home$ cat backup.tar.gz
00m7000000 '(student:/home$ pwd
/home
student:/home$ ls
Andy   asgard      bobby  instructor Louise   new_girl poseidon Teddy   Tina
apollo athena      Gene   Jimmy   new_file.1 new_user professor test1.txt zeus
ares   backup.tar.gz hera    loki    new_file.2 Ollie   student  test2.txt
student:/home$
```

```

student:/home$ tar --create | --file=backup.1.tar | --listed-incremental=/var/log/home.snar | /home
bash: /home: Is a directory
tar: bash: --listed-incremental=/var/log/home.snar: No such file or directory
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
--file=backup.1.tar: command not found
student:/home$ sudo tar --create | --file=backup.1.tar | --listed-incremental=/var/log/home.snar | /home
bash: /home: Is a directory
bash: --listed-incremental=/var/log/home.snar: No such file or directory
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
--file=backup.1.tar: command not found
student:/home$ cd ~
student:~$ sudo tar --create | --file=backup.1.tar | --listed-incremental=/var/log/home.snar | /home
bash: /home: Is a directory
bash: --listed-incremental=/var/log/home.snar: No such file or directory
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
--file=backup.1.tar: command not found
student:~$ sudo tar --create --file=backup.1.tar --listed-incremental=/var/log/home.snar /home
tar: Removing leading '/' from member names
^C
student:~$ sudo tar --create --file=backup.1.tar --listed-incremental=/var/log/home.snar /home
tar: Removing leading '/' from member names
^C
student:~$ sudo tar --create --file=backup.1.tar --listed-incremental=/var/log/home.snar/home
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
student:~$ sudo tar --create --file=backup.1.tar --listed-incremental=/var/log/home.snar
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
student:~$ sudo tar --create --file=backup.1.tar --listed-incremental=/var/log/home.snar.gz
tar: Cowardly refusing to create an empty archive
Try 'tar --help' or 'tar --usage' for more information.
student:~$ █

```

```

student:/home$ cd ..
student:/$ cd /var/backups
student:/var/backups$ ls
alternatives.tar.0      apt.extended_states.3.gz  dpkg.arch.6.gz           dpkg.statoverride.2.gz  dpkg.status.5.gz
alternatives.tar.1.gz   apt.extended_states.4.gz  dpkg.diversions.0        dpkg.statoverride.3.gz  dpkg.status.6.gz
alternatives.tar.2.gz   apt.extended_states.5.gz  dpkg.diversions.1.gz     dpkg.statoverride.4.gz  group.bak
alternatives.tar.3.gz   apt.extended_states.6.gz  dpkg.diversions.2.gz     dpkg.statoverride.5.gz  gshadow.bak
alternatives.tar.4.gz   dpkg.arch.0              dpkg.diversions.3.gz     dpkg.statoverride.6.gz  passwd.bak
alternatives.tar.5.gz   dpkg.arch.1.gz           dpkg.diversions.4.gz     dpkg.status.0           sendmail.cf.bak
alternatives.tar.6.gz   dpkg.arch.2.gz           dpkg.diversions.5.gz     dpkg.status.1.gz       sendmail.mc.bak
apt.extended_states.0    dpkg.arch.3.gz           dpkg.diversions.6.gz     dpkg.status.2.gz       shadow.bak
apt.extended_states.1.gz dpkg.arch.4.gz           dpkg.statoverride.0       dpkg.status.3.gz       submit.cf.bak
apt.extended_states.2.gz dpkg.arch.5.gz           dpkg.statoverride.1.gz   dpkg.status.4.gz       submit.mc.bak
student:/var/backups$ cd ~
student:~$ cd /home
student:/home$ ls
Andy  asgard      bobby  instructor  Louise  new_girl  poseidon  Teddy  Tina
apollo athena      Gene   Jimmy      new_file.1  new_user  professor  test1.txt  zeus
ares  backup.tar.gz  hera   loki       new_file.2  ollie     student   test2.txt
student:/home$

```

Crontab Exercise

```
student:~$ crontab -l > backup-cron-jobs.txt
student:~$ crontab -i
crontab: usage error: file name must be specified for replace
usage: crontab [-u user] file
       crontab [ -u user ] [ -i ] { -e | -l | -r }
           (default operation is replace, per 1003.2)
       -e      (edit user's crontab)
       -l      (list user's crontab)
       -r      (delete user's crontab)
       -i      (prompt before deleting user's crontab)
student:~$ crontab backup-cron-jobs.txt
student:~$ crontab -l
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
40 15 * 12 5 tar -zcf /var/backups/home/passwd.bak /home/
* * * * * echo "this was today"
student:~$
```