Linux Lab 3

1. **Create a user account with the following attribute.**

```
nada@nada-VirtualBox:~$ sudo useradd nadaaa -c "Nada Ashraf" -m -p islam
[sudo] password for nada:
nada@nada-VirtualBox:~$
```

2. **Create a user account with the following attribute.**

   Command: `useradd baduser -c "Bad User" -m -p baduser`

3. **Create a supplementary (Secondary) group called pgroup with group ID of 30000.**

   You can determine the GID by youself.

```
nada@nada-VirtualBox:~$ sudo groupadd -g 30000 pgroup
nada@nada-VirtualBox:~$
```

4. **Create a supplementary group called badgroup.**

   Command: `sudo groupadd badgroup`

   After point 3&4, command `cat /etc/group` shows the groups added:

```
vboxsf:x:999:
rdma:x:137:
tftp:x:138:
nadaaa:x:1001:
baduser:x:1002:
pgroup:x:30000:
badgroup:x:30001:
nada@nada-VirtualBox:~$
```

5. **Add islam user to the pgroup group as a supplementary group.**

```
nada@nada-VirtualBox:~$ sudo usermod -aG pgroup nadaaa
nada@nada-VirtualBox:~$
```

6. **Modify the password of islam's account to password.**

```
nada@nada-VirtualBox:~$ sudo su nadaaa
$ passwd
Changing password for nadaaa.
Current password:
Current Password:
passwd: Authentication token manipulation error
passwd: password unchanged
$ exit
nada@nada-VirtualBox:~$ sudo passwd nadaaa
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a diction
ary word
Retype new password:
passwd: password updated successfully
nada@nada-VirtualBox:~$
```

Note: `sudo passwd` modifies the password of the root user, not the nadaaa user. To change the password for nadaaa, `sudo passwd nadaaa.`

7. **Modify islam's account so the password expires after 30 days.**

```
nada@nada-VirtualBox:~$ sudo chage -M 30 nadaaa
nada@nada-VirtualBox:~$
```

8. **Lock bad user account so he can't log in.**

```
nada@nada-VirtualBox:~$ sudo usermod -L baduser
nada@nada-VirtualBox:~$ sudo passwd -S baduser
baduser L 04/07/2025 0 99999 7 -1
nada@nada-VirtualBox:~$ sudo grep '^baduser:' /etc/shadow
baduser:!baduser:20185:0:99999:7:::
nada@nada-VirtualBox:~$
```

Note: To check that the account baduser is locked:

1. `sudo passwd -S baduser`

(The L in output means the account is locked.)

2. OR: `sudo grep '^baduser:' /etc/shadow`

(If the password field starts with ! or *, the account is locked.)

** To unlock: `sudo usermod -U baduser`

9. **Delete bad user account.**

```
nada@nada-VirtualBox:~$ sudo userdel baduser
nada@nada-VirtualBox:~$ grep '^baduser:' /etc/passwd
nada@nada-VirtualBox:~$ id baduser
id: ‘baduser’: no such user
nada@nada-VirtualBox:~$
```

To confirm that a user is deleted successfully:

`grep '^baduser:' /etc/passwd` OR `id baduser`

10. **Delete the supplementary group called badgroup.**

```
nada@nada-VirtualBox:~$ sudo groupdel badgroup
nada@nada-VirtualBox:~$ tail -n 2 /etc/group
nadaaa:x:1001:
pgroup:x:30000:nadaaa
nada@nada-VirtualBox:~$
```

Checked the group file, the badgroup is deleted.

11. **Create a folder called myteam in your home directory and change its permissions to read only for the owner.**

```
nada@nada-VirtualBox: ~
nada@nada-VirtualBox:~$ mkdir myteam
nada@nada-VirtualBox:~$ sudo chmod 400 ~/myteam
[sudo] password for nada:
nada@nada-VirtualBox:~$ sudo ls -ld ~/myteam
dr-------- 2 nada nada 4096 23:27 7  ابر /home/nada/myteam
nada@nada-VirtualBox:~$
```

12. **Log out and log in by another user.**

```
nada@nada-VirtualBox:~$ sudo su - nadaaa
$
```

13. **Try to access (by cd command) the folder (myteam).**

To enable nadaaa to access myteam directory located in nada's home directory:

- Adjusted Permissions on nada's Home Directory (/home/nada) where we gave the Execute permission for others to access this directory.
- Modified Permissions on myteam Directory by granting Read and Execute permissions to others.

```
nada@nada-VirtualBox:~$ sudo ls -ld ~/myteam
dr-------- 2 nada nada 4096 23:27 7  ابر /home/nada/myteam
nada@nada-VirtualBox:~$ ls -ld / /home /home/nada
drwxr-xr-x 20 root root 4096 2023  4  مل /
drwxr-xr-x  5 root root 4096 15:02 7  ابر /home
drwxr-x--- 25 nada nada 4096 23:27 7  ابر /home/nada
nada@nada-VirtualBox:~$ chmod o+x /home/nada
nada@nada-VirtualBox:~$ ls -ld / /home /home/nada
drwxr-xr-x 20 root root 4096 2023  4  مل /
drwxr-xr-x  5 root root 4096 15:02 7  ابر /home
drwxr-x--x 25 nada nada 4096 23:27 7  ابر /home/nada
nada@nada-VirtualBox:~$ ls -ld /home/nada/myteam
dr-------- 2 nada nada 4096 23:27 7  ابر /home/nada/myteam
nada@nada-VirtualBox:~$ chmod o+rx /home/nada/myteam
nada@nada-VirtualBox:~$ ls -ld /home/nada/myteam
dr-----r-x 2 nada nada 4096 23:27 7  ابر /home/nada/myteam
nada@nada-VirtualBox:~$ sudo su - nadaaa
$ cd /home/nada/myteam
$
```

14. Using the command Line

- **Change the permissions of oldpasswd file to give owner read and write permissions and for group write and execute and execute only for the others (using chmod in 2 different ways)**
- **Change your default permissions to be as above.**
- **What is the maximum permission a file can have, by default when it is just created? And what is that for directory.**
- **Change your default permissions to be no permission to everyone then create a directory and a file to verify.**

(LATER)

15. Starting from your home directory, find all files that were modified in the last two day.

```
nada@nada-VirtualBox:~$ find ~ -type f -mtime -2
/home/nada/file_list3.txt
/home/nada/.bashrc
/home/nada/file_list.txt
/home/nada/oldpasswd
/home/nada/file_list2.txt
/home/nada/log.txt
/home/nada/.config/dconf/user
/home/nada/.config/gedit/accels
/home/nada/.config/gtk-3.0/bookmarks
/home/nada/docs/mycv
/home/nada/data2.csv
/home/nada/.local/share/nautilus/tags/meta.db-shm
/home/nada/.local/share/nautilus/tags/.meta.isrunning
/home/nada/.local/share/nautilus/tags/meta.db-wal
/home/nada/.local/share/recently-used.xbel
/home/nada/.local/share/Trash/info/myteam.trashinfo
/home/nada/.local/share/gvfs-metadata/home
/home/nada/.local/share/gvfs-metadata/root-6d928c09.log
/home/nada/.local/share/gvfs-metadata/home-efdda59f.log
/home/nada/.local/share/gvfs-metadata/root
/home/nada/.local/share/gnome-shell/application_state
/home/nada/.local/share/gnome-shell/notifications
/home/nada/data.csv
/home/nada/file_list4.txt
/home/nada/snap/snapd-desktop-integration/253/.last_revision
/home/nada/snap/snapd-desktop-integration/253/.config/user-dirs.dirs.md5sum
/home/nada/snap/snapd-desktop-integration/253/.config/user-dirs.dirs
```

16. **Starting from /etc, find files owned by root user.**

```
nada@nada-VirtualBox:~$ find /etc -type f -user root
/etc/gshadow
/etc/host.conf
/etc/emacs/site-start.d/50autoconf.el
/etc/emacs/site-start.d/50dictionaries-common.el
/etc/locale.alias
/etc/udev/udev.conf
/etc/udev/rules.d/70-snap.snap-store.rules
/etc/udev/rules.d/70-snap.snapd-desktop-integration.rules
/etc/udev/rules.d/70-snap.firefox.rules
/etc/udev/rules.d/60-vboxadd.rules
/etc/udev/rules.d/70-snap.snapd.rules
/etc/mailcap.order
/etc/shadow-
/etc/apparmor/parser.conf
/etc/systemd/system.conf
/etc/systemd/oomd.conf
/etc/systemd/pstore.conf
/etc/systemd/user/snap.snapd-desktop-integration.snapd-desktop-integration.service
/etc/systemd/timesyncd.conf
/etc/systemd/system/var-snap-firefox-common-host\x2dhunspell.mount
/etc/systemd/system/snap-snapd-18357.mount
/etc/systemd/system/snap-gnome\x2d42\x2d2204-102.mount
/etc/systemd/system/snap-snapd\x2ddesktop\x2dintegration-253.mount
/etc/systemd/system/snap-firefox-2356.mount
/etc/systemd/system/snap-gtk\x2dcommon\x2dthemes-1535.mount
/etc/systemd/system/snap-firefox-2667.mount
/etc/systemd/system/snap-snap\x2dstore-959.mount
```

17. **Find all directories in your home directory.**

```
nada@nada-VirtualBox:~$ find ~ -type d
```

18. Write a command to search for all files on the system that, its name is ".profile".

```
nada@nada-VirtualBox:~$ sudo su
root@nada-VirtualBox:/home/nada# find / -type f -name ".profile"
/home/baduser/.profile
/home/nadaaa/.profile
/home/nada/.profile
find: ‘/run/user/1000/doc’: Permission denied
find: ‘/run/user/1000/gvfs’: Permission denied
/etc/skel/.profile
/snap/core20/1852/etc/skel/.profile
/snap/core20/1852/root/.profile
/snap/core20/1879/etc/skel/.profile
/snap/core20/1879/root/.profile
/snap/core22/634/etc/skel/.profile
/snap/core22/634/root/.profile
/root/.profile
root@nada-VirtualBox:/home/nada# exit
exit
nada@nada-VirtualBox:~$ sudo find / -type f -name ".profile"
/home/baduser/.profile
/home/nadaaa/.profile
/home/nada/.profile
find: ‘/run/user/1000/doc’: Permission denied
find: ‘/run/user/1000/gvfs’: Permission denied
/etc/skel/.profile
/snap/core20/1852/etc/skel/.profile
/snap/core20/1852/root/.profile
/snap/core20/1879/etc/skel/.profile
/snap/core20/1879/root/.profile
/snap/core22/634/etc/skel/.profile
/snap/core22/634/root/.profile
/root/.profile
nada@nada-VirtualBox:~$
```

Note: `sudo su` allows a permitted user to switch to the superuser (root) account.

About the Prompt Shell:

- **User prompt ($)**: This prompt indicates you're logged in as a regular user.
- **Root prompt (#)**: This prompt indicates you're logged in as the root user or using superuser privileges.

19. **Identify the file types of the following: /etc/passwd, /dev/pts/0, /etc, /dev/sda.**

```
nada@nada-VirtualBox:~$ file /etc/passwd
/etc/passwd: ASCII text
nada@nada-VirtualBox:~$ file /dev/pts/0
/dev/pts/0: character special (136/0)
nada@nada-VirtualBox:~$ file /etc
/etc: directory
nada@nada-VirtualBox:~$ file /dev/sda
/dev/sda: block special (8/0)
nada@nada-VirtualBox:~$
```

20. **List the inode numbers of /, /etc, /etc/hosts.**

```
nada@nada-VirtualBox:~$ ls -id /
2 /
nada@nada-VirtualBox:~$ ls -id /etc
1179649 /etc
nada@nada-VirtualBox:~$ ls -id /etc/hosts
1179813 /etc/hosts
nada@nada-VirtualBox:~$
```

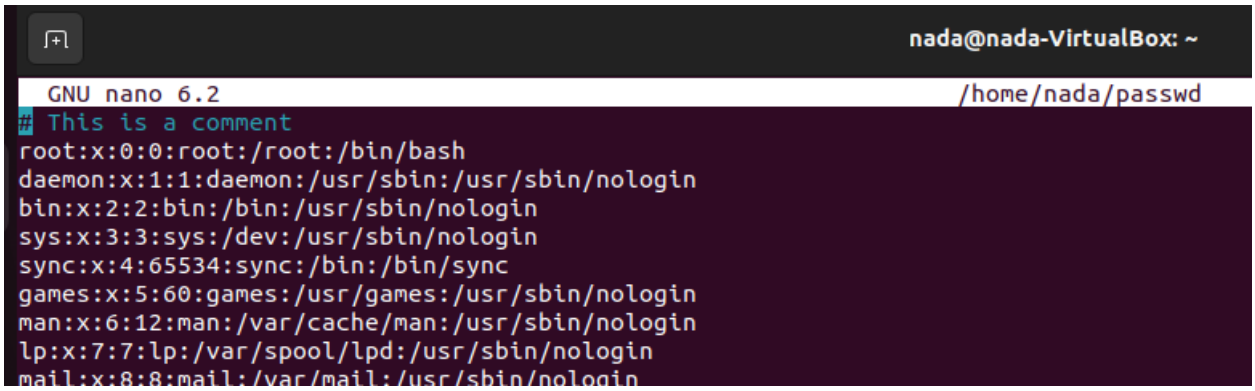
21. **Copy /etc/passwd to your home directory, use the commands diff and cmp, and Edit in the file you copied, and then use these commands again, and check the output.**

>>> `diff`: This command shows the differences between two files.
If there are no differences, the command will not produce any output.
If there are differences, it will display the lines that differ between the two files.

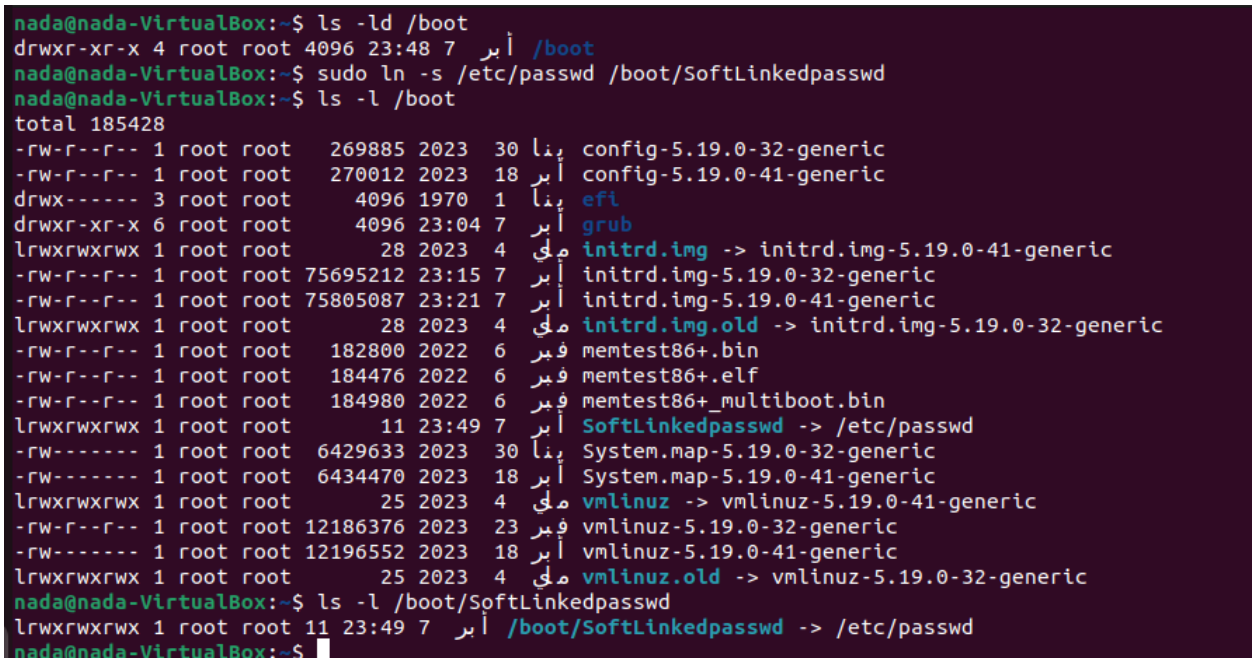
>>> `cmp` : This command compares two files byte by byte and outputs the first byte where the files differ.
If the files are identical, there will be no output.
If they differ, it will display the byte where they first differ.

```
nada@nada-VirtualBox:~$ cp /etc/passwd ~/
nada@nada-VirtualBox:~$ diff /etc/passwd ~/passwd
nada@nada-VirtualBox:~$ cmp /etc/passwd ~/passwd
nada@nada-VirtualBox:~$ nano ~/passwd
nada@nada-VirtualBox:~$ diff /etc/passwd ~/passwd
0a1
> # This is a comment
nada@nada-VirtualBox:~$ cmp /etc/passwd ~/passwd
/etc/passwd /home/nada/passwd differ: byte 1, line 1
nada@nada-VirtualBox:~$
```

Editted the passwd file: Added a comment



22. Create a symbolic link of /etc/passwd in /boot.



Note: to delete it: `sudo rm /boot/SoftLinkedpasswd`

23. Create a hard link of /etc/passwd in /boot. Could you? Why?

No, you cannot create a hard link of /etc/passwd in /boot (or any other directory outside the same filesystem) because hard links can only be created within the same filesystem.

Additional notes about Hard Links:

- Hard links cannot be created for directories, except for the special . (current directory) and .. (parent directory) links that the system automatically creates for each directory.
- No Link for Special Files: Some files like device files (found in /dev) cannot have hard links created.