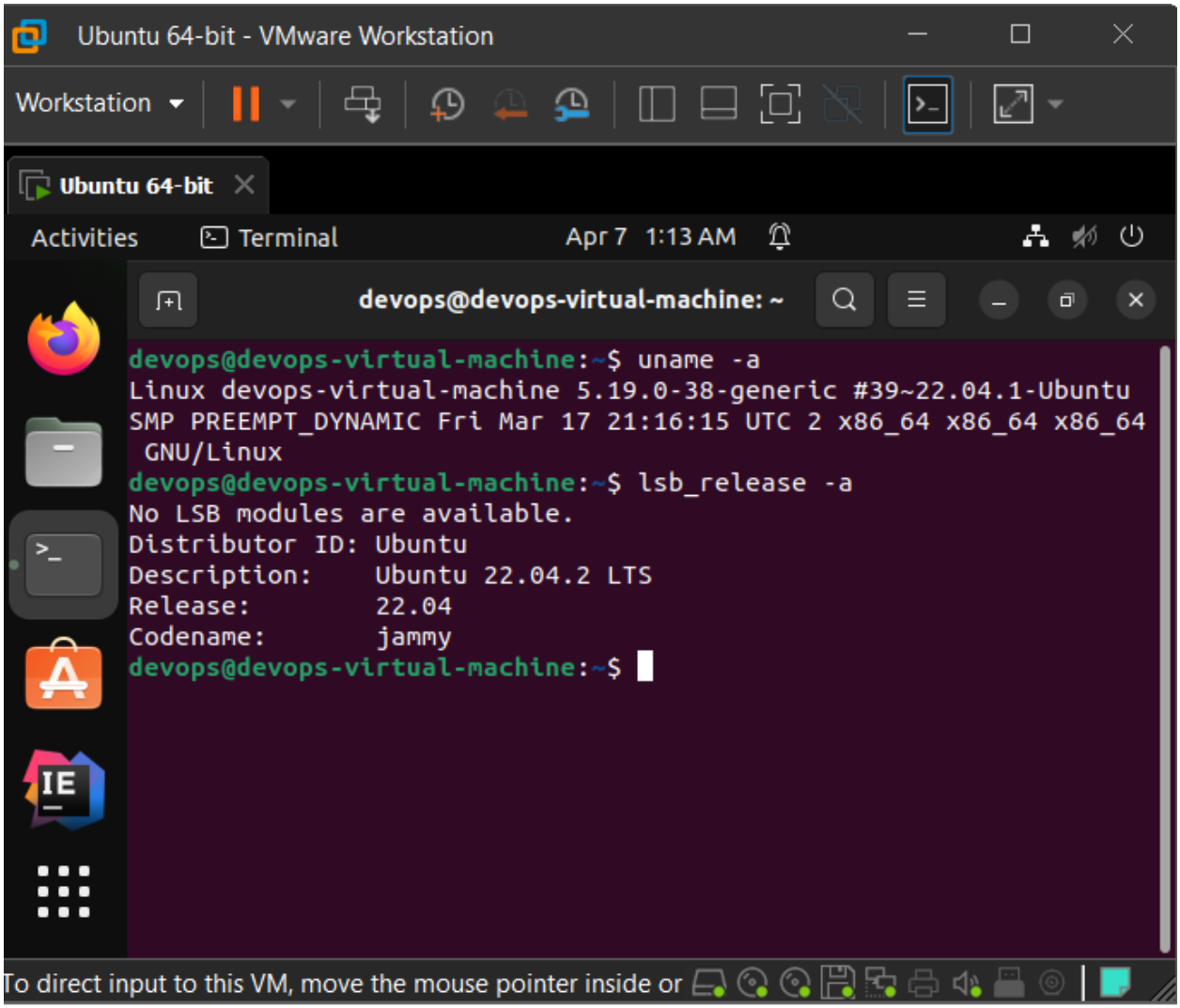
Linux Practicing

1. Install CentOS /RHEL.

Ubuntu 22.04.2 is installed on a licensed VMware



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2. What is the difference between cat and more command?

The cat and more commands are both used for displaying the contents of a file in the terminal, but they differ in their behavior and functionality.

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The cat command (short for "concatenate") is used to display the contents of one or more files to the terminal. It can display the entire contents of a file at once, regardless of its size, by simply printing it out to the terminal.

```
devops@devops-virtual-machine:~/practice$ pwd
/home/devops/practice
devops@devops-virtual-machine:~/practice$ ls
1.txt  2.txt  3.txt  4.txt  5.txt  owner.txt  script.sh
devops@devops-virtual-machine:~/practice$ cat > cat-more.txt
This is a test
Practicing cat and more commands
devops@devops-virtual-machine:~/practice$ cat cat-more.txt
This is a test
Practicing cat and more commands
devops@devops-virtual-machine:~/practice$ ls
1.txt  2.txt  3.txt  4.txt  5.txt  cat-more.txt  owner.txt  script.sh
devops@devops-virtual-machine:~/practice$
```

Notice that I pressed Ctrl-d to end cat writing.

The more command, on the other hand, is used to display the contents of a file one screen at a time. It waits for the user to press the spacebar before displaying the next page of content. This can be useful for viewing large files or for quickly scanning through the contents of a file.

```
devops@devops-virtual-machine:~/practice$ ls
1.txt  2.txt  3.txt  4.txt  5.txt  cat-more.txt  owner.txt  script.sh
devops@devops-virtual-machine:~/practice$ cp /proc/cpuinfo more.txt
devops@devops-virtual-machine:~/practice$ ls
1.txt  2.txt  3.txt  4.txt  5.txt  cat-more.txt  more.txt  owner.txt  script.sh
devops@devops-virtual-machine:~/practice$ more more.txt
```

```
                                    devops@devops-virtual-machine: ~/practice
processor       : 0
vendor_id       : GenuineIntel
cpu family      : 6
model           : 69
model name      : Intel(R) Core(TM) i7-4510U CPU @ 2.00GHz
stepping        : 1
microcode       : 0xffffffff
cpu MHz         : 2593.994
cache size      : 4096 KB
physical id     : 0
siblings        : 1
core id         : 0
cpu cores       : 1
apicid          : 0
initial apicid  : 0
fpu             : yes
fpu_exception   : yes
cpuid level     : 13
wp              : yes
--More--(15%)
```

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In summary, the cat command is used to display the entire contents of a file at once, while the more command is used to display the contents of a file one screen at a time, allowing the user to control the pace of the display.

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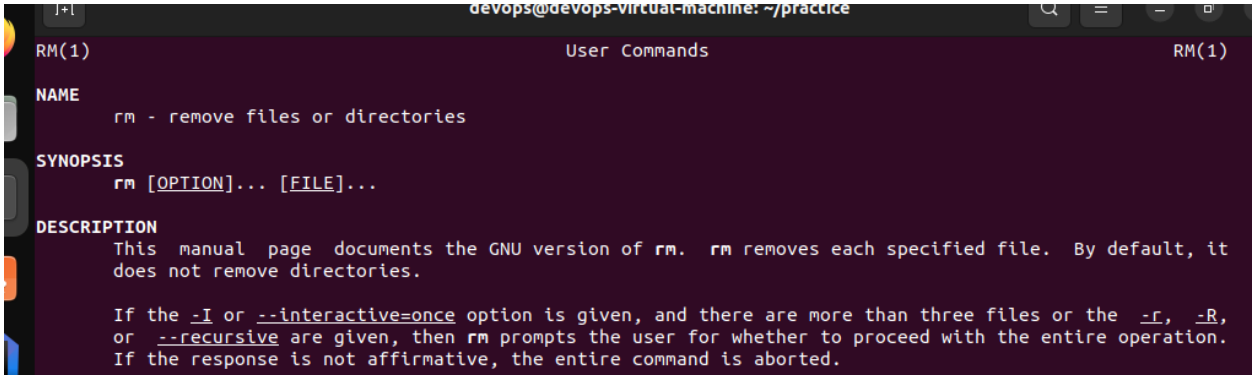
3. What is the difference between rm and rmdir using man?

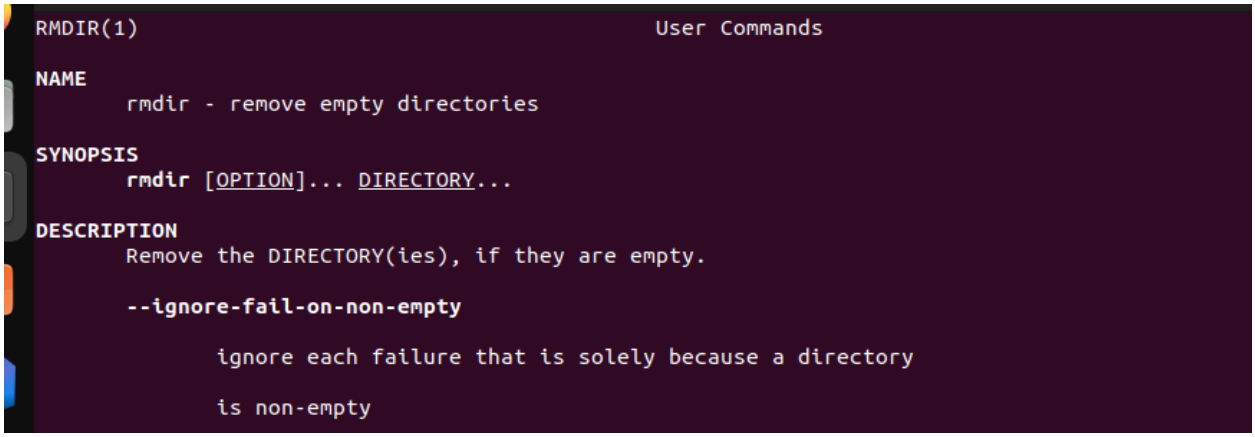
The rm command in Linux is used to remove files or directories, while the rmdir command is used to remove only empty directories.

Here are the differences between the two commands as stated in the man pages:

rm: The rm command removes files or directories, and its options can be used to modify the behavior of the command. For example, the -r option can be used to remove directories and their contents recursively.



rmdir: The rmdir command removes only empty directories. If a directory contains files or other directories, it cannot be removed with rmdir.



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4. Create the following hierarchy under your home directory:

/home/practice[dir (dir11 , dir12 (file1)) & docs (mycv)]

Notice: I'm in practice directory in home to make it more clear as my home contains a lot of file and directories
(/home/devops/practice)

```
devops@devops-virtual-machine:~/practice$ pwd && ls
/home/devops/practice
cat-more.txt  more.txt
devops@devops-virtual-machine:~/practice$ mkdir dir docs && cd dir && mkdir dir1{1,2} && touch dir12/file1 && cd .. && touch docs/mycv
devops@devops-virtual-machine:~/practice$ ls && echo "---------------" && ls -R dir/ && echo "---------------" && ls -R docs/
cat-more.txt  dir  docs  more.txt
---------------
dir/:
dir11  dir12

dir/dir11:

dir/dir12:
file1
---------------
docs/:
mycv
devops@devops-virtual-machine:~/practice$
```

a. Remove dir12 in one-step.

```
devops@devops-virtual-machine:~/practice$ ls
cat-more.txt  dir  docs  more.txt
devops@devops-virtual-machine:~/practice$ cd dir/
devops@devops-virtual-machine:~/practice/dir$ ls
dir11  dir12
devops@devops-virtual-machine:~/practice/dir$ rm dir12
rm: cannot remove 'dir12': Is a directory
devops@devops-virtual-machine:~/practice/dir$ rm -d dir12
rm: cannot remove 'dir12': Directory not empty
devops@devops-virtual-machine:~/practice/dir$ ls dir12
file1
devops@devops-virtual-machine:~/practice/dir$ rm -r dir12
devops@devops-virtual-machine:~/practice/dir$ ls
dir11
devops@devops-virtual-machine:~/practice/dir$
```

What did you notice?

Two errors occurred upon removing dir12:

- **Can't remove dir12 with only rm command.**
- **Can't remove dir12 with rm -d command as it's not empty.**

And how did you overcome that?

I used rm -r (r option for removing anything recursively)

b. Remove dir11 using rmdir –p command. State what happened to the hierarchy (Note: you are in your home directory).

```
devops@devops-virtual-machine:~/practice/dir$ cd -
/home/devops/practice
devops@devops-virtual-machine:~/practice$ ls
cat-more.txt  dir  docs  more.txt
devops@devops-virtual-machine:~/practice$ ls -R dir
dir:
dir11

dir/dir11:
devops@devops-virtual-machine:~/practice$ rmdir -p dir/dir11/
devops@devops-virtual-machine:~/practice$ ls
cat-more.txt  docs  more.txt
devops@devops-virtual-machine:~/practice$ man rmdir
devops@devops-virtual-machine:~/practice$
```

Remove the empty directory dir11 and its ancestors dir.

c. The output of the command pwd was /home/user. Write the absolute and relative path for the file mycv

Absolute Path > /home/devops/practice/docs

Relative Path > ./practice/docs

---

5. Copy the /etc/passwd file to your home directory making its name is mypasswd.

```
devops@devops-virtual-machine:~/practice/docs$ cd -
/home/devops/practice
devops@devops-virtual-machine:~/practice$ cp /etc/passwd mypasswd
devops@devops-virtual-machine:~/practice$ ls -l
total 16
-rw-rw-r-- 1 devops devops   48 Apr  7 01:22 cat-more.txt
drwxrwxr-x 2 devops devops 4096 Apr  7 01:59 docs
-r--r--r-- 1 devops devops 2160 Apr  7 01:28 more.txt
-rw-r--r-- 1 devops devops 3054 Apr  7 02:50 mypasswd
devops@devops-virtual-machine:~/practice$
```

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6. Rename this new file to be oldpasswd.

```
devops@devops-virtual-machine:~/practice$ mv mypasswd oldpasswd
devops@devops-virtual-machine:~/practice$ ls
cat-more.txt  docs  more.txt  oldpasswd
devops@devops-virtual-machine:~/practice$
```

---

7. You are in /usr/bin, list four ways to go to your home directory

Using the absolute path:

```
devops@devops-virtual-machine:~/practice$ cd /usr/bin/
devops@devops-virtual-machine:/usr/bin$ pwd
/usr/bin
devops@devops-virtual-machine:/usr/bin$ cd /home/devops/
devops@devops-virtual-machine:~$ pwd
/home/devops
devops@devops-virtual-machine:~$
```

Using the tilde character ~ to represent your home directory:

```
devops@devops-virtual-machine:~$ cd -
/usr/bin
devops@devops-virtual-machine:/usr/bin$ cd ~
devops@devops-virtual-machine:~$ pwd
/home/devops
devops@devops-virtual-machine:~$
```

Using the cd command without any arguments

```
devops@devops-virtual-machine:~$ cd -
/usr/bin
devops@devops-virtual-machine:/usr/bin$ cd
devops@devops-virtual-machine:~$ pwd
/home/devops
devops@devops-virtual-machine:~$
```

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Using the HOME environment variable:

```
devops@devops-virtual-machine:~$ cd -
/usr/bin
devops@devops-virtual-machine:/usr/bin$ echo $HOME
/home/devops
devops@devops-virtual-machine:/usr/bin$ cd $HOME
devops@devops-virtual-machine:~$ pwd
/home/devops
devops@devops-virtual-machine:~$
```

---

8. List Linux commands in /usr/bin that start with letter w

```
devops@devops-virtual-machine:~$ pwd
/home/devops
devops@devops-virtual-machine:~$ ls /usr/bin/w*
/usr/bin/w            /usr/bin/wdctl     /usr/bin/which.debianutils  /usr/bin/whoopsie-preferences
/usr/bin/wall         /usr/bin/wget      /usr/bin/whiptail           /usr/bin/word-list-compress
/usr/bin/watch        /usr/bin/whatis    /usr/bin/who                /usr/bin/wpa_passphrase
/usr/bin/watchgnupg   /usr/bin/whereis   /usr/bin/whoami             /usr/bin/write
/usr/bin/wc           /usr/bin/which     /usr/bin/whoopsie           /usr/bin/write.ul
devops@devops-virtual-machine:~$
```

---

9. Display the first 4 lines of /etc/passwd

```
devops@devops-virtual-machine:~$ head -4 /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
devops@devops-virtual-machine:~$
```

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10. Display the last 7 lines of /etc/passwd

```
devops@devops-virtual-machine:~$ tail -7 /etc/passwd
hplip:x:126:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:127:133:Gnome Display Manager:/var/lib/gdm3:/bin/false
devops:x:1000:1000:Islam,,,:/home/devops:/bin/bash
guest:x:1001:1003:,,,:/home/guest:/bin/bash
guest2:x:1002:1003:Tom Adams,707,01110487890,2066687,other:/home/guest2:/bin/bash
islam:x:1003:1004::/home/islam:/bin/sh
fwupd-refresh:x:128:136:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
devops@devops-virtual-machine:~$
```

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11. Display the man pages of passwd the command and the file sequentially in one command

:~$ man passwd && man 5 passwd

This command uses the && operator to execute the two man commands sequentially, only if the first one succeeds. The first man passwd command will display the manual page for the passwd command, while the second man 5 passwd command will display the manual page for the /etc/passwd file.

```
devops@devops-virtual-machine:~$ man passwd && man 5 passwd
```

```
PASSWD(1)                        User Commands                        PASSWD(1)

NAME
       passwd - change user password

SYNOPSIS
       passwd [options] [LOGIN]

DESCRIPTION
       The passwd command changes passwords for user accounts. A normal user may only change the password
       for their own account, while the superuser may change the password for any account.  passwd also
       changes the account or associated password validity period.

   Password Changes
```

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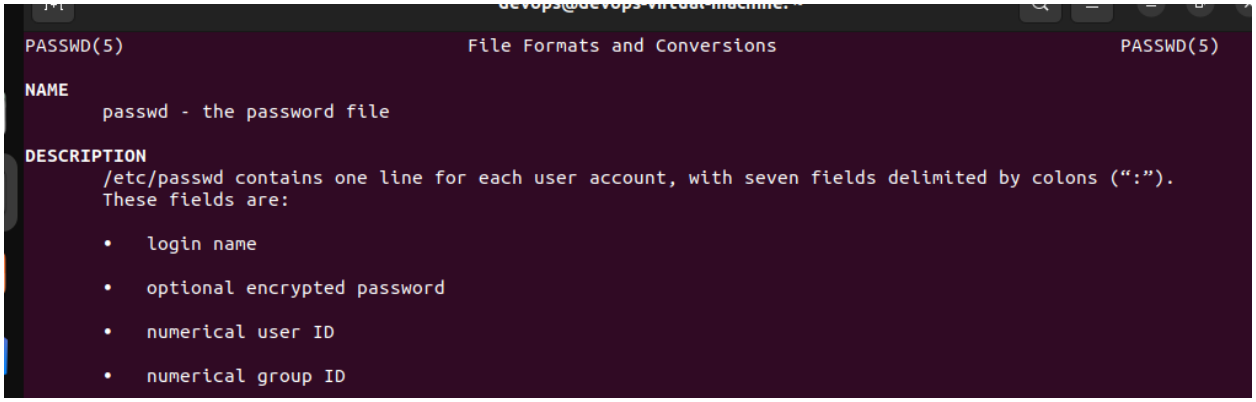
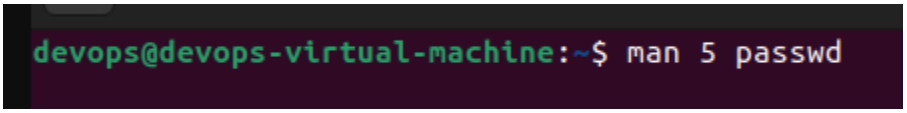
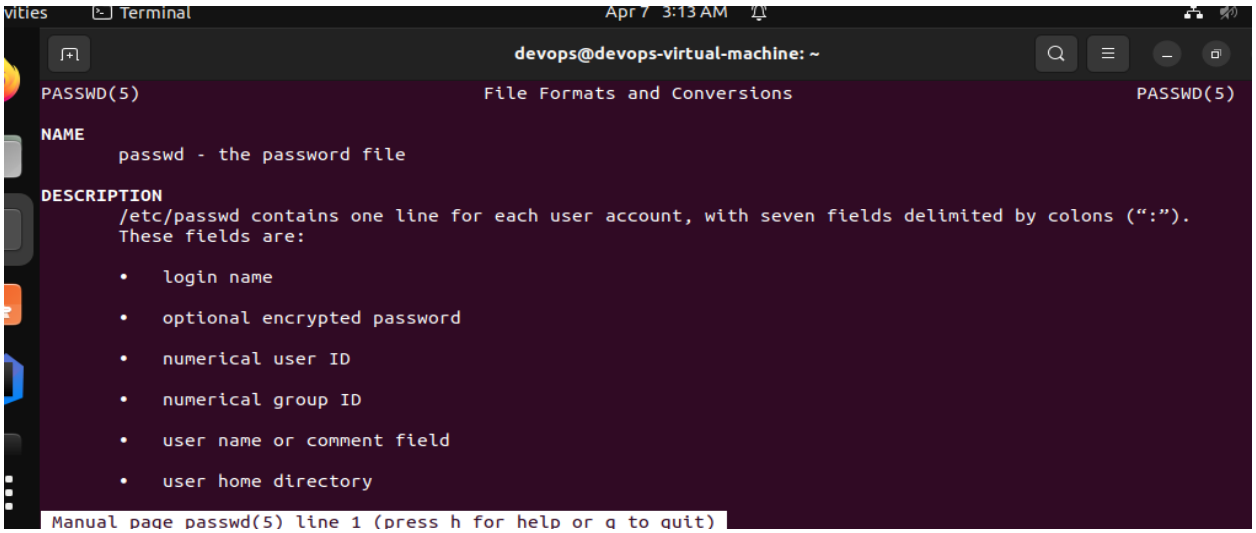


12.Display the man page of the passwd file.





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13. Display a list of all the commands that contain the keyword passwd in their man page.

The apropos command searches the manual page names and descriptions for the given keyword and returns a list of all the commands that match.

```
devops@devops-virtual-machine:~$ apropos passwd
chgpasswd (8)         - update group passwords in batch mode
chpasswd (8)          - update passwords in batch mode
gpasswd (1)           - administer /etc/group and /etc/gshadow
grub-mkpasswd-pbkdf2 (1) - generate hashed password for GRUB
openssl-passwd (1ssl) - compute password hashes
pam_localuser (8)     - require users to be listed in /etc/passwd
passwd (1)            - change user password
passwd (1ssl)         - OpenSSL application commands
passwd (5)            - the password file
update-passwd (8)     - safely update /etc/passwd, /etc/shadow and /etc/group
devops@devops-virtual-machine:~$
```

We can use another -k argument with the man command to do exactly the same as apropos

```
devops@devops-virtual-machine:~/practice$ man man
devops@devops-virtual-machine:~/practice$ man -k passwd
chgpasswd (8)         - update group passwords in batch mode
chpasswd (8)          - update passwords in batch mode
gpasswd (1)           - administer /etc/group and /etc/gshadow
grub-mkpasswd-pbkdf2 (1) - generate hashed password for GRUB
openssl-passwd (1ssl) - compute password hashes
pam_localuser (8)     - require users to be listed in /etc/passwd
passwd (1)            - change user password
passwd (1ssl)         - OpenSSL application commands
passwd (5)            - the password file
update-passwd (8)     - safely update /etc/passwd, /etc/shadow and /etc/group
devops@devops-virtual-machine:~/practice$
```
