Linux Lab 2

1. **List the available shells in your system.**

```
nada@nada-VirtualBox:~/docs$ cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/usr/bin/bash
/bin/rbash
/usr/bin/rbash
/usr/bin/sh
/bin/dash
/usr/bin/dash
nada@nada-VirtualBox:~/docs$
```

2. **List all of the environment variables in your current shell.**

   Command: `nada@nada-VirtualBox:~$ printenv`

```
nada@nada-VirtualBox:~$ printenv
SHELL=/bin/bash
SESSION_MANAGER=local/nada-VirtualBox:@/tmp/.ICE-unix/1767,unix/nada-VirtualBox:/tmp/.ICE-unix/1767
QT_ACCESSIBILITY=1
COLORTERM=truecolor
XDG_CONFIG_DIRS=/etc/xdg/xdg-ubuntu:/etc/xdg
SSH_AGENT_LAUNCHER=gnome-keyring
XDG_MENU_PREFIX=gnome-
GNOME_DESKTOP_SESSION_ID=this-is-deprecated
LC_ADDRESS=ar_EG.UTF-8
GNOME_SHELL_SESSION_MODE=ubuntu
LC_NAME=ar_EG.UTF-8
SSH_AUTH_SOCK=/run/user/1000/keyring/ssh
XMODIFIERS=@im=ibus
DESKTOP_SESSION=ubuntu
LC_MONETARY=ar_EG.UTF-8
GTK_MODULES=gail:atk-bridge
PWD=/home/nada
LOGNAME=nada
XDG_SESSION_DESKTOP=ubuntu
XDG_SESSION_TYPE=wayland
SYSTEMD_EXEC_PID=1792
XAUTHORITY=/run/user/1000/.mutter-Xwaylandauth.1L9941
HOME=/home/nada
USERNAME=nada
IM_CONFIG_PHASE=1
LC_PAPER=ar_EG.UTF-8
LANG=en_US.UTF-8
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=00:su=37;41:sg=30;43:ca=30;41:tw=30;
2:ow=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.t
z=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=01;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=0
;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar
```

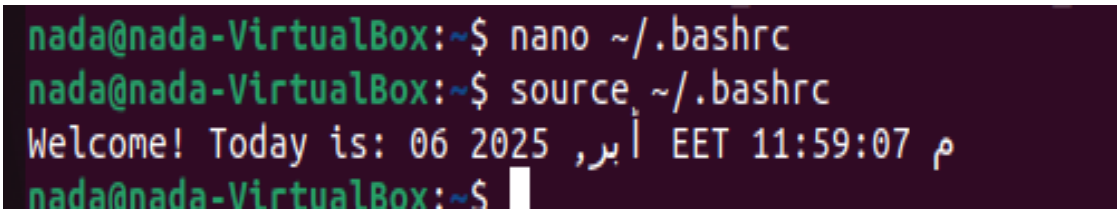
3. **Display your current shell name.**

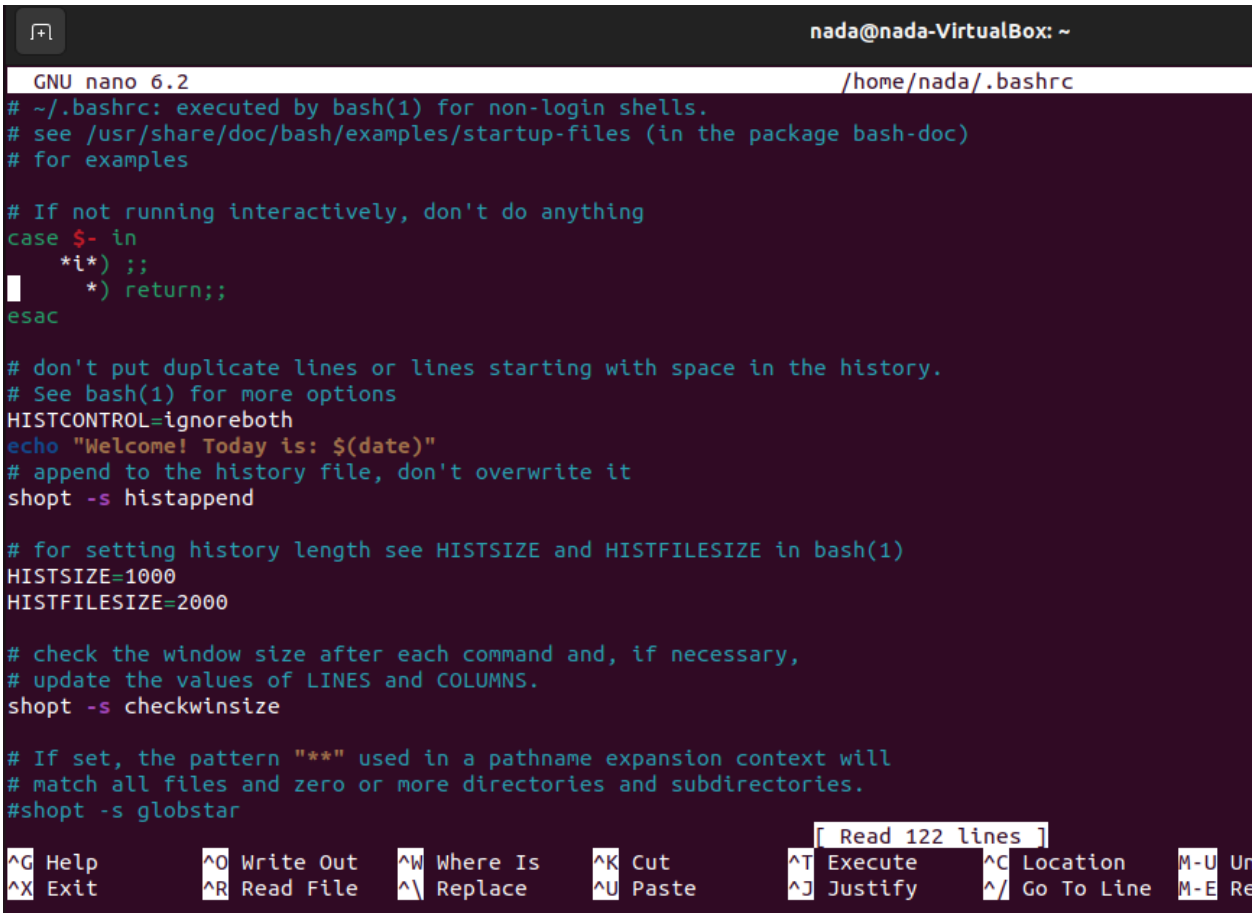
```
nada@nada-VirtualBox:~$ echo $SHELL
/bin/bash
```

4. **List all of the environment variables for the Bash shell.**

   Command: `nada@nada-VirtualBox:~$ printenv` (??)

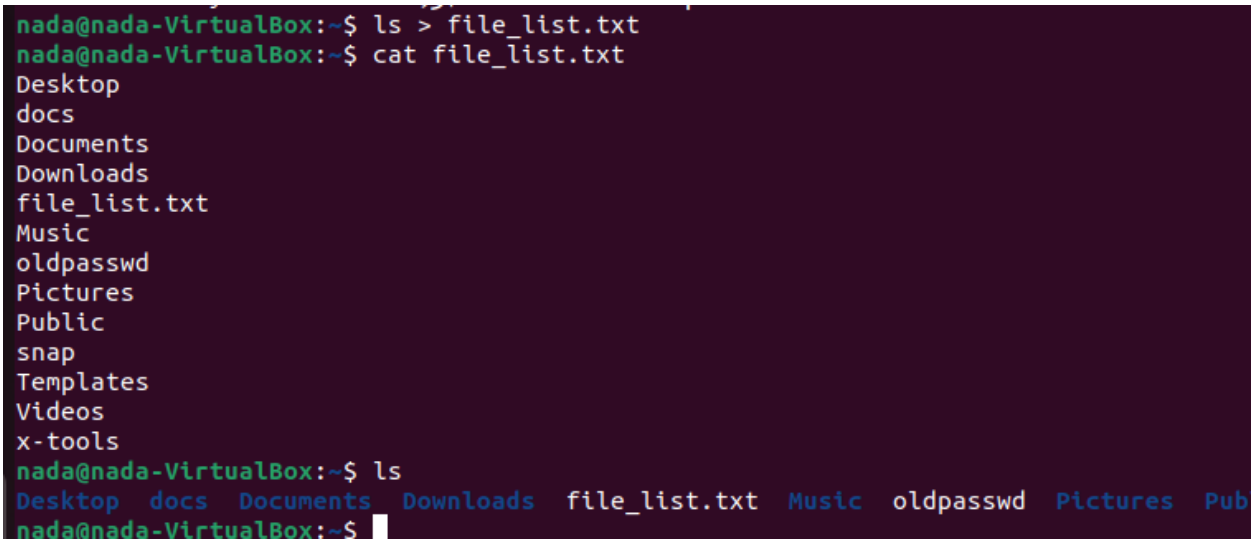
5. **Edit your shell profile to display the date at login and change your prompt.**
   - Get into the bashrc using `nano`
   - Type: `echo "Welcome! Today is: $(date)"`
   - Re-run .bashrc file in the current shell session.



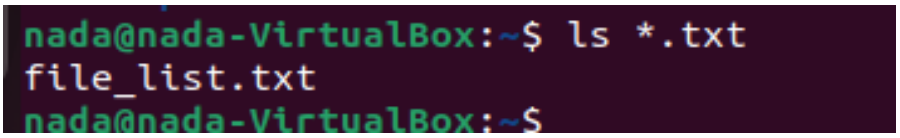


6. **Redirect the output of the ls command to a file called file_list.txt.**

   Use > to redirect to a file.

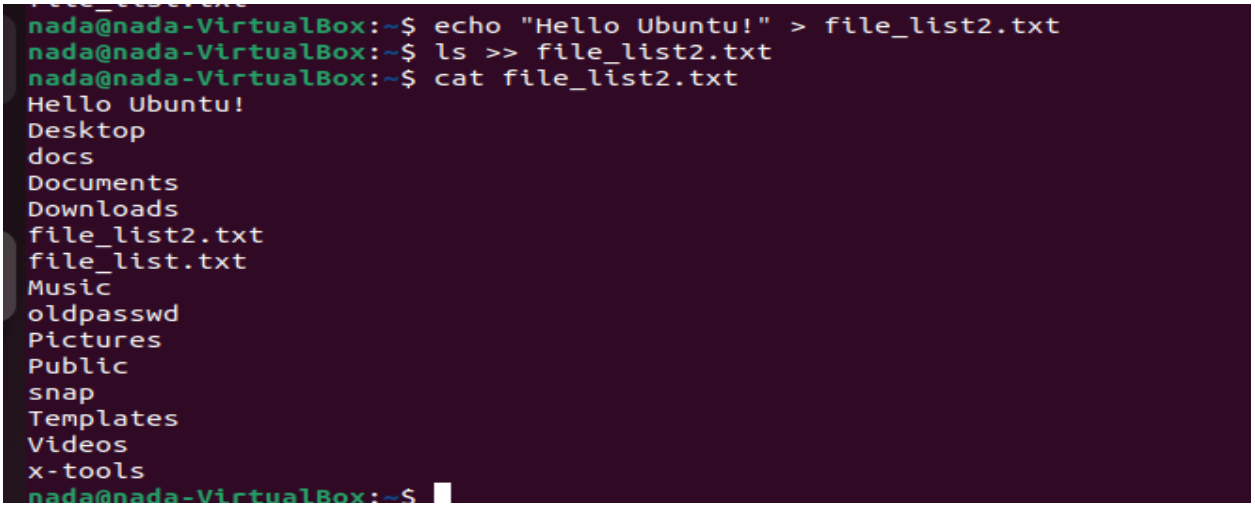


7. **Use file globbing to list all .txt files in the current directory.**

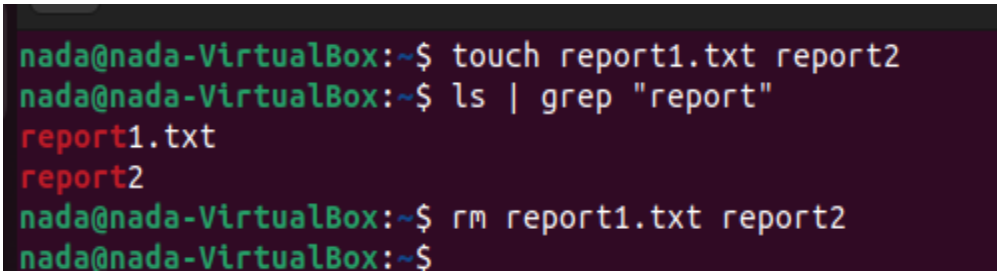


8. **Redirect the output of the ls command to a file and append it.**

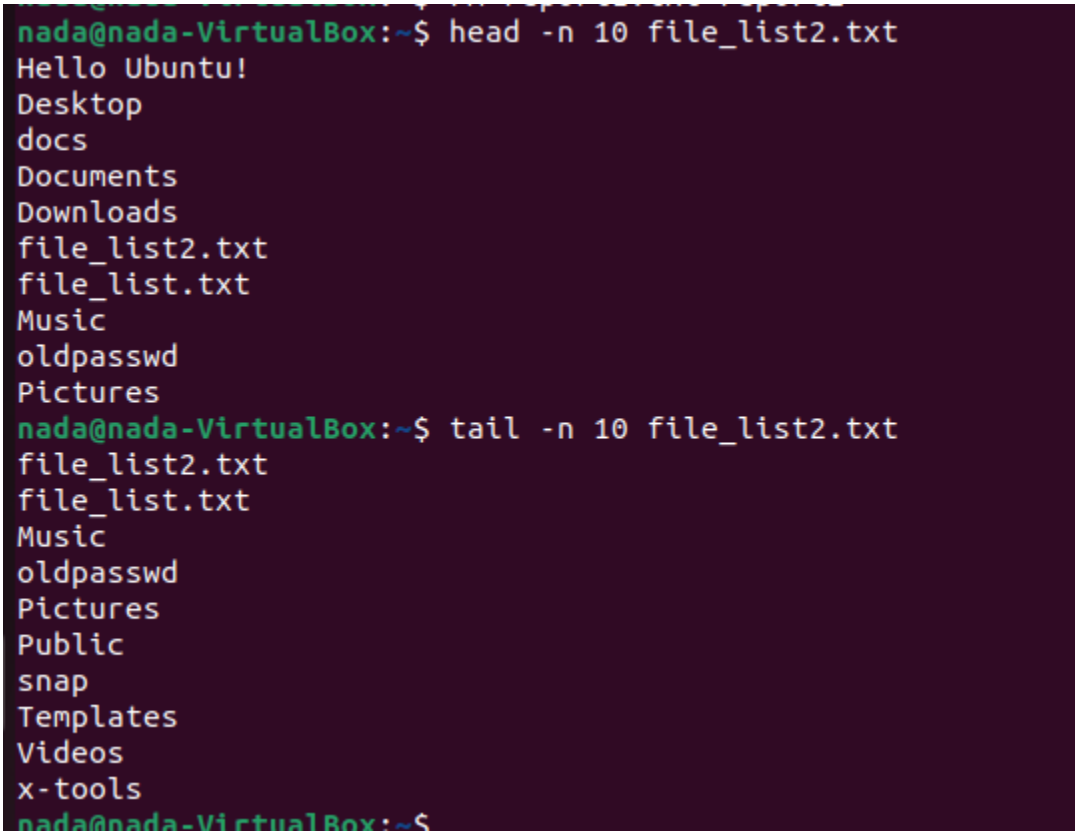
   Use >> to redirect to a file and append to it.



9. **Use a pipe to send the output of ls to the grep command to filter for files containing the word "report".**



10. **Use head to view the first 10 lines of a file, and tail to view the last 10 lines.**



11. **Use cut to extract the second column of a file called data.csv.**
    - Create the file using `touch`
    - Get into it using `nano`
    - Fill it with some content of rows and columns (then: ctrl x , y, enter)
    - Extract using `cut` command

```
nada@nada-VirtualBox:~$ touch data.csv
nada@nada-VirtualBox:~$ nano data.csv
nada@nada-VirtualBox:~$
nada@nada-VirtualBox:~$ cut -d',' -f2 data.csv
 Age
 27
 25
 28
nada@nada-VirtualBox:~$
```

```
nada@nada-VirtualBox: ~
  GNU nano 6.2                                  data.csv
Name, Age, City
Ali, 27, Cairo
Bassma, 25, Giza
Dina, 28, Alexandria
```

12. Search for all lines in a file called log.txt that contain the word "ERROR" using grep.

- Create the file
- Get into it using `nano`
- Fill it with some content
- Search for the word using `grep` command

```
nada@nada-VirtualBox: ~
nada@nada-VirtualBox:~$ touch log.txt
nada@nada-VirtualBox:~$ nano log.txt
nada@nada-VirtualBox:~$ grep "ERROR" log.txt
ERROR: Failed to connect to the database
There is some ERROR here!
ERROR Disk space is almost full
Unexpected shutdown ERROR
nada@nada-VirtualBox:~$
```

```
  GNU nano 6.2                                  log.txt
INFO System initialized
ERROR: Failed to connect to the database
DEBUG Connection retrying
There is some ERROR here!
INFO: User logged in
ERROR Disk space is almost full
DEBUG: Memory usage normal
Unexpected shutdown ERROR
INFO: User logged out
```

13. Create a shell variable called current_user to store the output of the whoami command.

(There should NOT be spaces around the = sign)

```
nada@nada-VirtualBox:~$ current_user=$(whoami)
nada@nada-VirtualBox:~$ echo $current_user
nada
nada@nada-VirtualBox:~$
```

14. Use tr to convert a string of lowercase letters to uppercase.

```
nada@nada-VirtualBox:~$ echo "hello ubuntu" | tr '[:lower:]' '[:upper:]'
HELLO UBUNTU
nada@nada-VirtualBox:~$ echo "hello ubuntu" | tr '[a-z]' '[A-Z]'
HELLO UBUNTU
```

15. Use a pipe to send the output of ps to grep to search for a specific process name.

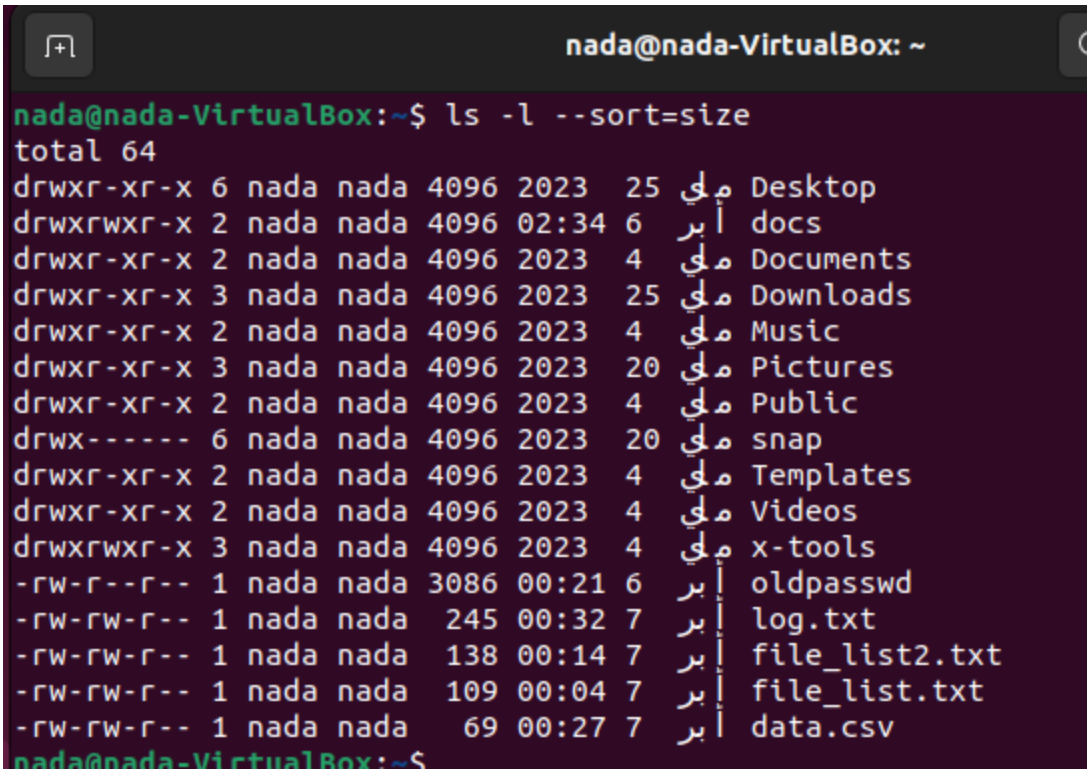
```
nada@nada-VirtualBox:~$ ps
    PID TTY          TIME CMD
  95166 pts/0    00:00:00 bash
  95656 pts/0    00:00:00 ps
nada@nada-VirtualBox:~$ ps | grep "bash"
  95166 pts/0    00:00:00 bash
nada@nada-VirtualBox:~$
```

16. Create a Bash alias named ls for the command ls -l.

(`Unalias` is to delete the alias.)

```
nada@nada-VirtualBox:~$ alias ls="ls -l"
nada@nada-VirtualBox:~$ alias ls
alias ls='ls -l'
nada@nada-VirtualBox:~$ unalias ls
nada@nada-VirtualBox:~$ alias ls
bash: alias: ls: not found
nada@nada-VirtualBox:~$
```

17. Use sort to sort the output of ls -l by file size.



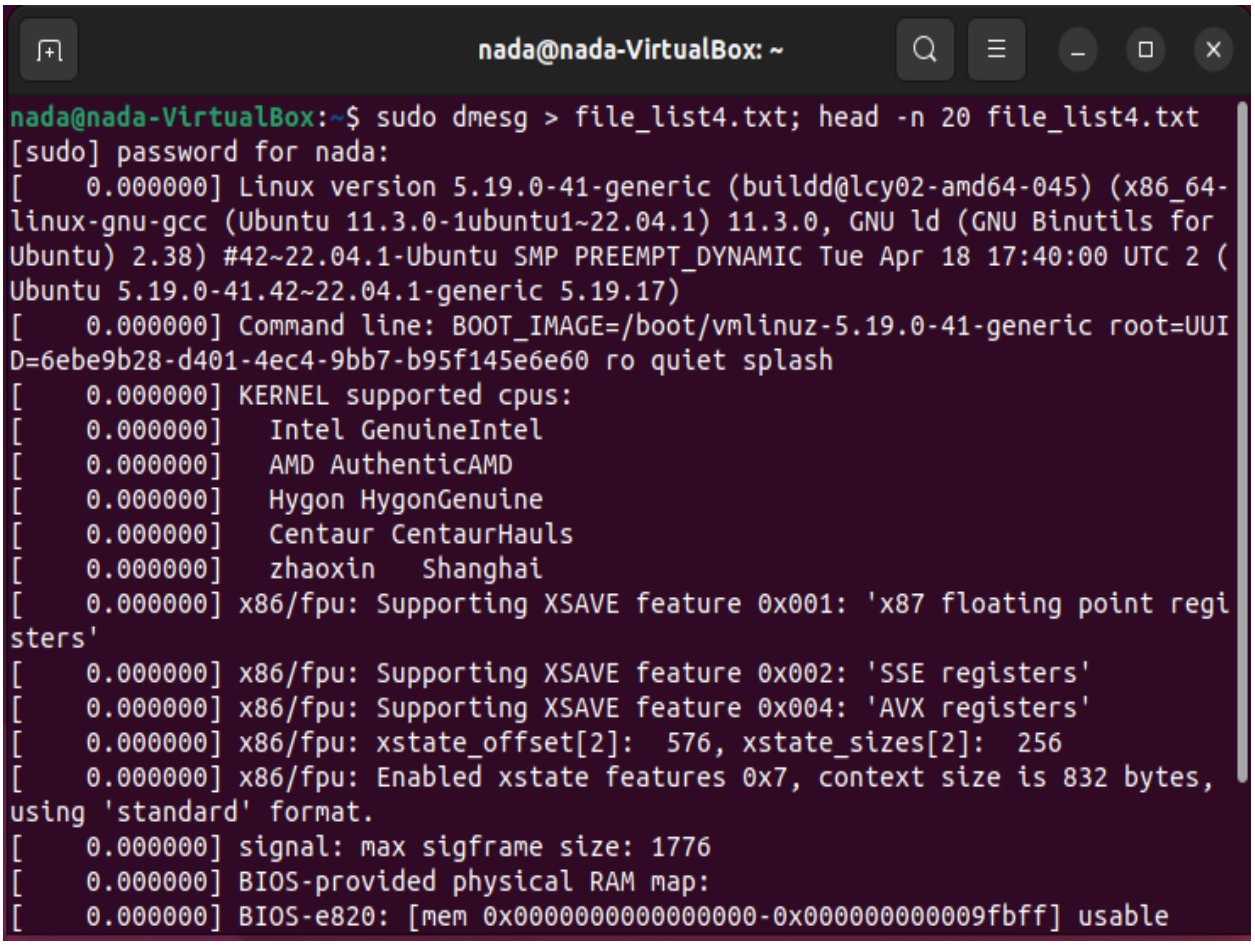
18. Use grep to count the number of lines that contain the word "success" in a file.

- Create the file
- Get into it using `nano` to fill it with some content
- Count the number of lines containing the word using `grep` command

```
nada@nada-VirtualBox:~$ touch file_list3.txt
nada@nada-VirtualBox:~$ nano file_list3.txt
nada@nada-VirtualBox:~$ grep -c ''success'' file_list3.txt
3
```

```
  GNU nano 6.2                          file_list3.txt
The operation was a success after many retries.
There were challenges along the way,
but we eventually achieved success.
success comes to those who persevere, and it happened today.
After hours of work, we had a huge progress with the project.
```

19. Redirect the output of the dmesg command to a file and view the first 20 lines using head.



20. Use cut to extract the first field from a CSV file and display it.

```
nada@nada-VirtualBox:~$ touch data2.csv
nada@nada-VirtualBox:~$ nano data2.csv
nada@nada-VirtualBox:~$ cut -d' ' -f1 data2.csv
Name
Ali
Bassma
Dina
nada@nada-VirtualBox:~$ cut -f1 -d' ' data2.csv
Name
Ali
Bassma
Dina
nada@nada-VirtualBox:~$
```

```
  GNU nano 6.2                                  data2.csv
Name Age City
Ali 27 Cairo
Bassma 25 Giza
Dina 28 Alexandria
```

Content of Files created

data.csv	*file_list3.txt*
Name, Age, City Ali, 27, Cairo Bassma, 25, Giza Dina, 28, Alexandria	The operation was a success after many retries. There were challenges along the way, But we eventually achieved success. success comes to those who persevere, and it happened today. After hours of work, we had a huge progress with the project.
log.txt	*data2.csv*
INFO System initialized ERROR: Failed to connect to the database DEBUG Connection retrying There is some ERROR here! INFO: User logged in ERROR Disk space is almost full DEBUG: Memory usage normal Unexpected shutdown ERROR INFO: User logged out	Name Age City Ali 27 Cairo Bassma 25 Giza Dina 28 Alexandria