

## OS LAB#4

### Question: 1

- a. Use the df command to display the amount of used and available space on your hard drive.

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev             973552         0     973552   0% /dev
tmpfs            200544        1508     199036   1% /run
/dev/sda5       40503552 8472260 29944124  23% /
tmpfs            1002716         0     1002716   0% /dev/shm
tmpfs             5120          4         5116   1% /run/lock
tmpfs            1002716         0     1002716   0% /sys/fs/cgroup
/dev/loop4        31872       31872         0 100% /snap/snapd/11036
/dev/loop1        66432       66432         0 100% /snap/gtk-common-themes/1514
/dev/loop0        56832       56832         0 100% /snap/core18/1988
/dev/loop2       224256     224256         0 100% /snap/gnome-3-34-1804/66
/dev/loop5        33152       33152         0 100% /snap/snapd/11107
/dev/loop3        52352       52352         0 100% /snap/snap-store/518
/dev/sda1        523248         4     523244   1% /boot/efi
tmpfs            200540        20     200520   1% /run/user/1000
nimra@ubuntu:~$
```

- b. Check the man page for df, and use it to find an option to the command which will display the free space in a more human-friendly form. Try both the single-letter and long-style options.

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ man df
nimra@ubuntu:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            951M   0    951M   0% /dev
tmpfs           196M  1.5M  195M   1% /run
/dev/sda5       39G   8.1G   29G  23% /
tmpfs           980M   0    980M   0% /dev/shm
tmpfs           5.0M  4.0K   5.0M   1% /run/lock
tmpfs           980M   0    980M   0% /sys/fs/cgroup
/dev/loop4       32M   32M     0 100% /snap/snapd/11036
/dev/loop1       65M   65M     0 100% /snap/gtk-common-themes/1514
/dev/loop0       56M   56M     0 100% /snap/core18/1988
/dev/loop2      219M  219M     0 100% /snap/gnome-3-34-1804/66
/dev/loop5       33M   33M     0 100% /snap/snapd/11107
/dev/loop3       52M   52M     0 100% /snap/snap-store/518
/dev/sda1       511M  4.0K   511M   1% /boot/efi
tmpfs           196M  28K   196M   1% /run/user/1000
```

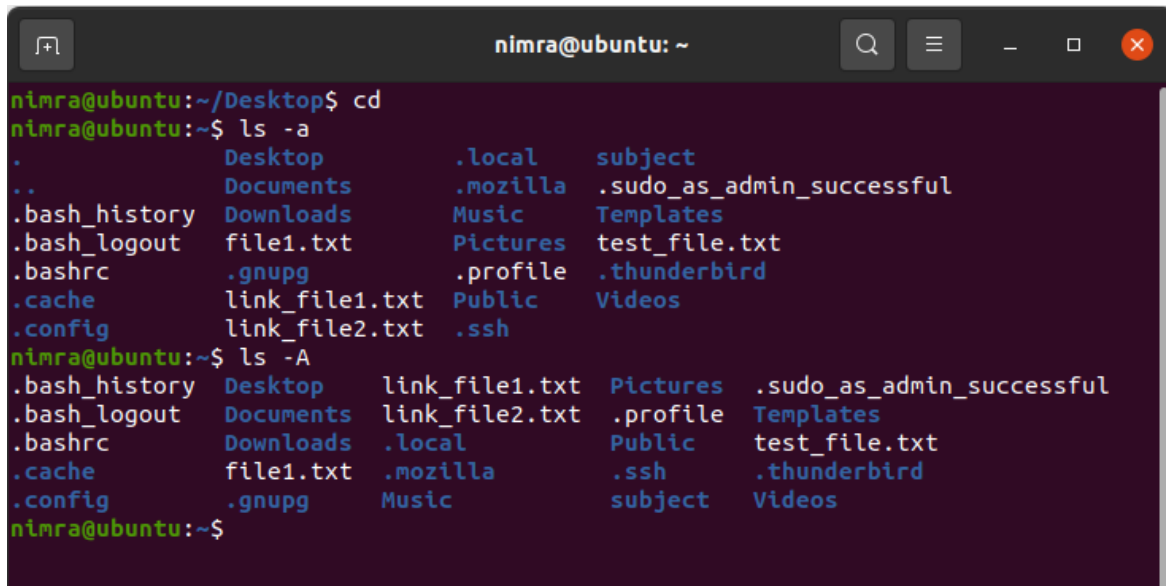
```
nimra@ubuntu:~$ df -H
Filesystem      Size  Used Avail Use% Mounted on
udev            997M   0    997M   0% /dev
tmpfs           206M  1.6M  204M   1% /run
/dev/sda5       42G   8.7G   31G  23% /
tmpfs           1.1G   0    1.1G   0% /dev/shm
tmpfs           5.3M  4.1k   5.3M   1% /run/lock
tmpfs           1.1G   0    1.1G   0% /sys/fs/cgroup
/dev/loop4      33M   33M    0 100% /snap/snapd/11036
/dev/loop1      69M   69M    0 100% /snap/gtk-common-themes/1514
/dev/loop0      59M   59M    0 100% /snap/core18/1988
/dev/loop2     230M  230M    0 100% /snap/gnome-3-34-1804/66
/dev/loop5      34M   34M    0 100% /snap/snapd/11107
/dev/loop3      54M   54M    0 100% /snap/snap-store/518
/dev/sda1       536M  4.1k  536M   1% /boot/efi
tmpfs           206M  29k   206M   1% /run/user/1000
nimra@ubuntu:~$
```

- c. Run the shell, bash, and see what happens. Remember that you were already running it to start with. Try leaving the shell you have started with the exit command.

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ ps -a
  PID TTY          TIME CMD
 1357 tty2      00:00:02 Xorg
 1410 tty2      00:00:00 gnome-session-b
 1924 pts/0      00:00:00 ps
nimra@ubuntu:~$ bash
nimra@ubuntu:~$ ps -a
  PID TTY          TIME CMD
 1357 tty2      00:00:02 Xorg
 1410 tty2      00:00:00 gnome-session-b
 1925 pts/0      00:00:00 bash
 1931 pts/0      00:00:00 ps
nimra@ubuntu:~$ exit
exit
nimra@ubuntu:~$ ps -a
  PID TTY          TIME CMD
 1357 tty2      00:00:02 Xorg
 1410 tty2      00:00:00 gnome-session-b
 1932 pts/0      00:00:00 ps
nimra@ubuntu:~$
```

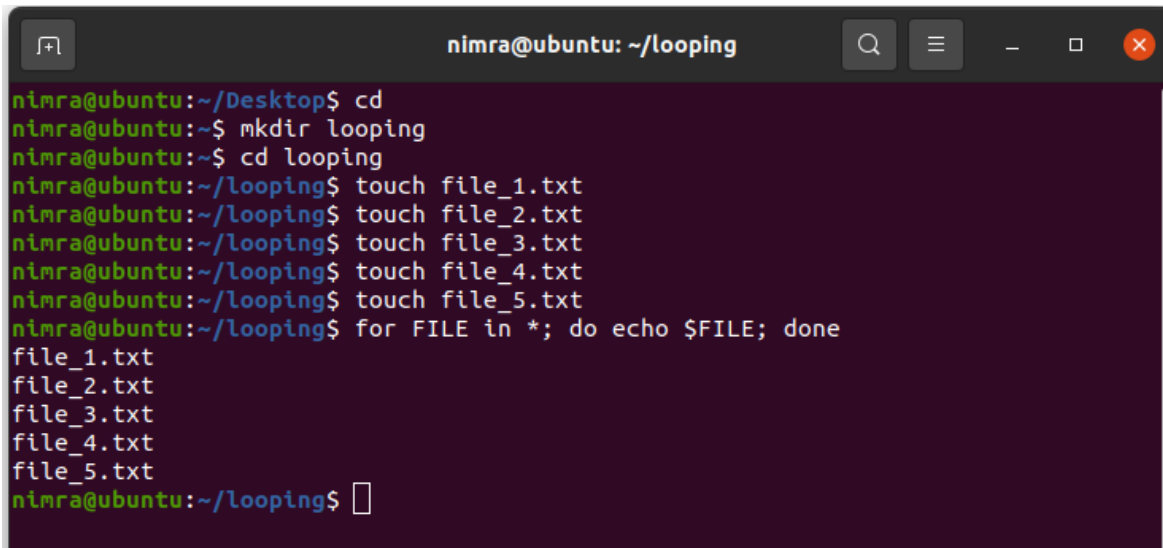
## Question: 2

a. Try ls with the -a and -A options. What is the difference between them?



```
nimra@ubuntu: ~  
nimra@ubuntu:~/Desktop$ cd  
nimra@ubuntu:~$ ls -a  
.          Desktop      .local      subject  
..         Documents    .mozilla    .sudo_as_admin_successful  
.bash_history Downloads    Music       Templates  
.bash_logout file1.txt    Pictures     test_file.txt  
.bashrc     .gnupg      .profile    .thunderbird  
.cache      link_file1.txt Public       Videos  
.config     link_file2.txt .ssh  
nimra@ubuntu:~$ ls -A  
.bash_history Desktop    link_file1.txt Pictures  .sudo_as_admin_successful  
.bash_logout Documents link_file2.txt .profile Templates  
.bashrc     Downloads .local      Public   test_file.txt  
.cache      file1.txt  .mozilla    .ssh     .thunderbird  
.config     .gnupg    Music       subject  Videos  
nimra@ubuntu:~$
```

b. Write a for loop which goes through all the files in a directory and prints out their names with echo. If you write the whole thing on one line, then it will be easy to repeat it using the command line history.



```
nimra@ubuntu: ~/looping  
nimra@ubuntu:~/Desktop$ cd  
nimra@ubuntu:~$ mkdir looping  
nimra@ubuntu:~$ cd looping  
nimra@ubuntu:~/looping$ touch file_1.txt  
nimra@ubuntu:~/looping$ touch file_2.txt  
nimra@ubuntu:~/looping$ touch file_3.txt  
nimra@ubuntu:~/looping$ touch file_4.txt  
nimra@ubuntu:~/looping$ touch file_5.txt  
nimra@ubuntu:~/looping$ for FILE in *; do echo $FILE; done  
file_1.txt  
file_2.txt  
file_3.txt  
file_4.txt  
file_5.txt  
nimra@ubuntu:~/looping$
```

c. Change the loop so that it goes through the names of the people in the room (which needn't be the names of files) and print greetings to them.

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ mkdir looping
nimra@ubuntu:~$ cd looping
nimra@ubuntu:~/looping$ touch file_1.txt
nimra@ubuntu:~/looping$ touch file_2.txt
nimra@ubuntu:~/looping$ touch file_3.txt
nimra@ubuntu:~/looping$ touch file_4.txt
nimra@ubuntu:~/looping$ touch file_5.txt
nimra@ubuntu:~/looping$ for FILE in *; do echo $FILE; done
file_1.txt
file_2.txt
file_3.txt
file_4.txt
file_5.txt
nimra@ubuntu:~/looping$
```

- d. Of course, a simpler way to print a list of filenames is `echo *`. Why might this be useful, when we usually use the `ls` command?

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ cd looping
nimra@ubuntu:~/looping$ echo *
file_1.txt file_2.txt file_3.txt file_4.txt file_5.txt
nimra@ubuntu:~/looping$ ls
file_1.txt file_2.txt file_3.txt file_4.txt file_5.txt
nimra@ubuntu:~/looping$
```

### Question: 3

- a. Use the `find` command to list all the files and directories under your home directory. Try the `-type d` and `-type f` criteria to show just files and just directories

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ find
.
./.gnupg
./.gnupg/private-keys-v1.d
./.gnupg/trustdb.gpg
./.gnupg/pubring.kbx
./.bash_history
./.ssh
./.mozilla
./.mozilla/extensions
./.mozilla/firefox
./.mozilla/firefox/ye8z9hwd.default
./.mozilla/firefox/ye8z9hwd.default/times.json
./.mozilla/firefox/Pending Pings
./.mozilla/firefox/installs.ini
./.mozilla/firefox/l5cy4gyc.default-release
./.mozilla/firefox/l5cy4gyc.default-release/permissions.sqlite
./.mozilla/firefox/l5cy4gyc.default-release/bookmarkbackups
./.mozilla/firefox/l5cy4gyc.default-release/bookmarkbackups/bookmarks-2021-03-14_16_eNPwmadu7uSG4DYhHU5V2Q==.jsonlz4
./.mozilla/firefox/l5cy4gyc.default-release/lock
```

```
nimra@ubuntu: ~  
./config/libreoffice/4/user/extensions/shared/registry/com.sun.star.comp.deploy  
ment.sfwk.PackageRegistryBackend  
./config/libreoffice/4/user/extensions/shared/registry/com.sun.star.comp.deploy  
ment.configuration.PackageRegistryBackend  
./config/libreoffice/4/user/extensions/shared/registry/com.sun.star.comp.deploy  
ment.configuration.PackageRegistryBackend/backenddb.xml  
./config/libreoffice/4/user/extensions/shared/lastsynchronized  
./config/libreoffice/4/user/config  
./config/libreoffice/4/user/config/soffice.cfg  
./config/libreoffice/4/user/config/soffice.cfg/modules  
./config/libreoffice/4/user/config/soffice.cfg/modules/swriter  
./config/libreoffice/4/user/config/soffice.cfg/modules/swriter/statusbar  
./config/libreoffice/4/user/config/soffice.cfg/modules/swriter/popupmenu  
./config/libreoffice/4/user/config/soffice.cfg/modules/swriter/images  
./config/libreoffice/4/user/config/soffice.cfg/modules/swriter/images/Bitmaps  
./config/libreoffice/4/user/config/soffice.cfg/modules/swriter/toolbar  
./config/libreoffice/4/user/config/soffice.cfg/modules/swriter/menubar  
./config/libreoffice/4/user/config/autotbl.fmt  
./config/libreoffice/4/user/config/javasettings_Linux_X86_64.xml  
./link_file2.txt  
./test_file.txt  
./Downloads  
./Public  
nimra@ubuntu:~$
```

```
nimra@ubuntu: ~  
nimra@ubuntu:~/Desktop$ cd  
nimra@ubuntu:~$ find . -type d  
.  
./gnupg  
./gnupg/private-keys-v1.d  
./ssh  
./mozilla  
./mozilla/extensions  
./mozilla/firefox  
./mozilla/firefox/ye8z9hwd.default  
./mozilla/firefox/Pending Pings  
./mozilla/firefox/l5cy4gyc.default-release  
./mozilla/firefox/l5cy4gyc.default-release/bookmarkbackups  
./mozilla/firefox/l5cy4gyc.default-release/gmp-gmpopenh264  
./mozilla/firefox/l5cy4gyc.default-release/gmp-gmpopenh264/1.8.1.1  
./mozilla/firefox/l5cy4gyc.default-release/features  
./mozilla/firefox/l5cy4gyc.default-release/features/{9632b757-b7b6-4137-b108-9b  
469d60cf31}  
./mozilla/firefox/l5cy4gyc.default-release/features/{a23c73bb-7f62-4f2d-acab-74  
86f47c26ba}  
./mozilla/firefox/l5cy4gyc.default-release/storage  
./mozilla/firefox/l5cy4gyc.default-release/storage/temporary  
./mozilla/firefox/l5cy4gyc.default-release/storage/default  
./mozilla/firefox/l5cy4gyc.default-release/storage/default/https+++mail.google.
```

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ find . -type f
```

```
./config/libreoffice/4/user/pack/ExtensionInfo.pack
./config/libreoffice/4/user/pack/registrymodifications.pack
./config/libreoffice/4/user/pack/autotext/mytexts.pack
./config/libreoffice/4/user/pack/config/javasettings_Linux_X86_64.pack
./config/libreoffice/4/user/pack/config/autotbl.pack
./config/libreoffice/4/user/gallery/sg30.thm
./config/libreoffice/4/user/gallery/sg30.sdv
./config/libreoffice/4/user/registrymodifications.xcu
./config/libreoffice/4/user/autotext/mytexts.bau
./config/libreoffice/4/user/extensions/bundled/registry/com.sun.star.comp.deployment.help.PackageRegistryBackend/backenddb.xml
./config/libreoffice/4/user/extensions/bundled/registry/com.sun.star.comp.deployment.configuration.PackageRegistryBackend/backenddb.xml
./config/libreoffice/4/user/extensions/bundled/lastsynchronized
./config/libreoffice/4/user/extensions/buildid
./config/libreoffice/4/user/extensions/tmp/registry/com.sun.star.comp.deployment.help.PackageRegistryBackend/backenddb.xml
./config/libreoffice/4/user/extensions/tmp/registry/com.sun.star.comp.deployment.configuration.PackageRegistryBackend/backenddb.xml
./config/libreoffice/4/user/extensions/shared/registry/com.sun.star.comp.deployment.help.PackageRegistryBackend/backenddb.xml
./config/libreoffice/4/user/extensions/shared/registry/com.sun.star.comp.deployment.configuration.PackageRegistryBackend/backenddb.xml
./config/libreoffice/4/user/extensions/shared/lastsynchronized
./config/libreoffice/4/user/config/autotbl.fmt
./config/libreoffice/4/user/config/javasettings_Linux_X86_64.xml
./link_file2.txt
./test_file.txt
nimra@ubuntu:~$
```

- b. Use 'locate' to find files whose name contains the string 'bashbug'. Try the same search with find, looking over all files on the system. You'll need to use the \* wildcard at the end of the pattern to match files with extensions.



```
nimra@ubuntu:~$ locate bashbug
/snap/core18/1988/usr/bin/bashbug
/usr/bin/bashbug
/usr/share/man/man1/bashbug.1.gz
nimra@ubuntu:~$ find bashbug *
find: 'bashbug': No such file or directory
Desktop
Desktop/link_file1.txt
Desktop/link_file2.txt
Documents
Documents/nimra1.odt
Downloads
file1.txt
link_file1.txt
link_file2.txt
looping
looping/file_5.txt
looping/file_1.txt
looping/file_2.txt
looping/file_3.txt
looping/file_4.txt
Music
Pictures
Pictures/Q3
```

```
Pictures/Assignment 1/9.png
Pictures/Assignment 1/4-Output.png
Pictures/Assignment 1/3.png
Pictures/Assignment 1/12.png
Pictures/Assignment 1/6-a.png
Pictures/Assignment 1/2.png
Pictures/Assignment 1/5-Output.png
Pictures/Assignment 1/7.png
Pictures/Assignment 1/6-b.png
Pictures/Assignment 1/13.png
Pictures/Assignment 1/root-3.png
Pictures/Assignment 1/echo.png
Pictures/Assignment 1/6-a-input.png
Pictures/Assignment 1/root-2.png
Pictures/Assignment 1/6-d.png
Pictures/Assignment 1/8.png
Pictures/Assignment 1/10-a.png
Pictures/Assignment 1/4-Input.png
Public
subject
subject/nimra
Templates
test_file.txt
Videos
```

c. Find out what the find criterion -iname does.

```
nimra@ubuntu:~/Desktop$ cd
nimra@ubuntu:~$ find /home -user nimra -iname "*.txt"
/home/nimra/.mozilla/firefox/l5cy4gyc.default-release/pkcs11.txt
/home/nimra/.mozilla/firefox/l5cy4gyc.default-release/SiteSecurityServiceState.txt
/home/nimra/.mozilla/firefox/l5cy4gyc.default-release/serviceworker.txt
/home/nimra/.cache/tracker/locale-for-miner-apps.txt
/home/nimra/.cache/tracker/parser-version.txt
/home/nimra/.cache/tracker/db-version.txt
/home/nimra/.cache/tracker/first-index.txt
/home/nimra/.cache/tracker/last-crawl.txt
/home/nimra/.cache/tracker/db-locale.txt
/home/nimra/link_file1.txt
/home/nimra/.thunderbird/j2xi2003.default-release/Telemetry.ShutdownTime.txt
/home/nimra/.thunderbird/j2xi2003.default-release/pkcs11.txt
/home/nimra/.thunderbird/j2xi2003.default-release/AlternateServices.txt
/home/nimra/.thunderbird/j2xi2003.default-release/SecurityPreloadState.txt
/home/nimra/.thunderbird/j2xi2003.default-release/SiteSecurityServiceState.txt
/home/nimra/file1.txt
/home/nimra/looping/file_5.txt
/home/nimra/looping/file_1.txt
/home/nimra/looping/file_2.txt
/home/nimra/looping/file_3.txt
/home/nimra/looping/file_4.txt
/home/nimra/Desktop/link_file1.txt
/home/nimra/.local/share/Trash/files/my_file.txt
/home/nimra/.local/share/Trash/files/file3.txt
/home/nimra/.local/share/Trash/files/secret-of-universe.2.txt
/home/nimra/.local/share/Trash/files/myfile.txt
/home/nimra/.local/share/Trash/files/link_file1.txt
/home/nimra/.local/share/Trash/files/file1.txt
/home/nimra/.local/share/Trash/files/looping/file_5.txt
/home/nimra/.local/share/Trash/files/looping/file_1.txt
/home/nimra/.local/share/Trash/files/looping/file_2.txt
/home/nimra/.local/share/Trash/files/looping/file_3.txt
/home/nimra/.local/share/Trash/files/looping/file_4.txt
/home/nimra/.local/share/Trash/files/gyu.txt
/home/nimra/.local/share/Trash/files/fileA.txt
/home/nimra/.local/share/Trash/files/myamma.txt
/home/nimra/.local/share/Trash/files/file2.txt
/home/nimra/.local/share/Trash/files/my_link.txt
/home/nimra/.local/share/Trash/files/message.txt
/home/nimra/.local/share/Trash/files/link_file2.txt
/home/nimra/.local/share/Trash/files/mylink.txt
/home/nimra/.local/share/Trash/files/poetry.txt
/home/nimra/.local/share/Trash/files/secret-of-universe.txt
/home/nimra/.local/share/Trash/files/file1.2.txt
/home/nimra/link_file2.txt
/home/nimra/test file.txt
nimra@ubuntu:~$
```

-----THE END-----