

1.Type following command in your directory.

ls

ls -a

ls -la

ls -Fa

```
ps@rps-virtual-machine:/$ ls
ln  cdrom  etc  lib  lib64  lost+found  mnt  proc  run  snap  swapfile  tmp  var
oot  dev  home  lib32  libx32  media  opt  root  sbin  srv  sys  usr
ps@rps-virtual-machine:/$ ls -a
.  bin  cdrom  etc  lib  lib64  lost+found  mnt  proc  run  snap  swapfile  tmp  var
.  boot  dev  home  lib32  libx32  media  opt  root  sbin  srv  sys  usr
ps@rps-virtual-machine:/$ ls -la
total 2097240
-rwxr-xr-x 20 root root      4096 Mar 16  2023 .
-rwxr-xr-x 20 root root      4096 Mar 16  2023 ..
-rwxrwxrwx 1 root root         7 Mar 16  2023 bin -> usr/bin
-rwxr-xr-x 4 root root      4096 Jul 15 06:43 boot
-rwxrwxr-x 2 root root      4096 Mar 16  2023 cdrom
-rwxr-xr-x 18 root root     4220 Jun 15 20:25 dev
-rwxr-xr-x 130 root root    12288 Jul 17 06:17 etc
-rwxr-xr-x 3 root root      4096 Mar 16  2023 home
-rwxrwxrwx 1 root root         7 Mar 16  2023 lib -> usr/lib
-rwxrwxrwx 1 root root         9 Mar 16  2023 lib32 -> usr/lib32
-rwxrwxrwx 1 root root         9 Mar 16  2023 lib64 -> usr/lib64
-rwxrwxrwx 1 root root        10 Mar 16  2023 libx32 -> usr/libx32
-rwx----- 2 root root    16384 Mar 16  2023 lost+found
-rwxr-xr-x 2 root root      4096 Aug  9  2022 media
-rwxr-xr-x 2 root root      4096 Aug  9  2022 mnt
-rwxr-xr-x 2 root root      4096 Aug  9  2022 opt
-r-xr-xr-x 337 root root         0 Jun 15 20:24 proc
-rwx----- 5 root root      4096 Mar 31 22:14 root
-rwxr-xr-x 35 root root     1000 Jul 17 06:17 run
-rwxrwxrwx 1 root root         8 Mar 16  2023 sbin -> usr/sbin
-rwxr-xr-x 13 root root      4096 Mar  9 22:22 snap
-rwxr-xr-x 2 root root      4096 Aug  9  2022 srv
-rw----- 1 root root 2147483648 Mar 16  2023 swapfile
-r-xr-xr-x 13 root root         0 Jun 15 20:24 sys
-rwxrwxrwt 20 root root      4096 Jul 17 08:55 tmp
-rwxr-xr-x 14 root root      4096 Aug  9  2022 usr
-rwxr-xr-x 14 root root      4096 Aug  9  2022 var
ps@rps-virtual-machine:/$ ls -Fa
```

2. Make a directory

mkdir linux

pwd

cd linux

pwd

cd

pwd

rmdir linux

```
ps@rps-virtual-machine:~/linux$ mkdir linux
ps@rps-virtual-machine:~/linux$ pwd
home/rps/linux
ps@rps-virtual-machine:~/linux$ cd linux
ps@rps-virtual-machine:~/linux/linux$ pwd
home/rps/linux/linux
ps@rps-virtual-machine:~/linux/linux$ cd
ps@rps-virtual-machine:~$ pwd
home/rps
ps@rps-virtual-machine:~$ rmdir linux
```

Navigation:

cd (change directory): Moves you between directories.

Exercise: Navigate to your home directory (`cd ~`), then explore subdirectories like Documents (`cd Documents`). Use `pwd` (print working directory) to confirm your location. Try going back a directory with `cd ..`

pwd (print working directory): Shows your current directory path.

Exercise: After navigating using `cd`, use `pwd` to verify the path.

ls (list): Lists files and directories in the current directory.

Exercise: Use `ls` in your home directory and note the listed items. Try `ls -l` (long format) for detailed information like permissions, owner, and size.

File and Directory Management:

mkdir (make directory): Creates a new directory.

Exercise: Create a new directory called "Projects" (`mkdir Projects`). Use `ls` to confirm its existence.

rmdir (remove directory): Deletes an empty directory.

Exercise: Make a directory named "temp" (`mkdir temp`). Delete it after verifying its existence with `ls` (`rmdir temp`).

touch (create file): Creates an empty file.

Exercise: Create a file called "test.txt" (touch test.txt). Use ls to see it listed.

cp (copy): Copies a file or directory to another location.

Exercise: Copy "test.txt" to your Documents directory (cp test.txt Documents). Verify the copy with ls Documents.

mv (move/rename): Moves or renames a file or directory.

Exercise: Rename "test.txt" to "data.txt" (mv test.txt data.txt). Use ls to confirm the change. You can also move files to a different directory (e.g., mv data.txt Documents).

rm (remove): Deletes files or directories (use with caution!).

Exercise: Important: Only use this after creating a test file (e.g., touch temp.txt). Delete "temp.txt" with rm temp.txt. Never use rm -rf without understanding the risks!

File Viewing and Permissions:

cat (concatenate): Displays the contents of a text file.

Exercise: Create a text file named "message.txt" with some content (e.g., using a text editor). Then, use cat message.txt to view its contents.

more (pager): Displays a file's contents one screen at a time (useful for long files).

Exercise: Create a larger text file (e.g., "long_text.txt") and use more long_text.txt to navigate through its content page by page.

less (pager): Similar to more, but allows you to move backward in the file.

Exercise: Use less with "long_text.txt" to try moving backward using the Up arrow key.

chmod (change mode): Modifies file permissions (owner, group, others) for read, write, and execute access.

Exercise: This requires understanding permissions. Refer to the man chmod page for details. Proceed with caution when modifying permissions.

Getting Help and Information:

man (manual): Provides detailed information about a command.

Exercise: Use `man ls` or `man cd` to learn more about these commands.

info (information): Another source of documentation for some commands, often more user-friendly than `man`.

Exercise: Try `info ls` or `info cd` if available on your system.

--help or -h (help flag): Provides a brief overview of a command's usage.

Exercise: Use `ls --help` or `ls -h` to see the basic usage options for `ls`.

```
ps@rps-virtual-machine:~$ cd ~
ps@rps-virtual-machine:~$ pwd
/home/rps
ps@rps-virtual-machine:~$ cd Documents
ps@rps-virtual-machine:~/Documents$ pwd
/home/rps/Documents
ps@rps-virtual-machine:~/Documents$ cd ..
ps@rps-virtual-machine:~$ pwd
/home/rps
ps@rps-virtual-machine:~$ ls
assignment  Desktop  dognames  du          file3.txt  file6.txt  history.txt  Music  mydirectory  projects  snap  test1
basename   Downloads file1.txt  file4.txt  file.txt   linux      mv          password  Public  Templates  type
book       df        file2.txt  file5.txt  historyfile.txt  manbasename  mydir  Pictures  README.md  test  Videos
ps@rps-virtual-machine:~$ ls -l
total 120
-rwxrwxr-x 2 rps rps 4096 Jul 14 12:42 assignment
-rwxrwxr-x 2 rps rps 4096 Jun 21 15:26 basename
-rwxrwxr-x 2 rps rps 4096 Jul 17 10:16 book
-rwxrwxr-x 2 rps rps 4096 Jun 21 15:27 Desktop
-rwxr-xr-x 3 rps rps 4096 Mar 10 09:58 Desktop
-rwxrwxr-x 2 rps rps 4096 Jun 21 15:27 df
-rwxr-xr-x 2 rps rps 4096 Jul 17 12:09 Documents
-rw-rw-r-- 1 rps rps 30 Jun 21 16:00 dognames
-rwxr-xr-x 3 rps rps 4096 Jul 16 16:53 Downloads
-rwxrwxr-x 2 rps rps 4096 Jun 21 15:27 du
-rw-rw-r-- 1 rps rps 0 Jun 21 15:38 file1.txt
-rw-rw-r-- 1 rps rps 72 Jun 21 13:13 file2.txt
-rw-rw-r-- 1 rps rps 0 Jun 21 13:15 file3.txt
-rw-rw-r-- 1 rps rps 0 Jun 21 13:15 file4.txt
-rw-rw-r-- 1 rps rps 0 Jun 21 13:15 file5.txt
-rw-rw-r-- 1 rps rps 0 Jun 21 13:15 file6.txt
-rw-rw-r-- 1 rps rps 0 Jun 21 15:37 file.txt
-rw-rw-r-- 1 rps rps 4500 Jun 21 15:58 historyfile.txt
-rw-rw-r-- 1 rps rps 2431 Jun 21 16:03 history.txt
-rwxrwxr-x 3 rps rps 4096 Jul 17 10:29 linux
-rwxrwxr-x 2 rps rps 4096 Jun 21 15:26 manbasename
```

```

lrwxrwxr-x 2 rps rps 4096 Jul 16 12:15 test1
lrwxrwxr-x 2 rps rps 4096 Jun 21 15:27 type
lrwxr-xr-x 2 rps rps 4096 Mar 16 2023 Videos
ps@rps-virtual-machine:~$ mkdir Projects
ps@rps-virtual-machine:~$ ls
assignment  dem.txt  Documents  du          file3.txt  file6.txt  history.txt  Music  mydirectory  projects  README.md  test  Videos
asenname   Desktop  dognames   file1.txt  file4.txt  file.txt    linux        mv      password    Projects  snap      test1
look       df       Downloads  file2.txt  file5.txt  historyfile.txt  manbasename  nydir   Pictures    Public   Templates  type
ps@rps-virtual-machine:~$ mkdir temp
ps@rps-virtual-machine:~$ ls
assignment  dem.txt  Downloads  file3.txt  file.txt  manbasename  mydirectory  Projects  temp  type
asenname   Desktop  du          file4.txt  historyfile.txt  Music  password    Public  Templates  Videos
look       df       Downloads  file1.txt  file5.txt  history.txt   mv      Pictures    README.md  test
em.txt     dognames file2.txt  file6.txt  linux        nydir        projects    snap      test1
ps@rps-virtual-machine:~$ rmdir temp
ps@rps-virtual-machine:~$ ls
assignment  dem.txt  Documents  du          file3.txt  file6.txt  history.txt  Music  mydirectory  projects  README.md  test  Videos
asenname   Desktop  dognames   file1.txt  file4.txt  file.txt    linux        mv      password    Projects  snap      test1
look       df       Downloads  file2.txt  file5.txt  historyfile.txt  manbasename  nydir   Pictures    Public   Templates  type
ps@rps-virtual-machine:~$ rmdir temp
rmdir: failed to remove 'temp': No such file or directory
ps@rps-virtual-machine:~$ touch test.txt
ps@rps-virtual-machine:~$ ls
assignment  dem.txt  Downloads  file3.txt  file.txt  manbasename  mydirectory  Projects  Templates  type
asenname   Desktop  du          file4.txt  historyfile.txt  Music  password    Public  test  Videos
look       df       Downloads  file1.txt  file5.txt  history.txt   mv      Pictures    README.md  test1
em.txt     dognames file2.txt  file6.txt  linux        nydir        projects    snap      test.txt
ps@rps-virtual-machine:~$ cp test.txt Documents
ps@rps-virtual-machine:~$ ls Documents
test.txt
ps@rps-virtual-machine:~$ mv test.txt data.txt
ps@rps-virtual-machine:~$ ls
assignment  dem.txt  dognames   file2.txt  file6.txt  linux  nydir  projects  snap  type
asenname   Desktop  Downloads  file3.txt  file.txt  manbasename  mydirectory  Projects  Templates  Videos
look       df       du          file4.txt  historyfile.txt  Music  password    Public  test

```

```

ps@rps-virtual-machine:~$ ls Documents
test.txt
ps@rps-virtual-machine:~$ mv test.txt data.txt
ps@rps-virtual-machine:~$ ls
assignment  dem.txt  dognames   file2.txt  file6.txt  linux  nydir  projects  snap  type
asenname   Desktop  Downloads  file3.txt  file.txt  manbasename  mydirectory  Projects  Templates  Videos
look       df       du          file4.txt  historyfile.txt  Music  password    Public  test
data.txt   Documents  file1.txt  file5.txt  history.txt   mv      Pictures    README.md  test1
ps@rps-virtual-machine:~$ mv data.txt Documents
ps@rps-virtual-machine:~$ touch temp.txt
ps@rps-virtual-machine:~$ rm temp.txt
ps@rps-virtual-machine:~$ echo "This is a message." > message.txt
ps@rps-virtual-machine:~$ cat message.txt
this is a message.
ps@rps-virtual-machine:~$ seq 1 20 > long_text.txt
ps@rps-virtual-machine:~$ more long_text.txt

```

```

0
1
2
3
4
5
6
7
8
9
0

```


directory named "exercises," and then move into it.

A: `cd ~`

`mkdir exercises`

`cd exercises`

2. `cp ../data.txt` . (assuming "data.txt" exists in the parent directory): Copy a file named "data.txt" from the parent directory into your current "exercises" directory.

A: `cp ../data.txt` .

```
rps@rps-virtual-machine:~$ cd ~
rps@rps-virtual-machine:~$ mkdir exercises
rps@rps-virtual-machine:~$ cd exercises
rps@rps-virtual-machine:~/exercises$ cp ../data.txt
bash: cp ../data.txt: No such file or directory
rps@rps-virtual-machine:~/exercises$ cd
rps@rps-virtual-machine:~$ ls
commands  Desktop  Downloads  file.txt      message.txt  new_pear  programs  Public  Templates  Videos
desktop   Documents  exercises  long_text.txt  Music        Pictures  Projects  snap    unix
```

3. `mv important_file.txt important_data.txt && touch report.md`: Rename a file named "important_file.txt" to "important_data.txt" and create a new Markdown file named "report.md" within the "exercises" directory.

: `mv important_file.txt important_data.txt`

`touch report.md`

```
rps@rps-virtual-machine:~/exercises$ mkdir important_fille
rps@rps-virtual-machine:~/exercises$ ls
important_fille
rps@rps-virtual-machine:~/exercises$ mv important_file important_data
mv: cannot stat 'important_file': No such file or directory
rps@rps-virtual-machine:~/exercises$ mv important_fille important_data
rps@rps-virtual-machine:~/exercises$ ls
important_data
rps@rps-virtual-machine:~/exercises$ touch report.md
rps@rps-virtual-machine:~/exercises$ ls
important_data  report.md
rps@rps-virtual-machine:~/exercises$
```

4. `cat report.md` (assuming the file is empty): View the contents (which should be empty) of the "report.md" file using cat.

Ans : Displays the contents of the "report.md" file, which should be empty initially.

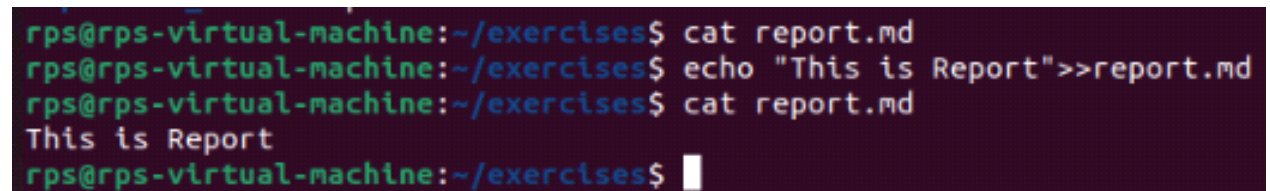
cat report.md

Output: Since the file is empty, no content will be displayed.

5. echo "This is a report" >> report.md: Append a line of text "This is a report" to the "report.md" file using redirection ('>>').

Ans : Appends the text "This is a report" to the "report.md" file using redirection ('>>').

echo "This is a report" >> report.md

A terminal window with a dark purple background and light green text. The prompt is 'rps@rps-virtual-machine:~/exercises\$'. The first command is 'cat report.md', which produces no output. The second command is 'echo "This is Report">>report.md'. The third command is 'cat report.md', which outputs 'This is Report' followed by a new line. The prompt returns after the third command.

```
rps@rps-virtual-machine:~/exercises$ cat report.md
rps@rps-virtual-machine:~/exercises$ echo "This is Report">>report.md
rps@rps-virtual-machine:~/exercises$ cat report.md
This is Report
rps@rps-virtual-machine:~/exercises$
```

6. less report.md: Use less to view the contents of the "report.md" file, which now contains the appended text.

Ans : Uses the `less` command to view the contents of the "report.md" file, which now contains the appended text.

less report.md

This is Report

Finding and Organizing Files:

7. ls -l | grep 'txt\$': List all files in the current directory with the long format (-l) and filter the output using grep to only show files ending with the ".txt" extension.

Ans: Lists all files in the current directory with the long format (-l) and filters the output using grep to only show files ending with the ".txt" extension.

```
ls -l | grep 'txt$'
```

```
rps@rps-virtual-machine:~$ ls -l | grep 'txt$'
drwxrwxr-x 2 rps rps 4096 Jul 17 12:43 data.txt
--w----- 1 rps rps    0 Jul 17 12:26 file.txt
-rw-rw-r-- 1 rps rps  792 Jul 17 12:17 long_text.txt
-rw-rw-r-- 1 rps rps   14 Jul 17 12:09 message.txt
rps@rps-virtual-machine:~$
```

8. find . -name 'data*': Search for all files starting with "data" (including "data.txt", "data_backup.csv", etc.) recursively within the current directory and its subdirectories using find.

Ans : Searches for all files starting with "data" (including "data.txt", "data_backup.csv", etc.) recursively within the current directory and its subdirectories using find.

find . -name 'data*'

```
rps@rps-virtual-machine:~$ find . -name 'data*'
./Documents/data.txt
./data.txt
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/https+++github.com/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/https+++docs.gitlab.com/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/https+++www.google.com/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/https+++accounts.google.com/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/https+++mail.google.com/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/http+++10.10.16.125+8929/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/https+++docs.vmware.com/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/storage/default/https+++ourcodeworld.com/ls/data.sqlite
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/settings/data.safe.bin
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/datareporting
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/datareporting/glean/db/data.safe.bin
./snap/firefox/common/.mozilla/firefox/6oz9udyh.default/security_state/data.safe.bin
./.config/Code/GPUCache/data_0
./.config/Code/GPUCache/data_3
./.config/Code/GPUCache/data_1
./.config/Code/GPUCache/data_2
./.config/Code/databases
./.config/Code/DawnCache/data_0
./.config/Code/DawnCache/data_3
./.config/Code/DawnCache/data_1
./.config/Code/DawnCache/data_2
./.config/libreoffice/4/user/database
./.config/libreoffice/4/user/pack/database
rps@rps-virtual-machine:~$
```

9. mv data* data_archive/: Move all files starting with "data" into a new directory named "data_archive" (create it if it doesn't exist).

Ans : Moves all files starting with "data" into a new directory named "data_archive". You need to create the "data_archive" directory if it doesn't exist.

mkdir -p data_archive

mv data* data_archive/

```

ps@rps-virtual-machine:~/exercises$ mkdir -p data_archive
ps@rps-virtual-machine:~/exercises$ ls
ata_archive  exercises
ps@rps-virtual-machine:~/exercises$ mv data* data_archive/
v: cannot move 'data_archive' to a subdirectory of itself, 'data_archive/data_archive'
ps@rps-virtual-machine:~/exercises$ pwd
home/rps/exercises
ps@rps-virtual-machine:~/exercises$ ls
ata_archive  exercises
ps@rps-virtual-machine:~/exercises$ cd data_archive
ps@rps-virtual-machine:~/exercises/data_archive$ pwd
home/rps/exercises/data_archive
ps@rps-virtual-machine:~/exercises/data_archive$ mv data* data_archive
ps@rps-virtual-machine:~/exercises/data_archive$ pwd
home/rps/exercises/data_archive
ps@rps-virtual-machine:~/exercises/data_archive$

```

Print c++ :-

```

rps@rps-virtual-machine:~$ ./hello
Welcome C++
rps@rps-virtual-machine:~$ sudo apt install g++
[sudo] password for rps:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
g++ is already the newest version (4:11.2.0-1ubuntu1).
The following packages were automatically installed and are no longer required:
  libflashrom1 libftdi1-2 libllvm13 libwpe-1.0-1 libwpebackend-fdo-1.0-1
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
rps@rps-virtual-machine:~$ g++ E hello.cpp -o hello.i
/usr/bin/ld: cannot find E: No such file or directory
collect2: error: ld returned 1 exit status
rps@rps-virtual-machine:~$ g++ -E hello.cpp -o hello.i
rps@rps-virtual-machine:~$ g++ -S hello.i -o hello.s
rps@rps-virtual-machine:~$ g++ -c hello.s -o hello.o
rps@rps-virtual-machine:~$ g++ hello.o -o hello_class
rps@rps-virtual-machine:~$ ./hello_class
Welcome C++
rps@rps-virtual-machine:~$ head hello.cpp
#include<iostream>
int main(){
    std::cout << "Welcome C++" << std::endl;
    return 0;
}

rps@rps-virtual-machine:~$ tail hello.cpp
#include<iostream>
int main(){
    std::cout << "Welcome C++" << std::endl;
    return 0;
}

```

PERMISSION :-

```
ps@rps-virtual-machine:~$ ls -l .bash_history
-rw----- 1 rps rps 4448 Jul 17 16:15 .bash_history
ps@rps-virtual-machine:~$ cp .bash_history sample.txt
ps@rps-virtual-machine:~$ ls -l sample.txt
-rw----- 1 rps rps 4448 Jul 17 17:15 sample.txt
ps@rps-virtual-machine:~$ chmod a-r sample.txt
ps@rps-virtual-machine:~$ ls -l sample.txt
-w----- 1 rps rps 4448 Jul 17 17:15 sample.txt
ps@rps-virtual-machine:~$ less sample.txt
ample.txt: Permission denied
ps@rps-virtual-machine:~$ chmod u+rw sample.txt
ps@rps-virtual-machine:~$ ls -l sample.txt
-rw----- 1 rps rps 4448 Jul 17 17:15 sample.txt
ps@rps-virtual-machine:~$ less sample.txt
ps@rps-virtual-machine:~$ rm sample.txt
ps@rps-virtual-machine:~$
```