

# Linux

## Working with directories

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A brief overview of the most common commands to work with directories: `pwd`, `cd`, `ls`, `mkdir` and `rmdir`. These commands are available on any Linux (or Unix) system.

- `pwd` : Print Working Directory (Will tell you the location you are currently working)
- `cd` : You can change your current directory with the `cd` command
- `cd` : shortcut to get back into your home directory. Just typing `cd` without a target directory, will put you in your home directory
- `cd ..` : To go to the parent directory (the one just above your current directory in the directory tree)
- `cd -` : To go to the previous directory
- `ls` : You can list the contents of a directory with `ls`
- `ls -a` : To show all files. Showing all files means including the hidden files. When a file name on a Linux file system starts with a dot, it is considered a hidden file and it doesn't show up in regular file listings.
- `ls -l` : to display the contents of the directory in different formats or to display different parts of the directory.
- `ls -lh` : shows the numbers (file sizes) in a more human readable format.
- `mkdir` : Create new directories
- `mkdir -p`: To create parent directories as needed
- `rmdir`: To remove the directory. (Directory has to be empty)

## Exercise 1

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1. Login to your VM. and Display your current directory
2. Change to /etc directory and display current directory
3. Go to root directory and list the contents
4. List a long listing of the root directory
5. Go to your home directory
6. Make directory named 'test'
7. make a directory inside test directory named 'one' and make a hidden directory inside 'one' directory named '.hidden'. Make a directory inside test directory named 'one' and make a hidden directory inside 'one' directory named 'unhidden'.
8. Go to 'one' directory and list the content.
9. Then list all contents
10. Remove directory 'unhidden'
11. Go to your home and try to remove directory 'test'
12. Type 'pwd' in different directories
13. Go to 'cd /etc' -> type 'pwd' -> type 'ls' -> type 'ls -l'

## Exercise 2

Exercise 1: Create a directory and copy files to it

1. Create a directory named "exercise1" using the mkdir command.
2. Use the touch command to create two files named "file1.txt" and "file2.txt".
3. Use the cp command to copy both files to the "exercise1" directory.
4. Verify that the files were copied correctly by using the ls command.

Exercise 2: Rename and move files

1. In the "exercise1" directory, rename "file1.txt" to "newfile1.txt" using the mv command.
2. Create a subdirectory named "subdir" inside the "exercise1" directory using the mkdir command.
3. Use the mv command to move "newfile1.txt" to the "subdir" directory.
4. Verify that "newfile1.txt" is now inside the "subdir" directory using the ls command.

### Exercise 3: Search for files

1. Use the find command to search for all files with a ".txt" extension in the "exercise1" directory.
2. Insert below lines in newfile.txt

**First example**

**Second example.com**

**Third example.txt**

3. Use the grep command to search for all lines containing the word "example" in the "newfile1.txt" file.
4. Use the grep command with the -r option to search for all lines containing the word "example" in all files within the "exercise1" directory and its subdirectories.

#### Exercise 4: File Permissions

1. In the "exercise1" directory, create a new file called "secret.txt" using the touch command.
2. Use the chmod command to set the file permissions to read and write for the owner only.
3. Use the ls -l command to verify that the file permissions have been set correctly.
4. Try to open and edit the file as a different user to see if the permissions are working as expected.

#### Exercise 5: File Ownership and Group Ownership

1. Create a new user using the adduser command.
2. In the "exercise1" directory, create a new file called "users.txt" using the touch command.
3. Use the chown command to change the ownership of the "users.txt" file to the new user you created in step 1.

#### Exercise 6: Symbolic and Numeric Permissions

- 4.
1. In the "exercise1" directory, create a new file called "permissions.txt" using the touch command.

2. Use the `chmod` command to set the permissions of the "permissions.txt" file to read and write for the owner, read-only for the group, and no access for others, using both symbolic and numeric notation.
3. Use the `ls -l` command to verify that the permissions of the file have been set correctly.

## Exercise 2

\*You have to add two new hard disks on your Linux system with size of 5GB and you need to format it and mount it. /dev/sdb and /dev/sdc in the system. You want to format it with the ext4 file system and mount it to a directory called /mnt/sdb and /mnt/sdc. After mounting the hard disk, you want to ensure that the mount point persists across reboots.

1. Create directory called **/home/student/Documents/project\_plans** directory. (Hint: if ~/Documents does not exist, the -p option for the mkdir command will create it.)

2. Create two empty files in the project\_plans directory:  
**season1\_project\_plan.odf and season2\_project\_plan.odf.**

3. Create a total of 12 files with names **tv\_seasonX\_episodeY.ogg**. Replace **X** with the season number and **Y** with that season's episode, for two seasons of six episodes each.

4. Create a total of eight files with names **mystery\_chapterX.odf**. Replace **X** with the numbers 1 through 8.

5. Use a single command to create two subdirectories named **season1 and season2** under the **Videos** directory, to organize the TV episodes. (have to create a **videos** directory also)

6. Move the appropriate TV episodes into the season subdirectories. Use only two commands, specifying destinations using relative syntax.

7. Create a 2-level directory hierarchy with a single command to organize the mystery book chapters. Create **my\_bestseller** under the **Documents** directory, and **chapters** under the new **my\_bestseller** directory.

8. Create three more subdirectories directly under the **my\_bestseller** directory using a single command. Name these subdirectories **editor**, **changes**, and **vacation**.

9. Move all book chapters to the **chapters** directory, which is now your current directory.

10. Move the first two chapters to the **editor** for review. Move only those two chapters to the **editor** directory.

11. While on vacation you intend to write **chapters 7 and 8**. Use a single command to move the files from the **chapters** directory to the **vacation** directory.

12. Change your working directory to **~/Videos/season2**, and then copy the first episode of

the season to the **vacation** directory.

13. Use a single `cd` command to change from your working directory to the `~/Documents/my_bestseller/vacation` directory. List its files. Use the previous working directory argument to return to the `season2` directory. (This will succeed if the last directory change with the `cd` command was accomplished with one command rather than several `cd` commands.) From the `season2` directory, copy the episode 2 file into the vacation directory. Use the shortcut again to return to the vacation directory.

14. The authors of **chapters 5 and 6** want to experiment with possible changes. Copy both files from the `~/Documents/my_bestseller/chapters` directory to the `~/Documents/my_bestseller/changes` directory to prevent these changes from modifying original files.

15. When the vacation is over, the vacation directory is no longer needed. Delete it using the `rm` command with the recursive option.

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Create a directory in `/home/new/numbers`



Create numbers.txt (Containing ten lines of numbers one to ten) file with cat command. \$ **cat > numbers1.txt**

Add the lines with enter key at the end. After inserting all the lines press **Ctrl + D**

one two . . Ten

View the file you created using less and cat

one

two

three

four

five

six

seven

eight

nine

Ten

Press q to exit from less

View first four lines and last four lines using head and tail commands

one

two

three

four

seven

eight

nine

ten

Create another file numbers2.txt(with lines contain eleven to fifteen)

eleven

twelve

thirteen

fourteen

fifteen

Combine numbers1.txt and numbers2.txt and create numbers3.txt. and view the file.

one

two

three

four

five

six

seven

eight

nine

ten

eleven

twelve

thirteen

fourteen

fifteen

Check the file **format** of the newly created file

Create a **test** directory and Copy all the created files to the **test** directory. and verify

**numbers2.txt numbers3.txt numbers.txt**

Make a copy of **test** directory as newest and rename it to **numbers**

**Delete** the test directory