Linux Environment Lab 1

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1. Objective

Understanding the Linux Architecture, File System, Commands etc.

2. Prerequisites

Prerequisites	Version
Operating System	Linux (Any flavor)

3. Problem Statement

To understand the Linux File System, Explore the content of each directory present in the root directory. Understand different Linux commands and execute the same.

4. Summary

Steps	Description
Step 1	Explore the content of each directory inside root directory
Step2	Execute Directory and File related commands
Step3	Output
Step4	Analyzing the Output with Program

5. Fundamental Concept

A Linux file system is a structured collection of files on a disk drive or a partition. A partition is a segment of memory and contains some specific data. Linux file system is generally a built-in layer of a Linux operating system used to handle the data management of the storage. It helps to arrange the file on the disk storage. It manages the file name, file size, creation date, and much more information about a file.

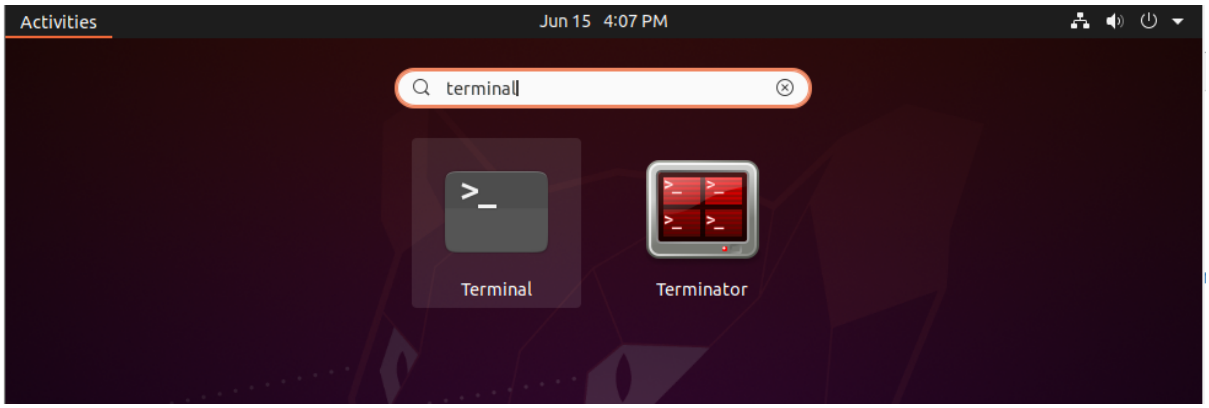
Directory and File related Linux Commands:

Command	Description
pwd	It prints the path of the working directory, starting from the root
ls	Lists directory contents of files and directories
cd	It is used to change current working directory
mkdir	Allows the user to create directories. This command can create multiple directories at once
rmdir	Used to remove empty directories from the filesystem in Linux
cp	Used to copy files or group of files or directory
mv	Used to move one or more files or directories from one place to another in file system like UNIX
touch	Used to create, change and modify timestamps of a file
less	Used to read contents of text file one page(one screen) per time
more	Used to view the text files in the command prompt, displaying one screen at a time in case the file is large
cat	Reads data from file and gives their content as output. It helps us to create, view, concatenate files
head	Prints the top N number of data of the given input
tail	Prints the last N number of data of the given input

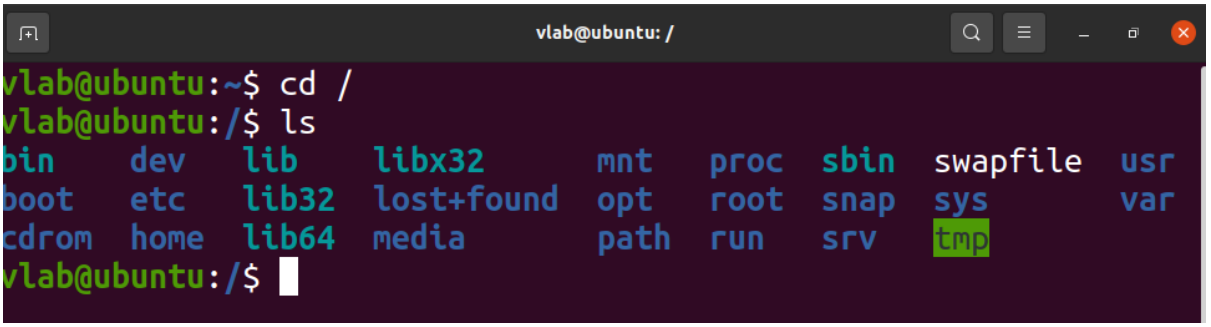
6. Template for each step

1. Step-1: Explore the content of each directory inside root directory

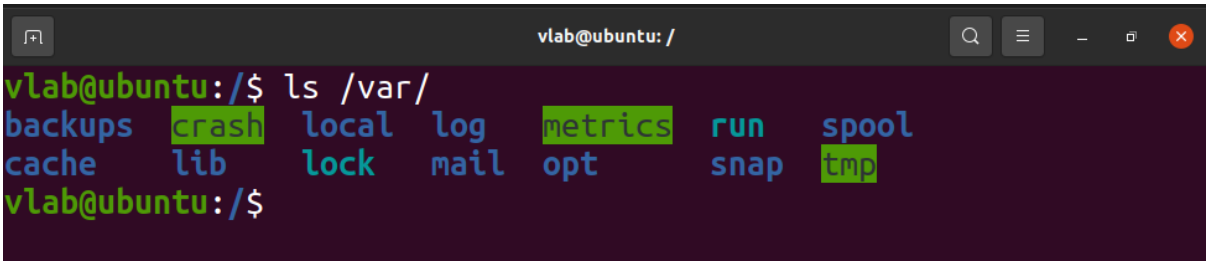
- Open the Terminal by clicking on Activities and type terminal or use keyboard shortcut **Ctrl + Alt + T**



- Go to the root directory by executing command **cd /** and then list the contents of root directory using **ls** commands



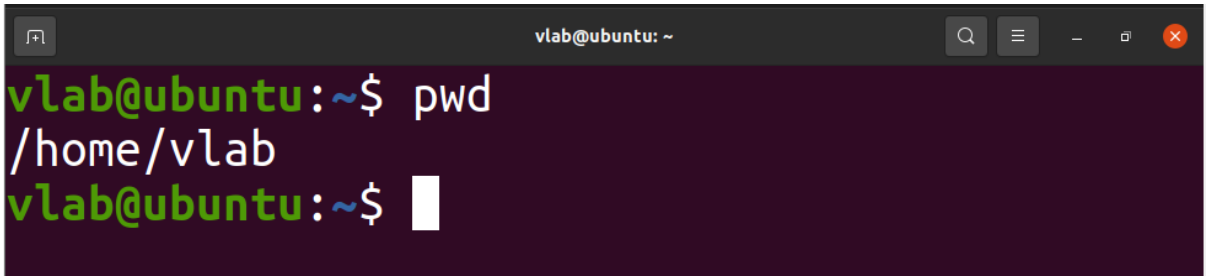
- Now, go inside each directory using command **cd** and list the content of that directory using command **ls** or execute the command **ls** followed by directory name from the root directory



2. Step-2: Execute Directory and File related commands

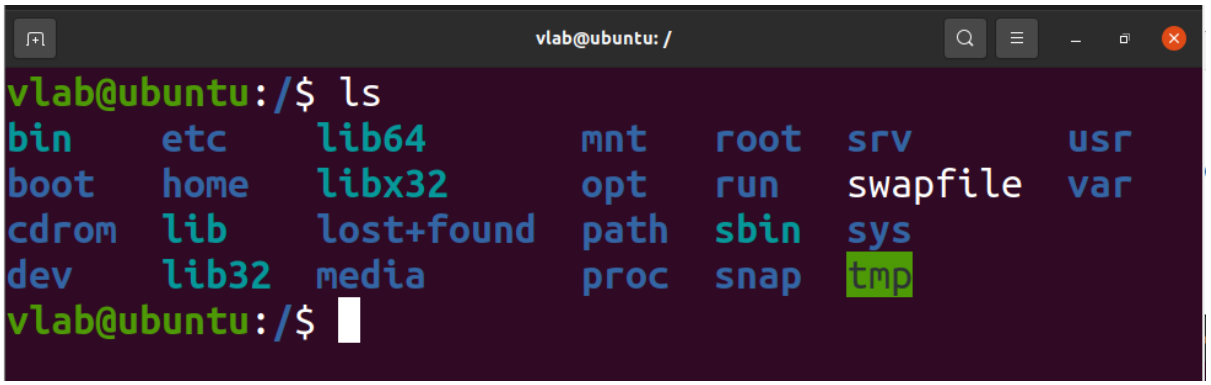
1. pwd: Print Working Directory

Execute the command **pwd.** This will print the current working directory



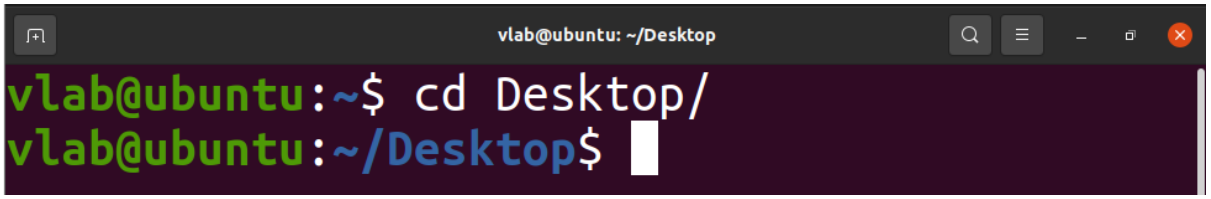
2. ls: List Directory Contents

Execute the command **ls.** This will print the content of the current working directory on the terminal



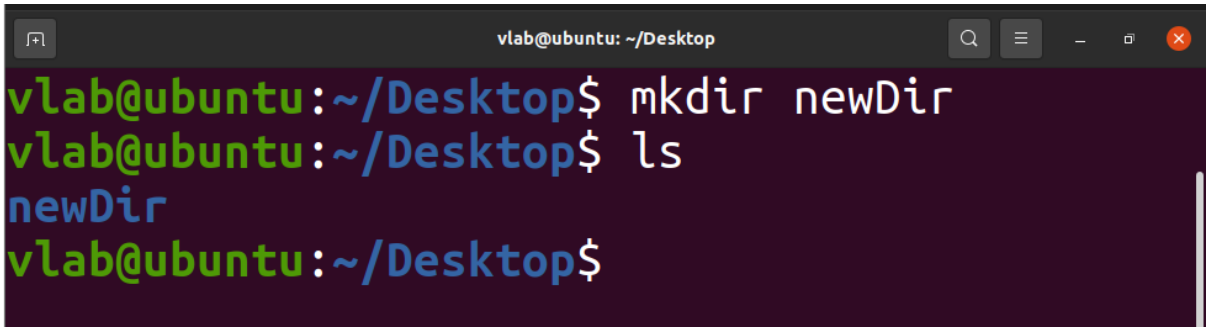
3. cd: Change Directory

Change the directory to **Desktop** using command **cd**



4. mkdir: Create Directory

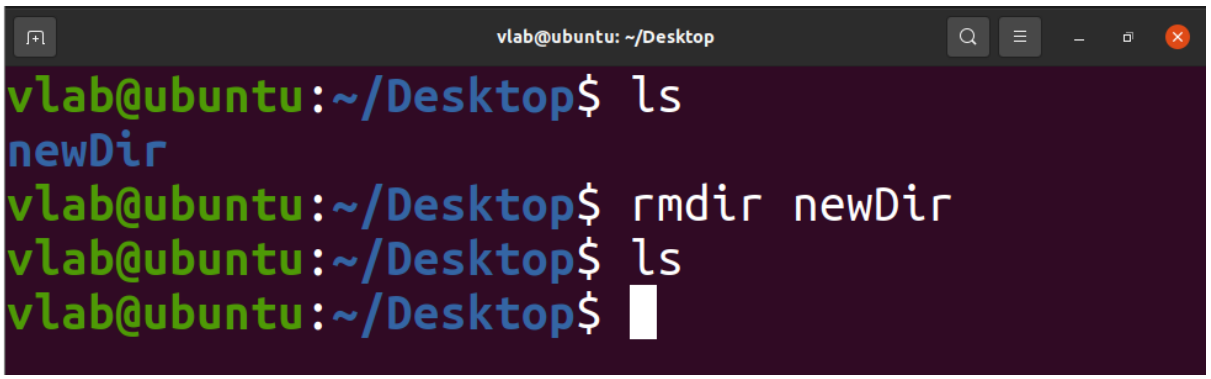
Create a new directory **newDir** using command **mkdir** and using **ls** command you can check the newly created directory



5. rmdir: Remove Directory

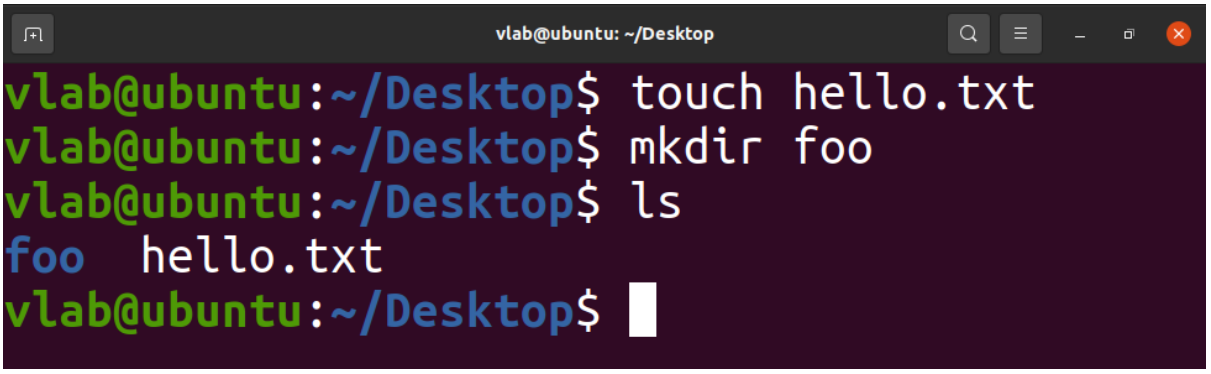
Remove the directory **newDir** using command r**mdir** and using **ls** command you can check the directory has been deleted or not.

- Note: Directory deleted using **rmdir** gets deleted permanently. They can't be recovered.

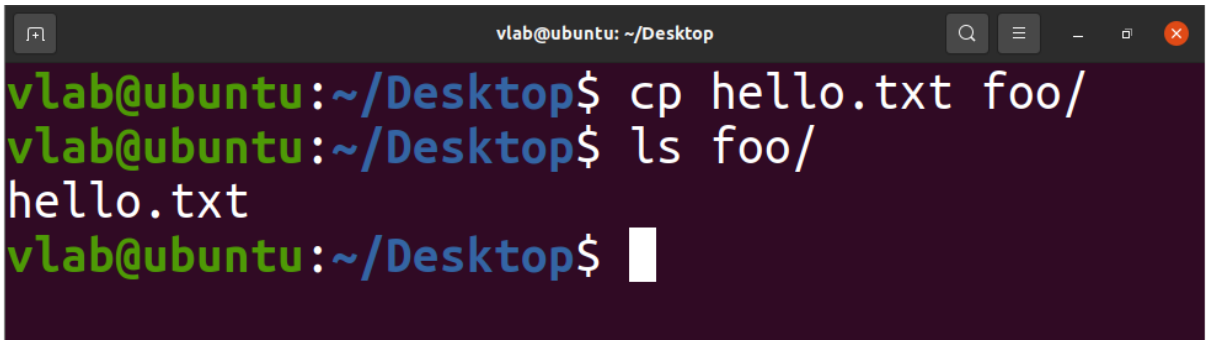


6. cp: Copy

First create a new file with command **touch** and a directory using command **mkdir** and confirm using **ls** command

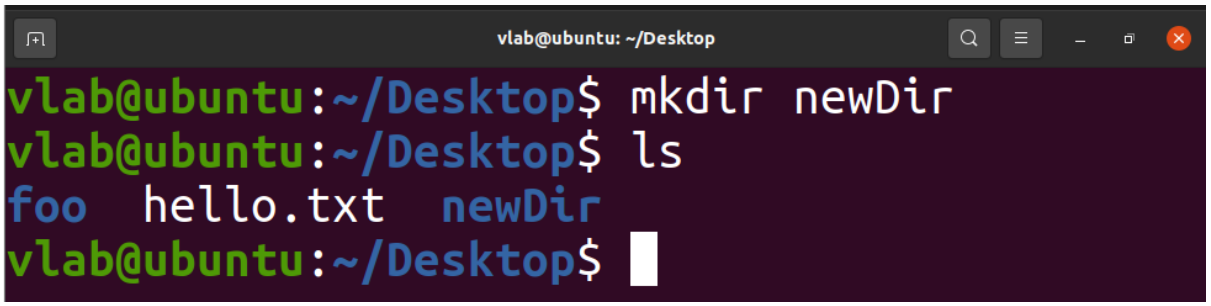


- Now using **cp** command copy the **hello.txt** file to **foo** directory and then check the contents of **foo** directory using **ls** command.
- You can also copy the directory using **cp**.

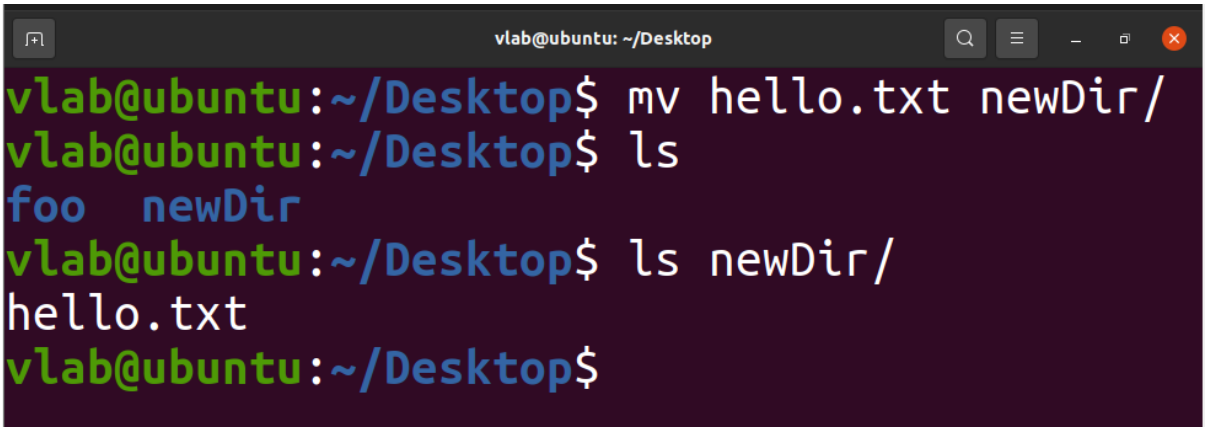


7. mv: Move

First create a new directory using command **mkdir** and confirm using **ls** command.

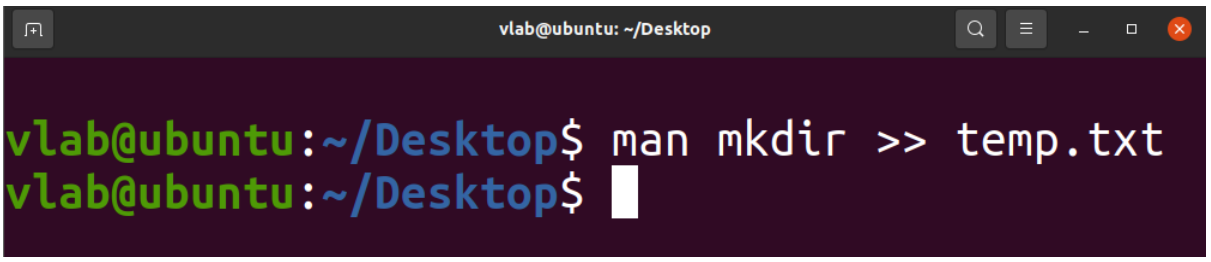


Now, move the file **hello.txt** inside newly created directory and then check the content of current directory and newly created directory using **ls** command



8. less: Allows you to view the contents of a file and navigate through file

First we will create a new file which has large content in it, for that execute below command:

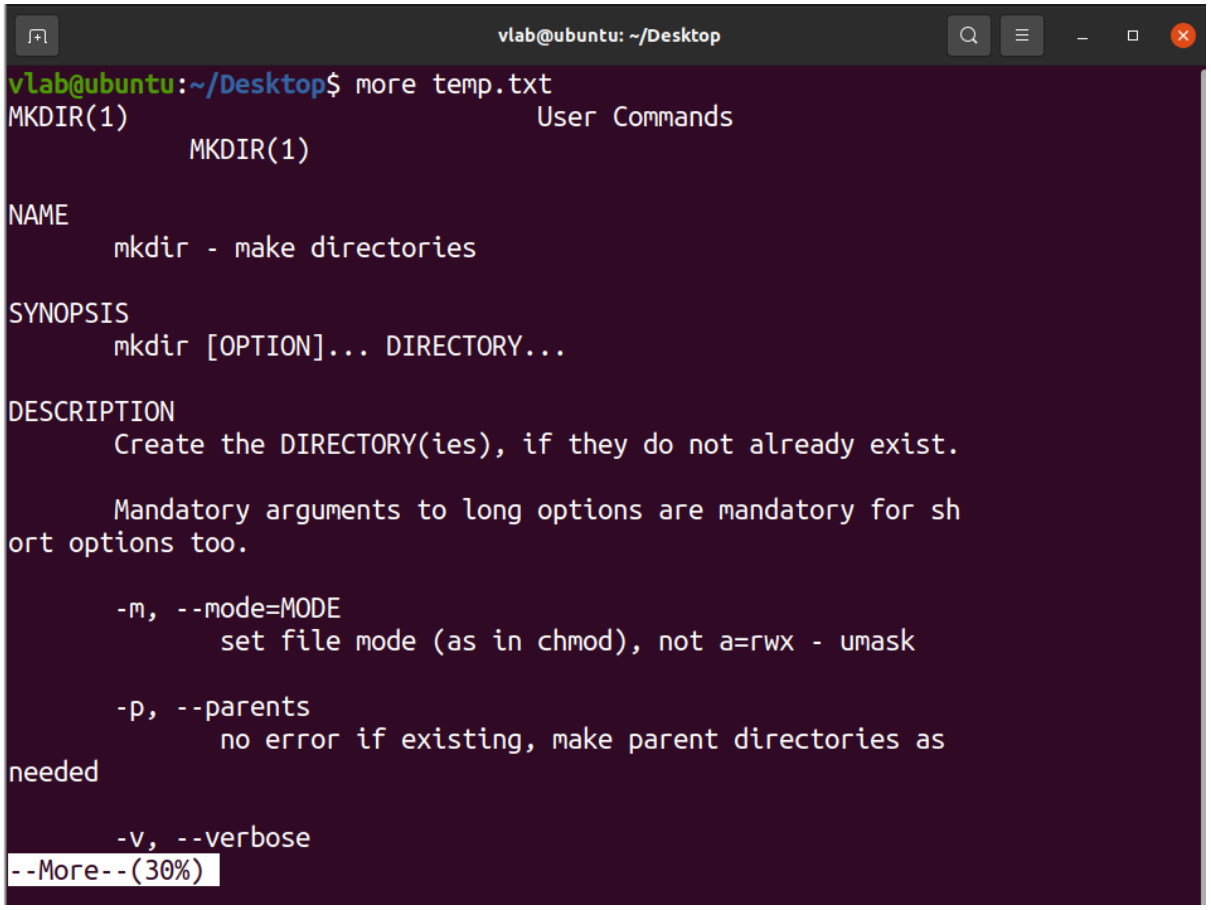


Now we will read the content of the file **temp.txt** using command less. This command will only show the one page at a time on the screen. If you can press **Enter key** it will show next line on the screen. And, if you press page down key, it will show the next page on the screen. Similarly, page up key will take you one page back.

9. more: Open a given file for interactive reading

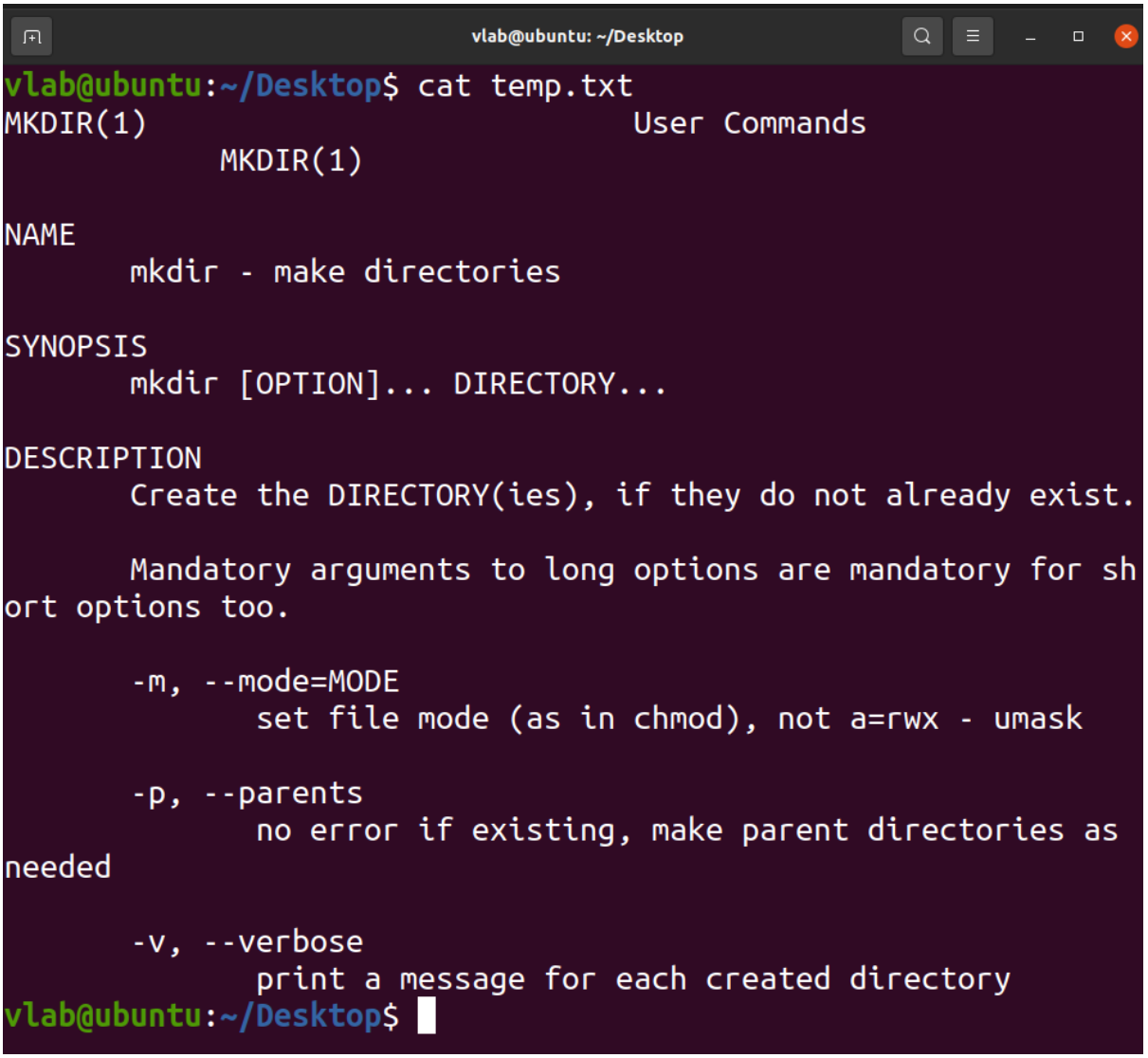
Now, we will use the **more** command to read the content of **temp.txt.** You can scroll through the contents of the file by pressing **ENTER** or **SPACE BAR** keys.

Note: The main difference between more and less is that less command is faster because it does not load the entire file at once and allows navigation though file using page up/down keys.



10. cat: Concatenate

Now, we will use the **cat** command to display the content of **temp.txt** on the screen**.**

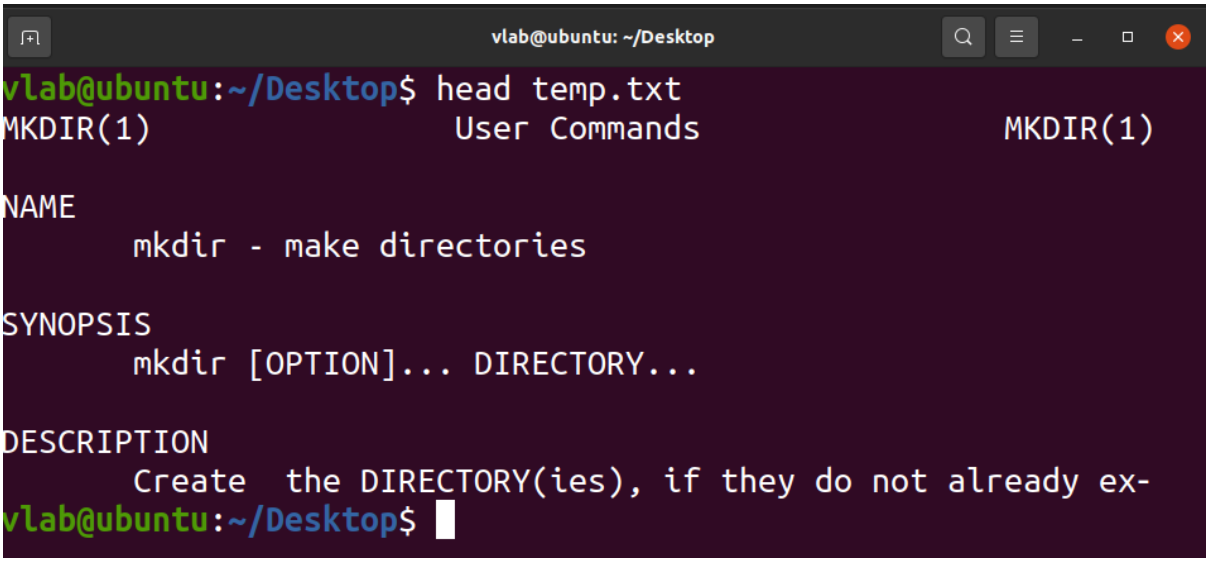


Now, we will use **cat** command to copy the content of **temp.txt** file to another text file. So, first we will create an empty text file using **touch** command and then copy the content of **temp.txt** to newly created file.

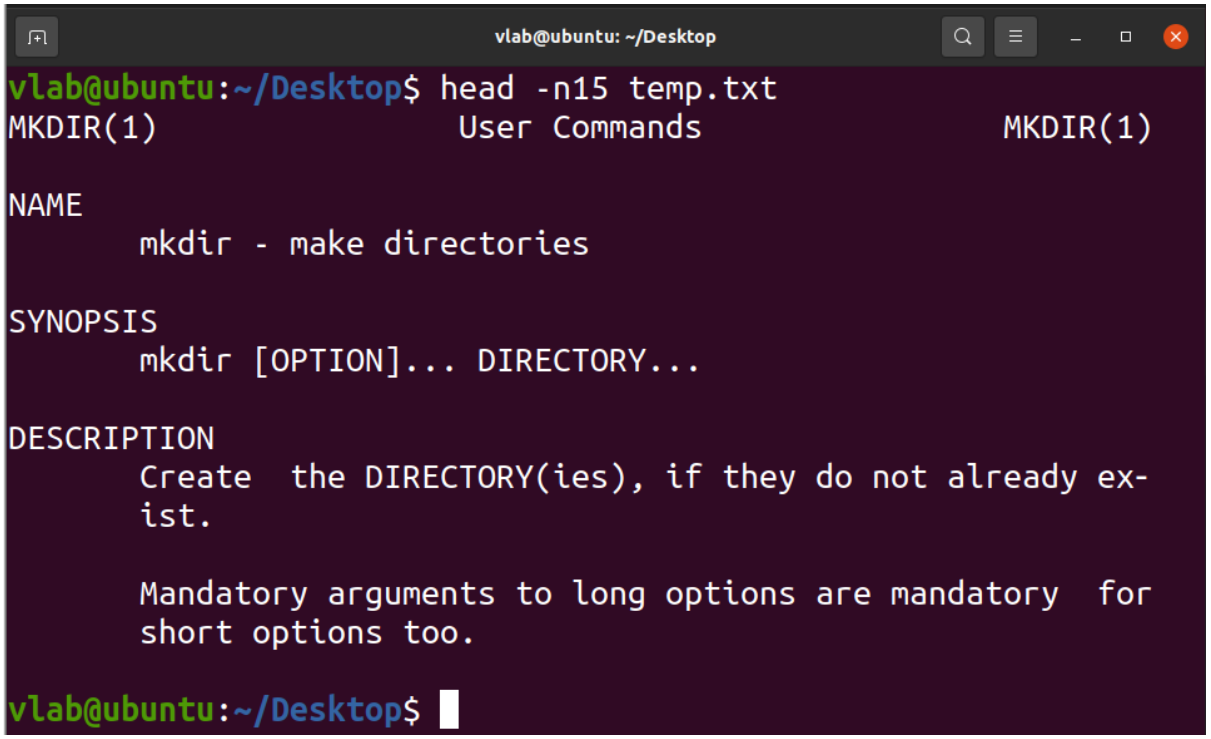
Now, print the content of **newFile.txt** using **cat** command and you can see that the content of **temp.txt** has got copied to **newFile.txt** using cat command

11. head: Print the top N number of data of the given input

We can use a **head** command to display the content of **temp.txt** on the screen**.** By default it will print first 10 lines on the screen.

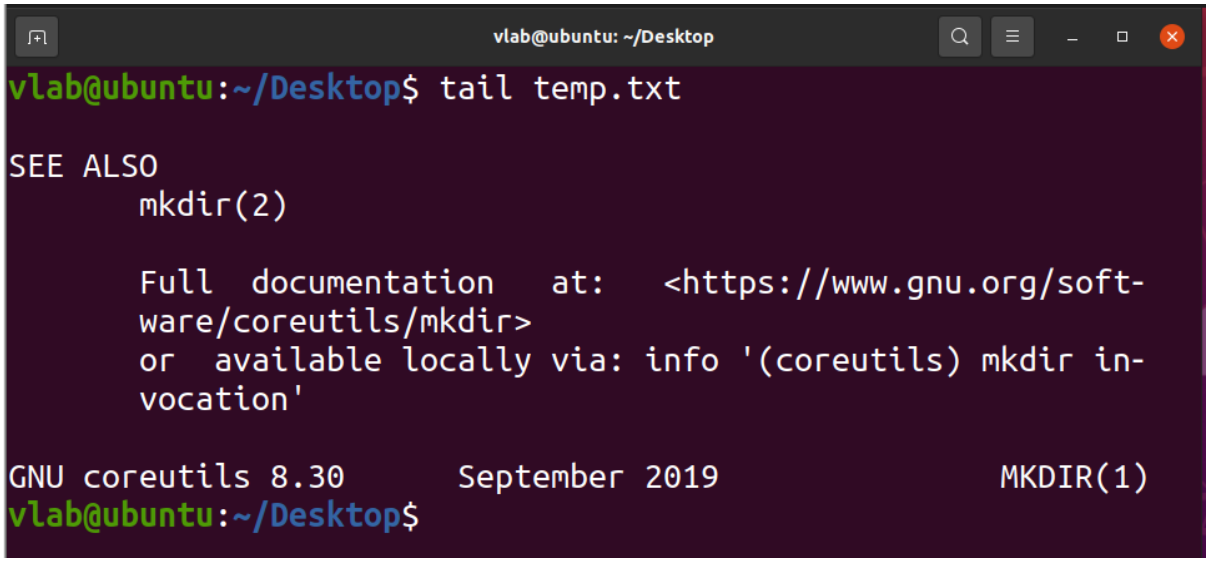


You can specify the no of lines to be printed on the screen by using **-n** followed by no of lines.

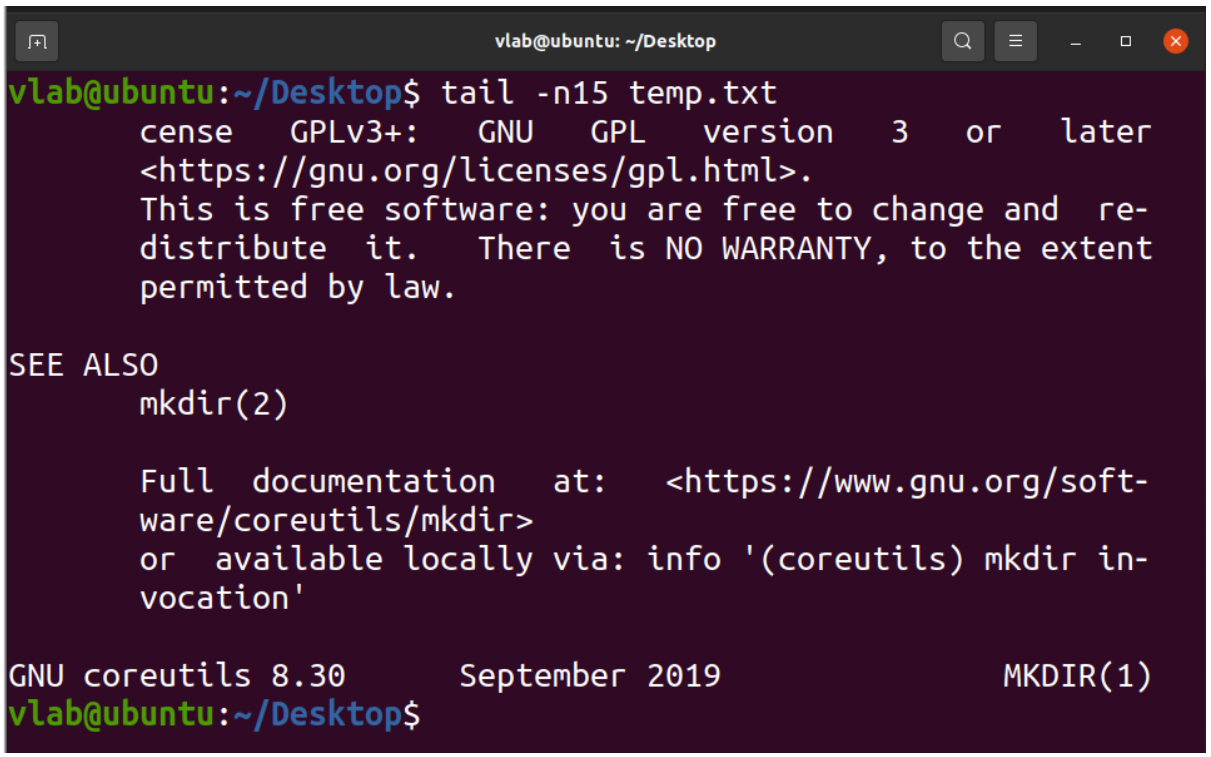


12. tail: Print the last N number of data of the given input

We can use a tail command to display the content of **temp.txt** from the end of the file. By default it will print last 10 lines on the screen.



We can specify the no of lines to print using option **-n**.



7. References

- https://en.wikipedia.org/wiki/File_system
- https://en.wikipedia.org/wiki/Filesystem_Hierarchy_Standard