Al-Isra' a University College Cyber Security Engineering

Operating systems

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Lecture (2,3)

1- Kali Linux Command Line

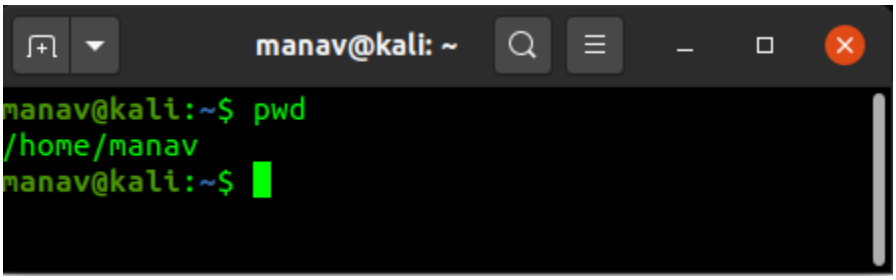
Command-line plays a vital role while working with Kali Linux as most of its tools don't have a Graphical User Interface and if you are performing ethical hacking or penetration testing then most of the time you will have to work with command Line Interface itself. While executing a command in Kali Linux we enter a command on the terminal emulator and it gives us the appropriate output after the execution of the command.

There are some commands in Kali Linux which we use too frequently. So we should be aware of those commands as it could increase our productivity.

Kali Linux Command Line Essentials

***1.** To display present working directory*

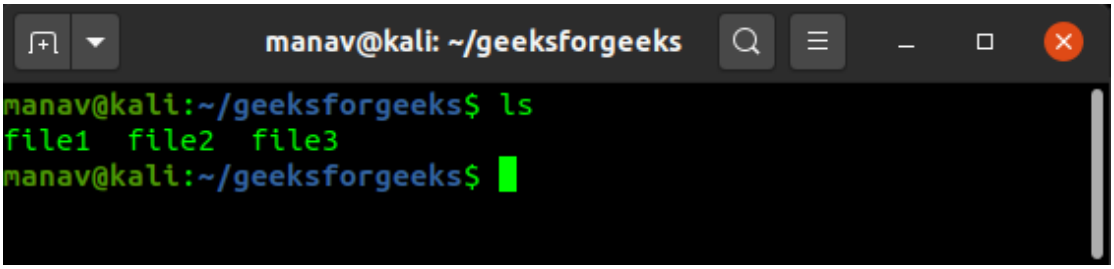
pwd



This command will display the current directory you are in.

***2.** To list the directories and files in the current directory.*

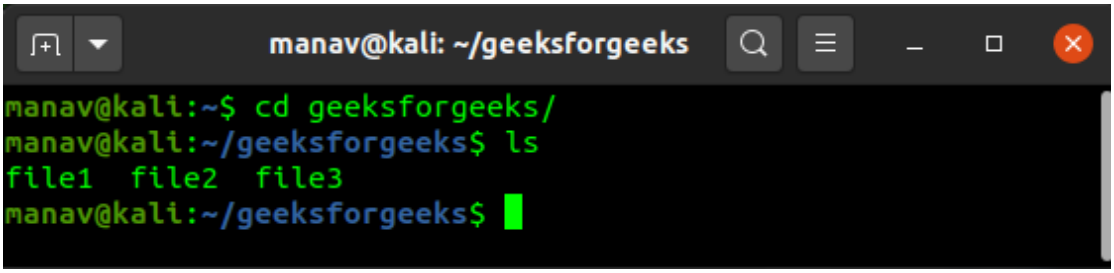
ls



This command will display the list of files and directories in the current directory.

***3.** To change the current working directory*

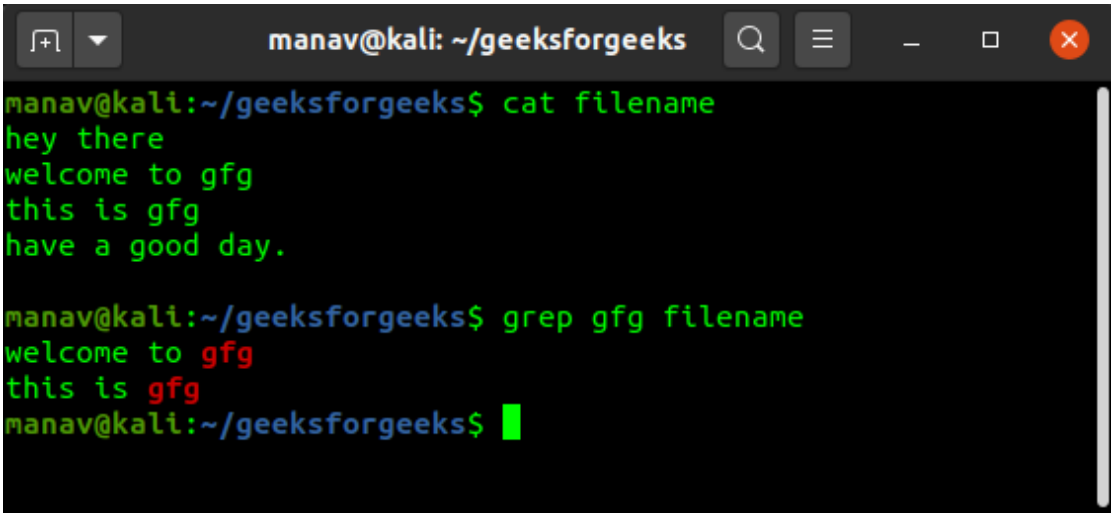
cd



This command will change the directory you are currently working on.

4. *To find a word in a file.*

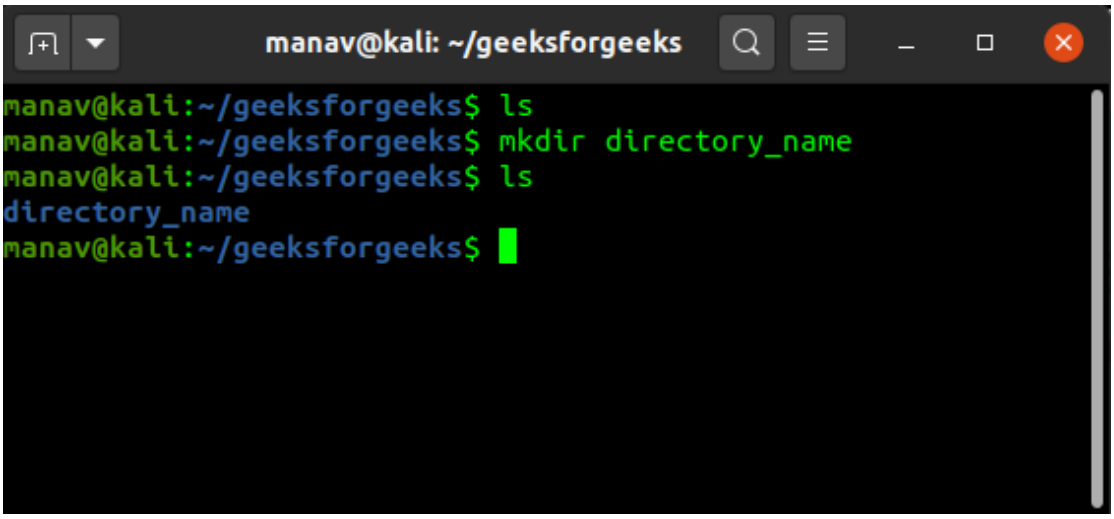
grep keyword filename



This command will list all the lines containing the keyword in them.

5. *To create a new directory*

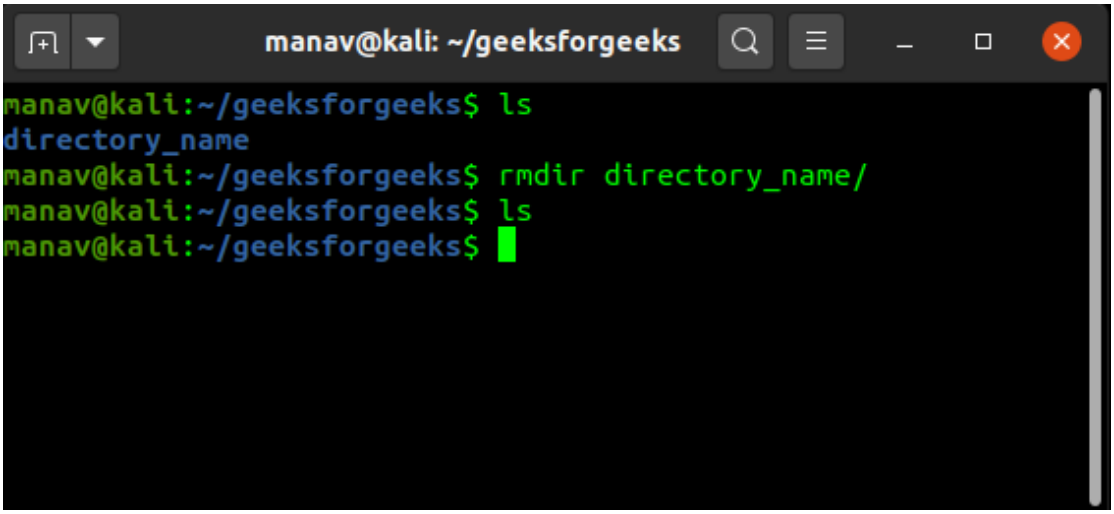
mkdir directory_name



This command will create a new directory in the current folder with the name ***directory_name****.*

6. *To remove a directory*

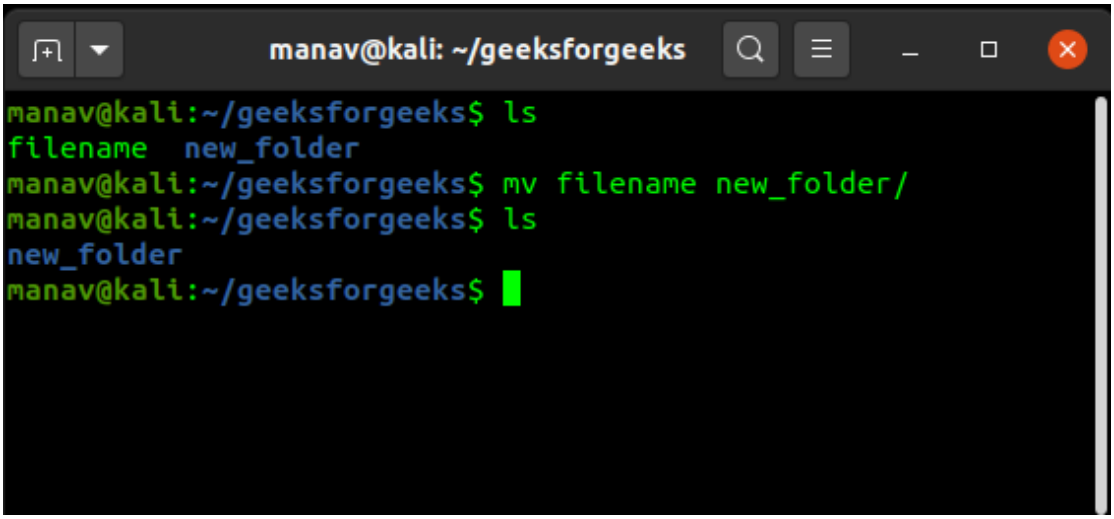
rmdir directory_name



This command will remove the directory with the name ***directory_name*** *from the current directory.*

7. *To move a file*

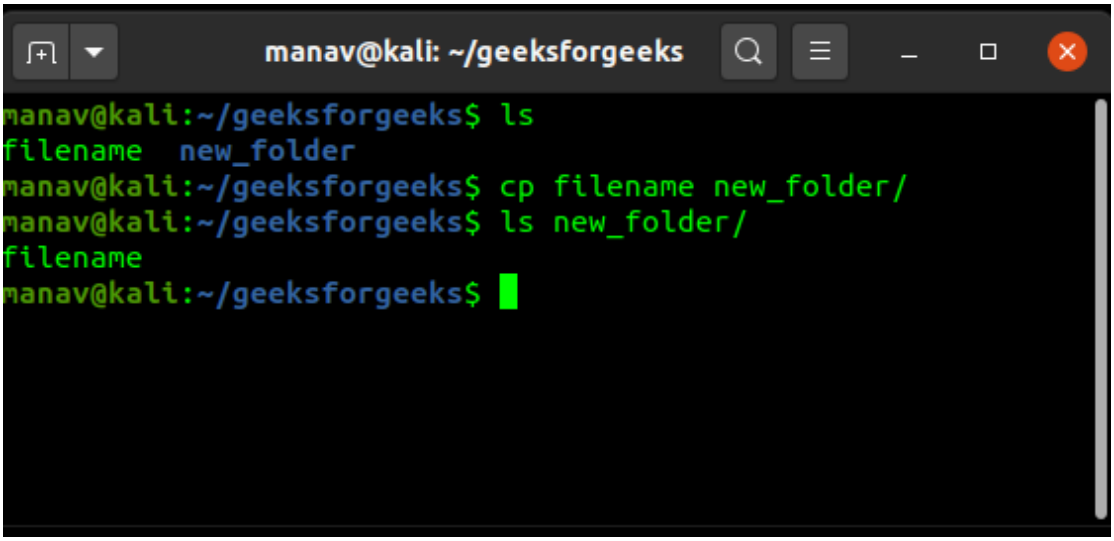
mv source destination



This command is used to move a file from one location to another.

8. *To copy a file*

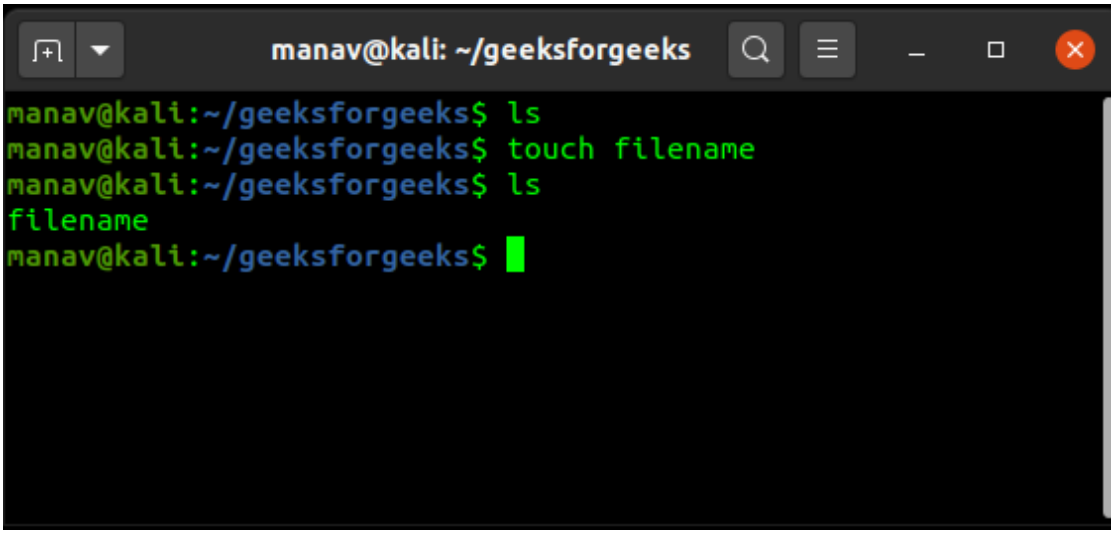
cp source destination



This command will copy the file from the source to the destination.

9. *To create a new file*

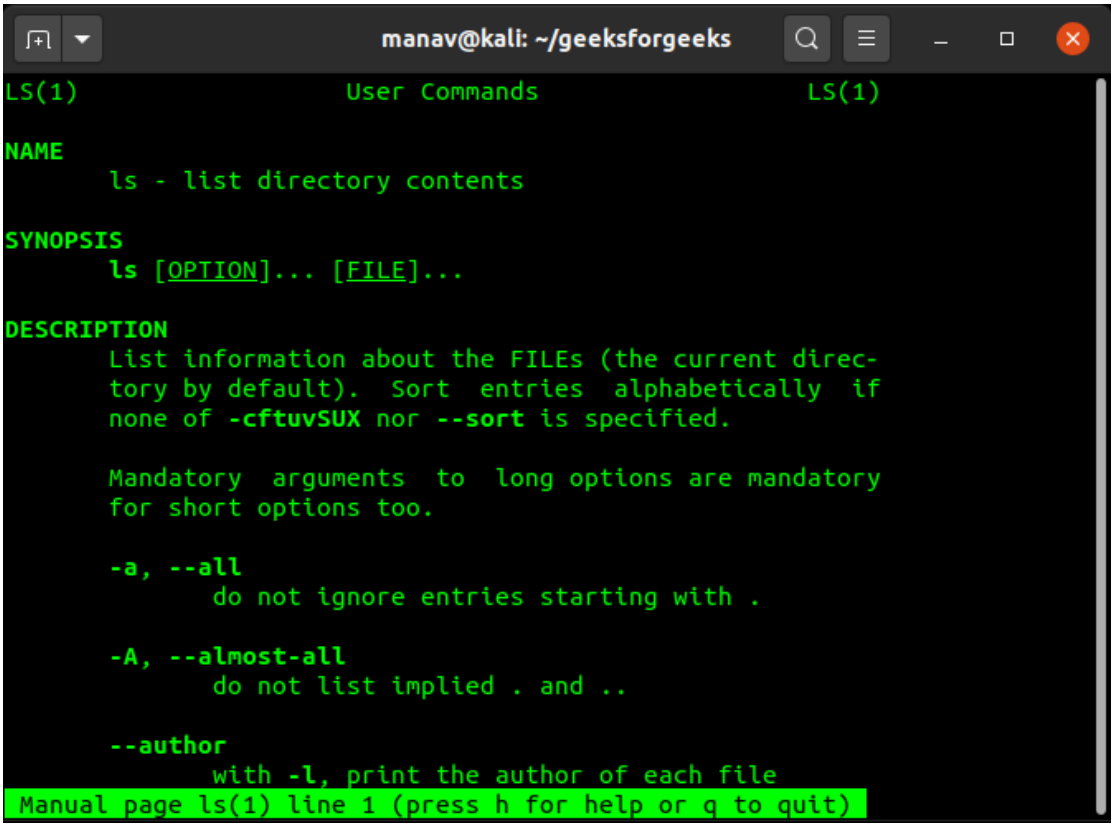
touch filename



*This command will create a new file with the name "**filename**"*

10. *To display manual of a command*

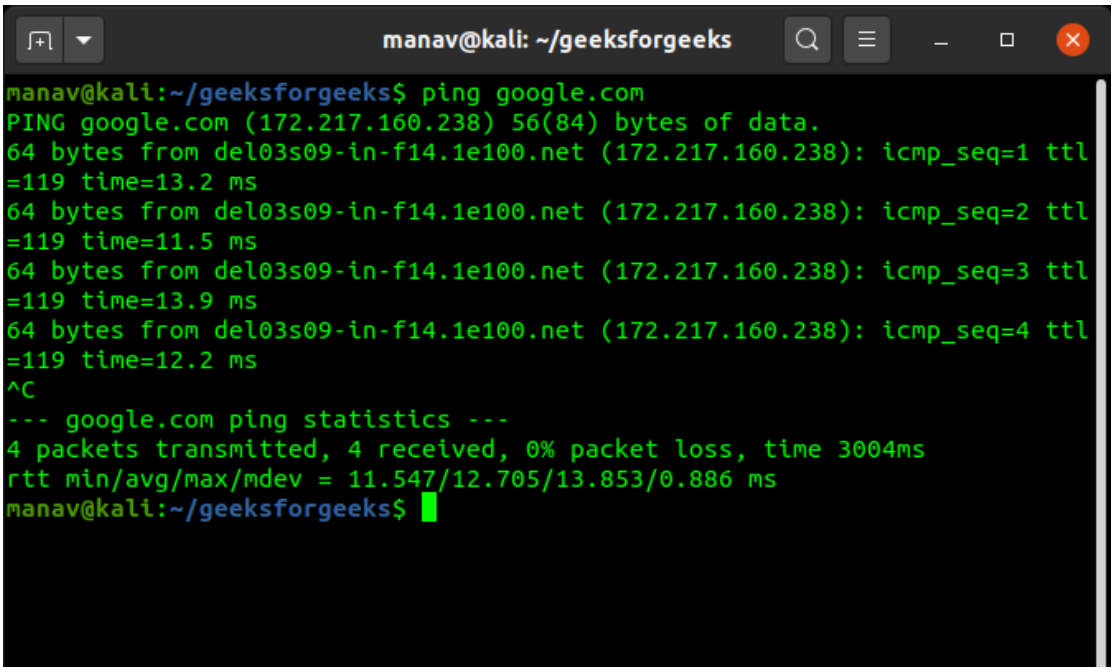
man ls



This command will display a manual or a user guide for the command.

11. *To check the internet connection or to check whether the host is active or not.*

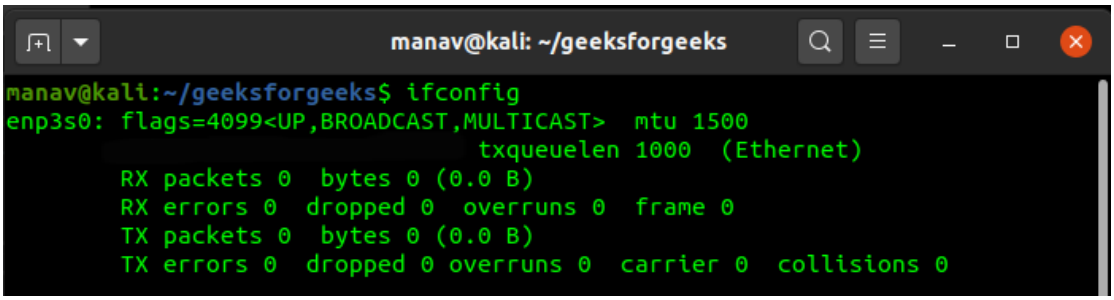
ping google.com



This command will send some packets to the mentioned host and will give us output about the details of what is the status of the packet. This command could be used to check the internet connection.

12. *To display network interface details.*

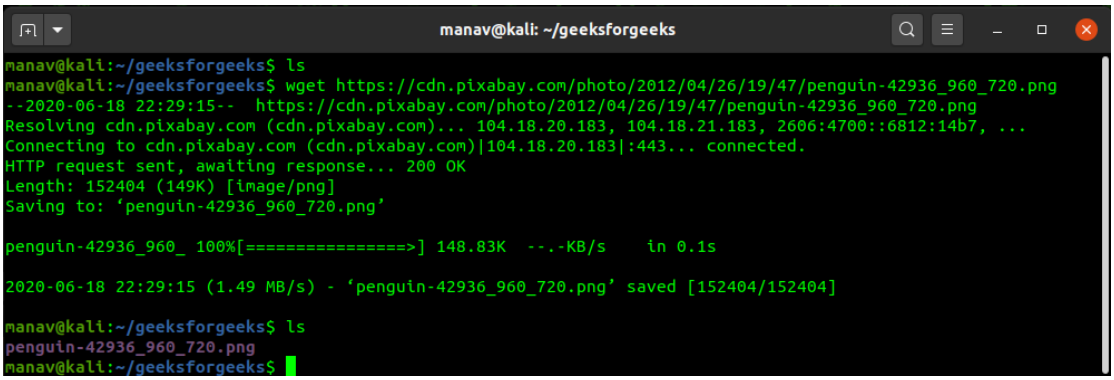
ifconfig



This command is used to display the details of the network interfaces connected to the system.

13. *To download a file*

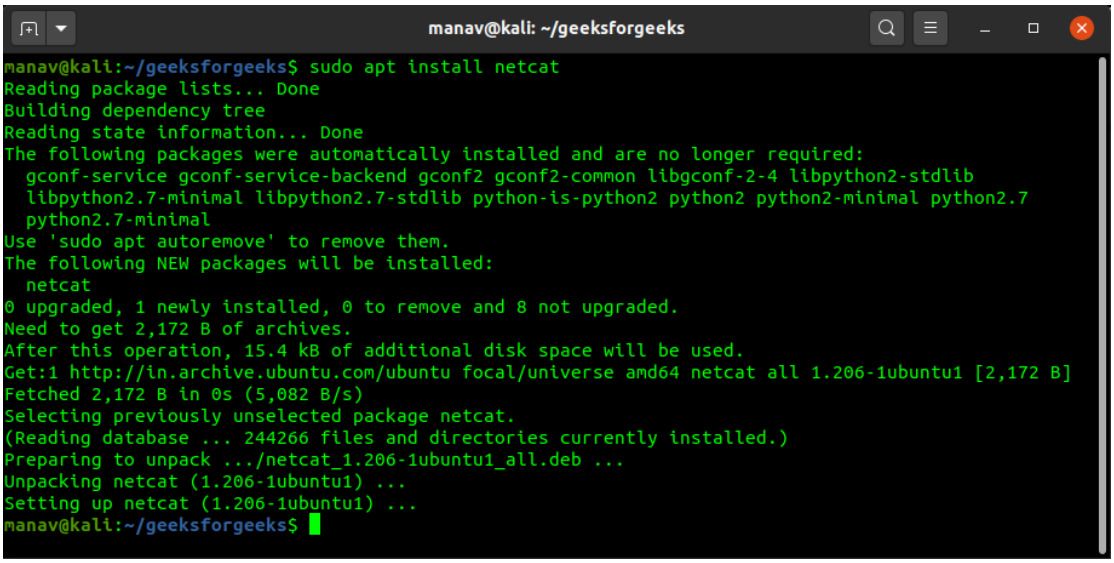
wget link_to_file



This command will download the file from the link entered in the command.

14. *To install a package*

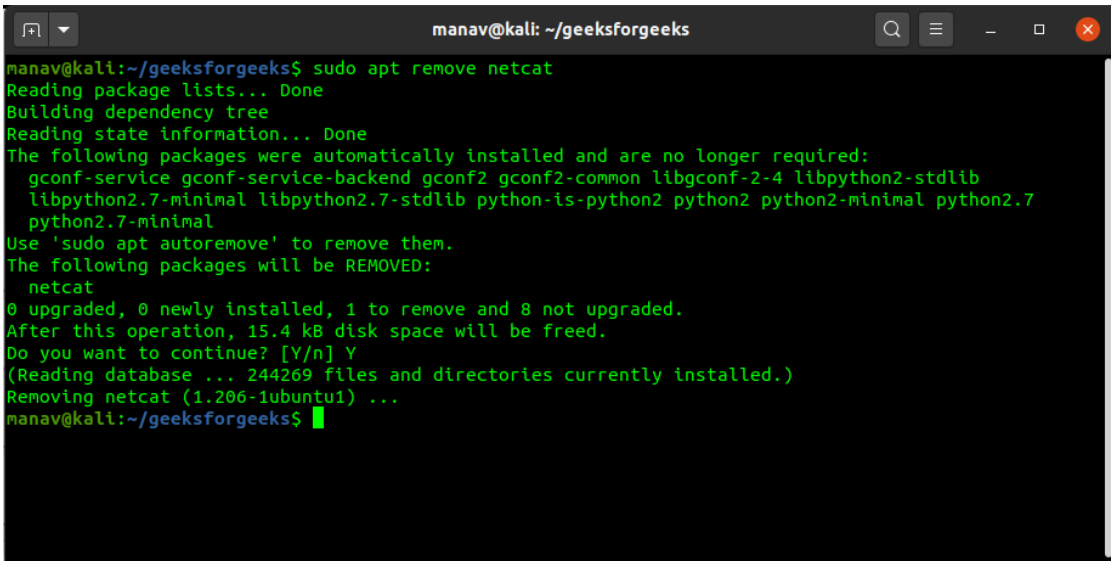
sudo apt install package_name



This command is used to install the mentioned package in the system.

15. *To remove a package*

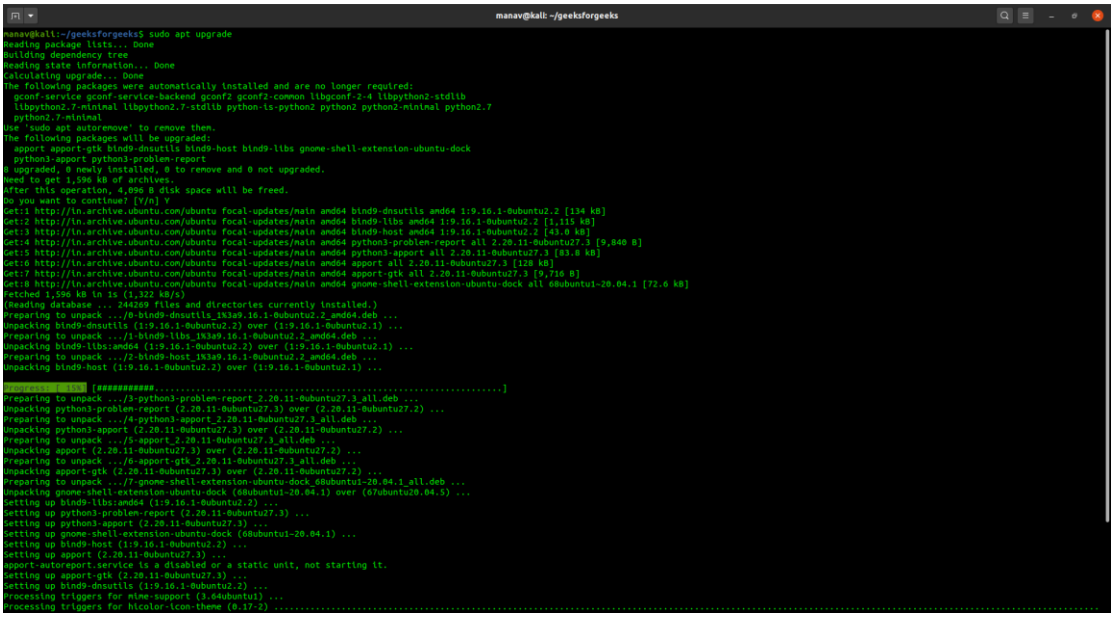
sudo apt remove package_namme



This command will remove the mentioned package from the system.

16. *To upgrade packages in the system*

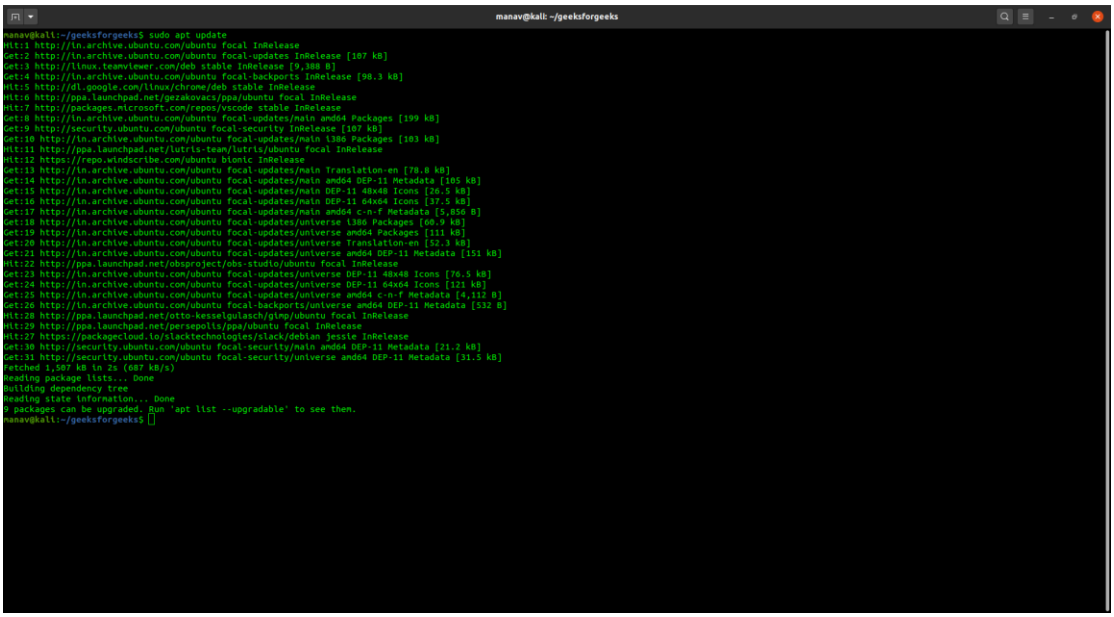
sudo apt upgrade



This command will upgrade all the packages in the system.

17. *To fetch the packages updates*

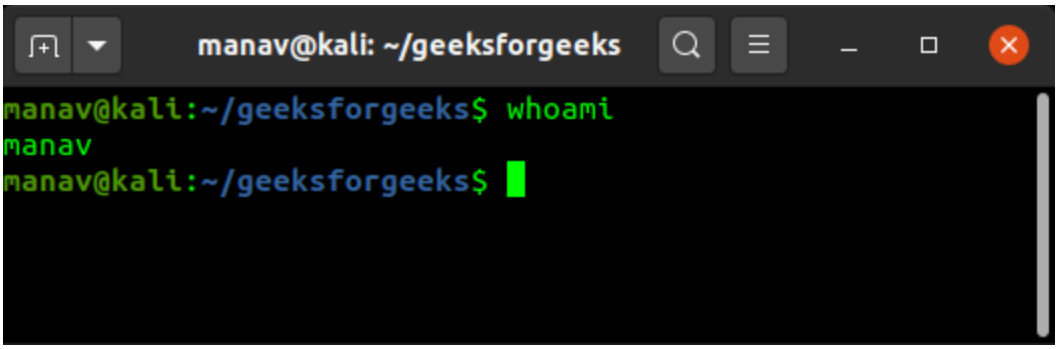
sudo apt update



This command will check for updates of all the packages and will add the updates in the list to upgrade.

18. *To get the current username*

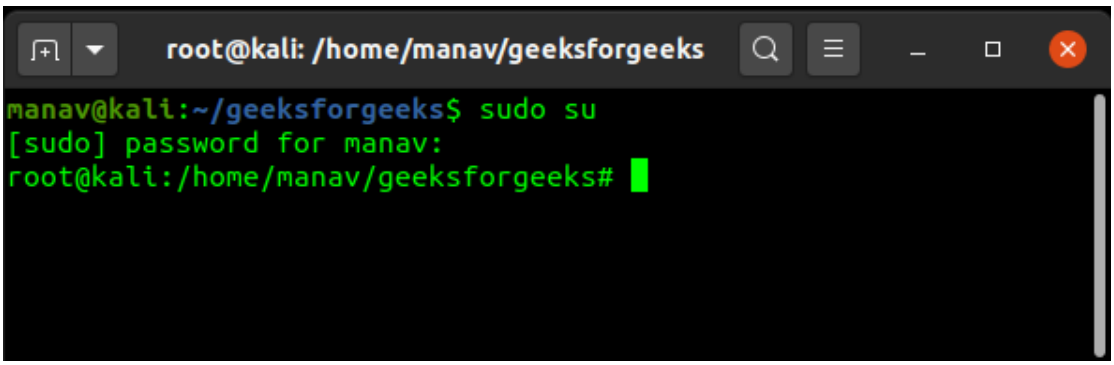
whoami



This command is used to print the username of the current user.

19. *To change the current user to superuser or root*

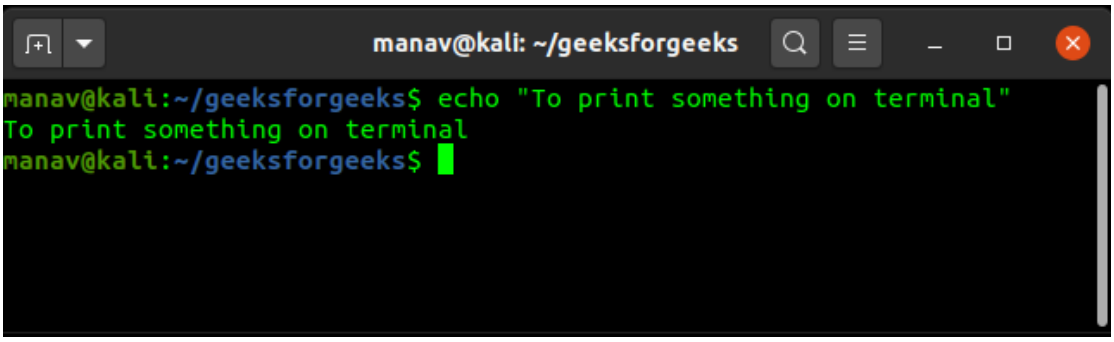
sudo su



This command will ask for a password and will change the current user to root.

20. *To print in terminal*

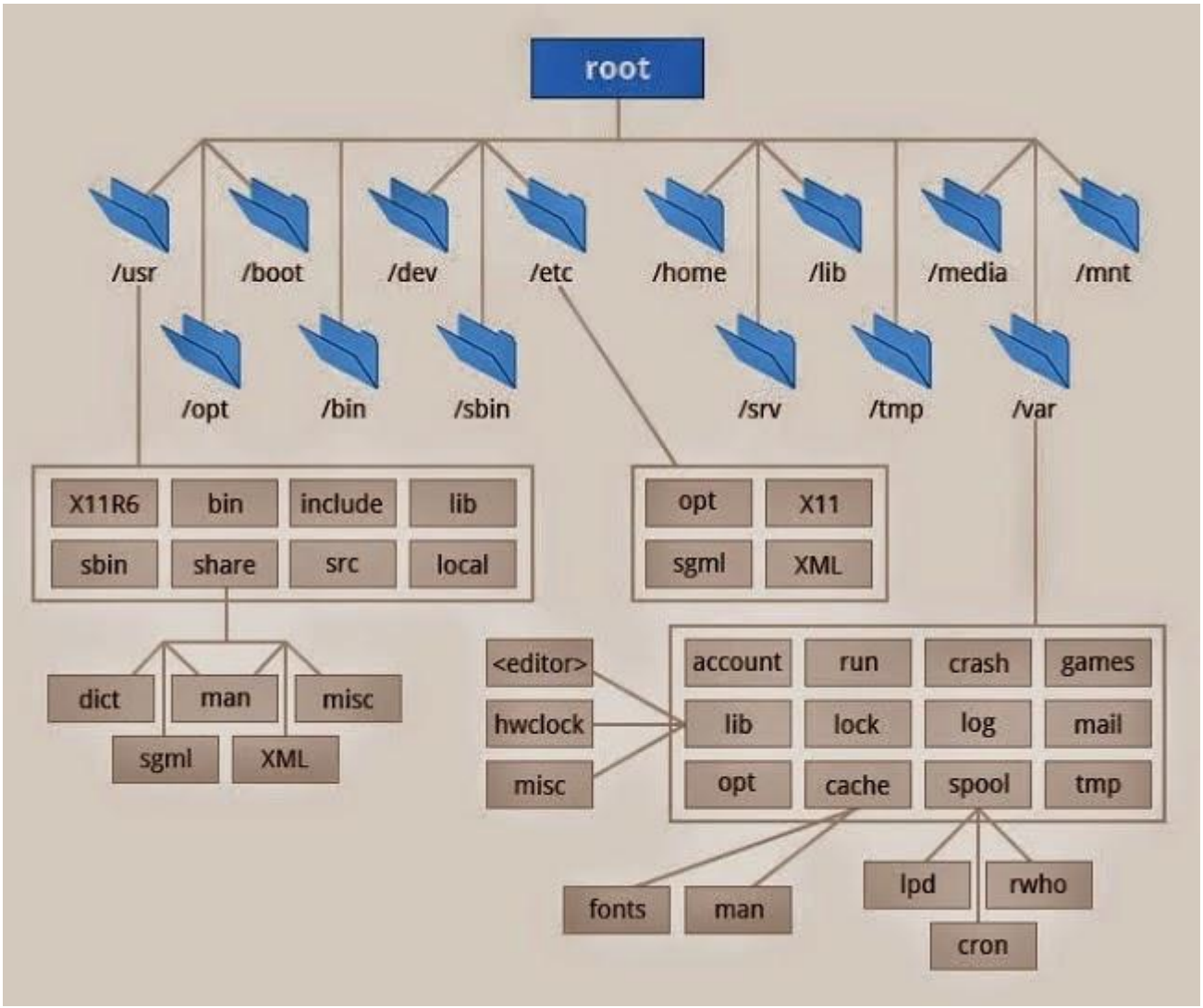
echo " To print something on terminal"



The command will print the mentioned text on the terminal.

2- Kali Linux File System

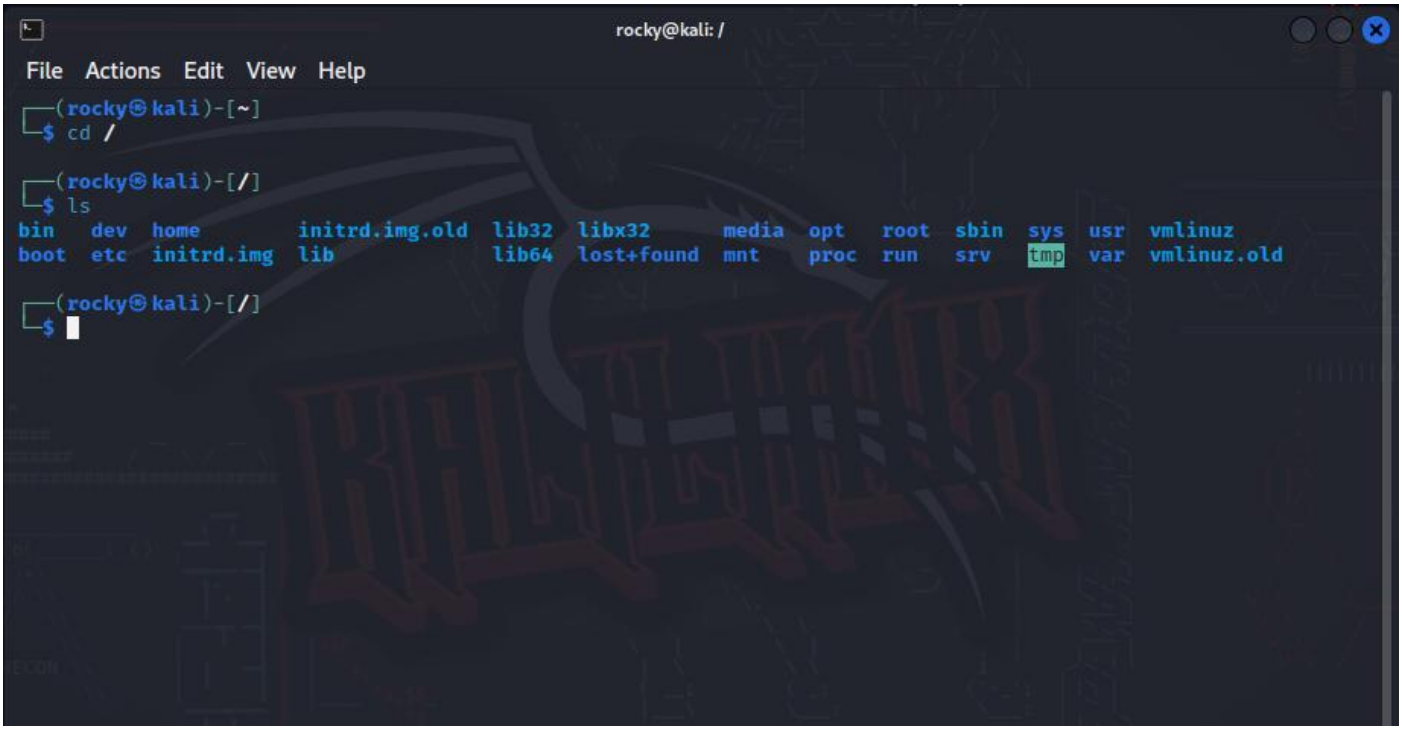
In our this guide we are going to talk about file system of Kali Linux this is very crucial for a user using Kali Linux. For the new comers who comes to Linux from Windows it is very important to understand the file system. For those who comes from another Debian based Linux distribution (Like Debian, Ubuntu, Linux Mint, Elementary OS etc) with a basic Linux knowledge can easily get this.



The directory structure of Kali Linux system is based on the Unix File system Hierarchy Standard (FHS), and that's how the directories are structured inside Kali Linux. In our Windows system, the root directory is **C:** , but in Kali Linux, it's a forward slash (***/***). Please do not confuse the term "**root directory**" with the "**root user's home directory**" (which is ***/root***), because they are two different things. the latter is the home is the home directory (***/root***) for the root user.

Talking about root user, root user is the super user, for an example it can be consider as Administrative user on Windows system, previously Kali Linux comes with root user by default but after 2020.1 update Kali Linux comes with non-root user by default, that means we need to run **sudo** if we want to execute high-privileged commands. New user should be careful using **sudo** because wrong command could destroy our system.

To understand the file system of Kali Linux we need to open our terminal window and execute the command **cd /** , here **cd** stands for change directory, and / is our root directory. That means we are changing the directory to the root directory. Then we need to run **ls** (list) command to see all the files/folders here. As we can see in the following screenshot:



In the above screenshot we can see some contents on our root directory. We need to know about them to understand the file system.

- ***/bin*** (binaries): This directory contains Linux binaries like the cd and ls command that we executed earlier.
- ***/sbin*** (system binaries): This directory holds system binary files that serve as administrative commands (like fdisk).
- ***/boot***: This directory contains the Linux bootloader files.
- ***/dev*** (devices): This directory contains the device configuration files (like */dev/null*).
- ***/sys***: This is similar to */dev*, which contains configurations about devices and drivers.
- ***/etc*** (etcetera): This directory contains all the administration system files (like */etc/passwd* shows all the system users in Kali Linux).
- ***/lib*** (libraries): This directory hods the shared libraries for the binaries inside */bin* and */sbin*.
- ***/proc*** (processes): This directory contains the processes and kernel information files.
- ***/lost+found***: As in the name, this directory contains the files that have been recovered.
- ***/mnt*** (mount): This directory contains the mounted directories (example, a remote file share).
- ***/media***: This directory holds the removable media mounted directories (like DVD).

- ***/opt*** (option): This directory is used for add-on software package installation. It is also used when installing software by users (example, hacking tools that you download from GitHub).
- ***/tmp*** (temporary): This is a temporary folder used temporarily, the holdings are wiped after each reboot. The tmp folder is a good place to download our tools for privilege escalation once we got a limited shell.
- ***/usr*** (user): This directory contains many sub-directories. In fact, */usr/share/* is a folder that we need to memorize because most of the tools that we use in Kali Linux (like Nmap, Metasploit, etc.) are stored there, and it also contains the wordlist dictionary files (*/usr/share/wordlists*).
- ***/home***: This is the home for Kali Linux users (example */home/kali/*).
- ***/root***: Home directory for root user.
- ***/srv*** (serve): This folder contains some data related to system server functionalities (like data for FTP servers).
- ***/var*** (variable): This folder contains variable data for databases, logs, and websites. For an example, */var/www/html/* contains the files for the Apache2 web server.
- ***/run*** (runtime): This directory holds runtime system data (like currently logged-in users).