



K. J. Somaiya Polytechnic, Mumbai-77

Batch No: C1

Enrollment No.: FCOW19118

Experiment No: 02

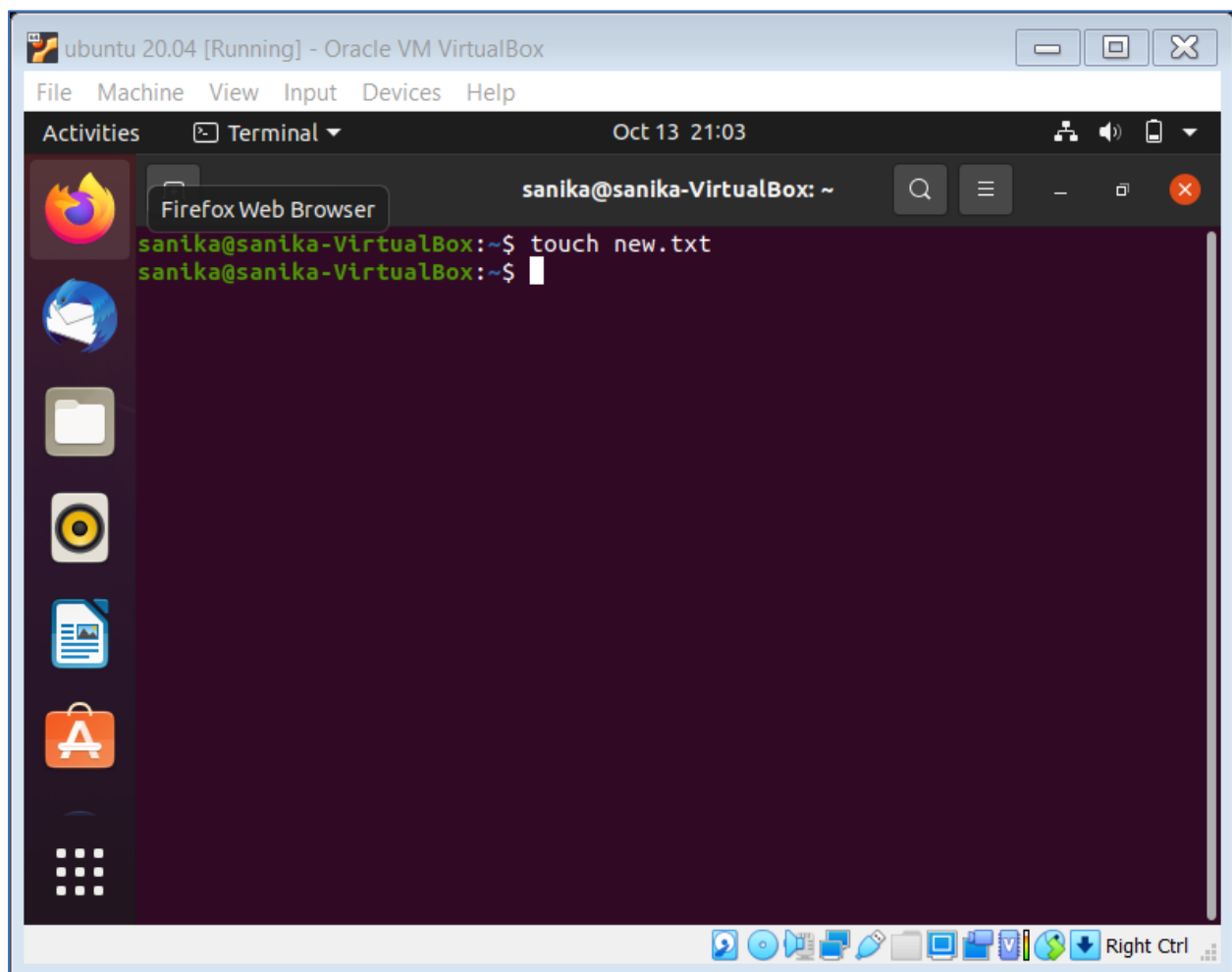
Experiment Name: Execution of basic Linux Commands.

Experiment No.: 02**Experiment Name: Execution of basic Linux Commands****Course Outcome:**

O18RC58.2	Execute basic & networking commands in Linux
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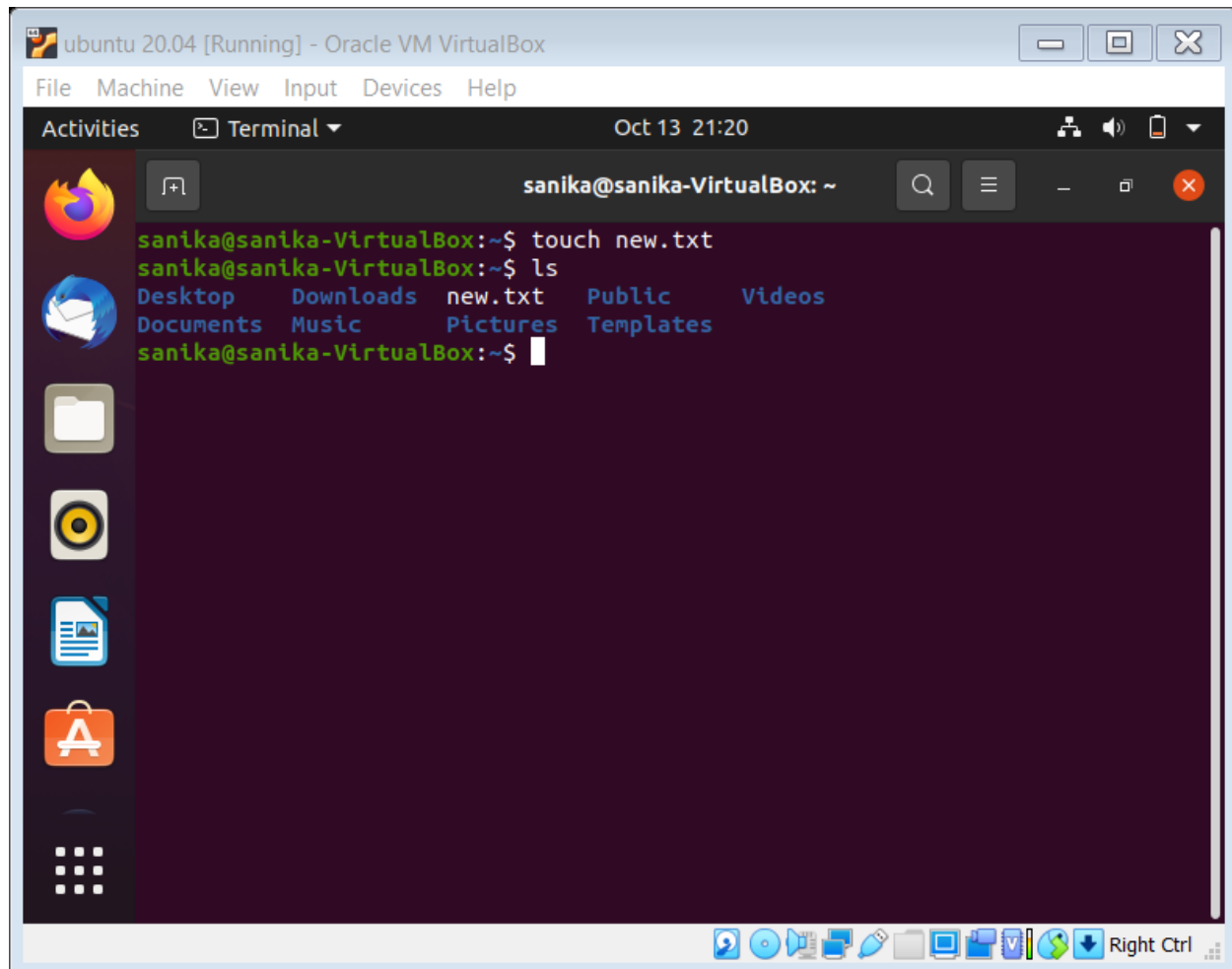
Theory:**1. touch command :- (touch FILE_NAME)**

The ***touch*** command is used to create a file without any content i.e., empty file. This command can be used when the user doesn't have data to store at the time of file creation.



2. ls command

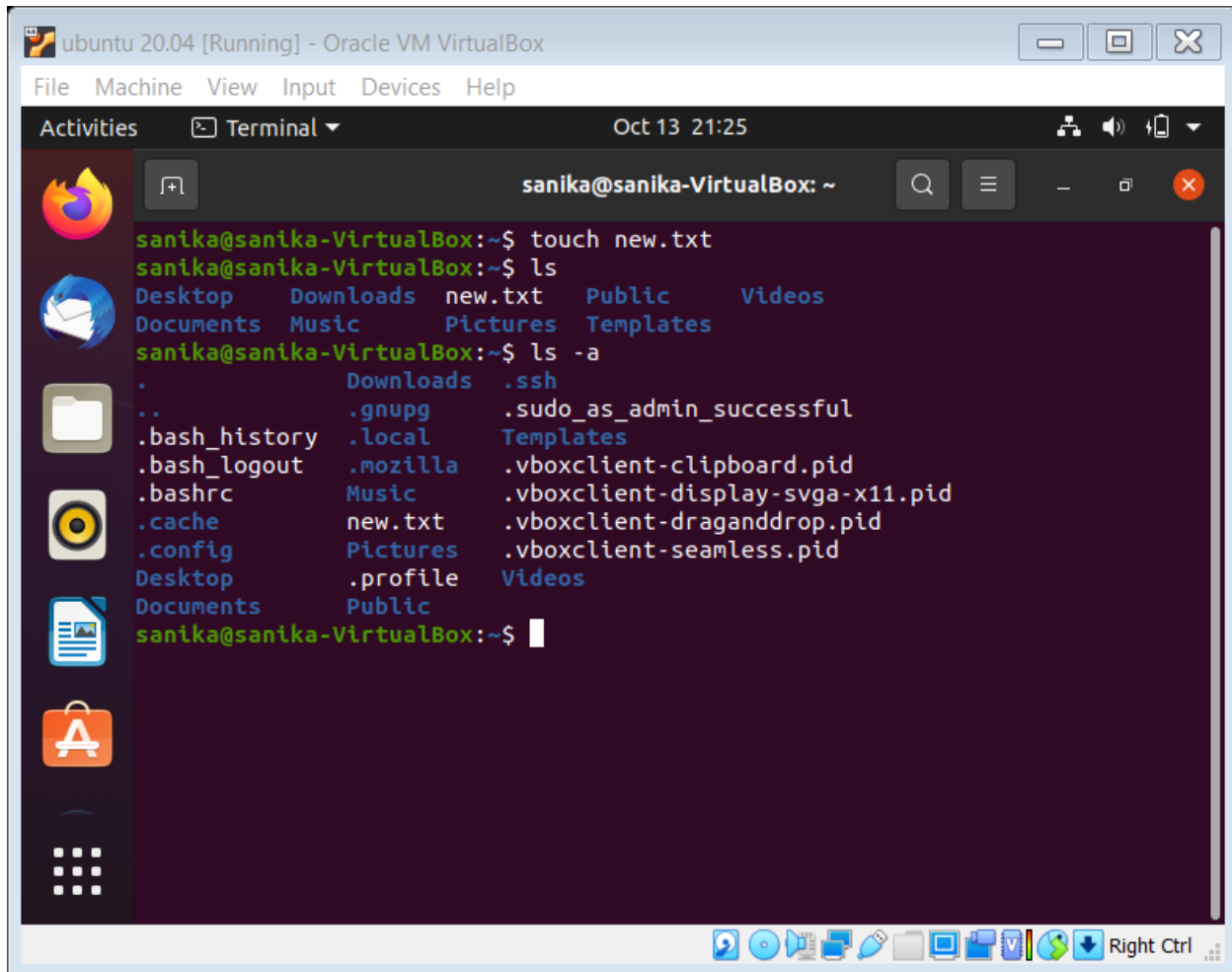
The *ls* command lists all the files and directories that exist within the file system.



3. ls -a

The *ls -a* command lists all the files and directories that exist within the file system along with all the **hidden files**. These files start with a '.' (dot).

E.g.: .bash_history, .profile, etc are hidden files.



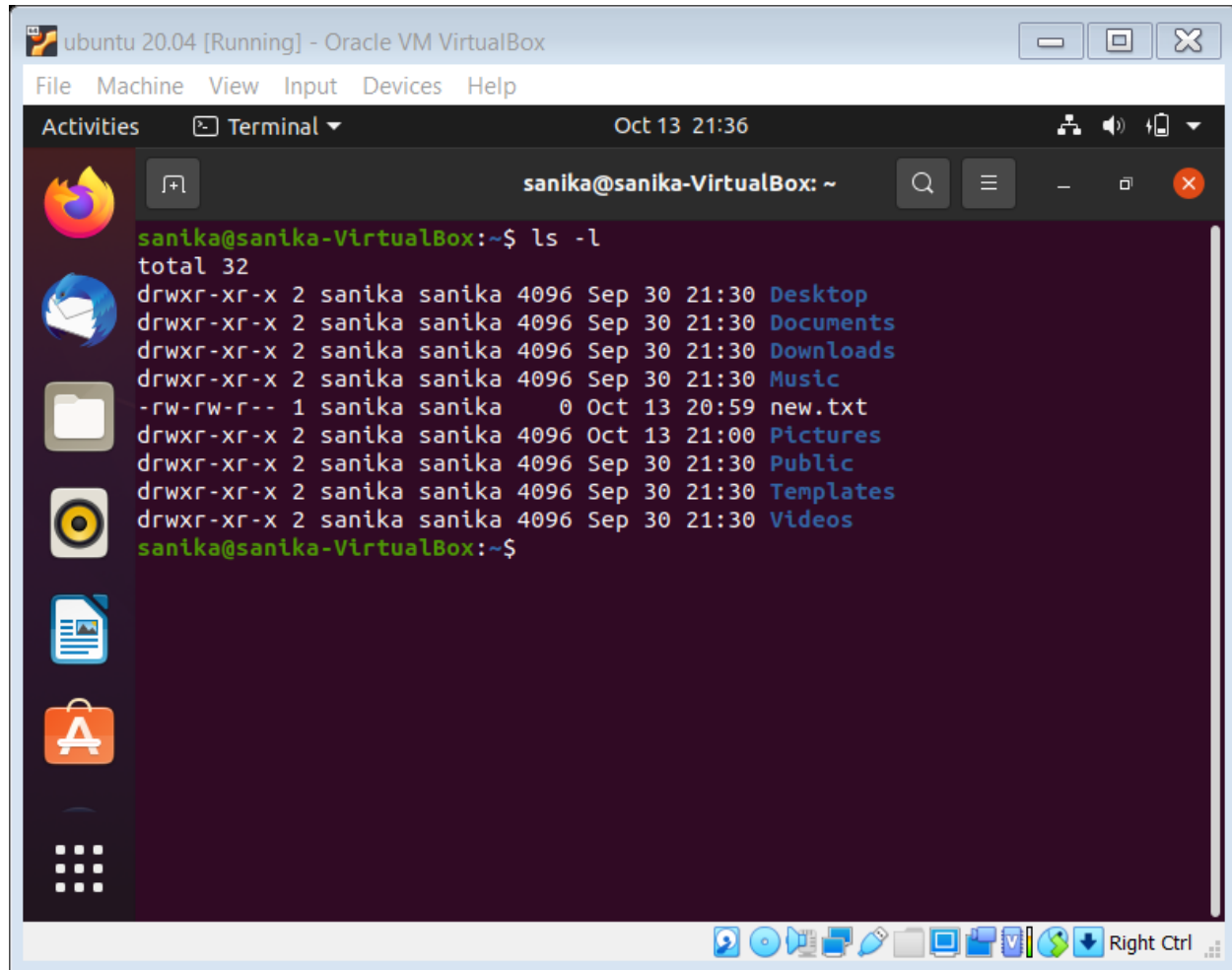
The screenshot shows a terminal window titled 'ubuntu 20.04 [Running] - Oracle VM VirtualBox'. The window has a menu bar with 'File', 'Machine', 'View', 'Input', 'Devices', and 'Help'. Below the menu bar is a toolbar with icons for activities, terminal, and search. The terminal prompt is 'sanika@sanika-VirtualBox: ~'. The user has entered the command 'touch new.txt' and 'ls'. The output of 'ls' shows a list of files and directories: Desktop, Downloads, new.txt, Public, Videos, Documents, Music, Pictures, and Templates. The user then enters the command 'ls -l'. The output of 'ls -l' shows a detailed listing of files and directories, including permissions, owner, group, size, date, and file name. The files listed are: ., .., .bash_history, .bash_logout, .bashrc, .cache, .config, Desktop, Documents, Downloads, .gnupg, .local, .mozilla, Music, new.txt, Pictures, .profile, .ssh, .sudo_as_admin_successful, Templates, .vboxclient-clipboard.pid, .vboxclient-display-svgx-x11.pid, .vboxclient-draganddrop.pid, and .vboxclient-seamless.pid.

```
sanika@sanika-VirtualBox:~$ touch new.txt
sanika@sanika-VirtualBox:~$ ls
Desktop  Downloads  new.txt    Public     Videos
Documents Music      Pictures   Templates
sanika@sanika-VirtualBox:~$ ls -l
total 128
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 ..
-rw-r--r-- 1 sanika sanika 12288 Oct 13 21:25 .bash_history
-rw-r--r-- 1 sanika sanika 65536 Oct 13 21:25 .bash_logout
-rw-r--r-- 1 sanika sanika 65536 Oct 13 21:25 .bashrc
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .cache
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .config
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 Desktop
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 Documents
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 Downloads
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .gnupg
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .local
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .mozilla
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 Music
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 new.txt
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 Pictures
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .profile
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .ssh
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .sudo_as_admin_successful
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 Templates
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .vboxclient-clipboard.pid
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .vboxclient-display-svgx-x11.pid
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .vboxclient-draganddrop.pid
-rw-r--r-- 1 sanika sanika 4096 Oct 13 21:25 .vboxclient-seamless.pid
sanika@sanika-VirtualBox:~$
```

4. `ls -l`

The `ls -l` is used to list information about files and directories within the file system. It is a **Long form** of listing. It shows the following information about files:

- i) Total number of files
- ii) Permissions
- iii) creator's name
- iv) file size
- v) creation date
- vi) creation time
- vii) file name

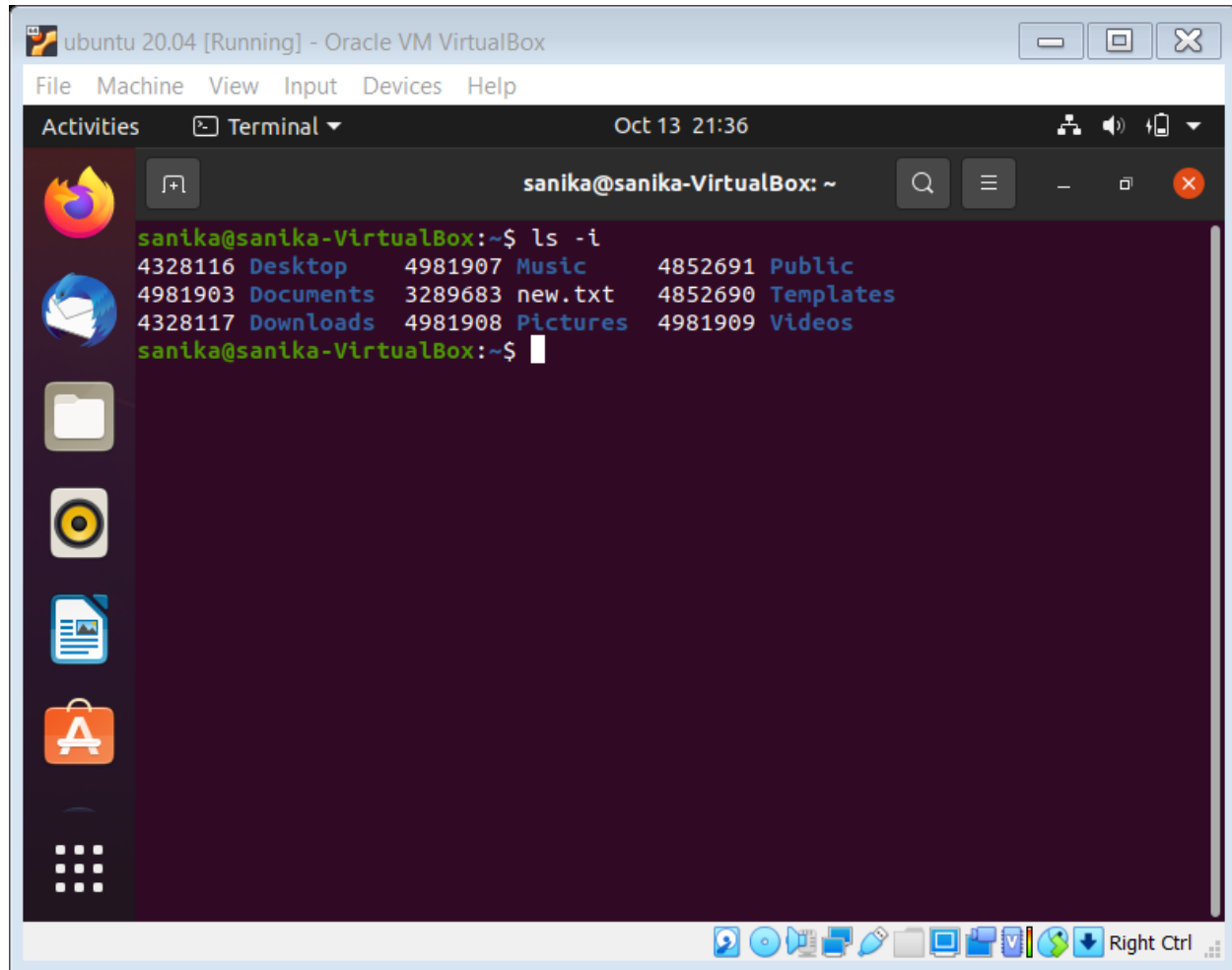


The screenshot shows a terminal window titled "ubuntu 20.04 [Running] - Oracle VM VirtualBox". The terminal displays the output of the command `ls -l` executed by the user `sanika` in the `sanika@sanika-VirtualBox: ~` directory. The output lists the permissions, owner, group, size, and timestamps for various files and directories in the home directory.

```
sanika@sanika-VirtualBox:~$ ls -l
total 32
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Desktop
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Documents
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Downloads
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Music
-rw-rw-r-- 1 sanika sanika    0 Oct 13 20:59 new.txt
drwxr-xr-x 2 sanika sanika 4096 Oct 13 21:00 Pictures
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Public
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Templates
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Videos
sanika@sanika-VirtualBox:~$
```

5. `ls -i`

The `ls -i` is used to list the file's inode number. An Inode number is a **uniquely existing number** for all the files in Linux. It is assigned to the file at the time of creation.

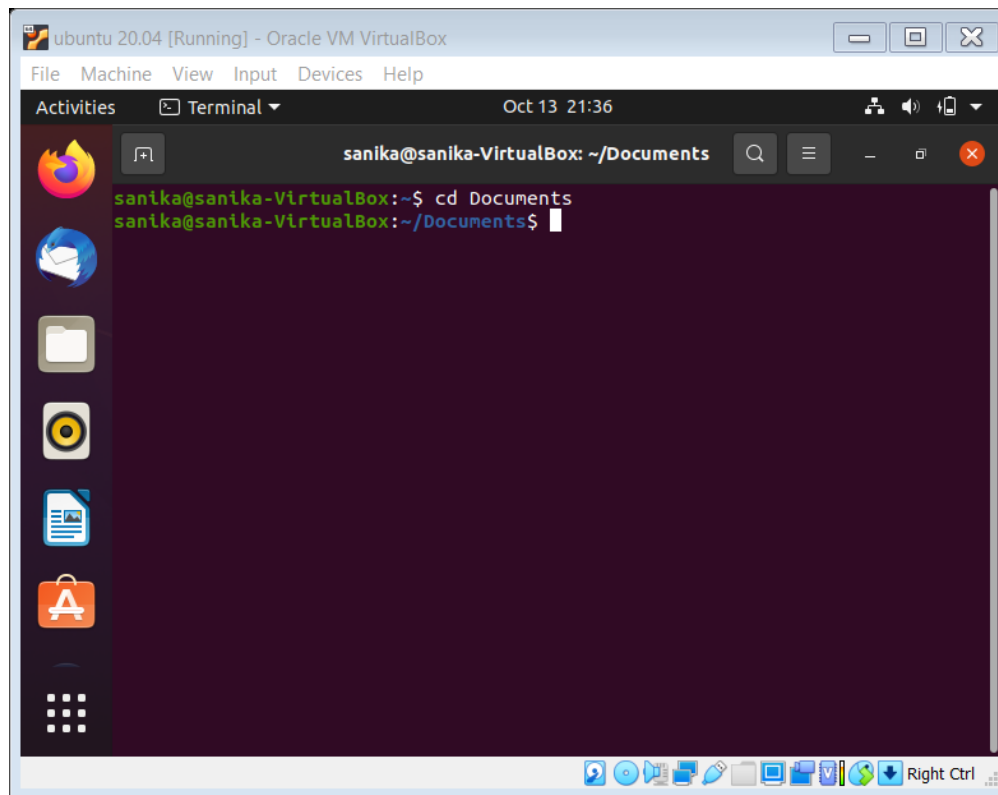


The screenshot shows a terminal window titled 'ubuntu 20.04 [Running] - Oracle VM VirtualBox'. The terminal prompt is 'sanika@sanika-VirtualBox: ~'. The command 'ls -l' has been executed, displaying the following output:

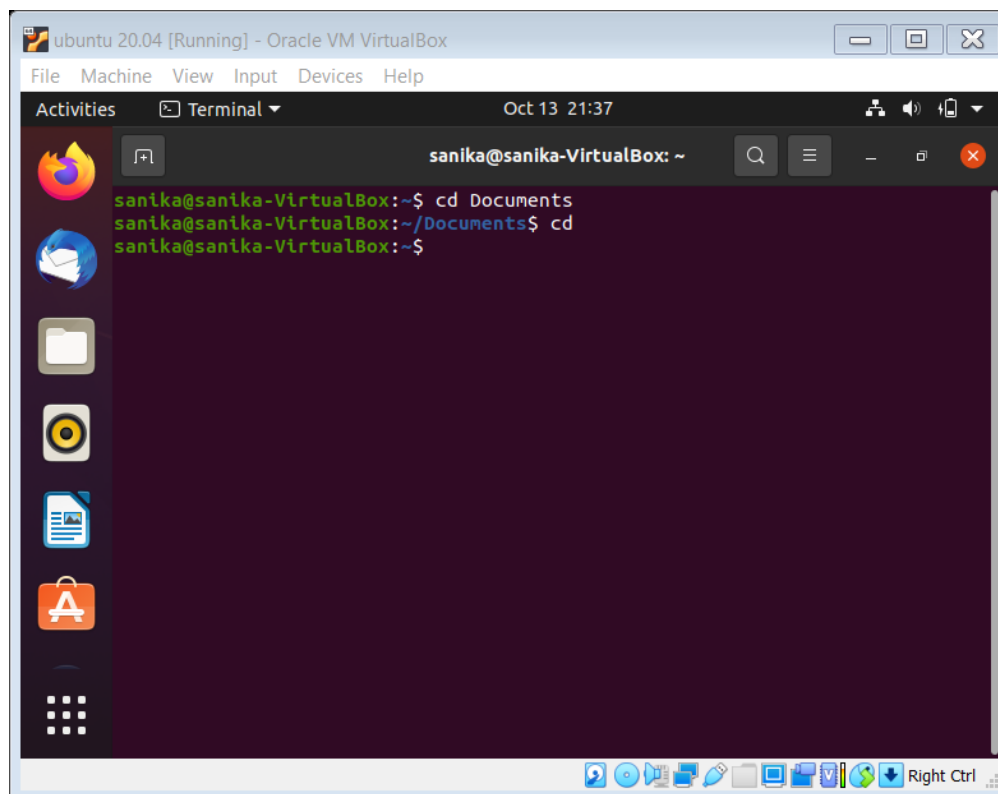
```
sanika@sanika-VirtualBox:~$ ls -l
4328116 Desktop      4981907 Music        4852691 Public
4981903 Documents    3289683 new.txt      4852690 Templates
4328117 Downloads    4981908 Pictures   4981909 Videos
sanika@sanika-VirtualBox:~$
```

6. **cd command :- (cd FOLDER_NAME)**

The **cd command** is used to change the current working directory (i.e., in which the current user is working). The cd stands for '**change directory**'.

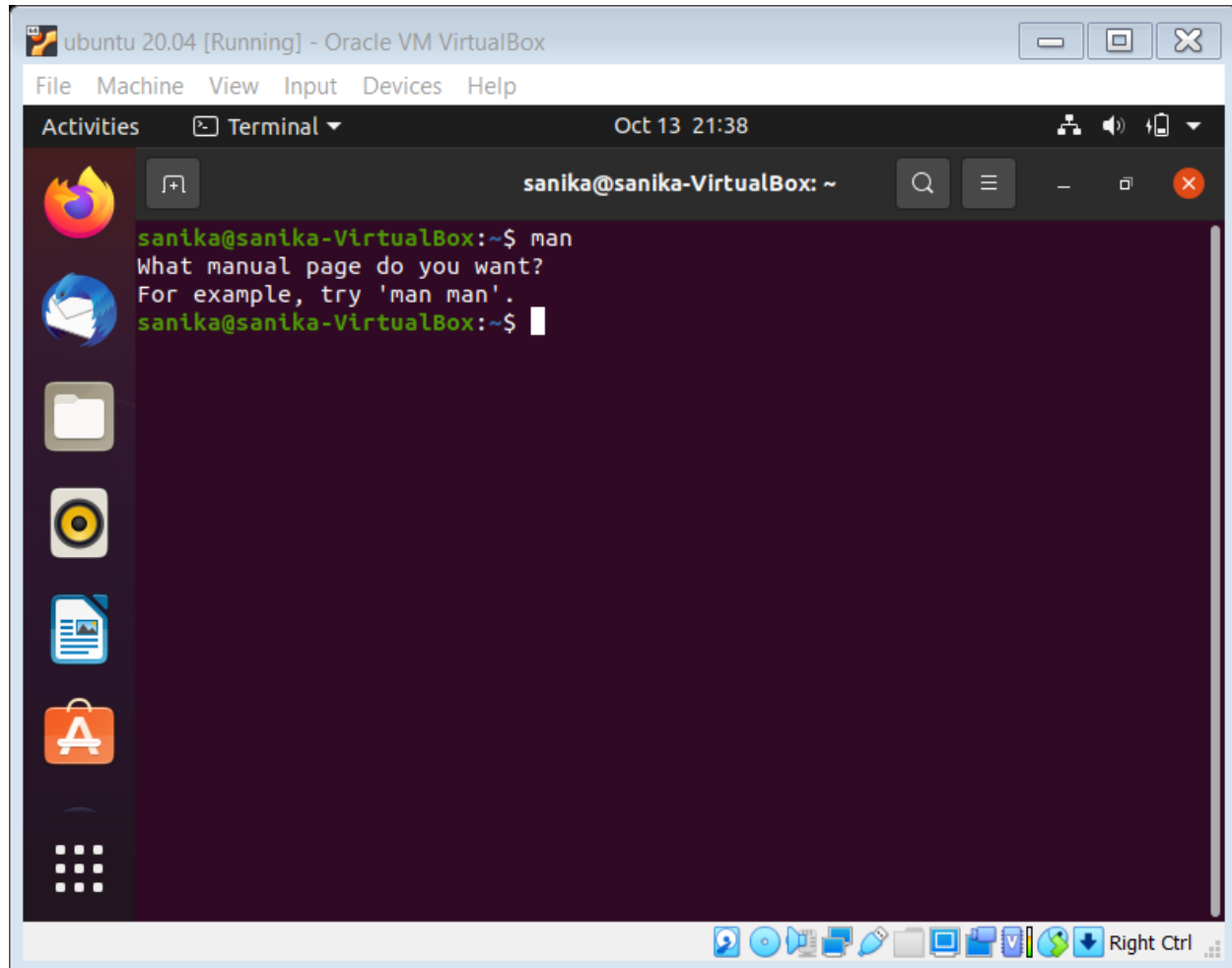


To come back to main directory simply type *cd*.

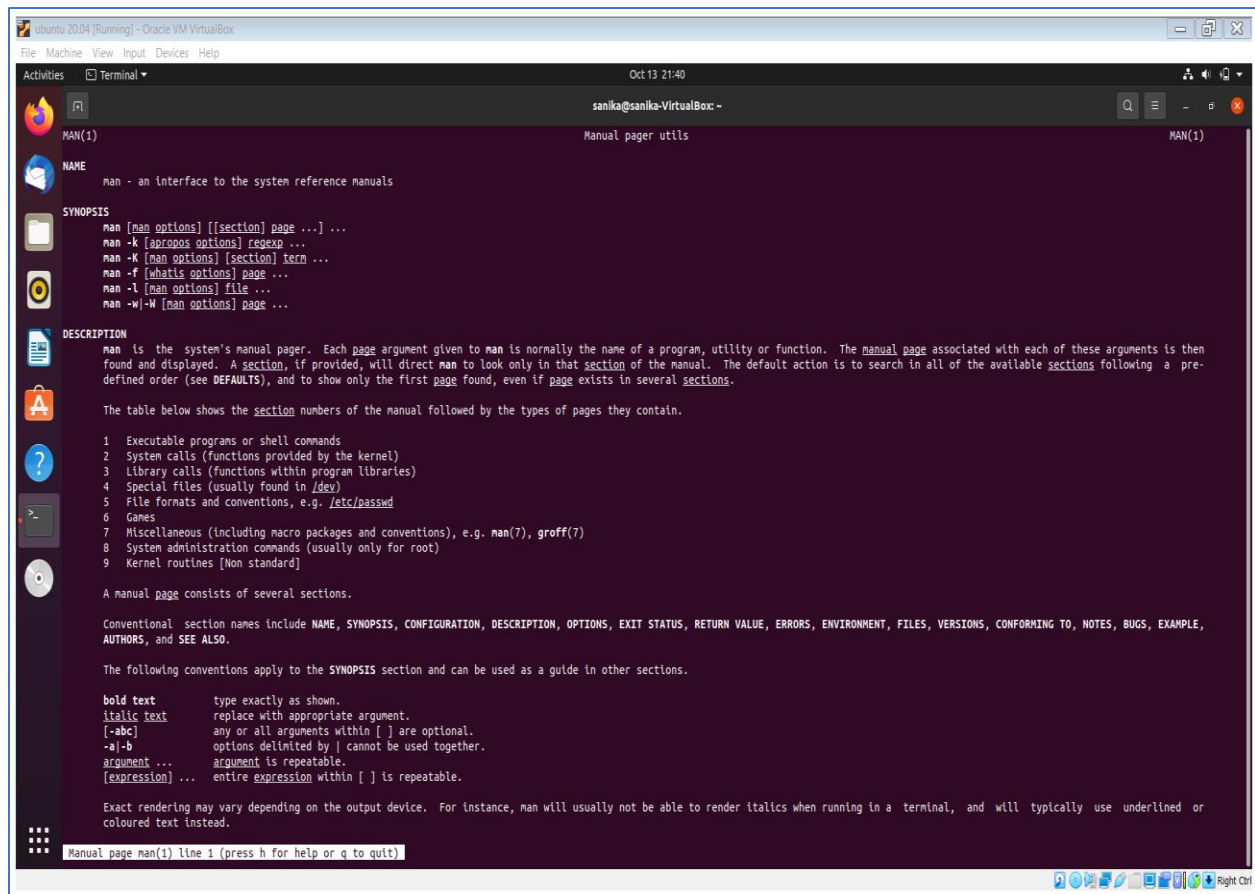


7. **man** command :- (man COMMAND_NAME)

The **man** command is used to display the user manual of any command that we can run on the terminal.



If we type the command **man man**, it shows the entire manual page that includes all the commands, as shown below:



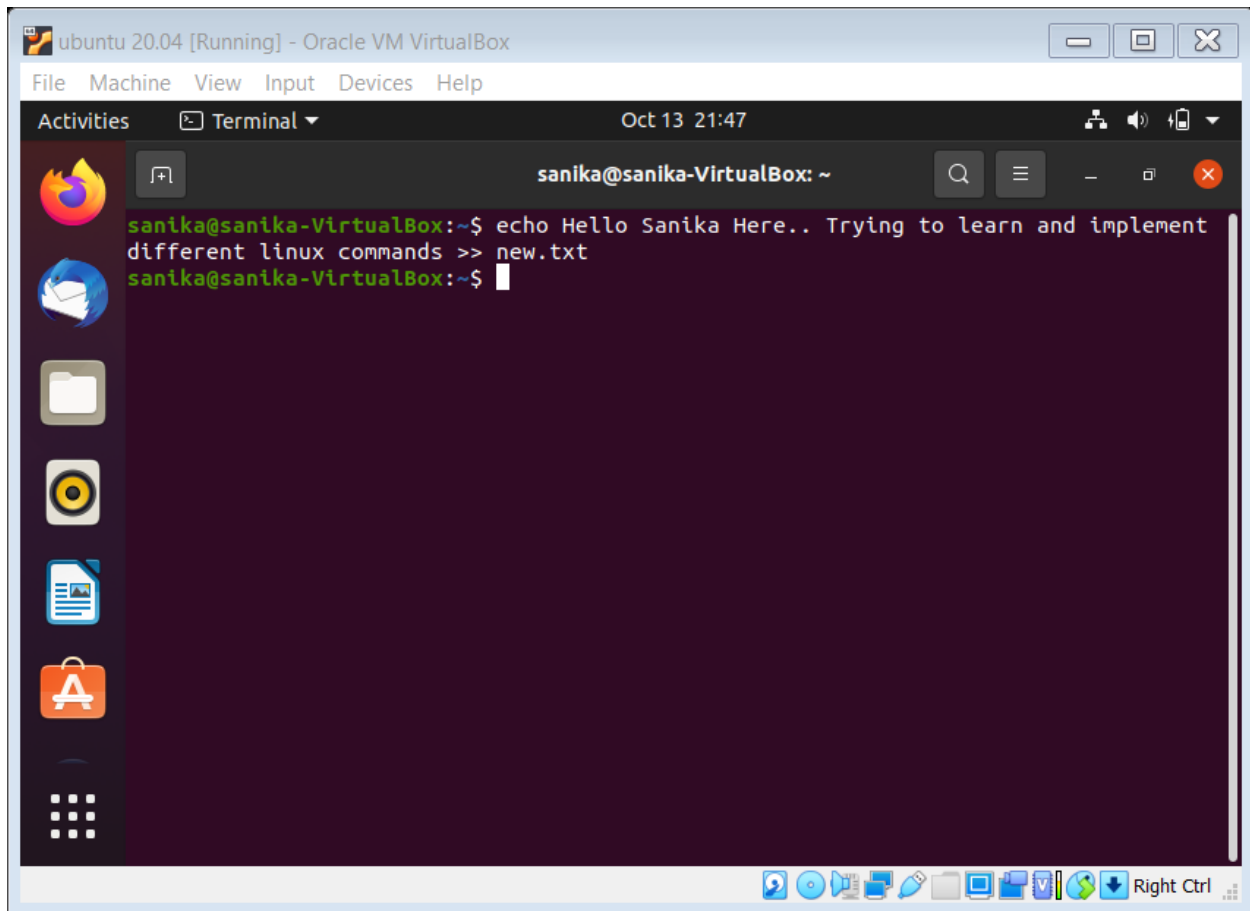
The screenshot shows a terminal window titled 'sanika@sanika-VirtualBox: ~' with a date of 'Oct 13 21:40'. The terminal displays the output of the 'man(1)' command, which shows the manual page for 'man'. The page is titled 'Manual pager utils' and 'MAN(1)'. It includes sections for NAME, SYNOPSIS, and DESCRIPTION. The SYNOPSIS section lists various options for the 'man' command, such as '-k', '-K', '-f', '-l', and '-w'. The DESCRIPTION section explains that 'man' is the system's manual pager and provides a table of section numbers and their corresponding page types. The table lists sections 1 through 9, including Executable programs or shell commands, System calls, Library calls, Special files, File formats and conventions, Games, Miscellaneous, System administration commands, and Kernel routines. The page also mentions that a manual page consists of several sections and lists conventional section names like NAME, SYNOPSIS, CONFIGURATION, etc. The bottom of the page shows the prompt 'Manual page man(1) line 1 (press h for help or q to quit)'.

8. echo

The **echo** command in linux is used for displaying lines of text or string which are passed as arguments on the command line.

echo LINE_OF_TEXT >> FILE_NAME

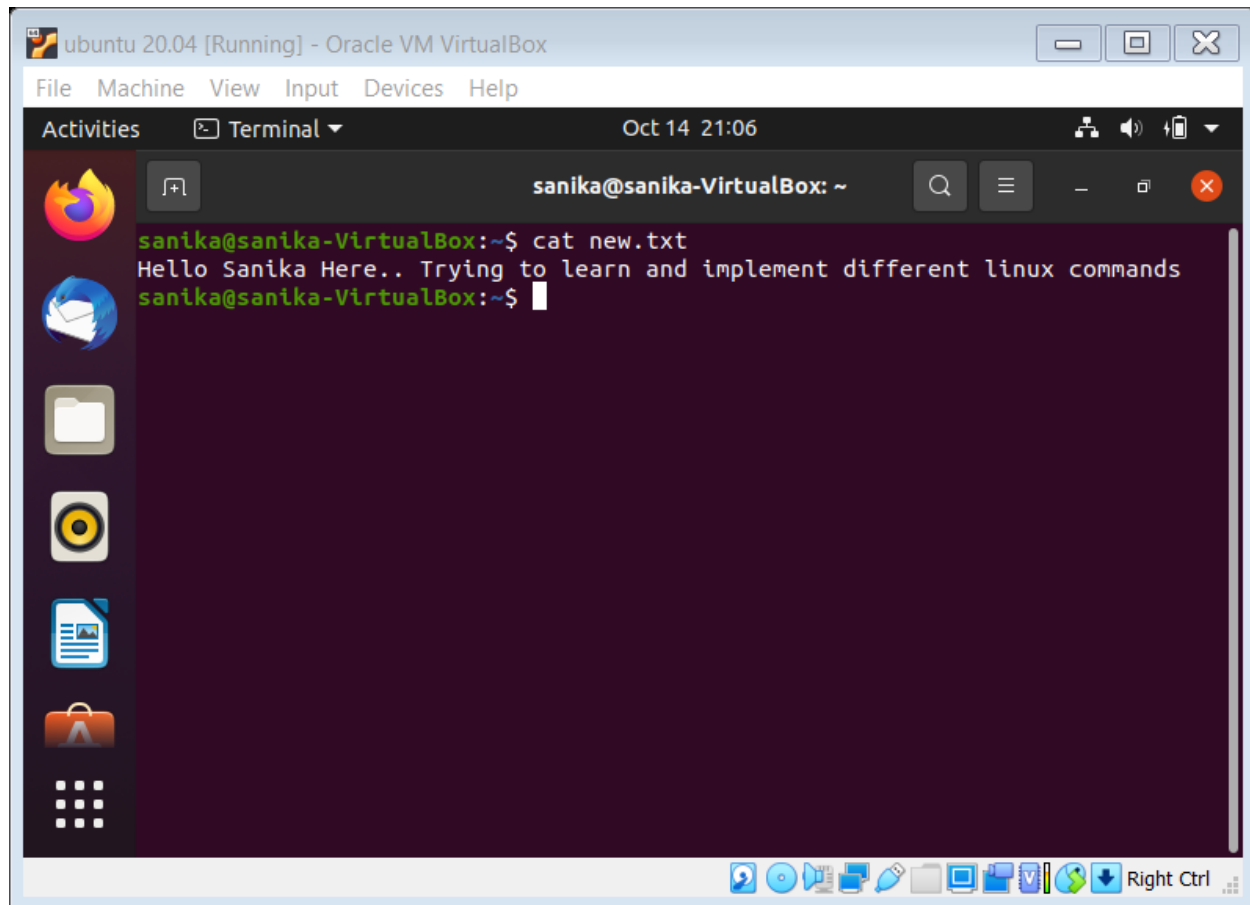
The above line of command is used to enter the specified line of text into an already existing file (i.e., in the specified file_name).



The screenshot shows a terminal window titled 'ubuntu 20.04 [Running] - Oracle VM VirtualBox'. The terminal prompt is 'sanika@sanika-VirtualBox:~\$'. The user has entered the command 'echo Hello Sanika Here.. Trying to learn and implement different linux commands >> new.txt'. The output of the command is displayed on the next line: 'sanika@sanika-VirtualBox:~\$'.

9. cat command :- (cat FILE_NAME)

The **cat command** allows us to view content of a file (i.e., redirect output in terminal or files). It reads data from the file and gives their content as output.



10. vi

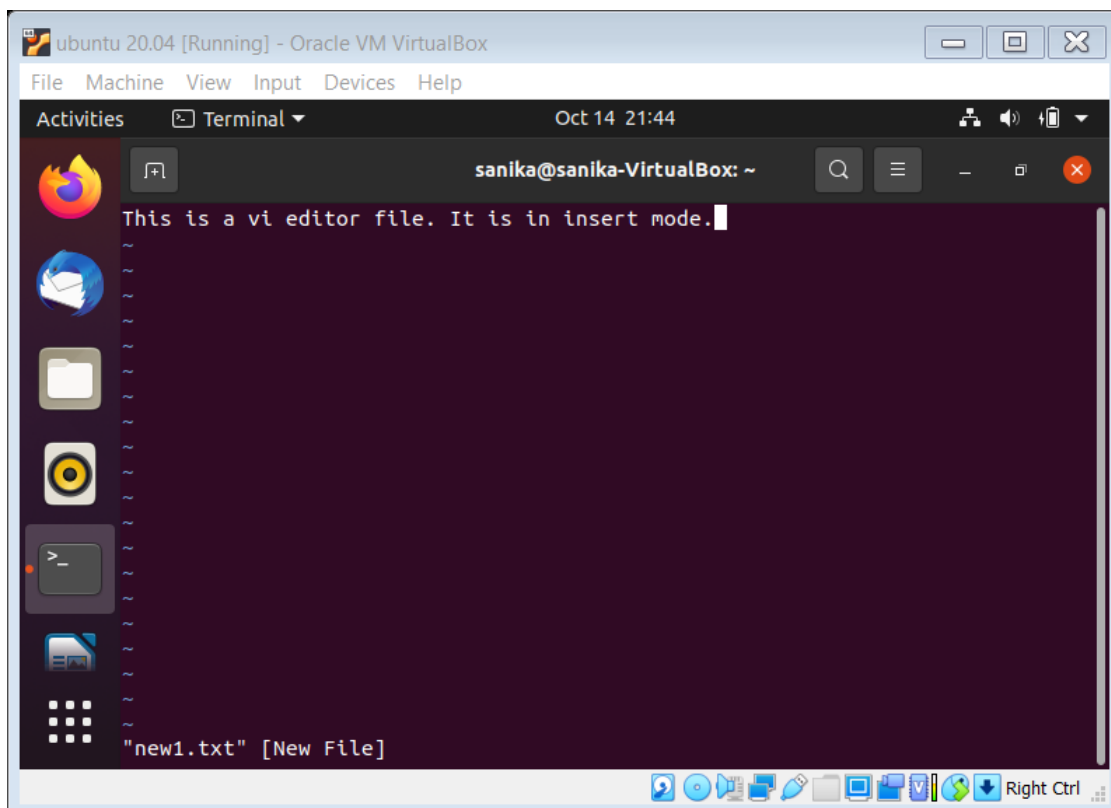
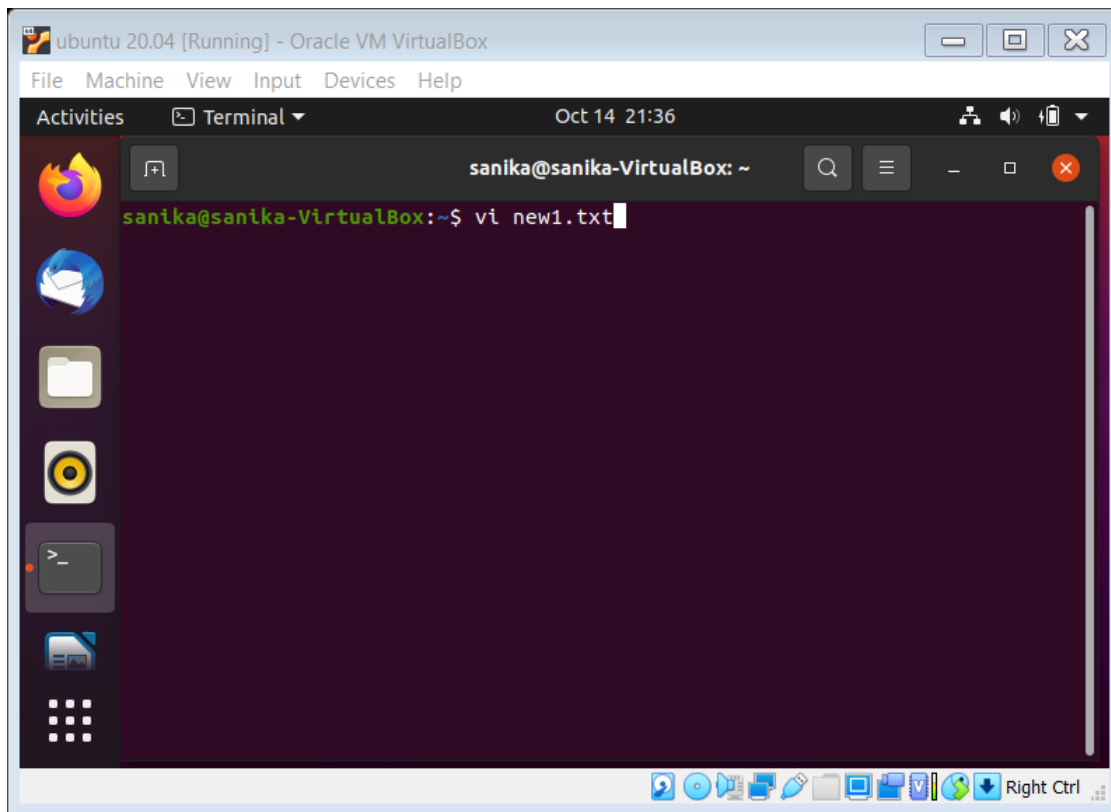
vi or the *Visual Editor* is the default text editor that comes with most Linux systems. It is a Terminal-based text editor. It operates in three modes:

- i) Command mode (*default*)
- ii) Insert mode
- iii) Escape mode

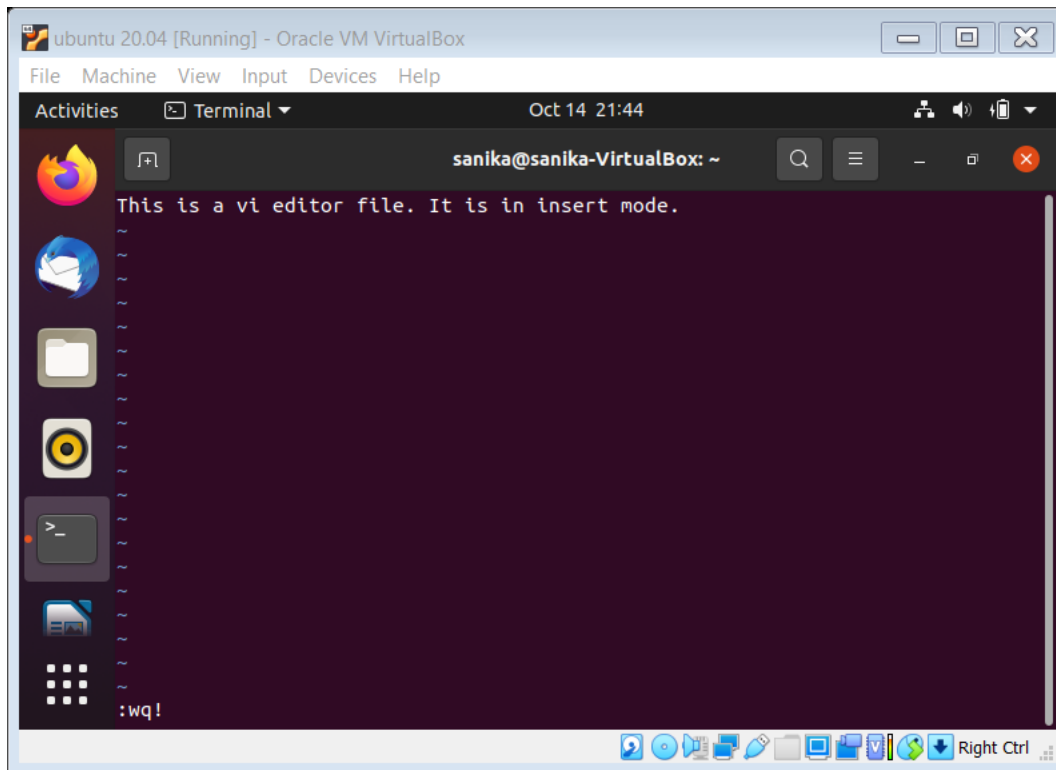
In the command mode, we can move through text, search for words and save a file but cannot insert anything in that file.

In the insert mode, we can type into the file and edit the text.

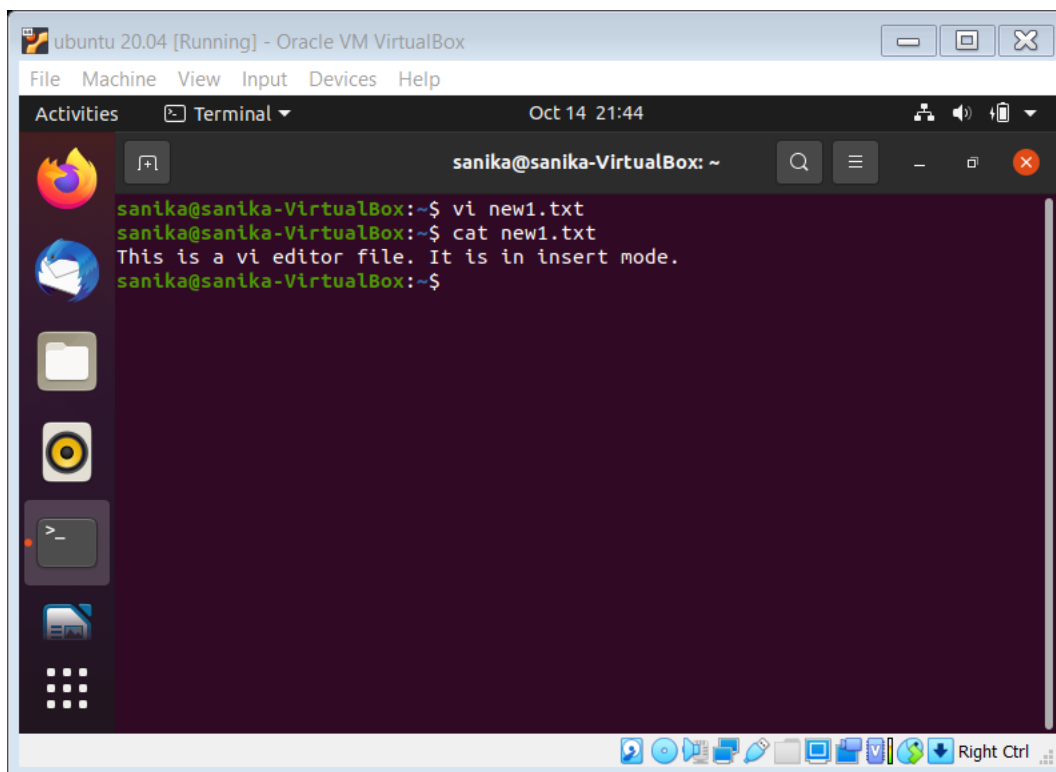
To create a file, we type the command: (**vi FILE_NAME**). It opens the file in command mode. To switch to insert mode we need to hit '*escape*' then type *i*. After editing, to save and switch back to command mode, we need to hit '*escape*' then type **:wq!** And hit 'enter'.



Now the above specified text is inserted in the *new1.txt*



:wq! This saves and closes the file. To check whether the text is inserted in the file or not, we should type: ***cat new1.txt***



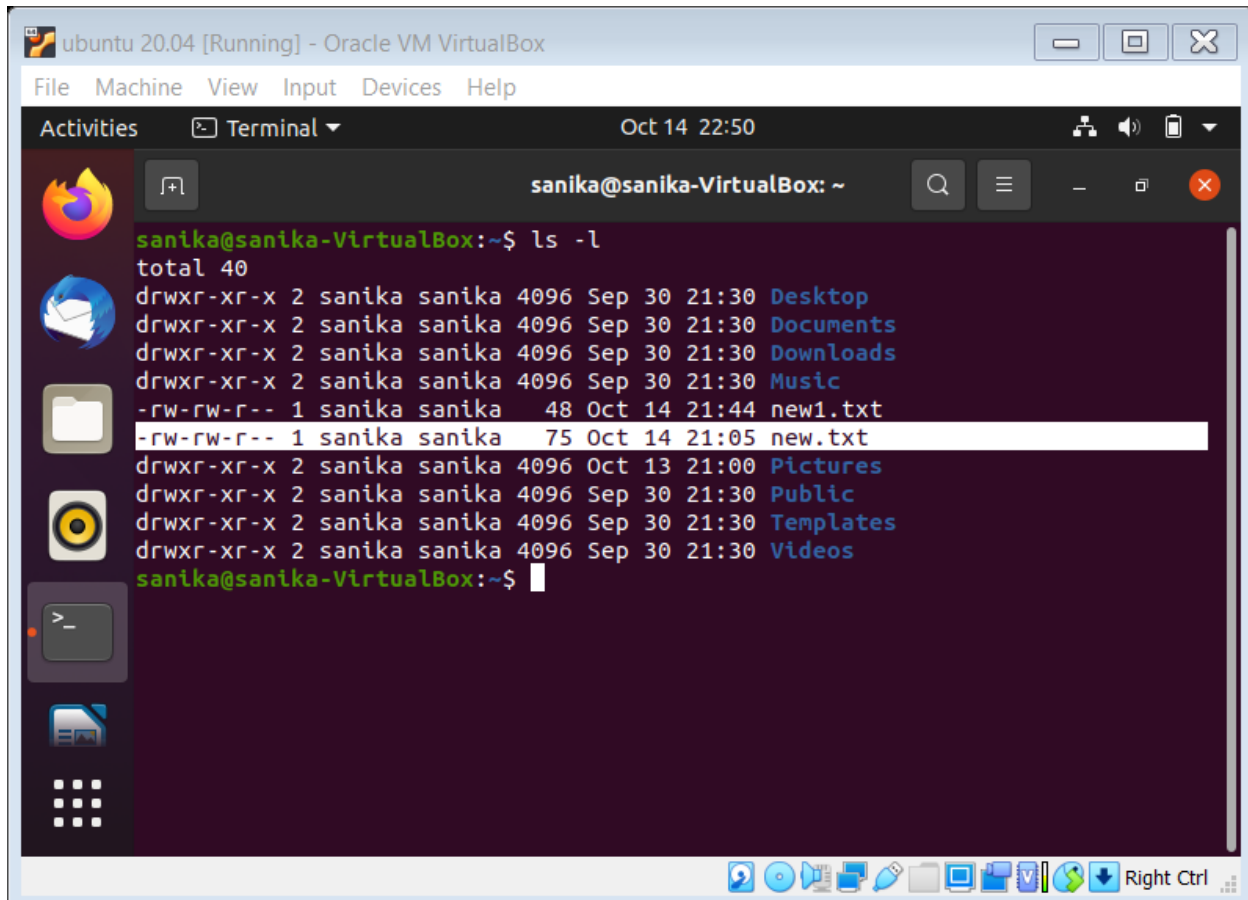
11. chmod :- (chmod OPTIONS_CODE FILE_NAME)

The chmod command is used to change the access mode of a file. It is used to change the directory permissions using symbolic code/ numeric code.

In Numeric code, each *write*, *read*, and *execute* permissions have the following number value:

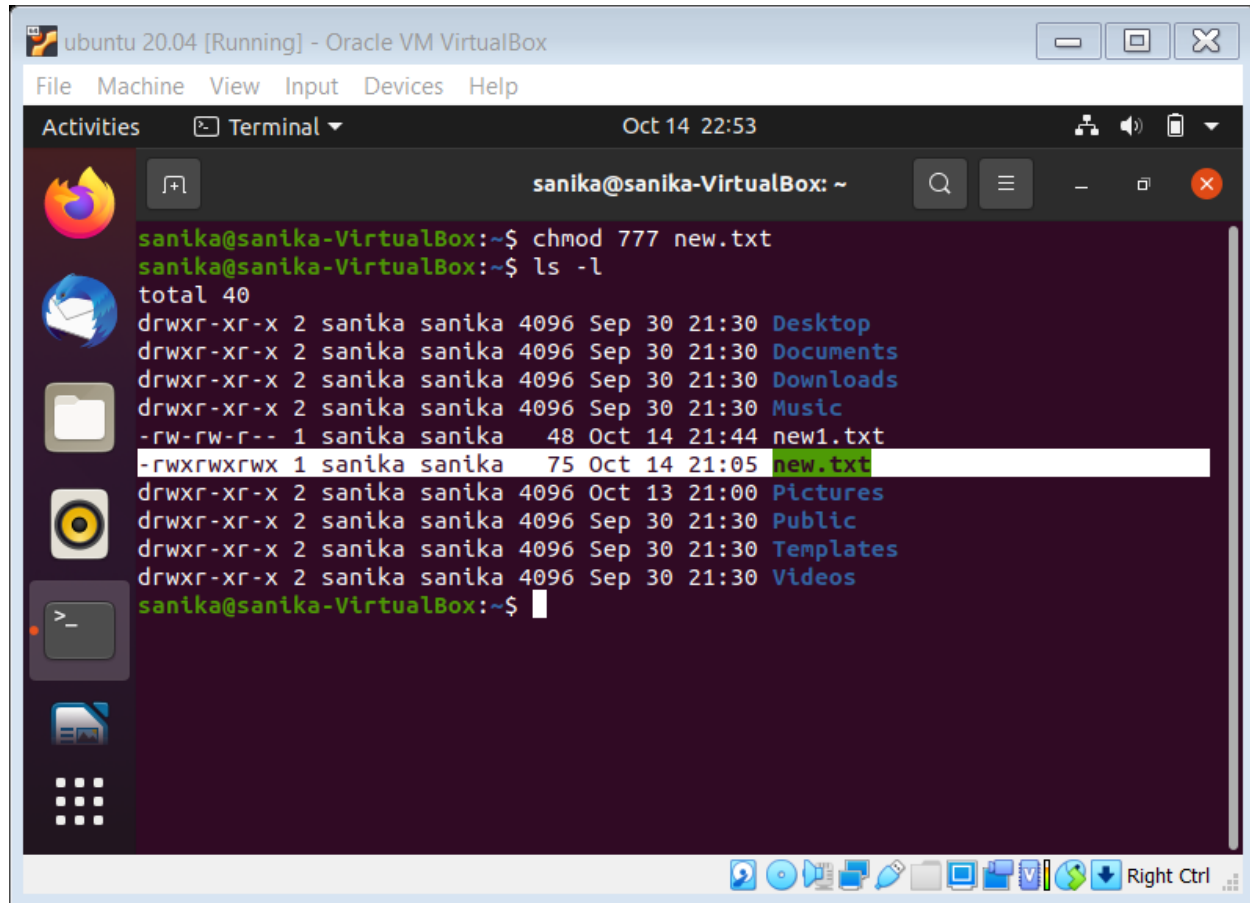
- r (read) = 4
- w (write) = 2
- x (execute) = 1
- no permissions = 0

new.txt has the following permissions:



```
sanika@sanika-VirtualBox:~$ ls -l
total 40
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Desktop
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Documents
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Downloads
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Music
-rw-rw-r-- 1 sanika sanika  48 Oct 14 21:44 new1.txt
-rw-rw-r-- 1 sanika sanika  75 Oct 14 21:05 new.txt
drwxr-xr-x 2 sanika sanika 4096 Oct 13 21:00 Pictures
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Public
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Templates
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Videos
sanika@sanika-VirtualBox:~$
```

After using chmod, the permissions are changed as follows:



The screenshot shows a terminal window titled "ubuntu 20.04 [Running] - Oracle VM VirtualBox". The terminal output is as follows:

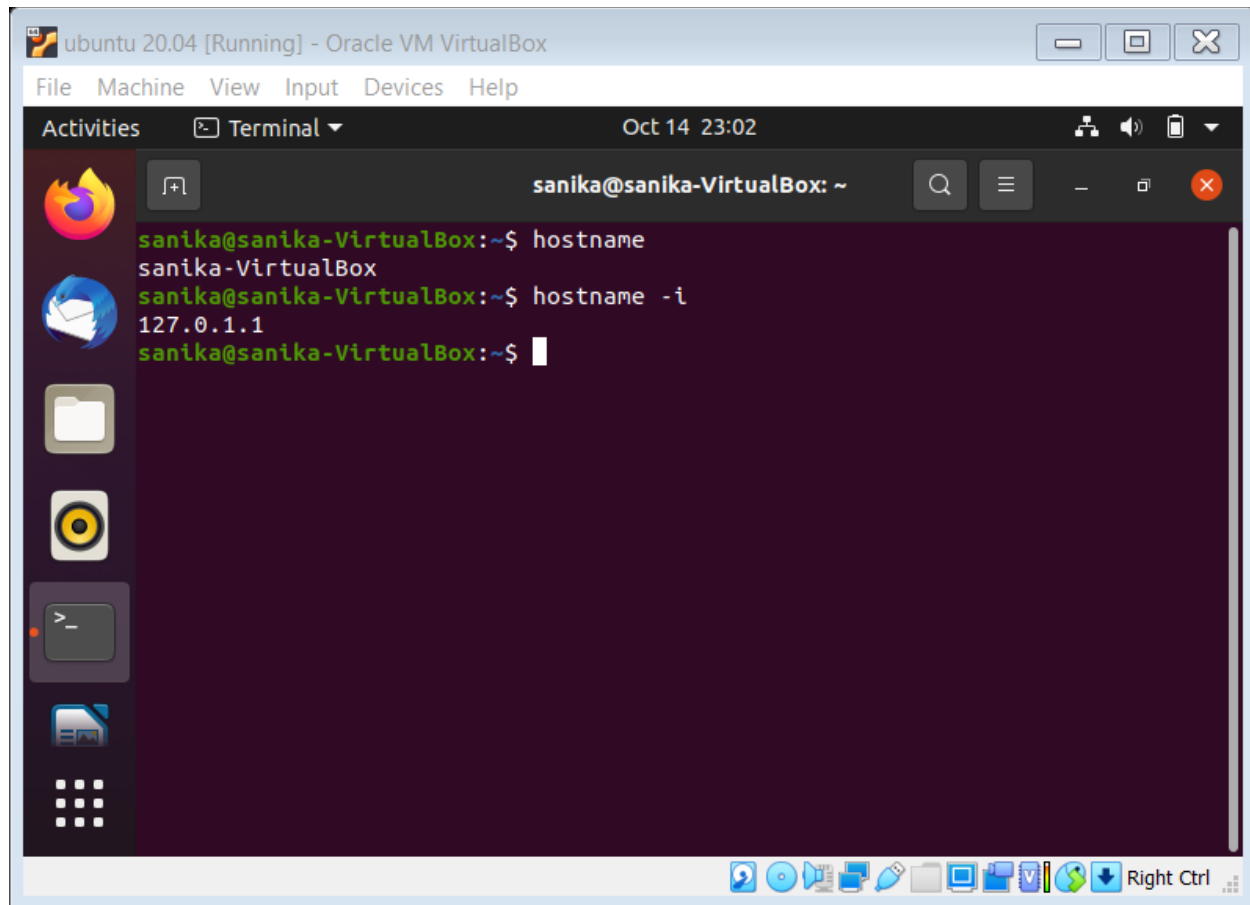
```
sanika@sanika-VirtualBox:~$ chmod 777 new.txt
sanika@sanika-VirtualBox:~$ ls -l
total 40
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Desktop
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Documents
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Downloads
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Music
-rw-rw-r-- 1 sanika sanika 48 Oct 14 21:44 new1.txt
-rwxrwxrwx 1 sanika sanika 75 Oct 14 21:05 new.txt
drwxr-xr-x 2 sanika sanika 4096 Oct 13 21:00 Pictures
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Public
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Templates
drwxr-xr-x 2 sanika sanika 4096 Sep 30 21:30 Videos
sanika@sanika-VirtualBox:~$
```

12. hostname

The **hostname** command is used to obtain the DNS (Domain Name System) name and set the system's hostname or NIS (Network Information System).

13. hostname -i

The **hostname -i** command is used to obtain the IP address of the system we are currently working on.



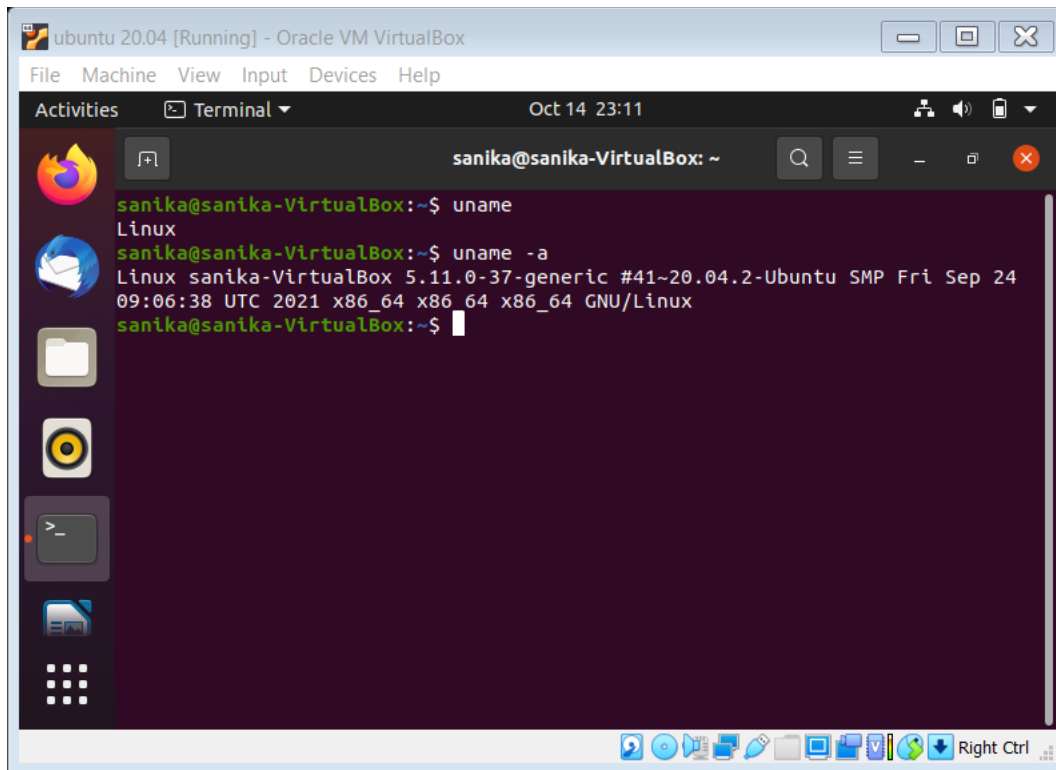
14. uname

We use the ***uname* command** to display system information, check the operating system, etc.

uname :- Shows name of the Operating System

uname -a :-Shows information which includes the following details:

- kernel name
- node name
- kernel release
- kernel version
- h/w name
- processor type
- h/w platform
- operating system name

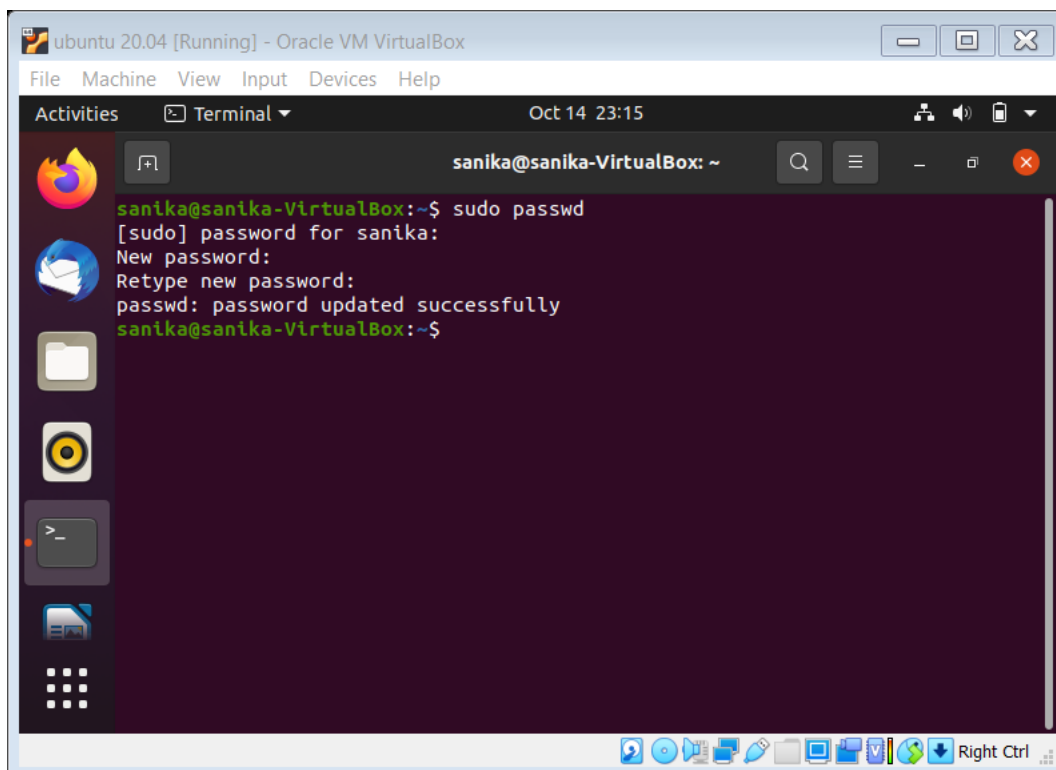


The screenshot shows a terminal window titled "ubuntu 20.04 [Running] - Oracle VM VirtualBox". The terminal prompt is "sanika@sanika-VirtualBox: ~". The user has entered the command "uname", which outputs "Linux". The user then enters "uname -a", which outputs "Linux sanika-VirtualBox 5.11.0-37-generic #41~20.04.2-Ubuntu SMP Fri Sep 24 09:06:38 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux". The terminal window has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". The status bar at the bottom shows "Right Ctrl" and a "Right Ctrl" button.

```
sanika@sanika-VirtualBox:~$ uname
Linux
sanika@sanika-VirtualBox:~$ uname -a
Linux sanika-VirtualBox 5.11.0-37-generic #41~20.04.2-Ubuntu SMP Fri Sep 24
09:06:38 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux
sanika@sanika-VirtualBox:~$
```

15. sudo passwd

The *sudo passwd* command is used to change the current password and set a new password.

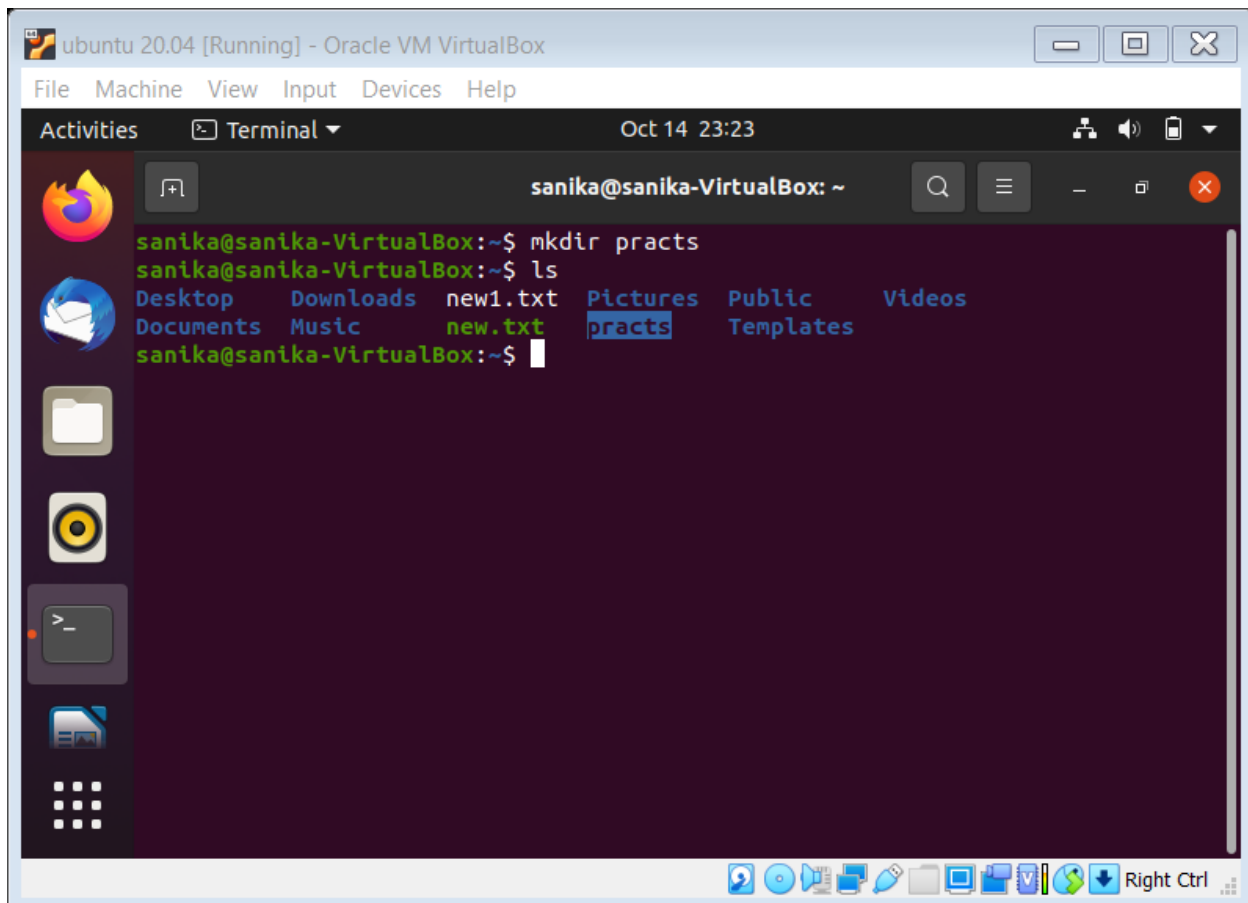


The screenshot shows a terminal window titled "ubuntu 20.04 [Running] - Oracle VM VirtualBox". The terminal prompt is "sanika@sanika-VirtualBox: ~". The user has entered the command "sudo passwd", which prompts for a password. The user enters a new password, and the terminal outputs "passwd: password updated successfully". The terminal window has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". The status bar at the bottom shows "Right Ctrl" and a "Right Ctrl" button.

```
sanika@sanika-VirtualBox:~$ sudo passwd
[sudo] password for sanika:
New password:
Retype new password:
passwd: password updated successfully
sanika@sanika-VirtualBox:~$
```

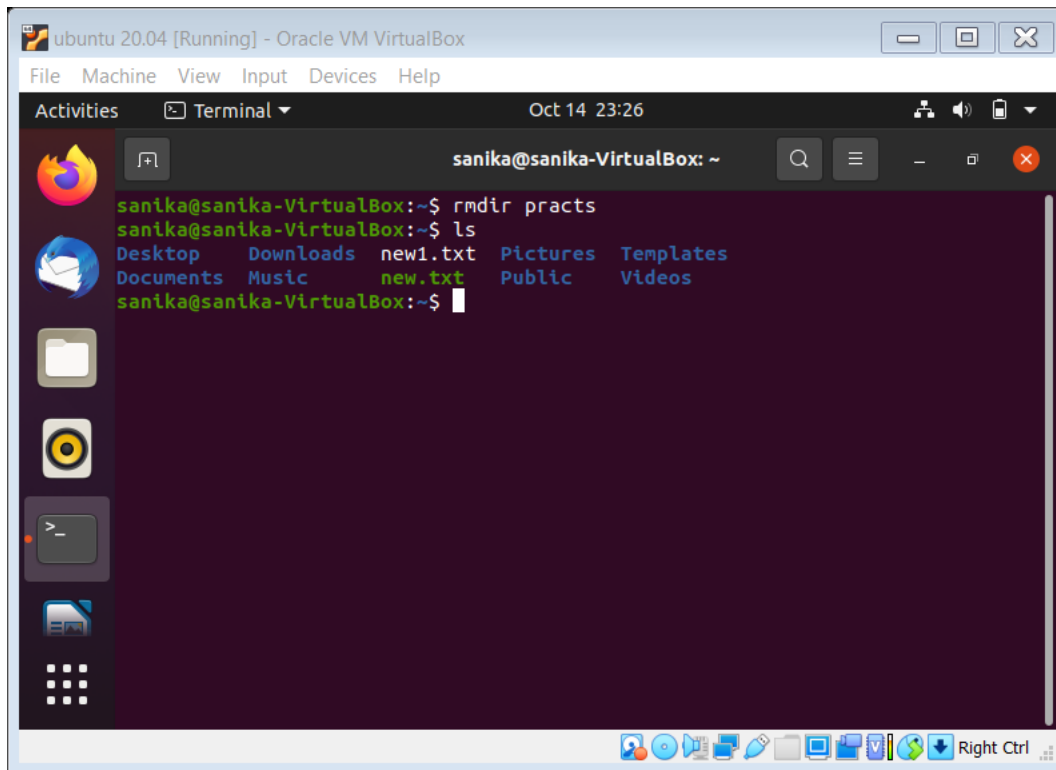
16.mkdir :- (mkdir DIRECTORY_NAME)

The *mkdir command* allows the user to create directories. mkdir stands for '*make directory*'.



17. rmdir :- (rmdir DIRECTORY_NAME)

The *rmdir command* is used to remove a directory from the system. rmdir stands for '*remove directory*'.

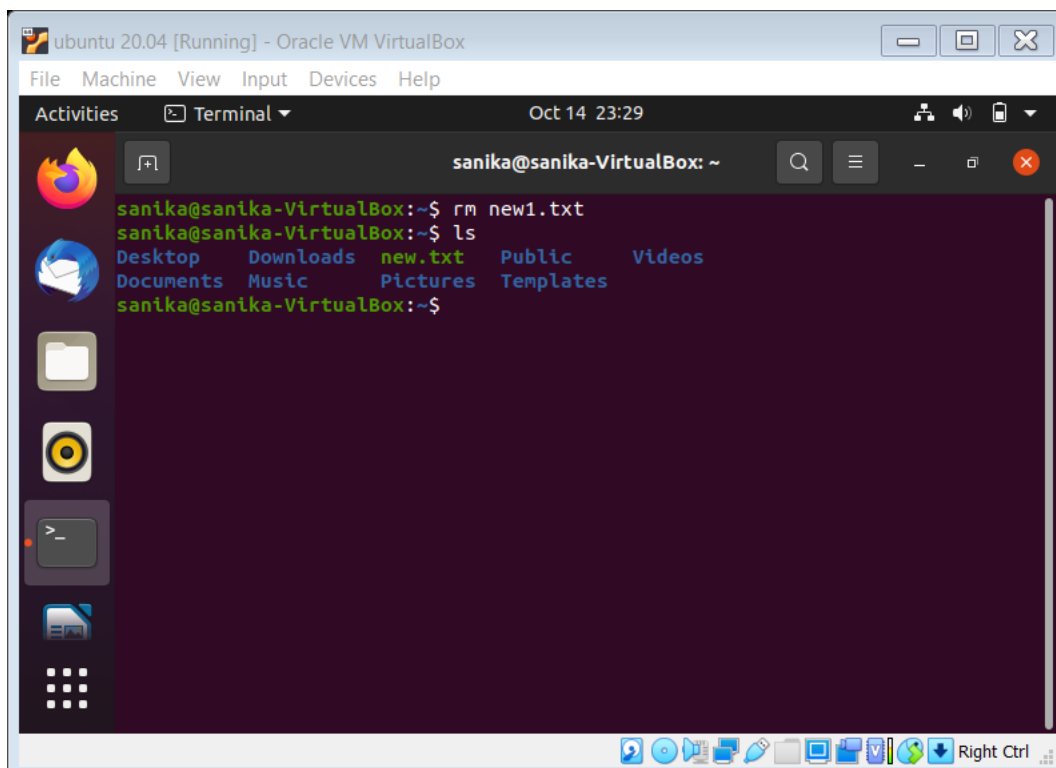


The screenshot shows a terminal window titled 'ubuntu 20.04 [Running] - Oracle VM VirtualBox'. The terminal prompt is 'sanika@sanika-VirtualBox: ~'. The user has entered the command 'rmdir practs', followed by 'ls' to list the directory contents. The output of 'ls' shows: Desktop, Downloads, new1.txt, Pictures, Templates, Documents, Music, new.txt, Public, and Videos. The terminal window has a dark background and a light-colored text. The window title bar includes standard Linux window controls (minimize, maximize, close) and a menu bar with File, Machine, View, Input, Devices, and Help. The bottom of the window shows a taskbar with various application icons and a system tray with a 'Right Ctrl' button.

```
sanika@sanika-VirtualBox:~$ rmdir practs
sanika@sanika-VirtualBox:~$ ls
Desktop  Downloads  new1.txt  Pictures  Templates
Documents Music      new.txt  Public    Videos
sanika@sanika-VirtualBox:~$
```

18. **rm** :- (rm FILE_NAME)

The **rm command** is used to remove a file from the system. It stands for ‘**remove**’.



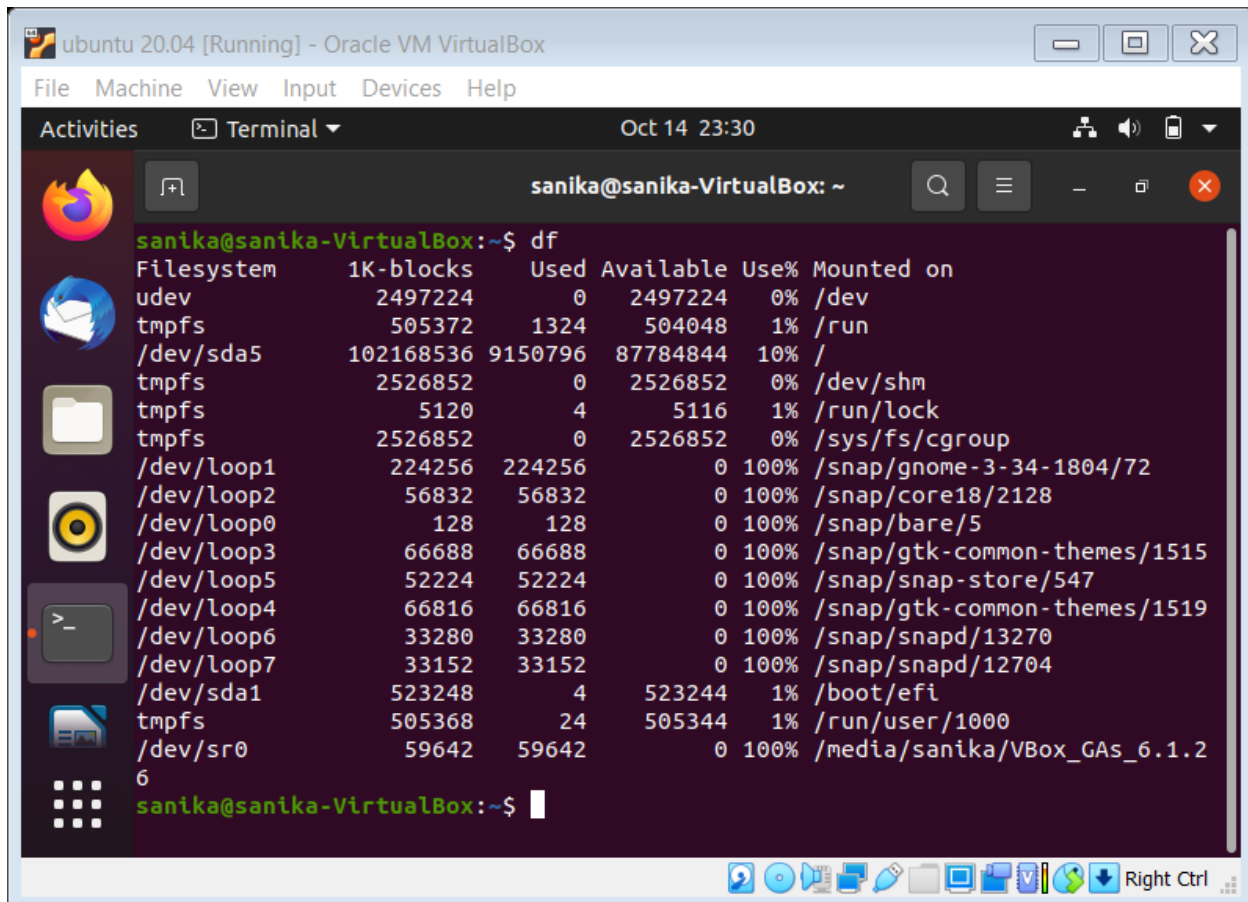
The screenshot shows a terminal window titled 'ubuntu 20.04 [Running] - Oracle VM VirtualBox'. The terminal prompt is 'sanika@sanika-VirtualBox: ~'. The user has entered the command 'rm new1.txt', followed by 'ls' to list the directory contents. The output of 'ls' shows: Desktop, Downloads, new.txt, Public, Videos, Documents, Music, Pictures, and Templates. The terminal window has a dark background and a light-colored text. The window title bar includes standard Linux window controls (minimize, maximize, close) and a menu bar with File, Machine, View, Input, Devices, and Help. The bottom of the window shows a taskbar with various application icons and a system tray with a 'Right Ctrl' button.

```
sanika@sanika-VirtualBox:~$ rm new1.txt
sanika@sanika-VirtualBox:~$ ls
Desktop  Downloads  new.txt  Public  Videos
Documents Music      Pictures Templates
sanika@sanika-VirtualBox:~$
```

19. df

The '**df**' stands for "**disk filesystem**". Is used to display the disk space used in the file system. It shows the following information:

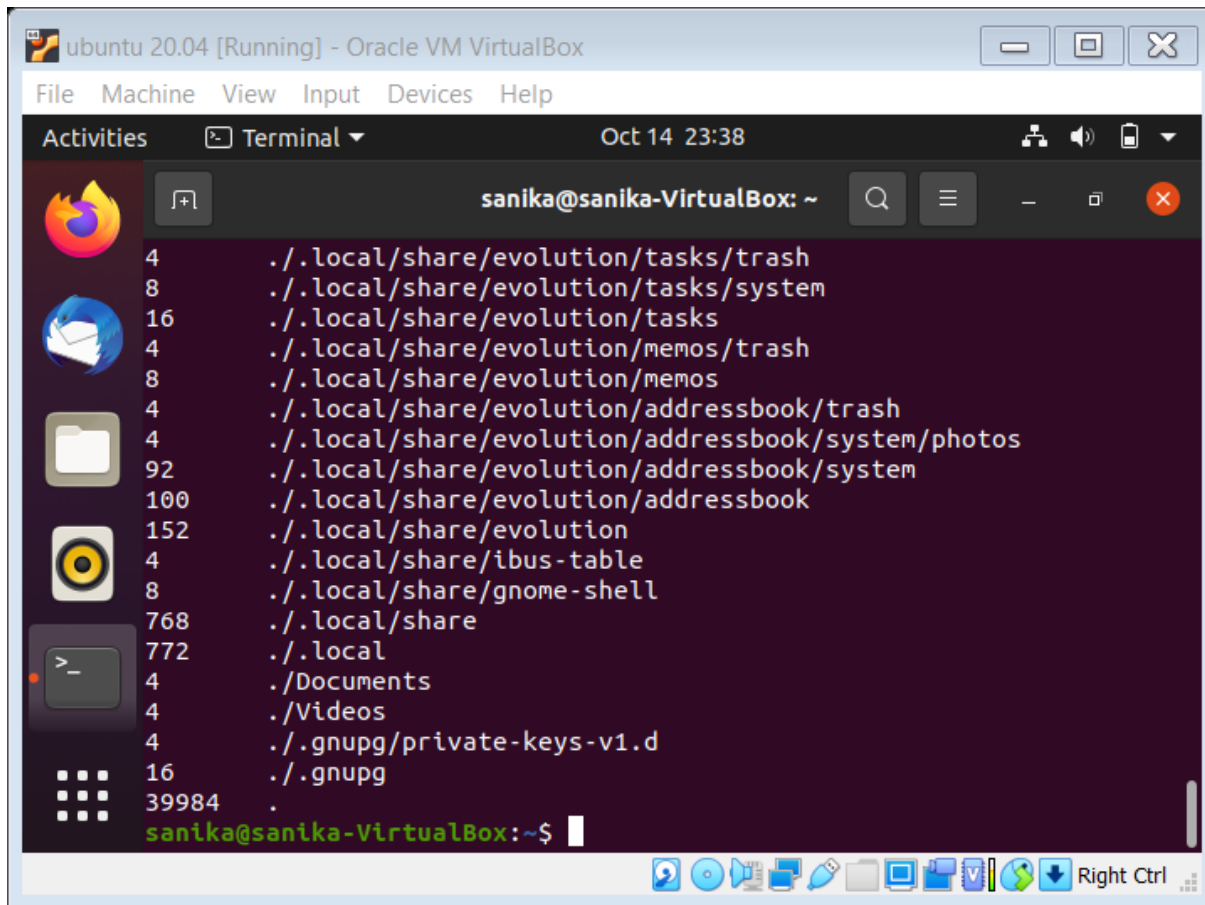
- Filesystem
- Blocks
- Used space
- Available space
- Used %
- Mounted on which file system.



```
sanika@sanika-VirtualBox:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev            2497224      0   2497224  0% /dev
tmpfs           505372     1324   504048  1% /run
/dev/sda5       102168536 9150796  87784844 10% /
tmpfs           2526852      0   2526852  0% /dev/shm
tmpfs            5120         4     5116  1% /run/lock
tmpfs           2526852      0   2526852  0% /sys/fs/cgroup
/dev/loop1       224256    224256      0 100% /snap/gnome-3-34-1804/72
/dev/loop2       56832     56832      0 100% /snap/core18/2128
/dev/loop0        128        128      0 100% /snap/bare/5
/dev/loop3       66688     66688      0 100% /snap/gtk-common-themes/1515
/dev/loop5       52224     52224      0 100% /snap/snap-store/547
/dev/loop4       66816     66816      0 100% /snap/gtk-common-themes/1519
/dev/loop6       33280     33280      0 100% /snap/snapd/13270
/dev/loop7       33152     33152      0 100% /snap/snapd/12704
/dev/sda1        523248        4   523244  1% /boot/efi
tmpfs           505368        24  505344  1% /run/user/1000
/dev/sr0         59642     59642      0 100% /media/sanika/VBox_GAs_6.1.2
6
sanika@sanika-VirtualBox:~$
```

20. du

'**du**' stands for **Disk Usage**. It is used to check the information of disk usage of files and directories on a system. It displays a list of all the files along with their respective sizes.



The screenshot shows a terminal window titled "ubuntu 20.04 [Running] - Oracle VM VirtualBox". The terminal displays the output of the `cat /etc/passwd` command, listing system users and regular users. The output is as follows:

```
4      :/.local/share/evolution/tasks/trash
8      :/.local/share/evolution/tasks/system
16     :/.local/share/evolution/tasks
4      :/.local/share/evolution/memos/trash
8      :/.local/share/evolution/memos
4      :/.local/share/evolution/addressbook/trash
4      :/.local/share/evolution/addressbook/system/photos
92     :/.local/share/evolution/addressbook/system
100    :/.local/share/evolution/addressbook
152    :/.local/share/evolution
4      :/.local/share/ibus-table
8      :/.local/share/gnome-shell
768    :/.local/share
772    :/.local
4      :/Documents
4      :/Videos
4      :/.gnupg/private-keys-v1.d
16     :/.gnupg
39984  :.
```

The prompt at the bottom is `sanika@sanika-VirtualBox:~$`. The terminal window has a dark purple background and a sidebar with application icons on the left.

Conclusion: Thus we have executed basic Linux Commands.