

USN: 20BTRCO048  
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Ex No: 1  
Date: 19th, Feb, 2022

# Basics commands of UNIX & LINUX

## **Objective**

- To learn the basic UNIX commands.
- To be able to work with VI editor.
- To learn UNIX shell programming at an introductory level.

## **Description**

### **Introduction**

UNIX is an operating system and was developed by a team of developers in the Bell Labs laboratories in 1960's, and has been under constant development ever since. It is a stable, multi-user, multi-tasking system for servers, desktops, and laptops. There are many different versions of UNIX, although they share common similarities. The most popular varieties of UNIX are Sun Solaris, GNU/Linux, and MacOS X.

### **Key Terminologies**

- **UNIX command prompt:** A command prompt, also referred to simply as a prompt, is a short text message at the start of the command line on a command line interface. The command line is the line on which commands are typed in a console or terminal window.  
**A**  
command is an instruction to tell a computer to do something, e.g., to execute a program. The functions of a command prompt are:
  - i) to inform the user that the system is ready for the next command, data element or other input.
  - ii) to help the user plan and execute subsequent operations. The dollar sign prompt (or a prompt ending with a dollar sign) means that UNIX is now ready to interpret and execute your commands as typed in from your keyboard.
- **The VI editor:** The default editor that comes with the UNIX operating system is called vi (visual editor). vi is a screen editor where a portion of the file is displayed on the terminal screen, and the cursor can be moved around the screen to indicate where you want to make changes. You can select which part of the file you want to have displayed.

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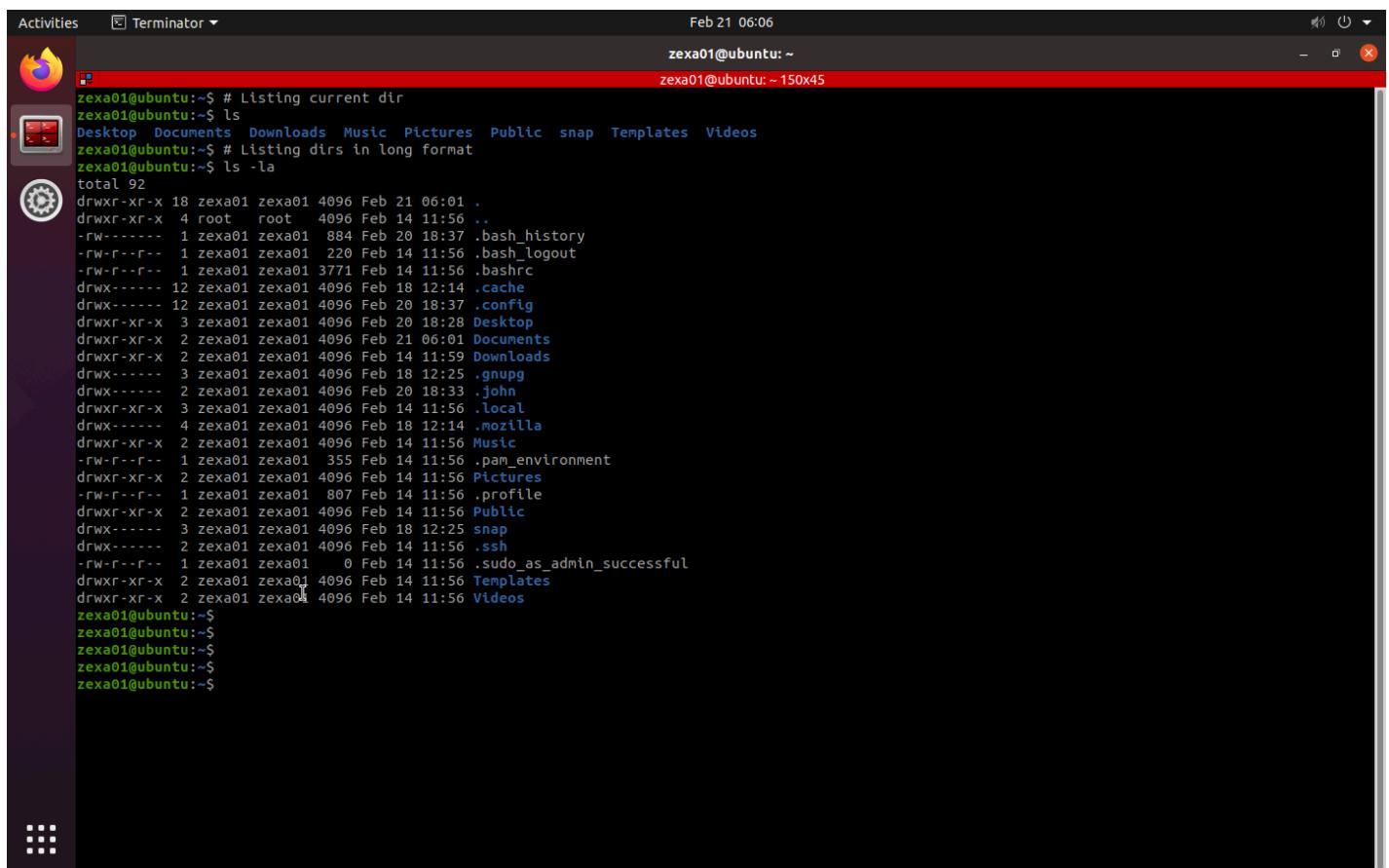
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Screen editors are also called display editors, or visual editors. vi is one of the more popular screen editors that run on the UNIX system.

- UNIX shell: The shell acts as an interface between the user and the kernel. When a user logs in, the login program checks the username and password and then starts another program called the shell. The shell is a command line interpreter (CLI). It interprets the commands that user types in and arranges for them to be carried out. The commands are themselves programs: when they terminate, the shell gives the user another prompt.

## Output of given commands

### 1. ls

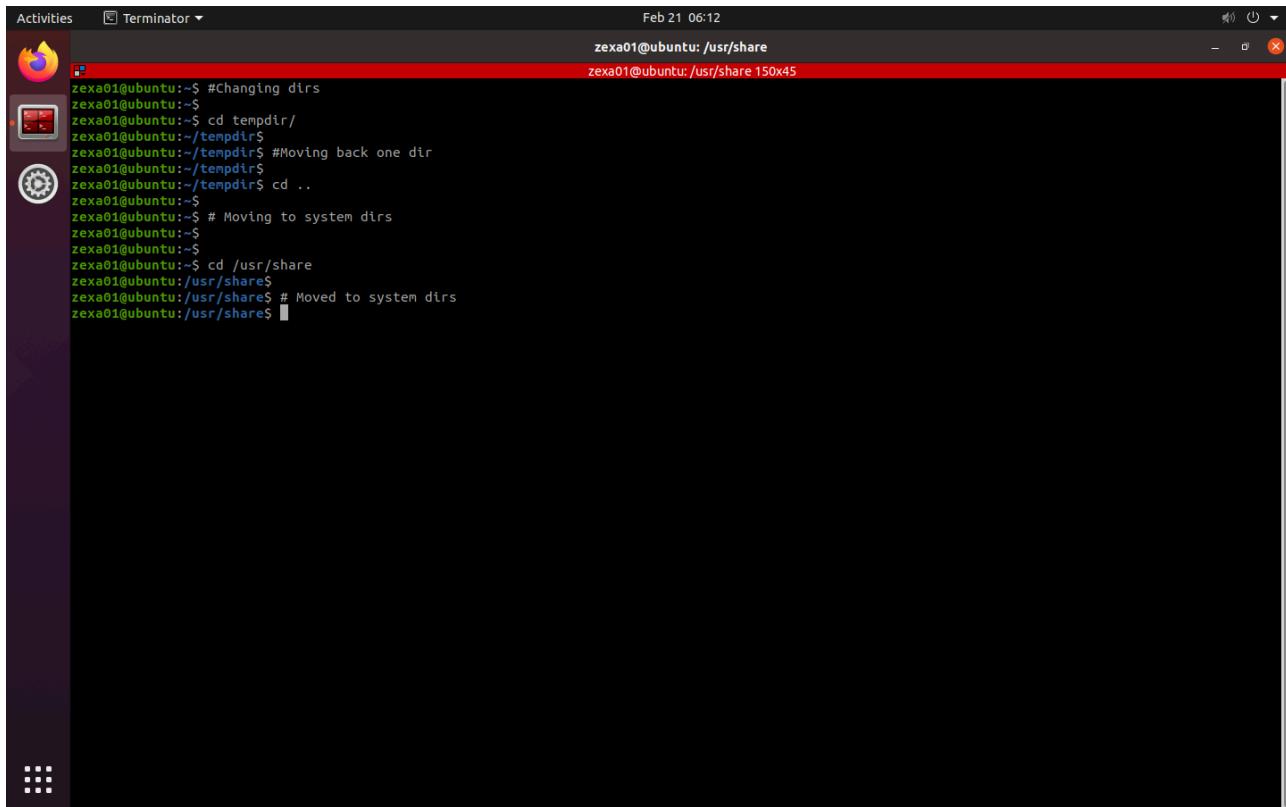


The screenshot shows a terminal window titled "Terminator" running on a Ubuntu desktop environment. The terminal window has a red header bar with the title and a status bar at the bottom. The main area of the terminal displays the output of the "ls" command in long format. The output lists various files and directories in the current directory, including ".bash\_history", ".bash\_logout", ".bashrc", ".cache", ".config", "Desktop", "Documents", "Downloads", "Music", "Pictures", "Public", "snap", "Templates", and "Videos". Each entry shows the file type (e.g., drwxr-xr-x), permissions, owner (zexa01), group (zexa01), size (4096), modification date (Feb 21 06:01 or Feb 14 11:56), and name.

```
Activities Terminator Feb 21 06:06
zexa01@ubuntu:~$ # Listing current dir
zexa01@ubuntu:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
zexa01@ubuntu:~$ # Listing dirs in long format
zexa01@ubuntu:~$ ls -la
total 92
drwxr-xr-x 18 zexa01 zexa01 4096 Feb 21 06:01 .
drwxr-xr-x 4 root root 4096 Feb 14 11:56 ..
-rw-r--r-- 1 zexa01 zexa01 884 Feb 20 18:37 .bash_history
-rw-r--r-- 1 zexa01 zexa01 220 Feb 14 11:56 .bash_logout
-rw-r--r-- 1 zexa01 zexa01 3771 Feb 14 11:56 .bashrc
drwxr-xr-x 12 zexa01 zexa01 4096 Feb 18 12:14 .cache
drwxr-xr-x 12 zexa01 zexa01 4096 Feb 20 18:37 .config
drwxr-xr-x 3 zexa01 zexa01 4096 Feb 20 18:28 Desktop
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 21 06:01 Documents
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:59 Downloads
drwxr-xr-x 3 zexa01 zexa01 4096 Feb 18 12:25 .gnupg
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 20 18:33 .john
drwxr-xr-x 3 zexa01 zexa01 4096 Feb 14 11:56 .local
drwxr-xr-x 4 zexa01 zexa01 4096 Feb 18 12:14 .mozilla
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Music
-rw-r--r-- 1 zexa01 zexa01 355 Feb 14 11:56 .pam_environment
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Pictures
-rw-r--r-- 1 zexa01 zexa01 807 Feb 14 11:56 .profile
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Public
drwxr-xr-x 3 zexa01 zexa01 4096 Feb 18 12:25 snap
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 .ssh
-rw-r--r-- 1 zexa01 zexa01 0 Feb 14 11:56 .sudo_as_admin_successful
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Templates
drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Videos
zexa01@ubuntu:~$
```

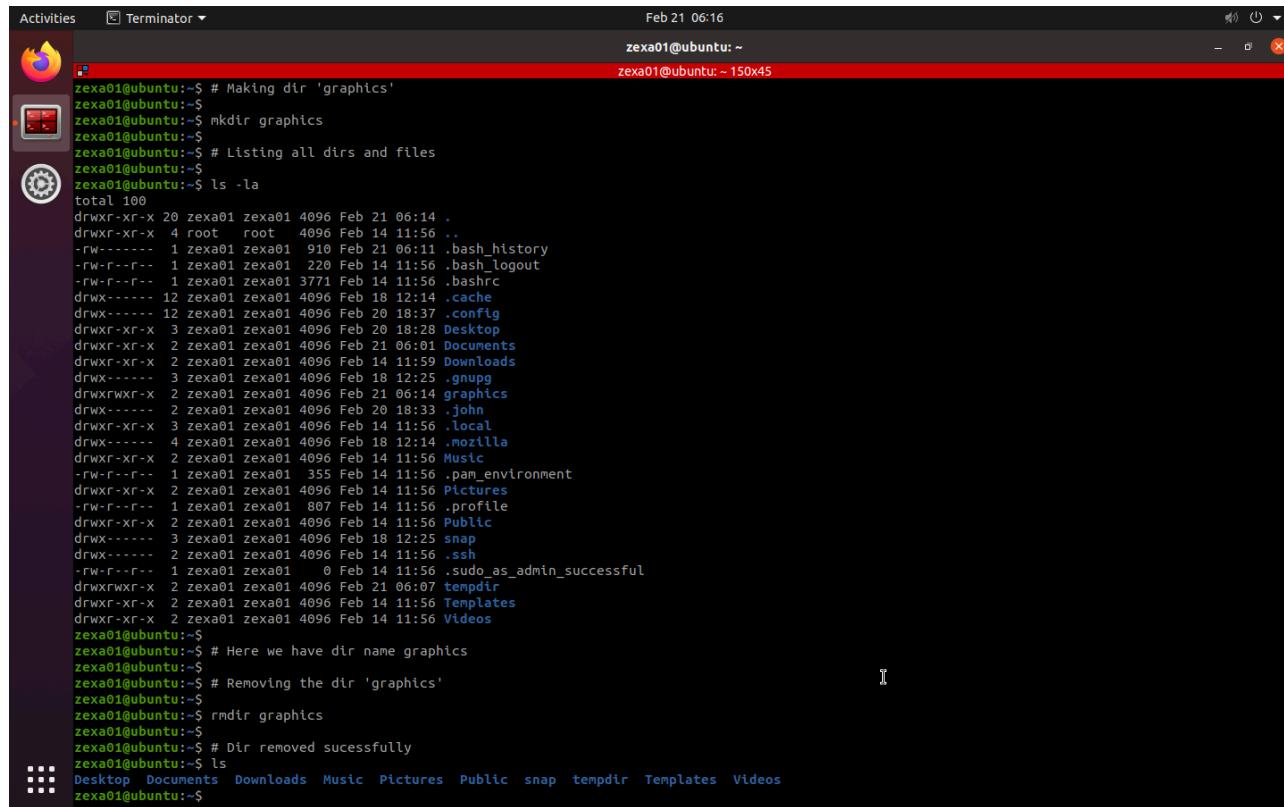
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## 2. cd



```
Activities Terminator ▾ Feb 21 06:12 zexa01@ubuntu:/usr/share zexa01@ubuntu:/usr/share 150x45 zexa01@ubuntu:~$ #Changing dirs zexa01@ubuntu:~$ zexa01@ubuntu:~$ cd tempdir/ zexa01@ubuntu:~/tempdir$ zexa01@ubuntu:~/tempdir$ #Moving back one dir zexa01@ubuntu:~/tempdir$ zexa01@ubuntu:~/tempdir$ cd .. zexa01@ubuntu:~$ zexa01@ubuntu:~$ # Moving to system dirs zexa01@ubuntu:~$ zexa01@ubuntu:~$ zexa01@ubuntu:~$ cd /usr/share zexa01@ubuntu:/usr/share$ zexa01@ubuntu:/usr/share$ # Moved to system dirs zexa01@ubuntu:/usr/share$
```

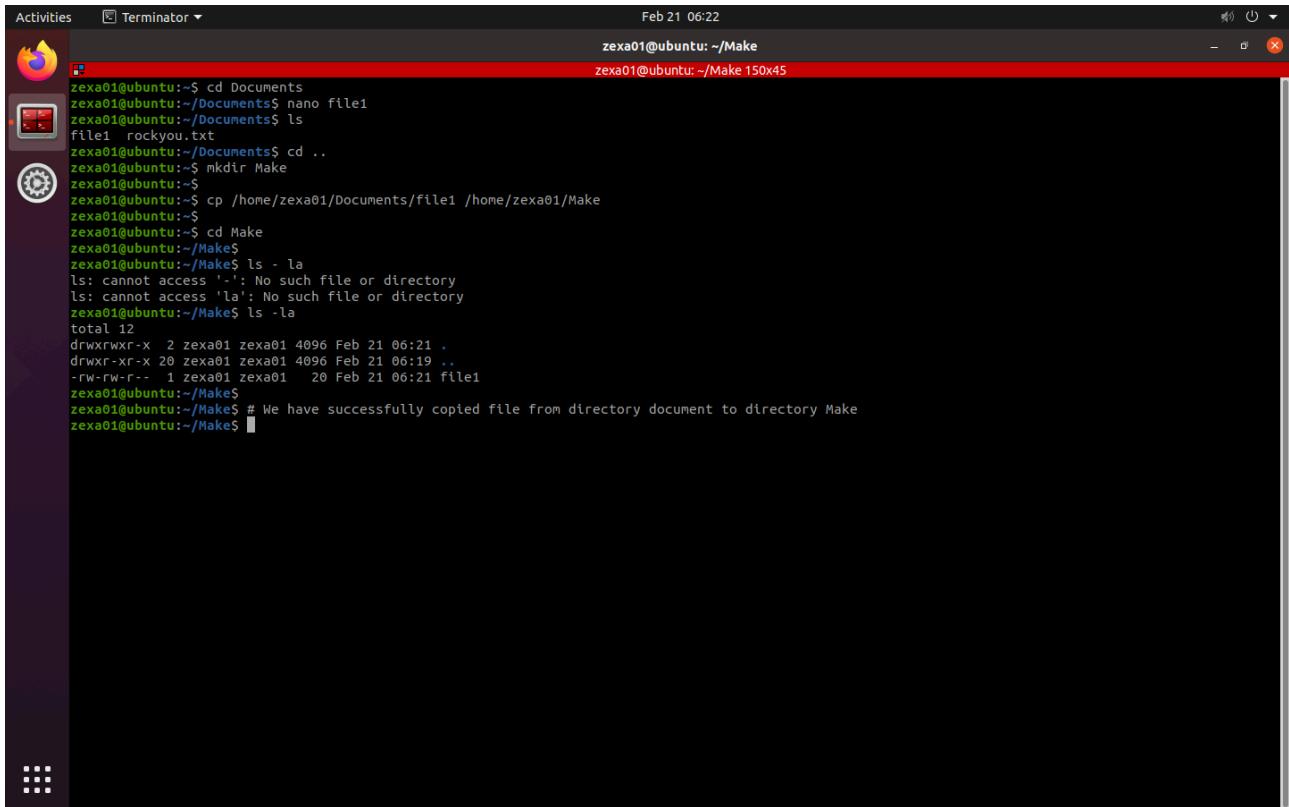
## 3.mkdir and 4.rmdir



```
Activities Terminator ▾ Feb 21 06:16 zexa01@ubuntu:~ zexa01@ubuntu:~ 150x45 zexa01@ubuntu:~$ # Making dir 'graphics' zexa01@ubuntu:~$ zexa01@ubuntu:~$ mkdir graphics zexa01@ubuntu:~$ zexa01@ubuntu:~$ # Listing all dirs and files zexa01@ubuntu:~$ zexa01@ubuntu:~$ zexa01@ubuntu:~$ ls -la total 100 drwxr-xr-x 20 zexa01 zexa01 4096 Feb 21 06:14 . drwxr-xr-x 4 root root 4096 Feb 14 11:56 .. -rw-r--r-- 1 zexa01 zexa01 910 Feb 21 06:11 .bash_history -rw-r--r-- 1 zexa01 zexa01 220 Feb 14 11:56 .bash_logout -rw-r--r-- 1 zexa01 zexa01 3771 Feb 14 11:56 .bashrc drwx----- 12 zexa01 zexa01 4096 Feb 18 12:14 .cache drwx----- 12 zexa01 zexa01 4096 Feb 20 18:37 .config drwxr-xr-x 3 zexa01 zexa01 4096 Feb 20 18:28 Desktop drwxr-xr-x 2 zexa01 zexa01 4096 Feb 21 06:01 Documents drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:59 Downloads drwx----- 3 zexa01 zexa01 4096 Feb 18 12:25 .gnupg drwxrwxr-x 2 zexa01 zexa01 4096 Feb 21 06:14 graphics drwx----- 2 zexa01 zexa01 4096 Feb 20 18:33 .john drwxr-xr-x 3 zexa01 zexa01 4096 Feb 14 11:56 .local drwx----- 4 zexa01 zexa01 4096 Feb 18 12:14 .mozilla drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Music -rw-r--r-- 1 zexa01 zexa01 355 Feb 14 11:56 .pan_environment drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Pictures -rw-r--r-- 1 zexa01 zexa01 807 Feb 14 11:56 .profile drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Public drwx----- 3 zexa01 zexa01 4096 Feb 18 12:25 snap drwx----- 2 zexa01 zexa01 4096 Feb 14 11:56 .ssh -rw-r--r-- 1 zexa01 zexa01 0 Feb 14 11:56 .sudo_as_admin_successful drwxrwxr-x 2 zexa01 zexa01 4096 Feb 21 06:07 tempdir drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Templates drwxr-xr-x 2 zexa01 zexa01 4096 Feb 14 11:56 Videos zexa01@ubuntu:~$ zexa01@ubuntu:~$ # Here we have dir name graphics zexa01@ubuntu:~$ zexa01@ubuntu:~$ # Removing the dir 'graphics' zexa01@ubuntu:~$ zexa01@ubuntu:~$ rmdir graphics zexa01@ubuntu:~$ zexa01@ubuntu:~$ # Dir removed sucessfully zexa01@ubuntu:~$ ls Desktop Documents Downloads Music Pictures Public snap tempdir Templates Videos zexa01@ubuntu:~$
```

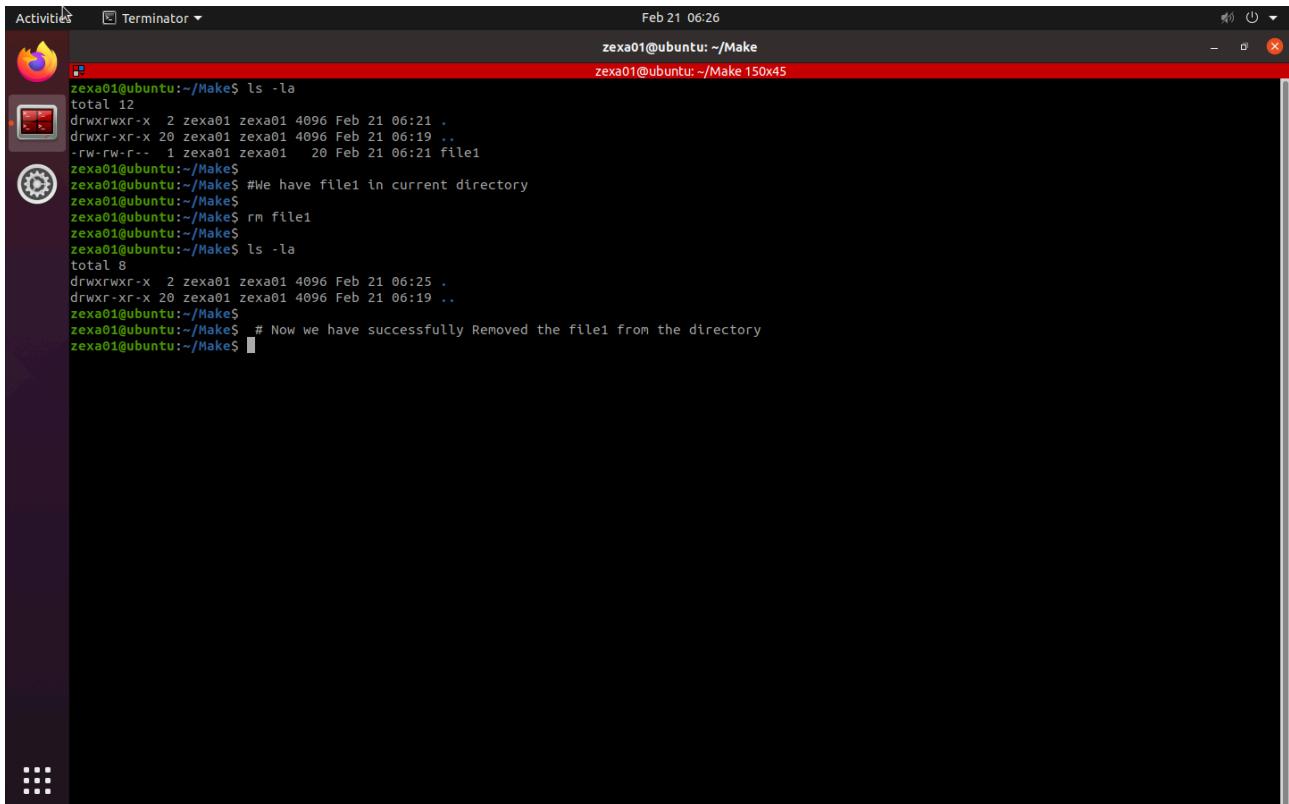
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## 5. cp



```
Activities Terminator Feb 21 06:22 zexa01@ubuntu: ~/Make zexa01@ubuntu:~/Documents$ cd Documents zexa01@ubuntu:~/Documents$ nano file1 zexa01@ubuntu:~/Documents$ ls file1 rockyou.txt zexa01@ubuntu:~/Documents$ cd .. zexa01@ubuntu:~$ mkdir Make zexa01@ubuntu:~$ zexa01@ubuntu:~/Documents$ cp /home/zexa01/Documents/file1 /home/zexa01/Make zexa01@ubuntu:~$ zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Make$ cd Make zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ ls - la ls: cannot access '.': No such file or directory ls: cannot access 'la': No such file or directory zexa01@ubuntu:~/Make$ ls -la total 12 drwxrwxr-x 2 zexa01 zexa01 4096 Feb 21 06:21 . drwxr-xr-x 20 zexa01 zexa01 4096 Feb 21 06:19 .. -rw-rw-r-- 1 zexa01 zexa01 20 Feb 21 06:21 file1 zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ # We have successfully copied file from directory document to directory Make zexa01@ubuntu:~/Make$
```

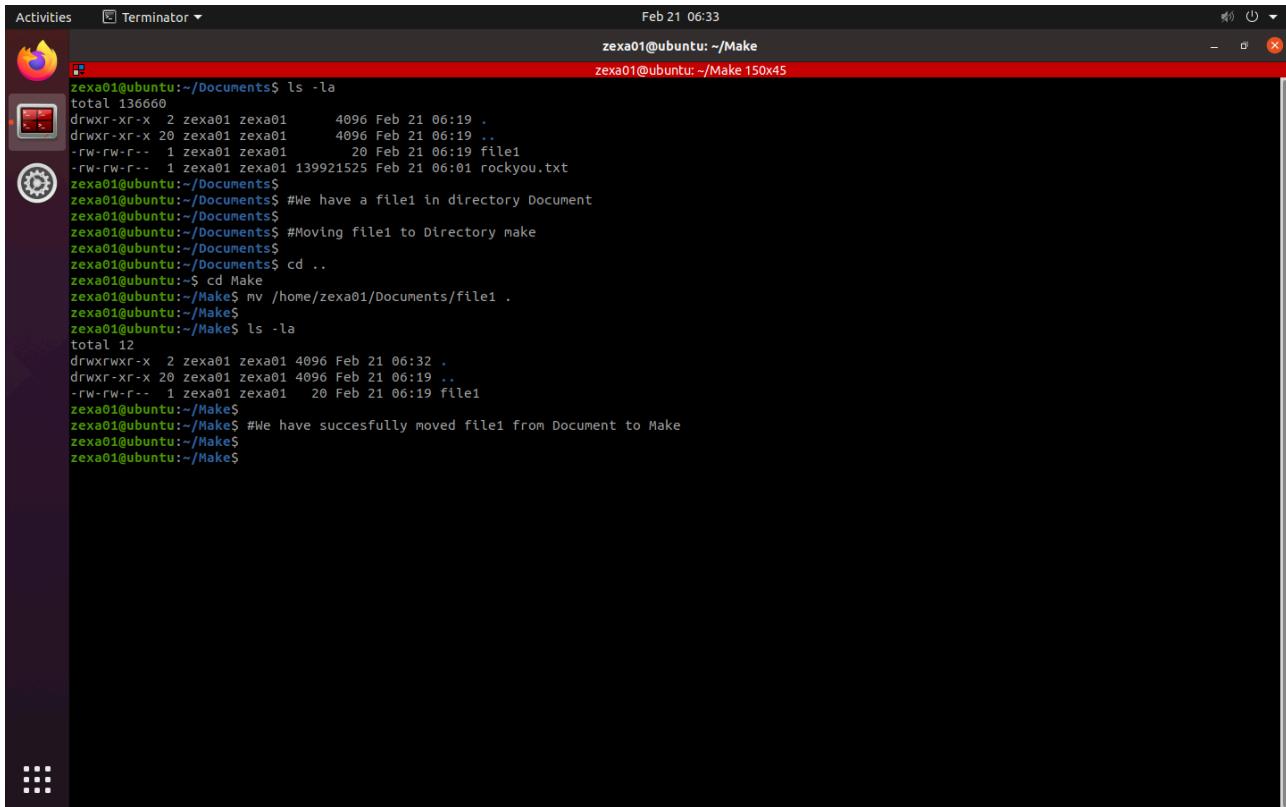
## 6. rm



```
Activities Terminator Feb 21 06:26 zexa01@ubuntu: ~/Make zexa01@ubuntu:~/Documents$ ls -la total 12 drwxrwxr-x 2 zexa01 zexa01 4096 Feb 21 06:21 . drwxr-xr-x 20 zexa01 zexa01 4096 Feb 21 06:19 .. -rw-rw-r-- 1 zexa01 zexa01 20 Feb 21 06:21 file1 zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ #We have file1 in current directory zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ rm file1 zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ ls -la total 8 drwxrwxr-x 2 zexa01 zexa01 4096 Feb 21 06:25 . drwxr-xr-x 20 zexa01 zexa01 4096 Feb 21 06:19 .. zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ # Now we have successfully Removed the file1 from the directory zexa01@ubuntu:~/Make$
```

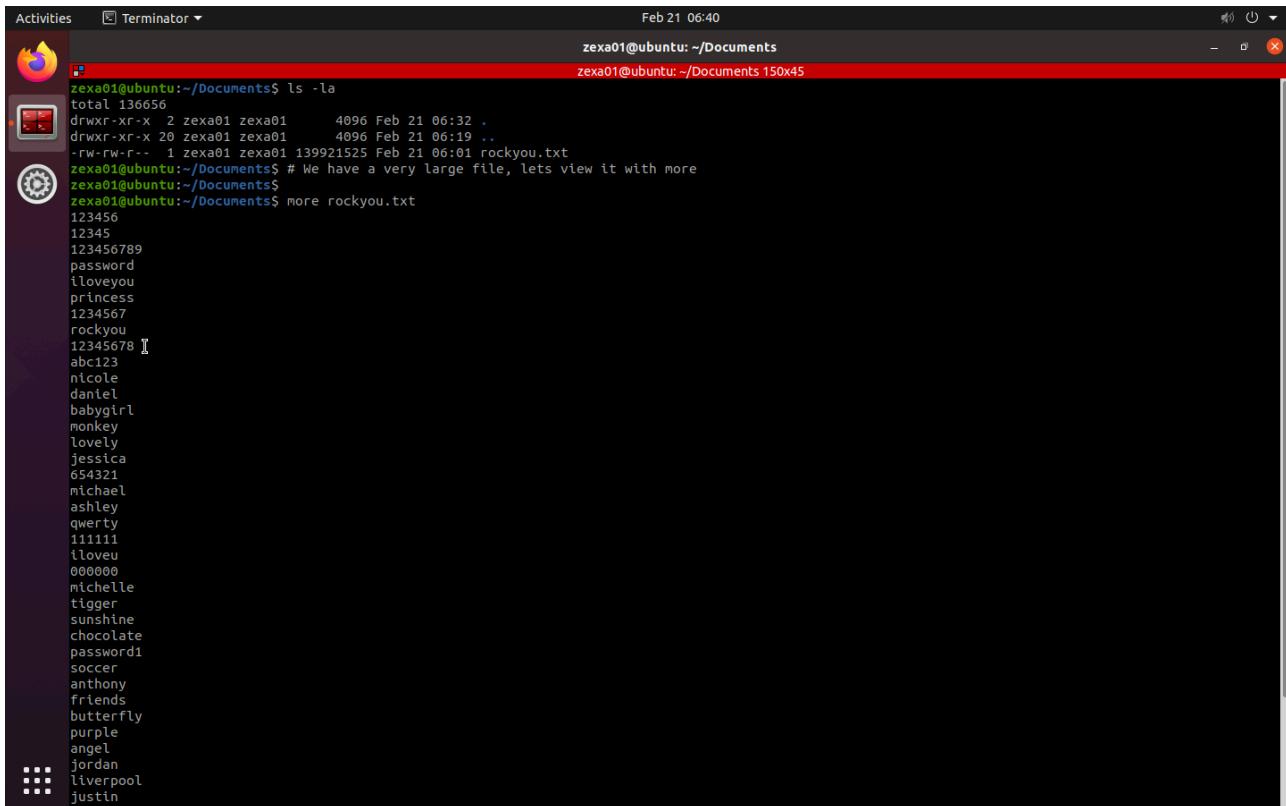
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## 7. mv



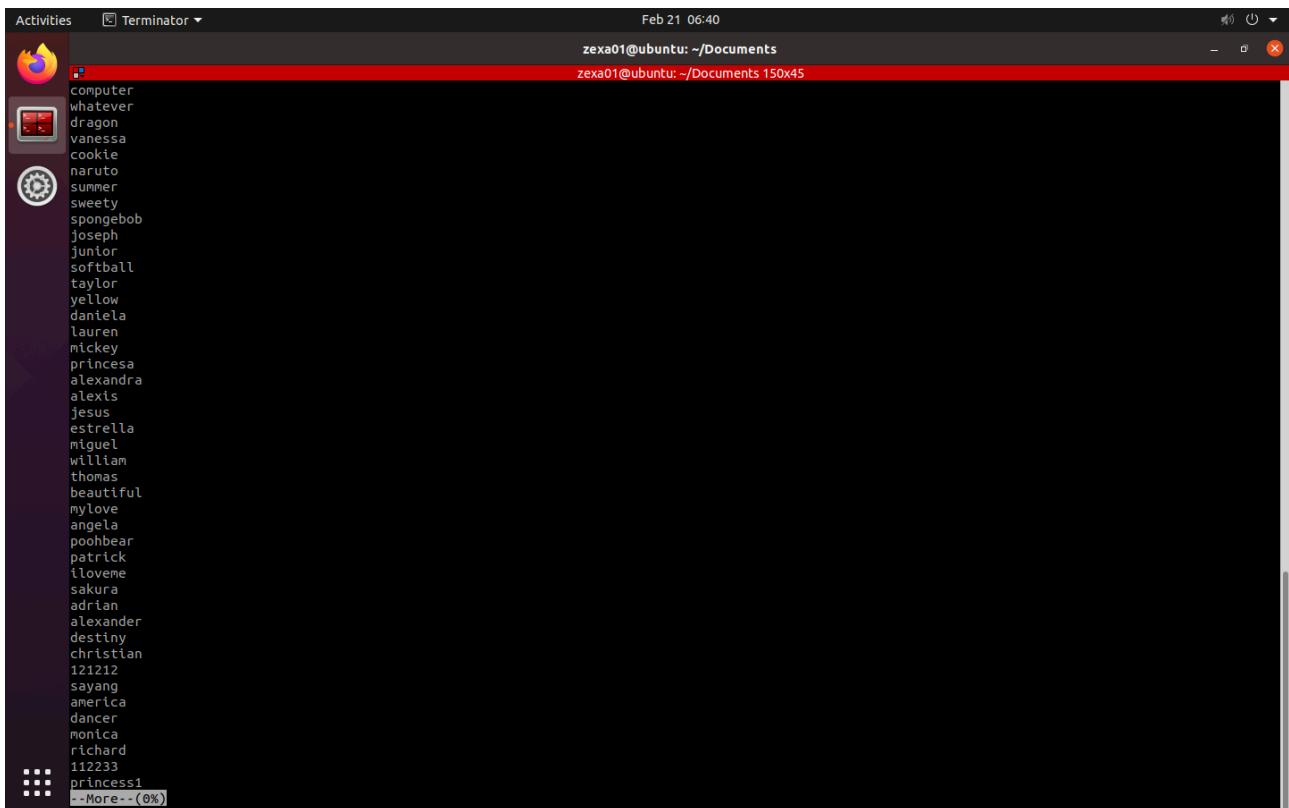
```
Activities Terminator Feb 21 06:33 zexa01@ubuntu: ~/Make zexa01@ubuntu: ~/Make 150x45 zexa01@ubuntu:~/Documents$ ls -la total 136660 drwxr-xr-x  2 zexa01 zexa01  4096 Feb 21 06:19 . drwxr-xr-x 20 zexa01 zexa01  4096 Feb 21 06:19 .. -rw-rw-r--  1 zexa01 zexa01   20 Feb 21 06:19 file1 -rw-rw-r--  1 zexa01 zexa01 139921525 Feb 21 06:01 rockyou.txt zexa01@ubuntu:~/Documents$ #We have a file1 in directory Document zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ #Moving file1 to Directory make zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ cd Make zexa01@ubuntu:~/Make$ mv ./file1 /home/zexa01/Documents/ zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ ls -la total 12 drwxrwxr-x  2 zexa01 zexa01  4096 Feb 21 06:32 . drwxr-xr-x 20 zexa01 zexa01  4096 Feb 21 06:19 .. -rw-rw-r--  1 zexa01 zexa01   20 Feb 21 06:19 file1 zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ #We have successfully moved file1 from Document to Make zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$
```

## 8. more



```
Activities Terminator Feb 21 06:40 zexa01@ubuntu: ~/Documents zexa01@ubuntu: ~/Documents 150x45 zexa01@ubuntu:~/Documents$ ls -la total 136656 drwxr-xr-x  2 zexa01 zexa01  4096 Feb 21 06:32 . drwxr-xr-x 20 zexa01 zexa01  4096 Feb 21 06:19 .. -rw-rw-r--  1 zexa01 zexa01 139921525 Feb 21 06:01 rockyou.txt zexa01@ubuntu:~/Documents$ # We have a very large file, lets view it with more zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ more rockyou.txt 123456 123456789 password iloveyou princess 1234567 rockyou 123456789 abc123 nicole daniel babygirl monkey lovely jessica 654321 michael ashley qwerty 111111 iloveu 000000 michelle tigger sunshine chocolate password1 soccer anthony friends butterfly purple angel jordan liverpool justin
```

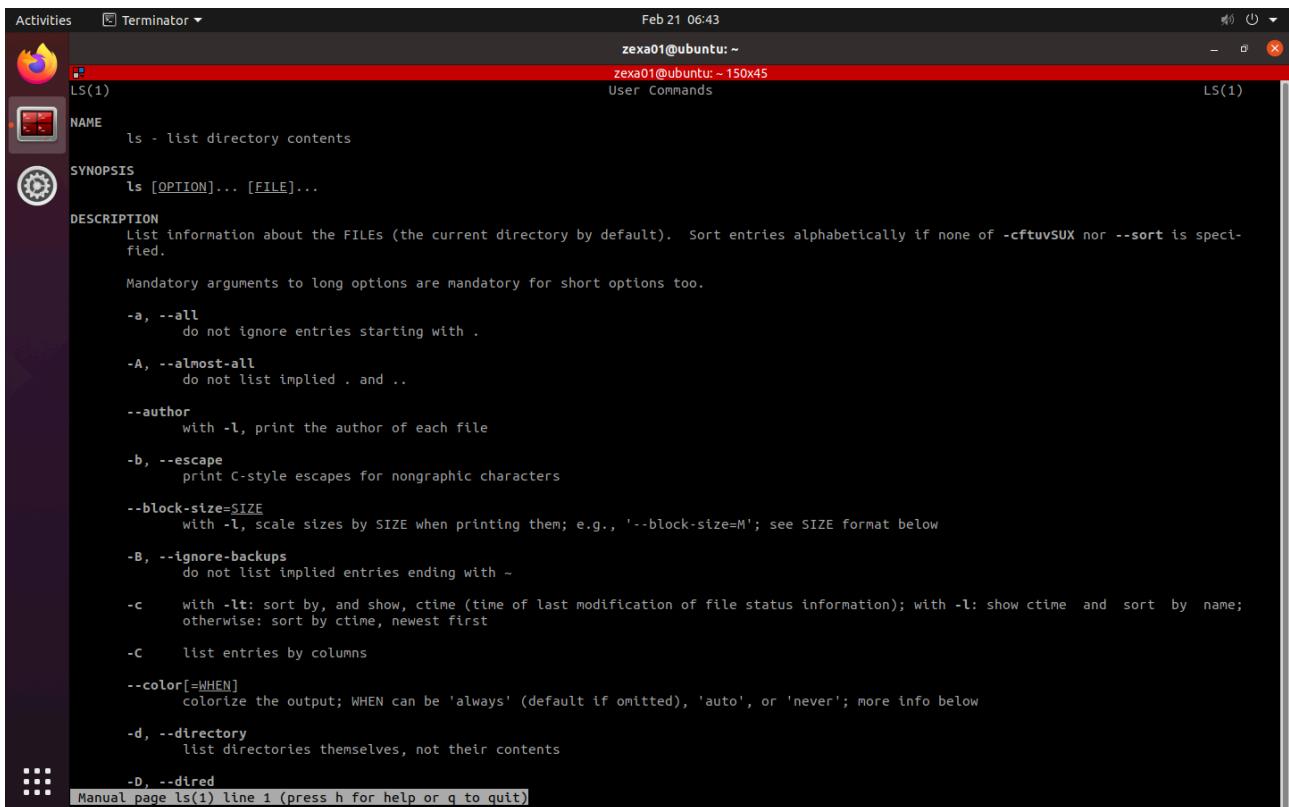
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```
Activities Terminator ▾ Feb 21 06:40
zexa01@ubuntu: ~/Documents
zexa01@ubuntu: ~/Documents 150x45

computer
whatever
dragon
vanessa
cookie
naruto
summer
sweety
spongebob
joseph
junior
softball
taylor
yellow
daniela
lauren
mickey
princesa
alexandra
alexis
jesus
estrella
miguel
william
thomas
beautiful
mylove
angela
poohbear
patrick
iloveme
sakura
adrian
alexander
destiny
christian
121212
sayang
america
dancer
monica
richard
112233
princess1
--More--(0%)
```

## 10. man



```
Activities Terminator ▾ Feb 21 06:43
zexa01@ubuntu: ~
zexa01@ubuntu: ~ 150x45
User Commands
LS(1)

NAME
    ls - list directory contents

SYNOPSIS
    ls [OPTION]... [FILE]...

DESCRIPTION
    List information about the FILEs (the current directory by default). Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

    Mandatory arguments to long options are mandatory for short options too.

    -a, --all
        do not ignore entries starting with .

    -A, --almost-all
        do not list implied . and ..

    --author
        with -l, print the author of each file

    -b, --escape
        print C-style escapes for nongraphic characters

    --block-size=SIZE
        with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below

    -B, --ignore-backups
        do not list implied entries ending with ~

    -c
        with -lt: sort by, and show, ctime (time of last modification of file status information); with -l: show ctime and sort by name;
        otherwise: sort by ctime, newest first

    -C
        list entries by columns

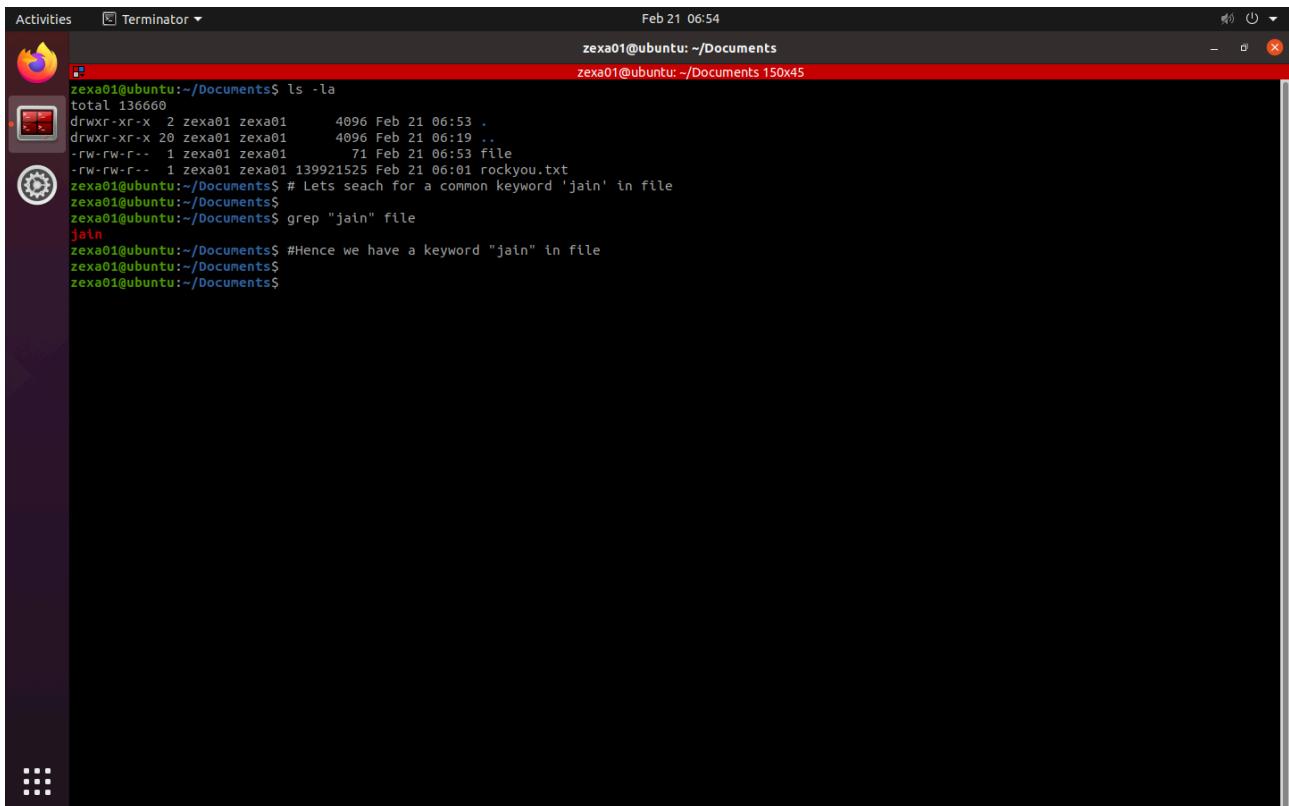
    --color[=WHEN]
        colorize the output; WHEN can be 'always' (default if omitted), 'auto', or 'never'; more info below

    -d, --directory
        list directories themselves, not their contents

    -D, --dired
        Manual page ls(1) line 1 (press h for help or q to quit)
```

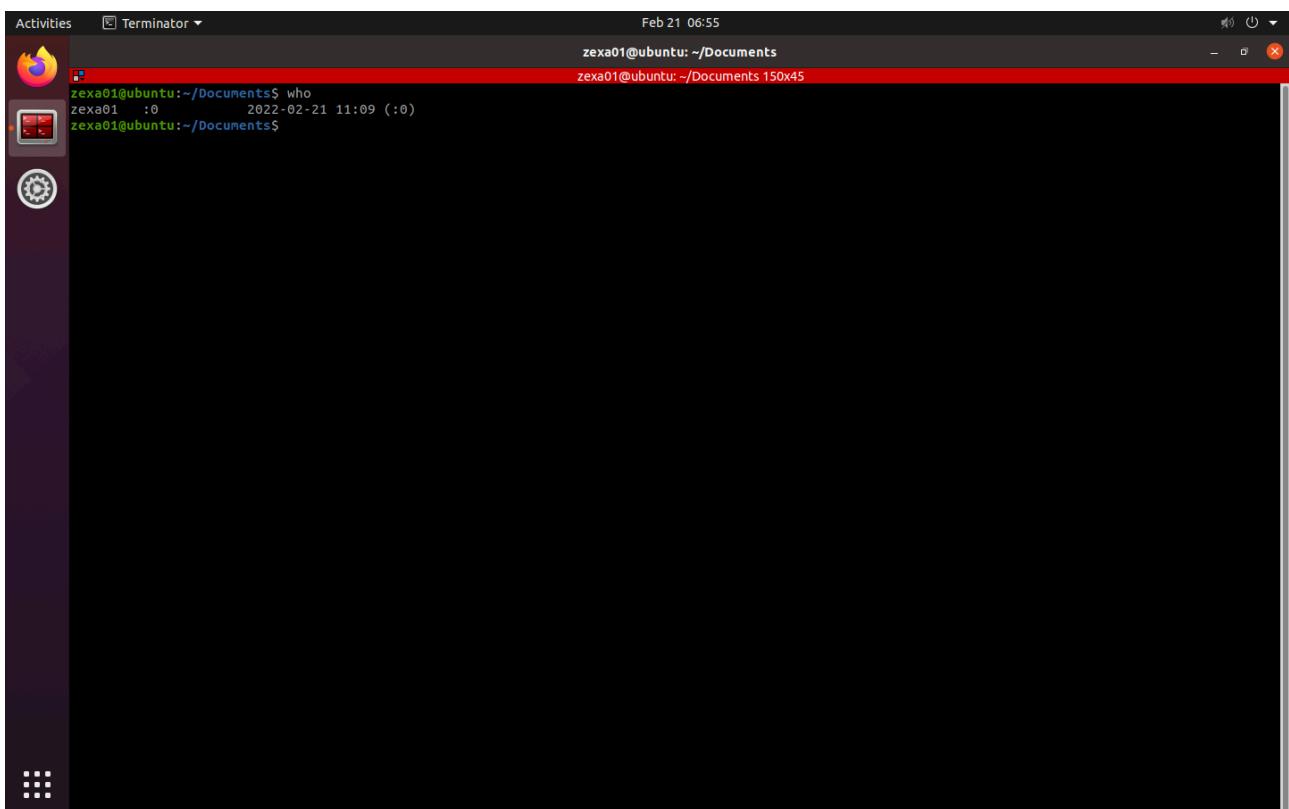
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## 11. grep



```
Activities Terminator Feb 21 06:54 zexa01@ubuntu: ~/Documents zexa01@ubuntu: ~/Documents 150x45 zexa01@ubuntu:~/Documents$ ls -la total 136660 drwxr-xr-x  2 zexa01 zexa01  4096 Feb 21 06:53 . drwxr-xr-x  20 zexa01 zexa01  4096 Feb 21 06:19 .. -rw-rw-r--  1 zexa01 zexa01     71 Feb 21 06:53 file -rw-rw-r--  1 zexa01 zexa01 139921525 Feb 21 06:01 rockyou.txt zexa01@ubuntu:~/Documents$ # Lets seach for a common keyword 'jain' in file zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ grep "jain" file jain zexa01@ubuntu:~/Documents$ #Hence we have a keyword "jain" in file zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$
```

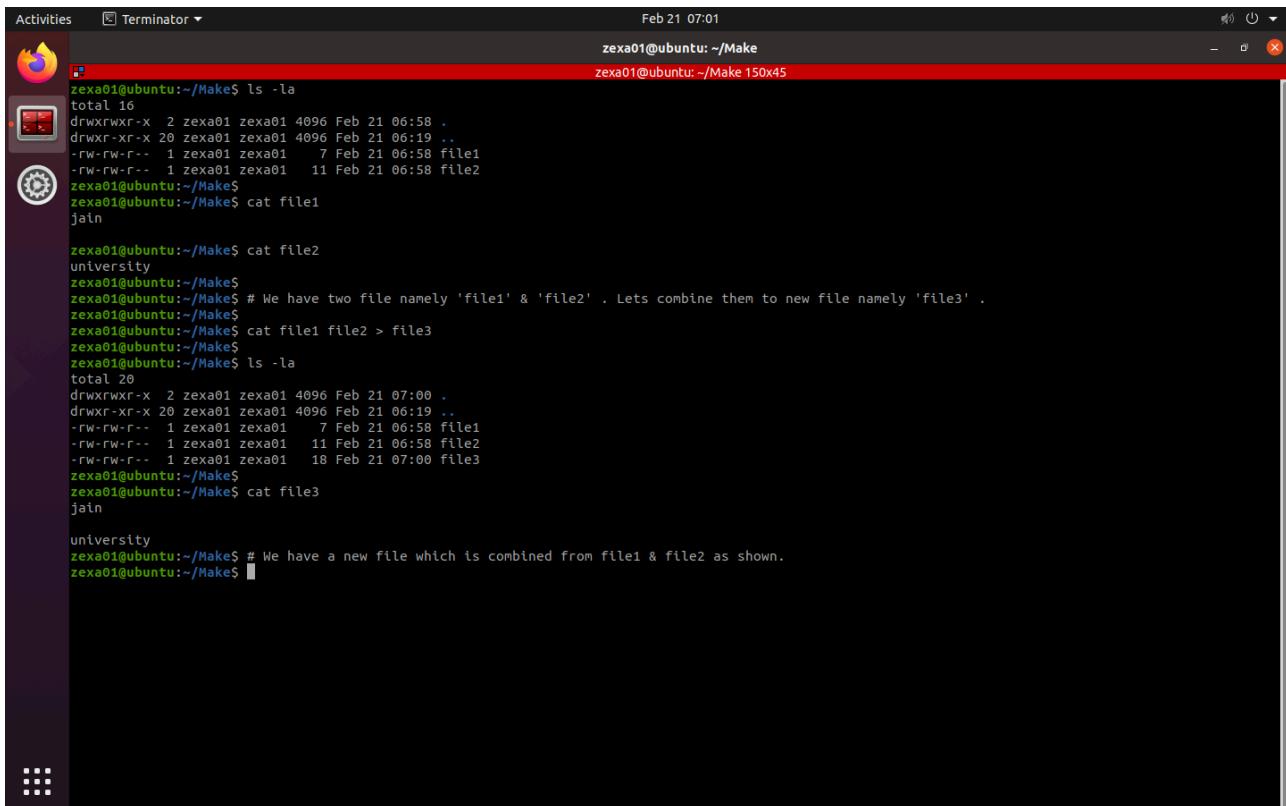
## 12. who



```
Activities Terminator Feb 21 06:55 zexa01@ubuntu: ~/Documents zexa01@ubuntu: ~/Documents 150x45 zexa01@ubuntu:~/Documents$ who zexa01 :0 2022-02-21 11:09 (:0) zexa01@ubuntu:~/Documents$
```

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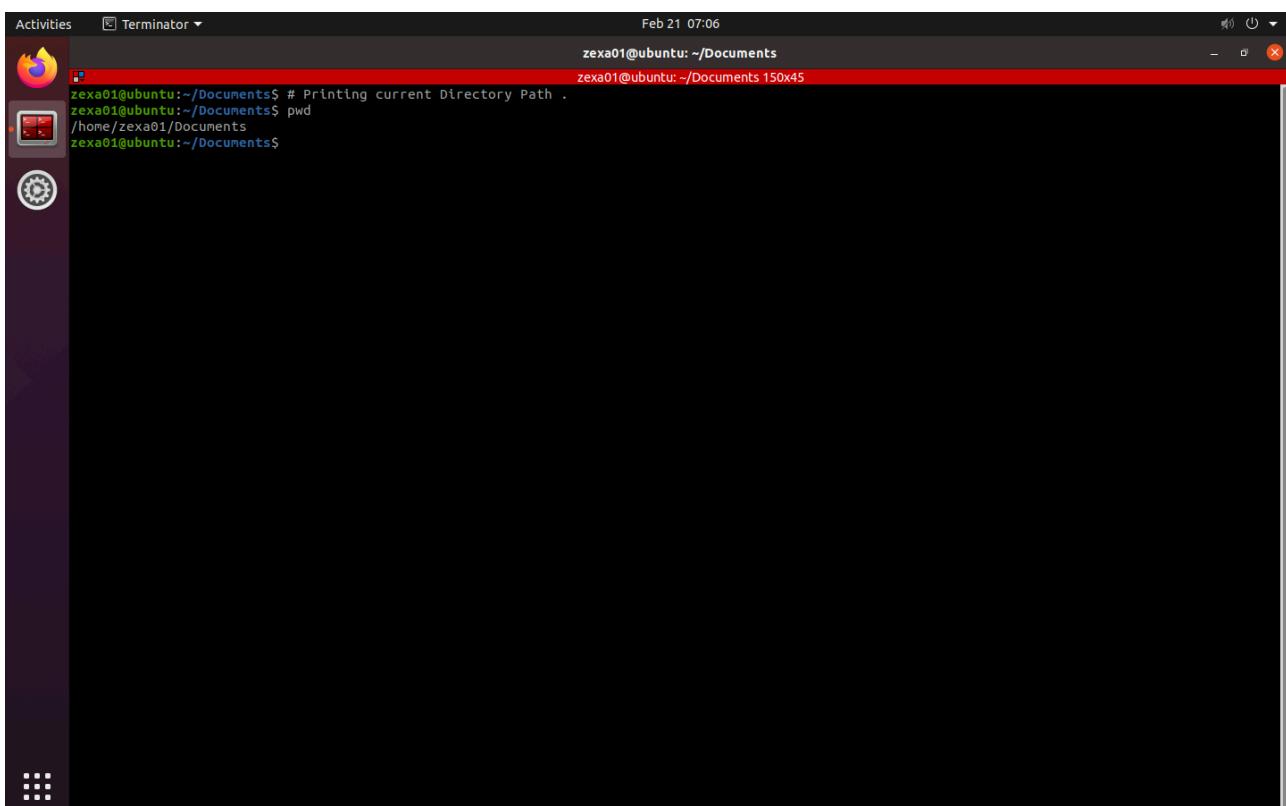
### 13. cat



```
Activities Terminator Feb 21 07:01 zexa01@ubuntu: ~/Make zexa01@ubuntu: ~/Make 150x45 zexa01@ubuntu:~/Make$ ls -la total 16 drwxrwxr-x  2 zexa01 zexa01 4096 Feb 21 06:58 . drwxr-xr-x 20 zexa01 zexa01 4096 Feb 21 06:19 .. -rw-rw-r--  1 zexa01 zexa01    7 Feb 21 06:58 file1 -rw-rw-r--  1 zexa01 zexa01   11 Feb 21 06:58 file2 zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ cat file1 Jain zexa01@ubuntu:~/Make$ cat file2 university zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ # We have two file namely 'file1' & 'file2' . Lets combine them to new file namely 'file3' . zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ cat file1 file2 > file3 zexa01@ubuntu:~/Make$ zexa01@ubuntu:~/Make$ cat file3 Jain university zexa01@ubuntu:~/Make$ # We have a new file which is combined from file1 & file2 as shown. zexa01@ubuntu:~/Make$
```

### #Extra

- pwd

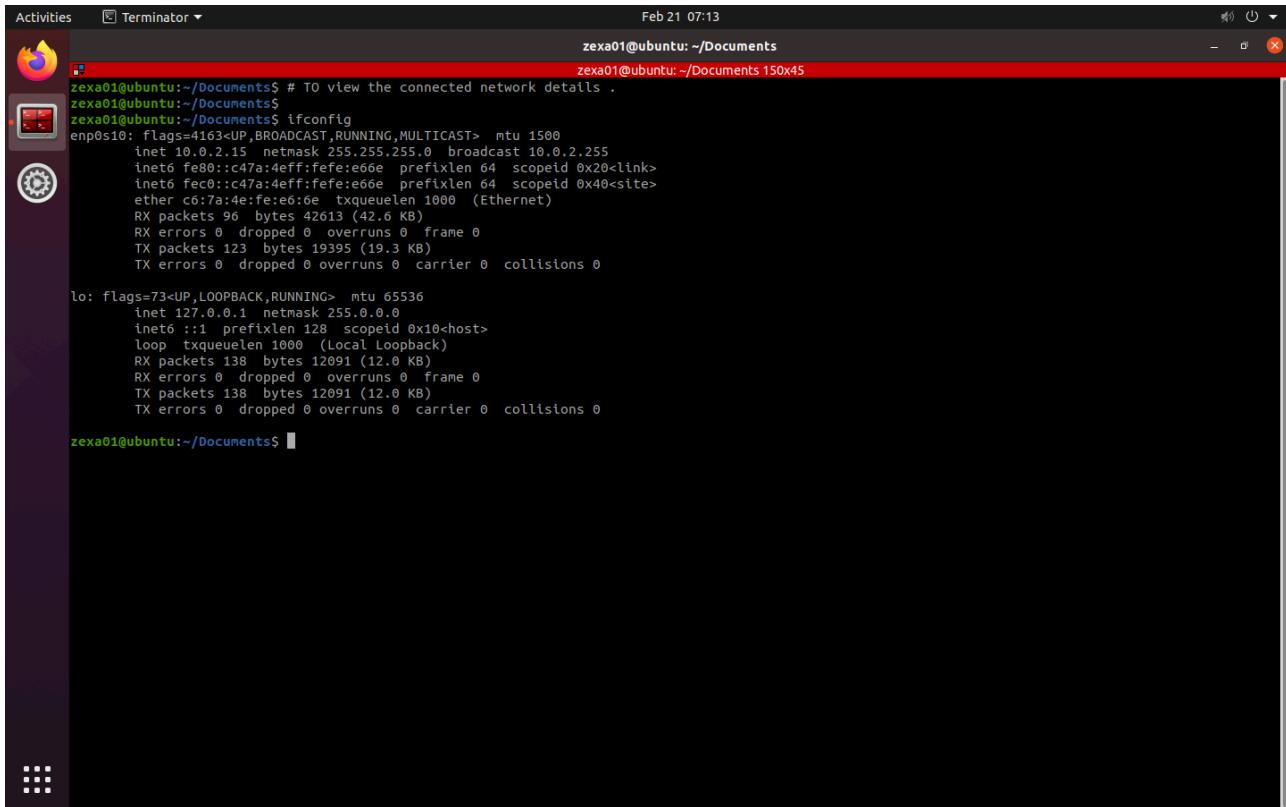


```
Activities Terminator Feb 21 07:06 zexa01@ubuntu: ~/Documents zexa01@ubuntu: ~/Documents 150x45 zexa01@ubuntu:~/Documents$ # Printing current Directory Path . zexa01@ubuntu:~/Documents$ pwd /home/zexa01/Documents zexa01@ubuntu:~/Documents$
```

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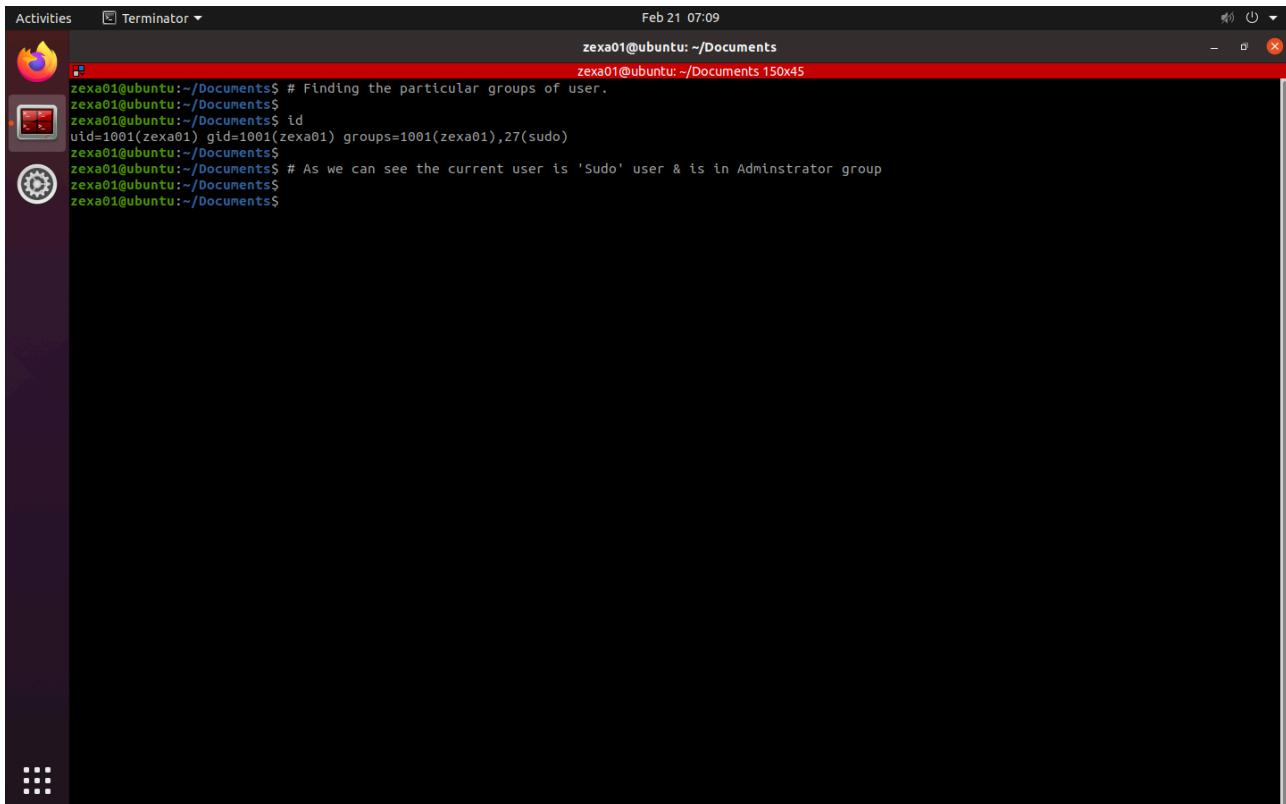
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- Ifconfig



```
Activities Terminator ▾ Feb 21 07:13 zexa01@ubuntu: ~/Documents zexa01@ubuntu: ~/Documents 150x45 zexa01@ubuntu:~/Documents$ # To view the connected network details . zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ ifconfig enp0s10: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500 inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255 inet6 fe80::c47a:4eff:fe:6e6e prefixlen 64 scopeid 0x20<link> inet6 fec0::c47a:4eff:fe:6e6e prefixlen 64 scopeid 0x40<site> ether c6:7a:4e:fe:e6:6e txqueuelen 1000 (Ethernet) RX packets 96 bytes 42613 (42.6 KB) RX errors 0 dropped 0 overruns 0 frame 0 TX packets 123 bytes 19395 (19.3 KB) TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0 lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536 inet 127.0.0.1 netmask 255.0.0.0 inet6 ::1 prefixlen 128 scopeid 0x10<host> loop txqueuelen 1000 (Local Loopback) RX packets 138 bytes 12091 (12.0 KB) RX errors 0 dropped 0 overruns 0 frame 0 TX packets 138 bytes 12091 (12.0 KB) TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0 zexa01@ubuntu:~/Documents$
```

- Id

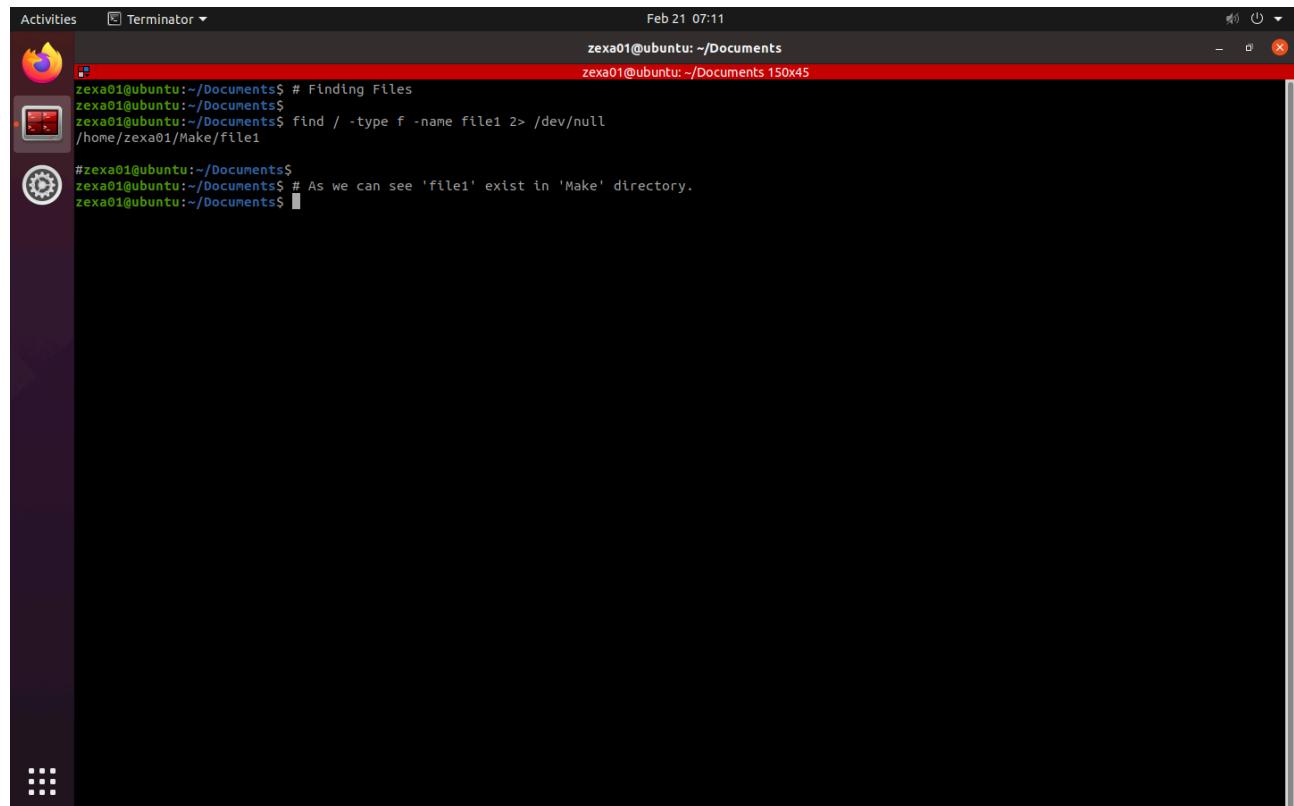


```
Activities Terminator ▾ Feb 21 07:09 zexa01@ubuntu: ~/Documents zexa01@ubuntu: ~/Documents 150x45 zexa01@ubuntu:~/Documents$ # Finding the particular groups of user. zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ id uid=1001(zexa01) gid=1001(zexa01) groups=1001(zexa01),27(sudo) zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ # As we can see the current user is 'Sudo' user & is in Adminstrator group zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$
```

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- find



A screenshot of a Linux desktop environment. On the left is a dark purple vertical dock with icons for the Dash, Home, Activities, and a terminal window. The main area shows a terminal window titled "Terminator". The terminal window has a red header bar with the title "Terminator" and a status bar at the bottom right showing "zexa01@ubuntu: ~/Documents 150x45". The terminal content is as follows:

```
Activities Terminator ▾ Feb 21 07:11
zexa01@ubuntu:~/Documents$ # Finding Files
zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ find / -type f -name file1 2> /dev/null
/home/zexa01/Make/file1
#zexa01@ubuntu:~/Documents$ zexa01@ubuntu:~/Documents$ # As we can see 'file1' exist in 'Make' directory.
zexa01@ubuntu:~/Documents$
```