

23/01/2025

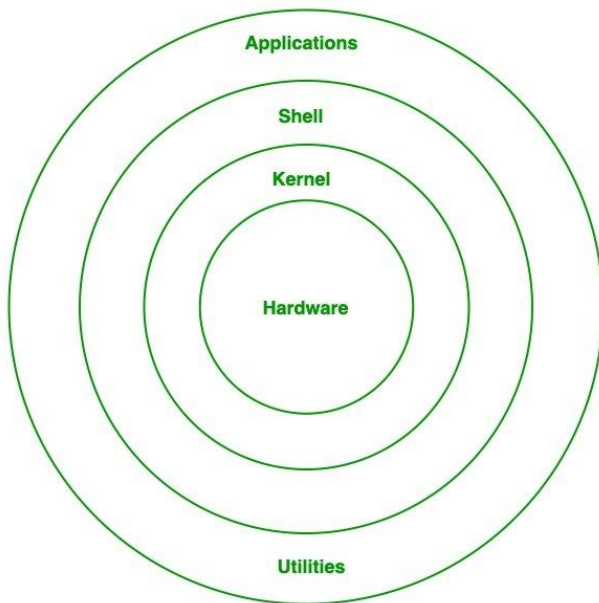
Linux:

Developed by Linus Torvalds.

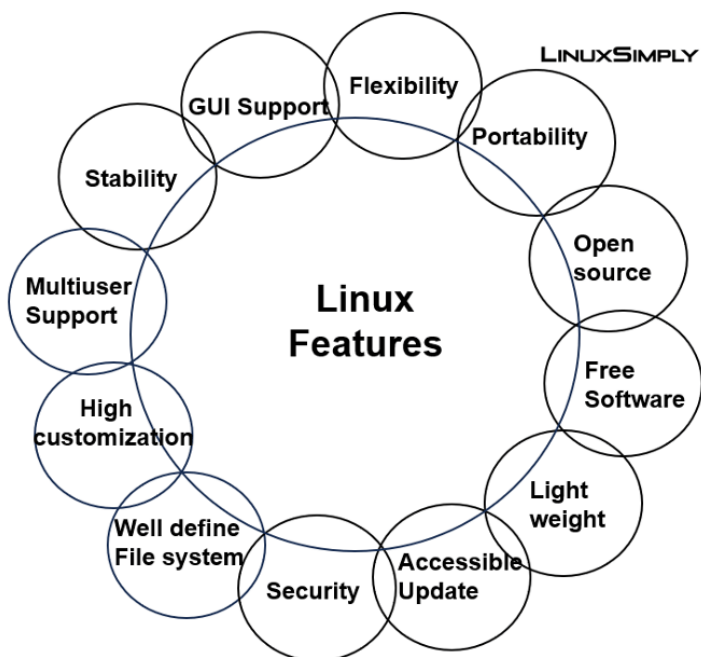
Open source

Unix like OS

Architecture of Linux:



Key Characteristics:



Open Source:

Portability

Security

Multi-user & Multi tasking

Concept of OS: UEFI

BIOS (Basic Input & Output)

POST (Post on Self Test)

MBR (Master Boot Record)

Boot Loader: grub

KERNEL

INIT

PROCESSES

Salient Features of Linux:

Process Management

Memory management

File Management

Device Management

I/O System Management

Secondary Storage Management

Security

Command Interpretation

Networking

Job Accounting

Communication Management

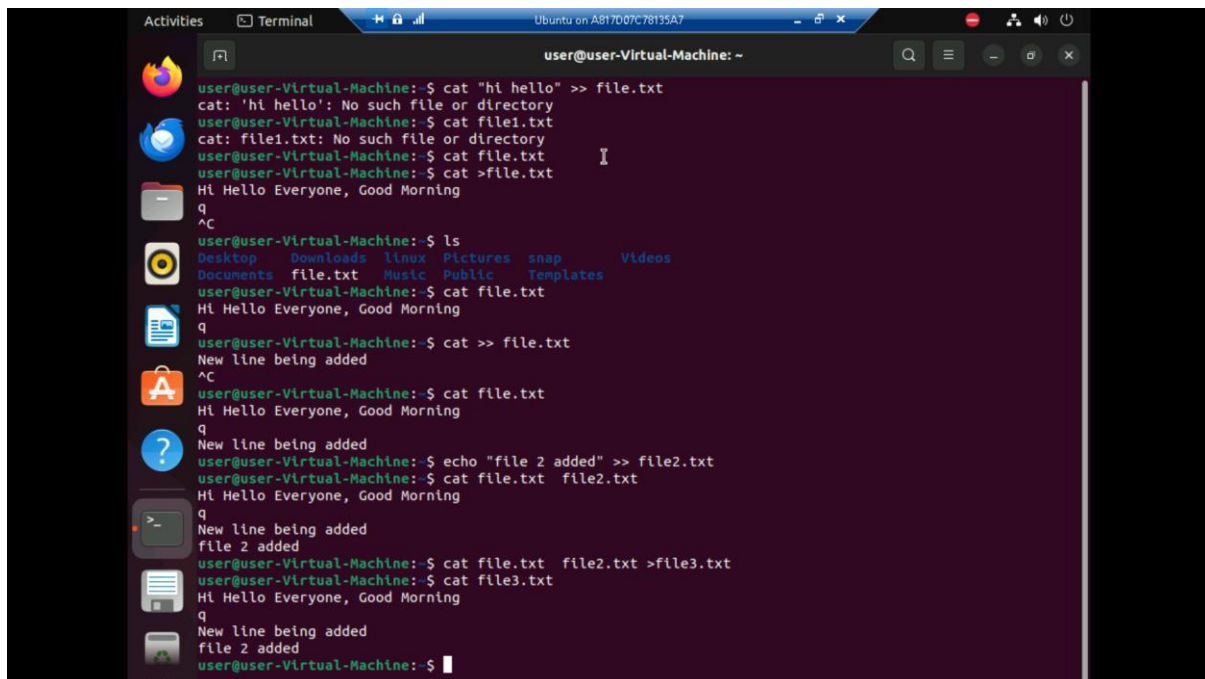
Dw

DI

Creation of File using Cat, Merging Files, Appending in the same file.

Cat :

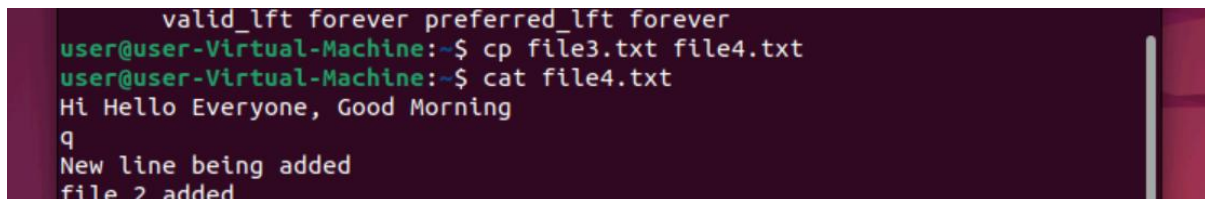
1. To view the contents of a file
Cat filename
2. To display the contents of a file with line numbers
cat -n filename.txt
3. creation of file
cat > filename.txt
4. Combine the contents of multiple files into one file
cat file1 file2 > mergedfile
5. Add new content to an existing file
cat >> filename



```
user@user-Virtual-Machine: ~  
user@user-Virtual-Machine:~$ cat "hi hello" >> file.txt  
cat: 'hi hello': No such file or directory  
user@user-Virtual-Machine:~$ cat file1.txt  
cat: file1.txt: No such file or directory  
user@user-Virtual-Machine:~$ cat file.txt  
user@user-Virtual-Machine:~$ cat >file.txt  
Hi Hello Everyone, Good Morning  
q  
^C  
user@user-Virtual-Machine:~$ ls  
Desktop  Downloads  linux  Pictures  snap  Videos  
Documents  file.txt  Music  Public  Templates  
user@user-Virtual-Machine:~$ cat file.txt  
Hi Hello Everyone, Good Morning  
q  
user@user-Virtual-Machine:~$ cat >> file.txt  
New line being added  
^C  
user@user-Virtual-Machine:~$ cat file.txt  
Hi Hello Everyone, Good Morning  
q  
New line being added  
user@user-Virtual-Machine:~$ echo "file 2 added" >> file2.txt  
user@user-Virtual-Machine:~$ cat file.txt file2.txt  
Hi Hello Everyone, Good Morning  
q  
New line being added  
file 2 added  
user@user-Virtual-Machine:~$ cat file.txt file2.txt >file3.txt  
user@user-Virtual-Machine:~$ cat file3.txt  
Hi Hello Everyone, Good Morning  
q  
New line being added  
file 2 added  
user@user-Virtual-Machine:~$
```

Copying a file

cp: copy files and directories



```
valid_lft forever preferred_lft forever  
user@user-Virtual-Machine:~$ cp file3.txt file4.txt  
user@user-Virtual-Machine:~$ cat file4.txt  
Hi Hello Everyone, Good Morning  
q  
New line being added  
file 2 added
```

Copying multiple files in to a folder

Cmd: cp file1 file2 file3 /path/to/destination/

```
user@user-Virtual-Machine:~$ mkdir luckyday
user@user-Virtual-Machine:~$ cp file1.txt file4.txt luckyday
cp: cannot stat 'file1.txt': No such file or directory
user@user-Virtual-Machine:~$ cp file.txt file4.txt luckyday
user@user-Virtual-Machine:~$ cd luckyday/
user@user-Virtual-Machine:~/luckyday$ ls
file4.txt  file.txt
```

Copying all txt files in to folder

To copy a directory and its contents recursively:

cp -r source_directory destination_directory

```
user@user-Virtual-Machine:~$ cp *.txt luckyday
user@user-Virtual-Machine:~$ cd luckyday/
user@user-Virtual-Machine:~/luckyday$ ls
file2.txt  file3.txt  file4.txt  file.txt
user@user-Virtual-Machine:~/luckyday$ cd ..
user@user-Virtual-Machine:~$ cp -i *.txt luckyday/
cp: overwrite 'luckyday/file2.txt'? y
cp: overwrite 'luckyday/file3.txt'? y
cp: overwrite 'luckyday/file4.txt'? y
cp: overwrite 'luckyday/file.txt'? y
user@user-Virtual-Machine:~$
```

Updating the content of the files using 'u':

Copy only when the source file is newer than the destination file.

```
user@user-Virtual-Machine:~/luckyday$ echo "Parent folder updating">
>./../file.txt
user@user-Virtual-Machine:~/luckyday$ cat ~/file.txt
Hi Hello Everyone, Good Morning
q
New line being added
Parent folder updating
user@user-Virtual-Machine:~/luckyday$ cp -u -v ./../file.txt file.tx
t
'./../file.txt' -> 'file.txt'
user@user-Virtual-Machine:~/luckyday$ cat file.txt
Hi Hello Everyone, Good Morning
q
New line being added
Parent folder updating
user@user-Virtual-Machine:~/luckyday$
```

Copying a directory

```
user@user-Virtual-Machine: ~/folder1
user@user-Virtual-Machine:~$ cd luckyday/
user@user-Virtual-Machine:~/luckyday$ cd ~
user@user-Virtual-Machine:~$ cp luckyday linux
cp: -r not specified; omitting directory 'luckyday'
user@user-Virtual-Machine:~$ cp -r luckyday linux
user@user-Virtual-Machine:~$ cd linux && ls
file1.txt  luckyday
user@user-Virtual-Machine:~/linux$ cd luckyday
user@user-Virtual-Machine:~/linux/luckyday$ ls
file2.txt  file3.txt  file4.txt  file.txt
user@user-Virtual-Machine:~/linux/luckyday$ cd ~
user@user-Virtual-Machine:~$ mkdir folder1
user@user-Virtual-Machine:~$ cp luckyday/*. * folder1/
user@user-Virtual-Machine:~$ cd folder1/ && ls
file2.txt  file3.txt  file4.txt  file.txt
user@user-Virtual-Machine:~/folder1$
```

Removing the files through I option

Prompt before overwriting existing files.

```
file2.txt  file3.txt  file4.txt  file.txt
user@user-Virtual-Machine:~/linux/luckyday$ cd ~
user@user-Virtual-Machine:~$ mkdir folder1
user@user-Virtual-Machine:~$ cp luckyday/*. * folder1/
user@user-Virtual-Machine:~$ cd folder1/ && ls
file2.txt  file3.txt  file4.txt  file.txt
user@user-Virtual-Machine:~/folder1$ cd ..
user@user-Virtual-Machine:~$ rm -I *.txt
rm: remove 4 arguments? y
user@user-Virtual-Machine:~$ ls
Desktop  Downloads  linux      Music      Public  Templates
Documents  folder1  luckyday  Pictures  snap    Videos
user@user-Virtual-Machine:~$
```


Moving the files without oveririding

The mv command in Unix-like operating systems (such as Linux and macOS) is used to move or rename files and directories.

The -n option (or --no-clobber) prevents the mv command from overwriting existing files.

```
user@user-Virtual-Machine:~$ echo "file4 added" >> file4.txt
user@user-Virtual-Machine:~$ echo "file 3 dded" >> file3.txt
user@user-Virtual-Machine:~$ mv file3.txt file4.txt
user@user-Virtual-Machine:~$ ls
Desktop  Downloads  folder1  luckyday  Pictures  snap      Videos
Documents file4.txt  linux    Music     Public   Templates
user@user-Virtual-Machine:~$ echo "file 2 dded" >> file2.txt
user@user-Virtual-Machine:~$ cat file4.txt
file 3 dded
user@user-Virtual-Machine:~$ mv -m file4.txt file2.txt
mv: invalid option -- 'm'
Try 'mv --help' for more information.
user@user-Virtual-Machine:~$ mv -n file4.txt file2.txt
user@user-Virtual-Machine:~$ ls
Desktop  Downloads  file4.txt  linux    Music  Public  Templates
Documents file2.txt  folder1   luckyday Pictures  snap    Videos
user@user-Virtual-Machine:~$ cat file2.txt
file 2 dded
user@user-Virtual-Machine:~$ cat file4.txt
file 3 dded
user@user-Virtual-Machine:~$
```

Finding the files

The find command in Unix-like operating systems is used to search for files and directories within a specified directory hierarchy based on various criteria such as name, size, type, and more.

Find all files in a directory

```
find /path/to/directory
```

Find files by name

```
find /path/to/directory -name "filename"
```

Find files by name, case-insensitive

```
find /path/to/directory -iname "filename"
```

Find files by extension

```
find /path/to/directory -name "*.txt"
```

Find files modified in the last N days

```
find /path/to/directory -mtime -7
```

```

user@user-Virtual-Machine:~$ find . -name file4.txt
./folder1/file4.txt
./luckyday/file4.txt
./linux/luckyday/file4.txt
./file4.txt
user@user-Virtual-Machine:~$ find . -name *.txt
find: paths must precede expression: `file4.txt'
find: possible unquoted pattern after predicate `-name'?
user@user-Virtual-Machine:~$ find . -name "*.txt"
./folder1/file.txt
./folder1/file2.txt
./folder1/file3.txt
./folder1/file4.txt
./file2.txt
./luckyday/file.txt
./luckyday/file2.txt
./luckyday/file3.txt
./luckyday/file4.txt
./linux/file1.txt
./linux/luckyday/file.txt
./linux/luckyday/file2.txt
./linux/luckyday/file3.txt
./linux/luckyday/file4.txt
./.cache/tracker3/files/locale-for-miner-apps.txt
./.cache/tracker3/files/last-crawl.txt
./.cache/tracker3/files/first-index.txt
./snap/firefox/common/.mozilla/firefox/serpg00o.default/SiteSecurityServiceState.txt
./snap/firefox/common/.mozilla/firefox/serpg00o.default/pkcs11.txt
./snap/firefox/common/.mozilla/firefox/serpg00o.default/AlternateServices.txt
./snap/firefox/common/.mozilla/firefox/serpg00o.default/serviceworker.txt

```

To copy files while preserving their attributes (like ownership, permissions, timestamps):

`cp -p source_file destination_file`

Sorting:

The sort command in Linux is used to sort lines of text files in various ways, either alphabetically, numerically.

To sort the contents of a file alphabetically

`sort filename`

To sort the lines in **reverse (descending)** order:

`sort -r filename`

To sort lines based on numerical values rather than alphabetically

`sort -n filename`

```

user@user-Virtual-Machine:~$ echo "s">> abc.txt
user@user-Virtual-Machine:~$ echo "b">> abc.txt
user@user-Virtual-Machine:~$ echo "a">> abc.txt
user@user-Virtual-Machine:~$ echo "c">> abc.txt
user@user-Virtual-Machine:~$ echo "d">> abc.txt
user@user-Virtual-Machine:~$ echo "f">> abc.txt
user@user-Virtual-Machine:~$ sort abc.txt
a
b
c
d
f
r
s

```

Sorting based on availability through specific column

`sort -k 2 filename`

2 indicates column name

```

sort: invalid number at field start: invalid count at start of -size
user@user-Virtual-Machine:~$ df -h | sort -k 4
/dev/sda3      124G   16G   103G   14% /
tmpfs          2.0G    0    2.0G    0% /dev/shm
tmpfs          392M   1.5M   391M    1% /run
tmpfs          392M    96K   392M    1% /run/user/1000
/dev/sda2      512M   6.1M   506M    2% /boot/efi
tmpfs          5.0M    0    5.0M    0% /run/lock
Filesystem      Size  Used Avail Use% Mounted on
user@user-Virtual-Machine:~$

```

Description

Option

- r Sort in reverse (descending) order.
- n Sort by numerical value instead of alphabetical.
- k Sort by a specific key (column or field).
- t Specify the delimiter to separate fields (default is whitespace).
- u Sort and remove duplicate lines.
- h Sort human-readable numbers (e.g., 1K, 2M, 3G).
- M Sort by month name (e.g., Jan, Feb, etc.).
- f Ignore case (case-insensitive sorting).

-b Ignore leading whitespace when sorting.

-o Output to a specific file.

-c Check if the file is already sorted (do not actually sort).

27/01/2025

Cut Command:

The cut command in Unix-like operating systems is used to remove sections from each line of input, typically to extract specific columns or fields from a text file.

-d (delimiter): Specifies the delimiter that separates fields in the input. The default delimiter is the tab character (`\t`)

-f (fields): Specifies which field(s) to extract. You can specify a single field, a range of fields, or multiple fields separated by commas.

-c (characters): Specifies which characters to cut from each line by position (instead of by field). You can specify single characters, ranges, or multiple non-contiguous positions.

```
user@us1r-Virtual-Machine:~$ cut -d ":" -f 1,6,7 /etc/passwd
root:/root:/bin/bash
daemon:/usr/sbin:/usr/sbin/nologin
bin:/bin:/usr/sbin/nologin
sys:/dev:/usr/sbin/nologin
sync:/bin:/bin/sync
games:/usr/games:/usr/sbin/nologin
man:/var/cache/man:/usr/sbin/nologin
lp:/var/spool/lpd:/usr/sbin/nologin
mail:/var/mail:/usr/sbin/nologin
news:/var/spool/news:/usr/sbin/nologin
uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:/bin:/usr/sbin/nologin
www-data:/var/www:/usr/sbin/nologin
backup:/var/backups:/usr/sbin/nologin
list:/var/list:/usr/sbin/nologin
irc:/run/ircd:/usr/sbin/nologin
gnats:/var/lib/gnats:/usr/sbin/nologin
nobody:/nonexistent:/usr/sbin/nologin
systemd-network:/run/systemd:/usr/sbin/nologin
systemd-resolve:/run/systemd:/usr/sbin/nologin
messagebus:/nonexistent:/usr/sbin/nologin
systemd-timesync:/run/systemd:/usr/sbin/nologin
```

Less Command: Displays the content of the file through scrolling

The less command in Unix-like operating systems is used to view the contents of a file one screen at a time. It's a powerful and efficient way to read files that are too large to fit on a single screen, and it allows for both forward and backward navigation through the content.

```
user@user-Virtual-Machine:~$ less /etc/passwd
```

Head Command:

:

```
user@user-Virtual-Machine:~$ head /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
user@user-Virtual-Machine:~$ head -n 12 /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
user@user-Virtual-Machine:~$
```

Tail

The tail command in Unix-like operating systems is used to display the last few lines of a file.

```

user@user-Virtual-Machine:~$ tail /etc/passwd
fwupd-refresh:x:120:126:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:122:129:/:var/lib/saned:/usr/sbin/nologin
colord:x:123:130:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:124:131:/:var/lib/geoclue:/usr/sbin/nologin
pulse:x:125:132:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:126:65534:/:run/gnome-initial-setup:/bin/false
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false
user:x:1000:1000:user,,,:/home/user:/bin/bash
user@user-Virtual-Machine:~$ tail -n 12 /etc/passwd
sssd:x:118:125:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
fwupd-refresh:x:120:126:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:122:129:/:var/lib/saned:/usr/sbin/nologin
colord:x:123:130:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:124:131:/:var/lib/geoclue:/usr/sbin/nologin
pulse:x:125:132:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:126:65534:/:run/gnome-initial-setup:/bin/false
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false
user:x:1000:1000:user,,,:/home/user:/bin/bash

```

Tail -f filename will be used often for log files because it displays the last 10 lines with the live file changes.

Tar

Creation of Tar file

Creating a .tar file (also known as a "tarball") in Unix-like operating systems allows you to bundle multiple files and directories into one file, making it easier to manage and transfer.

```

user@user-Virtual-Machine:~$ cd luckyday/
user@user-Virtual-Machine:~/luckyday$ ls
file2.txt file3.txt file4.txt file.txt
user@user-Virtual-Machine:~/luckyday$ man tar
user@user-Virtual-Machine:~/luckyday$ tar cvf file1.tar file1.txt
tar: file1.txt: Cannot stat: No such file or directory
tar: Exiting with failure status due to previous errors
user@user-Virtual-Machine:~/luckyday$ tar cvf file1.tar file.txt
file.txt
user@user-Virtual-Machine:~/luckyday$ ls
file1.tar file2.txt file3.txt file4.txt file.txt
user@user-Virtual-Machine:~/luckyday$ ls -ltr
total 28
-rw-rw-r-- 1 user user 69 Jan 24 11:48 file3.txt
-rw-rw-r-- 1 user user 13 Jan 24 11:48 file2.txt
-rw-rw-r-- 1 user user 69 Jan 24 11:48 file4.txt
-rw-rw-r-- 1 user user 123 Jan 24 12:05 file.txt
-rw-rw-r-- 1 user user 10240 Jan 27 11:34 file1.tar

```

Extraction of tar file


```

user@user-Virtual-Machine:~/luckyday$ tar xvf file1.tar
file.txt
user@user-Virtual-Machine:~/luckyday$ ls
file1.tar  file2.txt  file3.txt  file4.txt  file.txt
user@user-Virtual-Machine:~/luckyday$ cat file
cat: file: No such file or directory
user@user-Virtual-Machine:~/luckyday$ cat file.txt
Hi Hello Everyone, Good Morning
q
New line being added
Parent folder updating
Something more is written in parenet folder
user@user-Virtual-Machine:~/luckyday$ rm -rf file.txt
user@user-Virtual-Machine:~/luckyday$ tar xvf file1.tar
file.txt
user@user-Virtual-Machine:~/luckyday$ cat file.txt
Hi Hello Everyone, Good Morning
q
New line being added
Parent folder updating
Something more is written in parenet folder

```

Df -hT

```

user@user-Virtual-Machine:~/luckyday$ df -hT
Filesystem      Type      Size      Used      Avail     Use%      Mounted on
tmpfs           tmpfs     392M      1.5M      391M       1%        /run
/dev/sda3       ext4      124G      16G       103G      14%        /
tmpfs           tmpfs     2.0G        0         2.0G       0%        /dev/shm
tmpfs           tmpfs     5.0M        0         5.0M       0%        /run/lock
/dev/sda2       vfat      512M      6.1M      506M       2%        /boot/efi
tmpfs           tmpfs     392M      104K      392M       1%        /run/user/1000
user@user-Virtual-Machine:~/luckyday$

```

Du -h

```

user@user-Virtual-Machine:~/luckyday$ du -h
32K  .

```

netstat

```

user@user-Virtual-Machine:~/Desktop$ netstat -ru
Kernel IP routing table
Destination      Gateway          Genmask         Flags      MSS Window  irtt Iface
default          a817d07c78135a7 0.0.0.0         UG         0 0        0 eth0
link-local       0.0.0.0         255.255.0.0     U          0 0        0 eth0
172.17.0.0       0.0.0.0         255.255.0.0     U          0 0        0 docker0
172.21.0.0       0.0.0.0         255.255.240.0   U          0 0        0 eth0

```

```

user@user-Virtual-Machine:~/Desktop$ netstat -an | grep LISTEN
tcp        0      0 127.0.0.1:631          0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.53:53          0.0.0.0:*               LISTEN
tcp6       0      0 :::1:631               :::*                    LISTEN
unix  2      [ ACC ]     STREAM  LISTENING   12307    /tmp/.X11-unix/X1
unix  2      [ ACC ]     STREAM  LISTENING   7462     /run/irqbalance/irqbalance488.sock
unix  2      [ ACC ]     STREAM  LISTENING   10149    /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM  LISTENING   10156    /run/user/1000/bus
unix  2      [ ACC ]     STREAM  LISTENING   11847    /tmp/.ICE-unix/1680
unix  2      [ ACC ]     STREAM  LISTENING   10158    /run/user/1000/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM  LISTENING   10160    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM  LISTENING   10162    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM  LISTENING   10164    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM  LISTENING   10166    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM  LISTENING   10168    /run/user/1000/pipewire-0

```

Wget

```

user@user-Virtual-Machine:~/Desktop$ wget https://www.happiestminds.com/whitepapers/devops.pdf
--2025-01-27 11:59:56-- https://www.happiestminds.com/whitepapers/devops.pdf
Resolving www.happiestminds.com (www.happiestminds.com)... 172.67.13.98, 104.22.42.228, 104.22.43.228, ...
Connecting to www.happiestminds.com (www.happiestminds.com)|172.67.13.98|:443... connected
HTTP request sent, awaiting response... 200 OK
Length: 4976144 (4.7M) [application/pdf]
Saving to: 'devops.pdf'

devops.pdf          100%[=====] 4.75M  --.-KB/s   in 0.07s
2025-01-27 11:59:56 (65.4 MB/s) - 'devops.pdf' saved [4976144/4976144]

```

To write a content of a webfile to destination file

```

user@user-Virtual-Machine:~/Desktop$ wget -O a.txt github.com

user@user-Virtual-Machine:~/Desktop$ curl https://get.docker.com -o get-docker.sh

user@user-Virtual-Machine:~/Desktop$ curl https://github.com -o git.html

```

Which

```

user@user-Virtual-Machine:~/Desktop$ which ls
/usr/bin/ls

```

time


```
user@user-Virtual-Machine:~/Desktop$ time
```

```
real    0m0.000s
user    0m0.000s
sys     0m0.000s
```

Locate

```
user@user-Virtual-Machine:~$ locate file2.txt
/home/user/file2.txt
/home/user/folder1/file2.txt
/home/user/linux/luckyday/file2.txt
/home/user/luckyday/file2.txt
user@user-Virtual-Machine:~$
```

lsof -i tcp

```
user@user-Virtual-Machine:~$ lsof -i tcp
COMMAND PID USER   FD   TYPE DEVICE SIZE/OFF NODE NAME
firefox 2961 user   15u  IPv4 26806      0t0  TCP user-Virtual-Machine.mshome.net:53988->maa03s38-i
-f10.1e100.net:https (ESTABLISHED)
firefox 2961 user   62u  IPv4 23288      0t0  TCP user-Virtual-Machine.mshome.net:53404->a23-3-70-1
9.deploy.static.akamaitechnologies.com:http (ESTABLISHED)
firefox 2961 user   86u  IPv4 23615      0t0  TCP user-Virtual-Machine.mshome.net:46484->191.144.16
.34.bc.googleusercontent.com:https (ESTABLISHED)
firefox 2961 user   87u  IPv4 21492      0t0  TCP user-Virtual-Machine.mshome.net:45702->82.221.107
34.bc.googleusercontent.com:http (ESTABLISHED)
firefox 2961 user   89u  IPv4 23275      0t0  TCP user-Virtual-Machine.mshome.net:53388->a23-3-70-1
9.deploy.static.akamaitechnologies.com:http (ESTABLISHED)
firefox 2961 user   90u  IPv4 26633      0t0  TCP user-Virtual-Machine.mshome.net:45402->53.121.117
34.bc.googleusercontent.com:https (ESTABLISHED)
firefox 2961 user   99u  IPv4 23671      0t0  TCP user-Virtual-Machine.mshome.net:45704->82.221.107
34.bc.googleusercontent.com:http (ESTABLISHED)
firefox 2961 user  100u  IPv4 23287      0t0  TCP user-Virtual-Machine.mshome.net:39738->390-100-14
```

cmp

```
user@user-Virtual-Machine:~$ cmp file1.txt file2.txt
file1.txt file2.txt differ: byte 5, line 1
user@user-Virtual-Machine:~$ cat file1.txt
file1 added
file 2 added
file3 added
user@user-Virtual-Machine:~$ cat fiel2.txt
cat: fiel2.txt: No such file or directory
user@user-Virtual-Machine:~$ cat file2.txt
file 2 dded
```

diff

```
user@user-Virtual-Machine:~$ diff file1.txt file2.txt
1,3c1
< file1 added
< file 2 added
< file3 added
---
> file 2 dded
```

Cmp Vs Diff

```
user@user-Virtual-Machine:~$ cmp file1.txt data1.txt
file1.txt data1.txt differ: byte 1, line 1
user@user-Virtual-Machine:~$ diff file1.txt data1.txt
1c1
< file1 added
---
> i am doing changesfile1 added
```

```
user@user-Virtual-Machine:~$ echo "Hello World" | tr '[:lower:]' '[:upper:]'
HELLO WORLD
user@user-Virtual-Machine:~$ echo "UST GLOBAL" | tr -d '[:aeiou:]' '[:AEIOU:]'
tr: extra operand '[:AEIOU:]'
Only one string may be given when deleting without squeezing repeats.
Try 'tr --help' for more information.
user@user-Virtual-Machine:~$ echo "UST GLOBAL" | tr -d 'AEIOU'
ST GLBL
```

sed

```
user@user-Virtual-Machine:~$ cat /etc/passwd | tr ':' ' ' >> d.txt
user@user-Virtual-Machine:~$ cat d.txt
root x 0 0 root /root /bin/bash
daemon x 1 1 daemon /usr/sbin /usr/sbin/nologin
bin x 2 2 bin /bin /usr/sbin/nologin
sys x 3 3 sys /dev /usr/sbin/nologin
sync x 4 65534 sync /bin /bin/sync
games x 5 60 games /usr/games /usr/sbin/nologin
man x 6 12 man /var/cache/man /usr/sbin/nologin
lp x 7 7 lp /var/spool/lpd /usr/sbin/nologin
mail x 8 8 mail /var/mail /usr/sbin/nologin
news x 9 9 news /var/spool/news /usr/sbin/nologin
```

```
er@user-Virtual-Machine:~$ sed -i 's/root/administrator/g' d.txt
user@user-Virtual-Machine:~$ cat d.txt
administrator x 0 0 administrator /administrator /bin/bash
daemon x 1 1 daemon /usr/sbin /usr/sbin/nologin
bin x 2 2 bin /bin /usr/sbin/nologin
sys x 3 3 sys /dev /usr/sbin/nologin
sync x 4 65534 sync /bin /bin/sync
games x 5 60 games /usr/games /usr/sbin/nologin
man x 6 12 man /var/cache/man /usr/sbin/nologin
lp x 7 7 lp /var/spool/lpd /usr/sbin/nologin
mail x 8 8 mail /var/mail /usr/sbin/nologin
```

```
user@user-Virtual-Machine:~$ awk '{print $2,$3}' d.txt
x 0
x 1
x 2
x 3
x 4
x 5
x 6
x 7
x 8
x 9
x 10
x 13
x 33
x 34
x 38
x 39
x 41
x 65534
x 100
x 101
x 102
x 103
x 104
x 105
x 106
x 107
x 108
x 109
x 110
x 111
x 112
x 113
```

28/01/2025

172.27.53.139

Scp(Secured Copy) – Copying files from windows to linux machine

```
PS C:\Users\Administrator> scp .\scp.txt user@172.27.53.139:/home/user/
user@172.27.53.139's password:
scp.txt
PS C:\Users\Administrator> ssh user@172.27.53.139
user@172.27.53.139's password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 6.8.0-51-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

   https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update
New release '24.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Tue Jan 28 09:34:02 2025 from 172.27.48.1
user@user-Virtual-Machine:~$ ls
abc.txt  c.txt    Desktop  Downloads  file1      file2.txt  folder1  linux  luckyday  myls  Pictures  scp.txt  templates
a.txt    data1.txt Documents  d.txt     file1.txt  file4.txt  Hello.txt linuxgit Music    myls1  Public  snap      Videos
```

Cut – to fetch the characters from specified characters

```
user@user-Virtual-Machine:~$ cut -c 3-5 d.txt
ot
emo
n x
s x
nc
mes
n x
 x
il
ws
cp
oxy
w-d
cku
st
c x
ats
bod
ste
ste
ssa
ste
slo
pt
s x
```