

# List Of Linux Commands

- List of the commands: whoami, ls, ip a, cat, passwd, touch, pwd

```
vboxuser@ubuntu:~/Desktop$ ls
- Arjuman Arjumand Class d1 Devops Techie word
vboxuser@ubuntu:~/Desktop$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:44:c8:63 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 83881sec preferred_lft 83881sec
    inet6 fd17:625c:f037:2:22eb:5aa2:a04d:d2b4/64 scope global temporary dynamic
        valid_lft 86249sec preferred_lft 14249sec
    inet6 fd17:625c:f037:2:a00:27ff:fe44:c863/64 scope global dynamic mngtmpaddr
        valid_lft 86249sec preferred_lft 14249sec
    inet6 fe80::a00:27ff:fe44:c863/64 scope link
        valid_lft forever preferred_lft forever
vboxuser@ubuntu:~/Desktop$ cat word
Hello World
vboxuser@ubuntu:~/Desktop$ passwd
Changing password for vboxuser.
Current password:
Current Password:
passwd: Authentication token manipulation error
passwd: password unchanged
vboxuser@ubuntu:~/Desktop$ touch ARj.text
vboxuser@ubuntu:~/Desktop$ pwd
/home/vboxuser/Desktop
vboxuser@ubuntu:~/Desktop$ █
```

- I have used commands like man, apropos.

```
vboxuser@ubuntu:~/Desktop$ man ls
vboxuser@ubuntu:~/Desktop$ apropos cat
Command 'apropos' not found, did you mean:
  command 'apropos' from deb man-db (2.12.0-1)
Try: sudo apt install <deb name>
vboxuser@ubuntu:~/Desktop$ apropos cat
PAM (7)           - Pluggable Authentication Modules for Linux
__after_morecore_hook (3) - malloc debugging variables (DEPRECATED)
__free_hook (3)   - malloc debugging variables (DEPRECATED)
__malloc_hook (3) - malloc debugging variables (DEPRECATED)
```

```
arjumand@Arjumand:~$ sudo systemctl cat httpd
No files found for httpd.service.
arjumand@Arjumand:~$ sudo systemctl show httpd
ExitType=main
Restart=no
RestartMode=normal
```

## Used commands like pinfo

```
File: coreutils.info, Node: ls invocation, Next: dir invocation, Up: Directory listing

10.1 'ls': List directory contents
=====
The 'ls' program lists information about files (of any type, including
directories). Options and file arguments can be intermixed arbitrarily,
as usual. Later options override earlier options that are incompatible.

For non-option command-line arguments that are directories, by
default 'ls' lists the contents of directories, not recursively, and
omitting files with names beginning with '.'. For other non-option
arguments, by default 'ls' lists just the file name. If no non-option
argument is specified, 'ls' operates on the current directory, acting as
if it had been invoked with a single argument of '.'.

By default, the output is sorted alphabetically, according to the
locale settings in effect.(1) If standard output is a terminal, the
output is in columns (sorted vertically) and control characters are
output as question marks; otherwise, the output is listed one per line
and control characters are output as-is.

Because 'ls' is such a fundamental program, it has accumulated many
options over the years. They are described in the subsections below;
within each section, options are listed alphabetically (ignoring case).
The division of options into the subsections is not absolute, since some
options affect more than one aspect of 'ls''s operation.

Exit status:
  0 success
Viewing line 31/56, 55%
```

- Commands used in this below evidence is ls, cat, mkdir, cp, mv, rm

```
vboxuser@ubuntu:~$ ls
AArr      ARj.text  Desktop   Downloads  hello.tar  Music      Public    Templates
AArr_link  cat       Documents  hello     merged     Pictures   snap      Videos
vboxuser@ubuntu:~$ sudo cp hello /home
[sudo] password for vboxuser:
vboxuser@ubuntu:~$ mkdir Mydirectory
vboxuser@ubuntu:~$ rmdir Mydirectory
vboxuser@ubuntu:~$ ls
AArr      ARj.text  Desktop   Downloads  hello.tar  Music      Public    Templates
AArr_link  cat       Documents  hello     merged     Pictures   snap      Videos
vboxuser@ubuntu:~$ mv hello.txt hi.txt
mv: cannot stat 'hello.txt': No such file or directory
vboxuser@ubuntu:~$ mv hello hi
vboxuser@ubuntu:~$ ls
AArr      ARj.text  Desktop   Downloads  hi        Music      Public    Templates
AArr_link  cat       Documents  hello.tar merged    Pictures   snap      Videos
vboxuser@ubuntu:~$ rm hi
vboxuser@ubuntu:~$ ls
AArr      ARj.text  Desktop   Downloads  merged    Pictures   snap      Videos
AArr_link  cat       Documents  hello.tar Music    Public    Templates
```

- Commands used in below evidence In ln- to create soft link, eg:(ln -s AArr AArr\_link)
- Used Find command to search by file name “cat” was my file name. also searched file using ‘Find’ command which storage is more than 10mb

```

vboxuser@ubuntu:~$ pwd
/home/vboxuser
vboxuser@ubuntu:~$ k
: command not found
vboxuser@ubuntu:~$ rm AArr_link
vboxuser@ubuntu:~$ ln -s AArr AArr_link
vboxuser@ubuntu:~$ ls
AArr      ARj.text  Desktop  Downloads  merged  Pictures  snap      Videos
AArr_link cat      Documents hello.tar  Music    Public    Templates
vboxuser@ubuntu:~$ find /home -name cat
/home/vboxuser/cat
vboxuser@ubuntu:~$ find /home -size 10m
bash: find/home: No such file or directory
vboxuser@ubuntu:~$ find /home -size 10m
find: invalid -size type `m'
vboxuser@ubuntu:~$ find /home -size +10M
/home/vboxuser/snap/firefox/common/.cache/mozilla/firefox/4mjxycib.default/startupCache/scriptCache-current.bin
/home/vboxuser/snap/firefox/common/.cache/mozilla/firefox/4mjxycib.default/startupCache/scriptCache.bin
/home/vboxuser/snap/firefox/common/.mozilla/firefox/4mjxycib.default/storage/permanent/chrome/idb/3870112724rsegmnoittet
-es.sqlite

```

- Used various commands like: ls, vi, tar cvf to compress file, tar xvf to decompress file, gzip, zip, xz archive. Zip

```

vboxuser@ubuntu:~$ ls
AArr      ARj.text  Desktop  Downloads  merged  Pictures  snap      Videos
AArr_link cat      Documents hello.tar  Music    Public    Templates
vboxuser@ubuntu:~$ cat ARj.text
vboxuser@ubuntu:~$ vi ARj.text
vboxuser@ubuntu:~$ tar cvf ARj.text.tar ARj.text
ARj.text
vboxuser@ubuntu:~$ tar xvf ARj.text.tar
ARj.text
vboxuser@ubuntu:~$ gzipARj.text
gzipARj.text: command not found
vboxuser@ubuntu:~$ gzip ARj.text
vboxuser@ubuntu:~$ ls
AArr      ARj.text.gz  cat      Documents  hello.tar  Music    Public    Templates
AArr_link ARj.text.tar  Desktop  Downloads  merged    Pictures  snap      Videos
vboxuser@ubuntu:~$ tar xvf ARj.text.tar
ARj.text
vboxuser@ubuntu:~$ ls
AArr      ARj.text      ARj.text.tar  Desktop  Downloads  merged  Pictures  snap      Videos
AArr_link ARj.text.gz  cat      Documents  hello.tar  Music    Public    Templates
vboxuser@ubuntu:~$ xz ARj.text
vboxuser@ubuntu:~$ ls
AArr      ARj.text.gz  ARj.text.xz  Desktop  Downloads  merged  Pictures  snap      Videos
AArr_link ARj.text.tar  cat      Documents  hello.tar  Music    Public    Templates
vboxuser@ubuntu:~$ zip archive.zip ARj.gz ARj.text.xz
      zip warning: name not matched: ARj.gz
      adding: ARj.text.xz (stored 0%)
vboxuser@ubuntu:~$ zip archive.zip ARj.text.gz ARj.text.xz
      updating: ARj.text.xz (stored 0%)
      adding: ARj.text.gz (stored 0%)
vboxuser@ubuntu:~$ 

```

- Created soft link, find files using find command, used tar,xz to extra compress and gzi

```

arjumand@Arjumand:/home$ ls
arjumand  arjumand_link
arjumand@Arjumand:/home$ find /home -name AArr
/home/arjumand/AArr
arjumand@Arjumand:/home$ find /home -size 10M
arjumand@Arjumand:/home$ find /home -size +10M
arjumand@Arjumand:/home$ ls
arjumand  arjumand_link
arjumand@Arjumand:/home$ cd arjumand
arjumand@Arjumand:~/ls
AArr  data.txt  marks.txt  merged.txt
arjumand@Arjumand:~/ls$ tar cvf AArr.tar AArr
AArr
arjumand@Arjumand:~/ls
AArr  AArr.tar  data.txt  marks.txt  merged.txt
arjumand@Arjumand:~/ls$ AArr.tar.gz
AArr.tar.gz: command not found
arjumand@Arjumand:~/ls$ xz -9 AArr.tar
arjumand@Arjumand:~/ls
AArr  AArr.tar.xz  data.txt  marks.txt  merged.txt

```

- Used mount command to connect with pendrive, and confirm using ls command.

```
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
arjumand@Arjumand:~$ sudo mount /dev/sde1 /mnt/pendrive
mount: /mnt/pendrive: mount point does not exist.
        dmesg(1) may have more information after failed mount system call.
arjumand@Arjumand:~$ sudo mkdir /mnt/pendrive
arjumand@Arjumand:~$ sudo mount /dev/sde1 /mnt/pendrive
mount: /mnt/pendrive: special device /dev/sde1 does not exist.
        dmesg(1) may have more information after failed mount system call.
arjumand@Arjumand:~$ sudo mount /dev/sde /mnt/pendrive
arjumand@Arjumand:~$ ls /mnt/pendrive
Command 'ls' not found, but can be installed with:
sudo apt install ironseed
arjumand@Arjumand:~$ ls /mnt/pendrive
bin  docker-desktop-user-distro  home   lib      media   opt    root   sbin   sys   usr
dev  etc                          init   lost+found  mnt    proc   run    srv    tmp   var
```

- Used df -h to check disk free in human readable version

```
arjumand@Arjumand:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sdd       1007G  2.4G  954G  1% /
rootfs          1.9G  2.7M  1.9G  1% /init
none            1.9G     0  1.9G  0% /dev/shm
none            1.9G  540K  1.9G  1% /run
none            1.9G     0  1.9G  0% /run/lock
none            1.9G  108K  1.9G  1% /run/user
tmpfs           386M   20K  386M  1% /run/user/1000
drivers         238G  124G  114G  53% /usr/lib/wsl/drivers
none            1.9G     0  1.9G  0% /usr/lib/wsl/lib
none            1.9G  4.0K  1.9G  1% /mnt/wsl
none            1.9G  76K  1.9G  1% /mnt/wslg/versions.txt
none            1.9G  76K  1.9G  1% /mnt/wslg/doc
none            1.9G     0  1.9G  0% /usr/lib/modules/6.6.87.2-microsoft-standard-WSL2
C:\             238G  124G  114G  53% /mnt/c
D:\             444G   72G  372G  17% /mnt/d
E:\             489G   5.1G  484G  2% /mnt/e
/dev/sde        115M   59M   48M  56% /mnt/pendrive
```

- Listed all mounted files using findmnt -t ext4

```
arjumand@Arjumand:~$ findmnt -text4
TARGET            SOURCE   FSType OPTIONS
/                  /dev/sdd  ext4    rw,relatime,discard,errors=remount-ro,data=ordered
└─/mnt/pendrive  /dev/sde  ext4    rw,relatime,discard,errors=remount-ro,data=ordered
└─/mnt/wslg/distro /dev/sdd  ext4    ro,relatime,discard,errors=remount-ro,data=ordered
```

- Used lsblk to check list of imformation about block devices

```
arjumand@Arjumand:~$ lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda    8:0     0 388.4M  1 disk
sdb    8:16    0 186M  1 disk
sdc    8:32    0    1G  0 disk [SWAP]
sdd    8:48    0    1T  0 disk /mnt/wslg/distro
                   /
sde    8:64    0 128.6M  0 disk /mnt/pendrive
```

- Used various editors and file readers like Vi, Vim, Nano, Cat, more, less.

```
arjumand@Arjumand:~$ nano file1.txt
arjumand@Arjumand:~$ cat dile.txt
cat: dile.txt: No such file or directory
arjumand@Arjumand:~$ cat file1.txt
Welcome to nano editor
Using nano i am creating new file
Thank you for using nano
arjumand@Arjumand:~$ vim file2.txt
arjumand@Arjumand:~$ cat
^C
arjumand@Arjumand:~$ cat file2.txt
Hello welcome to vim
this is the first time using vim editor
Thank you
arjumand@Arjumand:~$ vi file3.txt
arjumand@Arjumand:~$ more file3.txt
hello word
arjumand@Arjumand:~$ less file3.txt
```

- Used head, tail, to check top and bottom content of the file, tac to see in reverse order, grep to search by keyword, awk to search for specific file.

```
arjumand@Arjumand:~$ head file1.txt
Welcome to nano editor
Using nano i am creating new file
Thank you for using nano
arjumand@Arjumand:~$ head -1 file1.txt
Welcome to nano editor
arjumand@Arjumand:~$ tail -1 file1.txt
Thank you for using nano
arjumand@Arjumand:~$ tac file1.txt
Thank you for using nano
Using nano i am creating new file
Welcome to nano editor
arjumand@Arjumand:~$ grep "Thank you" file1.txt
Thank you for using nano
arjumand@Arjumand:~$ awk 'NR==2 {print}' file1.txt
Using nano i am creating new file
arjumand@Arjumand:~$ sed 's/old/new/' file1.txt
Welcome to nano editor
Using nano i am creating new file
Thank you for using nano
arjumand@Arjumand:~$ sed 's/new/old/' file1.txt
Welcome to nano editor
Using nano i am creating old file
Thank you for using nano
```

- Used tr command to capitalizing whole text as you can see in the image

```
arjumand@Arjumand:~$ echo "hello world" | tr 'a-z' 'A-Z'
HELLO WORLD
```

- Used ‘cut’ command ands ‘sort’ commands to cut the text and take what we want from the text example: using commad cut -d ‘ ‘ -f3 myline.txt (I have taken 3<sup>rd</sup> word of line as you can see in the image) sort command to sorting the text or number example: sort -r file1.txt. then bottom line came in first line and first line goes bottom I reversed the order.

```
arjumand@Arjumand:~$ cat myline.txt
this is new line
arjumand@Arjumand:~$ echo "this is mt second line" >> myline.txt
arjumand@Arjumand:~$ cat -d ' ' -f3 myline.txt
cat: invalid option -- 'd'
Try 'cat --help' for more information.
arjumand@Arjumand:~$ cut -d ' ' -f3 myline.txt
new
mt
arjumand@Arjumand:~$ sort file1.txt
Thank you for using nano
Using nano i am creating new file
Welcomme to nano editor
arjumand@Arjumand:~$ sort -r file1.txt
Welcomme to nano editor
Using nano i am creating new file
Thank you for using nano
```

- Used su command to change the user account

```
arjumand@Arjumand:/ $ sudo useradd -m -s /bin/bash Arju
arjumand@Arjumand:/ $ sudo passwd Arju
New password:
Retype new password:
passwd: password updated successfully
arjumand@Arjumand:/ $ sudo su Arju
```

- Using Scp copied file from windwos to unbutu.

```
/home/arjumand/.bash_logout
/home/arjumand/data.txt
/home/arjumand/.local
/home/arjumand/.local/share
/home/arjumand/.local/share/nano
/home/arjumand/.viminfo
/home/arjumand/.landscape
/home/arjumand/.landscape/sysinfo.log
/home/arjumand/pizza_sales_excel_file.xlsx
/home/arjumand/.cache
/home/arjumand/.cache/motd.legal-displayed
/home/arjumand/.ssh
/home/arjumand/.ssh/known_hosts
/home/arjumand/.ssh/known_hosts.old
/home/arjumand/file1.txt
/home/arjumand/.profile
/home/arjumand/.motd_shown
/home/arjumand/file2.txt
/home/arjumand/AArr
/home/arjumand/.bash_history
arjumand@Arjumand:~$ pwd
/home/arjumand
arjumand@Arjumand:~$ ls
AArr  AArr.tar.xz  data.txt  file1.txt  file2.txt  file3.txt  marks.txt  merged.txt  myline.txt
za_sales_excel_file.xlsx
```

- Used history and Tee command history to check the commands that I have used.

```
arjumand@Arjumand: ~
11  pwd
12  cd arjumand
13  scp "C:\Users\ArjumandM\OneDrive\Desktop\pizza_sales_excel_file.xlsx" arjumand@172.23.184.20
/home/arjumand/
14  sudo systemctl status ssh
15  sudo apt update
16  sudo apt install openssh-server -y
17  sudo systemctl enable ssh
18  sudo systemctl start ssh
19  sudo systemctl status ssh
20  scp "C:\Users\ArjumandM\OneDrive\Desktop\pizza_sales_excel_file.xlsx" arjumand@172.23.184.20
/home/arjumand/
21  ls /mnt/c/Users/ArjumandM/OneDrive/Desktop
22  scp /mnt/c\Users\ArjumandM\OneDrive\Desktop\pizza_sales_excel_file.xlsx arjumand@172.23.184.20
:/home/arjumand/
23  ls /mnt/c/Users/ArjumandM/OneDrive/Desktop
24  cp /mnt/c\Users\ArjumandM\OneDrive\Desktop\pizza_sales_excel_file.xlsx ~/.
25  cp "/mnt/c\Users\ArjumandM\OneDrive\Desktop\pizza_sales_excel_file.xlsx" ~/.
26  cp "/mnt/c\Users\ArjumandM\OneDrive/Desktop/pizza_sales_excel_file.xlsx" ~/.
27  find /home -name "/mnt/c\Users\ArjumandM\OneDrive/Desktop/pizza_sales_excel_file.xlsx" ~/.
28  find "/mnt/c\Users\ArjumandM\OneDrive/Desktop/pizza_sales_excel_file.xlsx" ~/.
29  pwd
30  ls
31  tee
32  history
```

- Created group using groupadd and modify group using groupmod -n then deleted group using groupdel.

```
arjumand@Arjumand:~$ groupadd developers
groupadd: Permission denied.
groupadd: cannot lock /etc/group; try again later.
arjumand@Arjumand:~$ sudo groupadd developers
[sudo] password for arjumand:
arjumand@Arjumand:~$ groupmod -n Developers developers
groupmod: Permission denied.
groupmod: cannot lock /etc/group; try again later.
arjumand@Arjumand:~$ sudo groupmod -n Developers developers
arjumand@Arjumand:~$ groups Developers
groups: 'Developers': no such user
arjumand@Arjumand:~$ groups
arjumand adm cdrom sudo dip plugdev users
arjumand@Arjumand:~$ getnet group Developers
Command 'getnet' not found, did you mean:
  command 'getent' from deb libc-bin (2.39-0ubuntu8.6)
Try: sudo apt install <deb name>
arjumand@Arjumand:~$ cat /etc/group | grep Developers
Developers:x:1002:
arjumand@Arjumand:~$ sudo groupdel Developers
arjumand@Arjumand:~$ cat /etc/group | grep Developers
```

- Checked user and group Id by using 'id' command
- 

```
arjumand@Arjumand:~$ id
uid=1000(arjumand) gid=1000(arjumand) groups=1000(arjumand),4(adm),24(cdrom),27(sudo),30(dip),46(pl
gdev),100(users)
```

- Used getent to check all users

```
arjumand@Arjumand:~$ getent 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:/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
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
_apt:x:42:65534::/nonexistent:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:998:998:systemd Network Management:/:/usr/sbin/nologin
systemd-timesync:x:996:996:systemd Time Synchronization:/:/usr/sbin/nologin
dhcpcd:x:100:65534:DHCP Client Daemon,,,:/usr/lib/dhcpcd:/bin/false
messagebus:x:101:101::/nonexistent:/usr/sbin/nologin
syslog:x:102:102::/nonexistent:/usr/sbin/nologin
systemd-resolve:x:991:991:systemd Resolver:/:/usr/sbin/nologin
uidd:x:103:103::/run/uidd:/usr/sbin/nologin
```

- Used ‘w’ to know logged in user in detail, ‘who’ to know the user who is logged in, vipw to change the password, systemctl manage users.

```
arjumand@Arjumand:~$ w
14:31:10 up 12:32,  2 users,  load average: 0.01, 0.02, 0.00
USER      TTY      FROM             LOGIN@    IDLE   JCPU   PCPU WHAT
Arju      pts/3     -          12:50   1.00s  0.67s  0.01s su Arju
arjumand pts/1     -          Sat05   32:36m  0.02s  0.02s -bash
arjumand@Arjumand:~$ who
arjumand pts/1      2025-11-01 05:54
arjumand pts/3      2025-11-02 12:50
arjumand@Arjumand:~$ vipw
vipw: Permission denied.
vipw: Couldn't lock file: Permission denied
vipw: /etc/passwd is unchanged
arjumand@Arjumand:~$ sudo vipw

Select an editor. To change later, run 'select-editor'.
 1. /bin/nano      <---- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny
 4. /bin/ed

Choose 1-4 [1]: ^Cvipw: sensible-editor killed by signal 2
vipw: /etc/passwd is unchanged
arjumand@Arjumand:~$ loginctl
SESSION  UID USER      SEAT TTY      STATE  IDLE SINCE
        1 1000 arjumand -    pts/1 active yes   -
        c3 1001 Arju     -    pts/3 active no    -
2 sessions listed.
```

- Change the owner name using command ‘chown new\_owner file name’ and confirm using command ‘stat file name’

```
arjumand@Arjumand:~$ stat file1.txt
  File: file1.txt
  Size: 82          Blocks: 8          IO Block: 4096   regular file
Device: 8,48      Inode: 48747      Links: 1
Access: (0644/-rw-r--r--)
  Uid: ( 1000/arjumand)  Gid: ( 1000/arjumand)
Access: 2025-11-02 10:56:12.169350770 +0000
Modify: 2025-11-02 10:55:38.099786894 +0000
Change: 2025-11-02 10:55:38.099786894 +0000
 Birth: 2025-11-02 10:55:38.099786894 +0000
arjumand@Arjumand:~$ sudo chown Arju file1.txt
[sudo] password for arjumand:
arjumand@Arjumand:~$ stat file1.txt
  File: file1.txt
  Size: 82          Blocks: 8          IO Block: 4096   regular file
Device: 8,48      Inode: 48747      Links: 1
Access: (0644/-rw-r--r--)
  Uid: ( 1001/    Arju)  Gid: ( 1000/arjumand)
Access: 2025-11-02 10:56:12.169350770 +0000
Modify: 2025-11-02 10:55:38.099786894 +0000
Change: 2025-11-02 14:52:40.925802062 +0000
 Birth: 2025-11-02 10:55:38.099786894 +0000
```

- Changed the group of the file using ‘chgrp new\_group name’ and file name.

```
arjumand@Arjumand:~$ groups
arjumand adm cdrom sudo dip plugdev users
arjumand@Arjumand:~$ chgrp users file1.txt
chgrp: changing group of 'file1.txt': Operation not permitted
arjumand@Arjumand:~$ sudo chgrp users file1.txt
arjumand@Arjumand:~$ ll | grep file1.txt
-rw-r--r-- 1 Arju    users        82 Nov  2 10:55 file1.txt
```

- Executed command ‘find / -perm /4000’ to search for files with the set of user permission

```
arjumand@Arjumand:~$ sudo find / -perm /4000
/usr/bin/mount
/usr/bin/sudo
/usr/bin/su
/usr/bin/chsh
/usr/bin/passwd
/usr/bin/gpasswd
/usr/bin/newgrp
/usr/bin/fusermount3
/usr/bin/umount
/usr/bin/chfn
/usr/lib/polkit-1/polkit-agent-helper-1
/usr/lib/landscape/apt-update
/usr/lib/openssh/ssh-keysign
/usr/lib/dbus-1.0/dbus-daemon-launch-helper
find: '/mnt/c/$Recycle.Bin/S-1-5-18': Permission denied
find: '/mnt/c/$Recycle.Bin/S-1-5-21-3704930056-4102335811-2852059240-1000': Permission denied
find: '/mnt/c/Config.Msi': Permission denied
find: '/mnt/c/DumpStack.log.tmp': Permission denied
find: '/mnt/c/hiberfil.sys': Permission denied
find: '/mnt/c/MSOCache': Permission denied
find: '/mnt/c/pagefile.sys': Permission denied
find: '/mnt/c/PerfLogs': Permission denied
```

- Executed diff and umask commands in below image

```
'C
arjumand@Arjumand:~$ diff file1.txt file2.txt
1,3c1,3
< Welcome to nano editor
< Using nano i am creating new file
< Thank you for using nano
---
> Hello welcome to vim
> this is the first time using vim editor
> Thank you
arjumand@Arjumand:~$ umask 022
arjumand@Arjumand:~$ sudo umask 022
```

- Executed commands lsblk- to list all block devices, fdisk- manages permission, gdisk – manage partitions, mkfs – create a file system

```
arjumand@Arjumand:~$ diff file1.txt file2.txt
1,3c1,3
< Welcome to nano editor
< Using nano i am creating new file
< Thank you for using nano
---
> Hello welcome to vim
> this is the first time using vim editor
> Thank you
arjumand@Arjumand:~$ umask 022
arjumand@Arjumand:~$ sudo umask 022
sudo: umask: command not found
arjumand@Arjumand:~$ lsblk
NAME   MAJ:MIN RM    SIZE RO TYPE MOUNTPOINTS
sda    8:0      0 388.4M  1 disk
sdb    8:16     0   186M  1 disk
sdc    8:32     0     1G  0 disk [SWAP]
sdd    8:48     0     1T  0 disk /mnt/wslg/distro
                                /
sde    8:64     0 128.6M  0 disk /mnt/pendrive
arjumand@Arjumand:~$ fdisk
fdisk: bad usage
Try 'fdisk --help' for more information.
arjumand@Arjumand:~$ gdisk
GPT fdisk (gdisk) version 1.0.10

Type device filename, or press <Enter> to exit:
arjumand@Arjumand:~$ mksf
Command 'mksf' not found, did you mean:
  command 'mksh' from deb mksh (59c-33)
  command 'mkss' from deb julius (4.2.2-0ubuntu3)
  command 'mkfs' from deb util-linux (2.39.3-9ubuntu6.3)
Try: sudo apt install <deb name>
```

- lsof is used to know list of open files and the running processes.

```
arjumand@Arjumand:~$ lsof
lsof: WARNING: can't stat() tracefs file system /sys/kernel/debug/tracing
      Output information may be incomplete.
```

- Ip a command used to print current IP addresses information, ping used to test connectivity to a network host(google.com), Ip rout show uses to display routing table.

```
v_scri CLOSING 0 0 *:3797469884
arjumand@Arjumand:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
            inet 10.255.255.254/32 brd 10.255.255.254 scope global lo
                valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:5f:5d brd ff:ff:ff:ff:ff:ff
        inet 172.23.184.209/20 brd 172.23.191.255 scope global eth0
            valid_lft forever preferred_lft forever
        inet6 fe80::215:5dff:fe5d:64/64 scope link
            valid_lft forever preferred_lft forever
arjumand@Arjumand:~$ ip roun show
default via 172.23.176.1 dev eth0 proto kernel
172.23.176.0/20 dev eth0 proto kernel scope link src 172.23.184.209
arjumand@Arjumand:~$ ping google.com
PING google.com (142.251.222.142) 56(84) bytes of data.
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=1 ttl=114 time=26.9 ms
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=2 ttl=114 time=44.5 ms
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=3 ttl=114 time=28.5 ms
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=4 ttl=114 time=29.2 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3101ms
rtt min/avg/max/mdev = 26.928/32.271/44.498/7.106 ms
```

- SS used to show socket statistics.

Netid	State	Recv-Q	Send-Q	Local Address:Port	Peer Address:Port	Process
u_str	ESTAB	0	0	* 55586	* 57771	
u_str	ESTAB	0	0	* 903	* 7305	
u_dan	ESTAB	0	0	* 22694	* 1242	

- Dig-Queries DNS information, nmap- that scan network and systems, hostname- display systems host.

```
arjumand@Arjumand:~$ ip roun show
default via 172.23.176.1 dev eth0 proto kernel
172.23.176.0/20 dev eth0 proto kernel scope link src 172.23.184.209
arjumand@Arjumand:~$ ping google.com
PING google.com (142.251.222.142) 56(84) bytes of data.
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=1 ttl=114 time=26.9 ms
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=2 ttl=114 time=44.5 ms
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=3 ttl=114 time=28.5 ms
64 bytes from pnmaaa-az-in-f14.1e100.net (142.251.222.142): icmp_seq=4 ttl=114 time=29.2 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3101ms
rtt min/avg/max/mdev = 26.928/32.271/44.498/7.106 ms
arjumand@Arjumand:~$ dig
Command 'dig' not found, but can be installed with:
sudo apt install bind9-dnsutils
arjumand@Arjumand:~$ dig google.com
Command 'dig' not found, but can be installed with:
sudo apt install bind9-dnsutils
arjumand@Arjumand:~$ nmap -v 192.168.1.1
Command 'nmap' not found, but can be installed with:
sudo snap install nmap # version 7.95, or
sudo apt install nmap # version 7.94+git20230807.3be01efb1+dfsg-2
See 'snap info nmap' for additional versions.
arjumand@Arjumand:~$ hostname
Arjumand
arjumand@Arjumand:~$ hostnamectl
  Static hostname: Arjumand
    Icon name: computer-container
      Chassis: container □
```

- Used commands: `systemctl start` to start the process, `systemctl enable` to enable the process, `systemctl stop` to stop the process, `systemctl restart` – to restart the process.

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
arjumand@Arjumand:~$ sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nginx
arjumand@Arjumand:~$ sudo systemctl start
Too few arguments.
arjumand@Arjumand:~$ sudo systemctl start nginx
arjumand@Arjumand:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
  Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
    Active: active (running) since Mon 2025-11-03 04:34:28 UTC; 10min ago
      Docs: man:nginx(8)
   Main PID: 12432 (nginx)
     Tasks: 9 (limit: 4615)
    Memory: 6.3M (peak: 14.7M)
       CPU: 139ms
      CGroup: /system.slice/nginx.service
              ├─12432 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
              ├─12434 "nginx: worker process"
              ├─12435 "nginx: worker process"
              ├─12436 "nginx: worker process"
              ├─12437 "nginx: worker process"
              ├─12438 "nginx: worker process"
              ├─12439 "nginx: worker process"
              ├─12440 "nginx: worker process"
              └─12441 "nginx: worker process"

Nov 03 04:34:27 Arjumand systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Nov 03 04:34:28 Arjumand systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
arjumand@Arjumand:~$ sudo systemctl stop nginx
arjumand@Arjumand:~$ sudo systemctl restart nginx
arjumand@Arjumand:~$ sudo systemctl disable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install disable nginx
Removed "/etc/systemd/system/multi-user.target.wants/nginx.service".
```

- systemctl set-default**
  - Example: `systemctl set-default graphical.target`
  - Description: Sets the default target that the system boots into.
- systemctl get-default**
  - Example: `systemctl get-default`
  - Description: Displays the current default target.
- systemctl cat**
  - Example: `systemctl cat httpd`
  - Description: Shows the configuration of a unit file.
- systemctl show**
  - Example: `systemctl show httpd`
  - Description: Displays all the options set for a unit file.

```
arjumand@Arjumand:~$ ls
AArr AArr.tar.xz data.txt file1.txt file2.txt file3.txt marks.txt merged.txt myline.txt
arjumand@Arjumand:~$ cat file1.txt
Welcome to nano editor
Using nano i am creating new file
Thank you for using nano
arjumand@Arjumand:~$ awk 'NR==2' file1.txt
Using nano i am creating new file
arjumand@Arjumand:~$ ls
AArr AArr.tar.xz data.txt file1.txt file2.txt file3.txt marks.txt merged.txt myline.txt
arjumand@Arjumand:~$ ls | grep marks.txt
marks.txt
arjumand@Arjumand:~$ ll | grep marks.txt
-rw-r--r-- 1 arjumand arjumand 15 Nov 1 17:57 marks.txt
arjumand@Arjumand:~$ ls
AArr AArr.tar.xz data.txt file1.txt file2.txt file3.txt marks.txt merged.txt myline.txt
arjumand@Arjumand:~$ ln data.txt daata_link
arjumand@Arjumand:~$ ls
AArr AArr.tar.xz daata_link data.txt file1.txt file2.txt file3.txt marks.txt merged.txt
arjumand@Arjumand:~$ mv file1.txt file5.txt
arjumand@Arjumand:~$ ls
AArr AArr.tar.xz daata_link data.txt file2.txt file3.txt file5.txt marks.txt merged.txt
arjumand@Arjumand:~$ sudo systemctl set default
Unknown command verb 'set', did you mean 'set-default'?
arjumand@Arjumand:~$ sudo systemctl set-default
Too few arguments.
arjumand@Arjumand:~$ sudo systemctl set-default graphical.target
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/graphical.target.
arjumand@Arjumand:~$ sudo systemctl get-default
graphical.target
arjumand@Arjumand:~$ sudo systemctl cat
Too few arguments.
arjumand@Arjumand:~$ sudo systemctl cat httpd
No files found for httpd.service.
arjumand@Arjumand:~$ sudo systemctl show httpd
ExitType=main
Restart=no
RestartMode=normal
```

```
arjumand@Arjumand:~$ sudo systemctl cat httpd
No files found for httpd.service.
arjumand@Arjumand:~$ sudo systemctl show httpd
ExitType=main
Restart=no
RestartMode=normal
```

- **systemctl edit**

- **Example:** `systemctl edit httpd`
- **Description:** Opens an editor to modify a unit file.

- **systemctl daemon-reload**

- **Example:** `systemctl daemon-reload`
- **Description:** Instructs the `systemctl` main process to reload its configuration.

- **systemctl isolate**

```

ControlGroupId=0
MemoryCurrent=[not set]

arjumand@Arjumand:~$ sudo systemctl daemon-related httpd
Unknown command verb 'daemon-related', did you mean 'daemon-reload'?
arjumand@Arjumand:~$ sudo systemctl list-dependencies graphical.target
graphical.target
o └─display-manager.service
o └─systemd-update-utmp-runlevel.service
o └─wslg.service
● └─multi-user.target
o └─apport.service

```

```

lines 1-40
arjumand@Arjumand:~$ rpm -q nginx
Command 'rpm' not found, but can be installed with:
sudo apt install rpm
arjumand@Arjumand:~$ cd etc
-bash: cd: etc: No such file or directory
arjumand@Arjumand:~$ find /home -name gnginx.conf
find: '/home/Arju': Permission denied
arjumand@Arjumand:~$ sudo find /home -name gnginx.conf
arjumand@Arjumand:~$ ^C
arjumand@Arjumand:~$ rpm -q nginx
Command 'rpm' not found, but can be installed with:
sudo apt install rpm
arjumand@Arjumand:~$ sudo apt install rmp
[sudo] password for arjumand:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package rmp
arjumand@Arjumand:~$ sudo yum apt install rmp
sudo: yum: command not found
arjumand@Arjumand:~$ apt-cache
apt 2.8.3 (amd64)
Usage: apt-cache [options] command
      apt-cache [options] show pkg1 [pkg2 ...]

```

## Command: apt

- **Description:** `apt` is a command-line tool used in Ubuntu and other Debian-based systems for handling packages, including installation, updating, and removal.
- **Example:** `apt install package_name` - This command installs a specific package.

## Command: apt-cache

- **Description:** `apt-cache` is used for querying package information in Debian-based systems. It's especially useful for searching for packages containing specific files.
- **Example:** `apt-cache search keyword` - This command searches for packages related to a specific keyword.

## Change SSH Port on Ubuntu:

- Command: `sudo vim /etc/ssh/sshd_config`
- Description: Open the SSH configuration file using `vim` to change the SSH port.

### Update SSH Port to 2022:

- Command: Change the line `Port 22` to `Port 2022` in the file.
- Description: In the SSH configuration file, update the default port from 22 to 2022.

### Restart SSH Service:

- Command: `sudo systemctl restart sshd`
- Description: Restart the SSH daemon to apply the new configuration.

```
arjumand@Arjumand:~$ sudo vim /etc/ssh/sshd_config
arjumand@Arjumand:~$ sudo vim /etc/ssh/sshd_config
arjumand@Arjumand:~$ sudo systemctl restart sshd
arjumand@Arjumand:~$ sudo ufw allow 2022/tcp
sudo: ufw: command not found
arjumand@Arjumand:~$ sudo systemctl status sshd
● ssh.service - OpenBSD Secure Shell server
   Loaded: Loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: enabled)
   Active: active (running) since Mon 2025-11-03 06:53:31 UTC; 4min 21s ago
     TriggeredBy: ● ssh.socket
   Docs: man:sshd(8)
         man:sshd_config(5)
   Process: 14854 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 14855 (sshd)
      Tasks: 1 (limit: 4615)
     Memory: 1.4M (peak: 1.7M)
        CPU: 46ms
       CGroup: /system.slice/ssh.service
           └─14855 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Nov 03 06:53:31 Arjumand systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Nov 03 06:53:31 Arjumand sshd[14855]: Server listening on 0.0.0.0 port 22.
Nov 03 06:53:31 Arjumand sshd[14855]: Server listening on :: port 22.
Nov 03 06:53:31 Arjumand systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
```

```
Package and version choices can be expressed via apt_preferences(5).
Security details are available in apt-secure(8).
arjumand@Arjumand:~$ apt
apt 2.8.3 (amd64)
Usage: apt [options] command

apt is a commandline package manager and provides commands for
searching and managing as well as querying information about packages.
It provides the same functionality as the specialized APT tools,
```

### Check SSH Service Status:

- Command: `sudo systemctl status sshd`
- Description: Verify that the SSH service is active and listening on port 2022.

### Create SSH Session from Windows:

- Description: Use MobaXterm on Windows to create

a new SSH session.

```
| ► For more info, ctrl+click on help or visit our website. |  
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.6.87.2-microsoft-standard-WSL2 x86_64)  
* Documentation: https://help.ubuntu.com  
* Management: https://landscape.canonical.com  
* Support: https://ubuntu.com/pro  
System information as of Mon Nov 3 07:15:42 UTC 2025  
System load: 0.02 Processes: 63  
Usage of /: 0.2% of 1006.85GB Users logged in: 1  
Memory usage: 30% IPv4 address for eth0: 172.23.184.209  
Swap usage: 0%  
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.  
https://ubuntu.com/engage/secure-kubernetes-at-the-edge  
/usr/bin/xauth: file /home/arjumand/.Xauthority does not exist  
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.6.87.2-microsoft-standard-WSL2 x86_64)  
* Documentation: https://help.ubuntu.com  
* Management: https://landscape.canonical.com  
* Support: https://ubuntu.com/pro  
System information as of Mon Nov 3 07:15:42 UTC 2025  
System load: 0.02 Processes: 63  
Usage of /: 0.2% of 1006.85GB Users logged in: 1  
Memory usage: 30% IPv4 address for eth0: 172.23.184.209  
Swap usage: 0%  
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.  
https://ubuntu.com/engage/secure-kubernetes-at-the-edge  
This message is shown once a day. To disable it please create the  
/home/arjumand/.hushlogin file.  
Activate Windows  
Go to Settings to activate Windows
```

## Command: date

- Example: `date`
- Description: Displays the current date and time of the system. It's a basic and long-standing command in many operating systems.

## Command: hwclock

- Example: `hwclock --show`
- Description: Used for managing and viewing the hardware clock. It can also be used to synchronize the hardware clock with the system clock.

## Command: timedatectl

- Example: `timedatectl status`
- Description: A modern utility for

managing various aspects of time synchronization and settings. It can display and set time, date, and timezone, among other features.

### Command: chronyc

- Example: chronyc tracking

Description: Interfaces with the chronyd time-synchronizing service, providing detailed

```
arjumand@Arjumand:~$ date
Mon Nov  3 07:24:31 UTC 2025
arjumand@Arjumand:~$ hclock --show
Command 'hclock' not found, did you mean:
  command 'kclock' from snap kclock (25.08.0)
  command 'dclock' from deb dclock (2.2.2-14)
  command 'dclock' from deb ivtools-bin (2.0.11d.a1-1build5)
  command 'oclock' from deb x11-apps (7.7+11)
  command 'hwclock' from deb util-linux-extra (2.39.3-9ubuntu6.3)
  command 'gclock' from deb ivtools-bin (2.0.11d.a1-1build5)
  command 'xclock' from deb x11-apps (7.7+11)
See 'snap info <snapname>' for additional versions.
arjumand@Arjumand:~$ timedatectl status
timedatectl: command not found
arjumand@Arjumand:~$ timedatectl status
          Local time: Mon 2025-11-03 07:25:54 UTC
              Universal time: Mon 2025-11-03 07:25:54 UTC
                  RTC time: Mon 2025-11-03 07:25:54
                    Time zone: Etc/UTC (UTC, +0000)
System clock synchronized: yes
    NTP service: active
      RTC in local TZ: no
arjumand@Arjumand:~$ chronyc tracking
Command 'chronyc' not found, but can be installed with:
  sudo apt install chrony
```

- Used ‘top’ command to check cpu utilisation.

```
arjumand@Arjumand:~$ top
top - 07:30:30 up 19:22,  4 users,  load average: 0.05, 0.02, 0.00
Tasks: 59 total,  1 running, 58 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.1 sy,  0.0 ni, 99.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem : 3856.2 total, 2401.5 free, 1173.5 used,   462.0 buff/cache
MiB Swap: 1024.0 total, 1024.0 free,     0.0 used. 2682.7 avail Mem
      PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
  5517 mysql     20   0 2442696 396108 37632 S  0.7 10.0  10:28:98 mysqld
```

- Used ps us command to see all the processing and their properties.

```
15321 pts/3    00:00:00 ps
arjumand@Arjumand:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START  TIME COMMAND
root      1  0.0  0.3 22304 13312 ?        Ss Nov02  0:16 /usr/lib/systemd/systemd --system --deserialize=55
root      2  0.0  0.0 3072 1664 ?        Sl Nov02  0:00 /init
root      8  0.0  0.0 3088 1920 ?        Sl Nov02  0:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root    179  0.0  0.0 4236 2560 ?        Ss Nov02  0:00 /usr/sbin/cron -f -P
message+ 180  0.0  0.1 9812 4864 ?        Ss Nov02  0:00 @dbus-daemon --system --address=/systemd --nofork --nopidfile --systemd-activation --sysl
```

**Command: ps**

- Example: `ps aux`
- Description: Shows all processes and their properties; useful for monitoring system processes.

**Command: jobs**

- Example: `jobs`
- Description: Lists the jobs (processes) started by the user in the shell, allowing for management of interactive processes.

**Command: fg**

- Example: `fg %1`
- Description: Brings a job to the foreground, where `%1` is the job number.

```
arjumand@Arjumand:~$ jobs
arjumand@Arjumand:~$ fg %1
-bash: fg: %1: no such job
arjumand@Arjumand:~$ bg %1
-bash: bg: %1: no such job
arjumand@Arjumand:~$ renice -n 10 -p 1234
renice: failed to get priority for 1234 (process ID): No such process
```

**at Command**

- Description: Allows you to schedule a job to run at a specific time.
- Example: `at 10:30` schedules a job to run at 10:30.

**atq Command**

- Description: Displays a list of all jobs currently scheduled.
- Example: `atq` shows all scheduled jobs with their job numbers.

**atrm Command**

- Description: Used to remove scheduled jobs.
- Example: `atrm 5` removes the job with the job number 5.

**Editing Cron Configuration with crontab -e**

- Description: Opens the cron configuration for editing, allowing you to schedule jobs to run periodically.
- Example: `crontab -e` opens the cron configuration file in a text editor.

**Working with Systemctl Timers Using systemctl**

- Description: Used to manage and interact with systemctl timers, a more systemwide approach for scheduling tasks.
- Example: `systemctl list-timers` shows all active timers.

```
arjumand@Arjumand:~$ at 10:00
warning: commands will be executed using /bin/sh
at Mon Nov  3 10:00:00 2025
at> yes
at>
at> ^C
arjumand@Arjumand:~$ atrm 5
Cannot find jobid 5
arjumand@Arjumand:~$ systemctl list-timers
NEXT           LEFT  LAST           PASSED  UNIT                                  ACTIVATES
Mon 2025-11-03 12:22:44 UTC 4h 38min Sat 2025-11-01 06:09:29 UTC   19h ago systemd-tmpfiles-clean.timer  systemd-tmpfiles-clean
Mon 2025-11-03 13:20:46 UTC 5h 36min Mon 2025-11-03 04:31:13 UTC 3h 14min ago motd-news.timer    motd-news.service
Mon 2025-11-03 23:59:08 UTC      16h Mon 2025-11-03 06:14:57 UTC 1h 31min ago apt-daily.timer     apt-daily.service
Tue 2025-11-04 00:00:00 UTC      16h Mon 2025-11-03 04:30:56 UTC 3h 14min ago dpkg-db-backup.timer  dpkg-db-backup.service
Tue 2025-11-04 00:00:00 UTC      16h Mon 2025-11-03 04:30:56 UTC 3h 14min ago logrotate.timer    logrotate.service
Tue 2025-11-04 05:31:35 UTC      21h Mon 2025-11-03 04:34:27 UTC 3h 10min ago man-db.timer      man-db.service
Tue 2025-11-04 06:19:30 UTC      22h Mon 2025-11-03 06:09:41 UTC 1h 37min ago apt-daily-upgrade.timer apt-daily-upgrade.service
Sun 2025-11-09 03:10:06 UTC      5 days Sun 2025-11-02 09:03:38 UTC   11h ago e2scrub_all.timer   e2scrub_all.service

8 timers listed.
Pass --all to see loaded but inactive timers, too.
arjumand@Arjumand:~$ journalctl -u nginx.service
Nov 03 04:34:27 Arjumand systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Nov 03 04:34:28 Arjumand systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
Nov 03 04:46:54 Arjumand systemd[1]: Stopping nginx.service - A high performance web server and a reverse proxy server...
Nov 03 04:46:54 Arjumand systemd[1]: nginx.service: Deactivated successfully.
Nov 03 04:46:54 Arjumand systemd[1]: Stopped nginx.service - A high performance web server and a reverse proxy server.
Nov 03 04:47:15 Arjumand systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Nov 03 04:47:15 Arjumand systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
```

**Command: journalctl**

- Description: This command is used to check the contents of the systemd journal, which is a centralized logging system for Linux.
- Example: `journalctl -u nginx.service`
  - This example shows how to view logs for the Nginx service using `journalctl`.

**Command: tail**

- Description: The `tail` command is used to view the contents of log files, typically the last few lines.
- Example: `tail -n 100 /var/log/syslog`
  - This example displays the last 100 lines of the syslog file.

```
arjumand@Arjumand:~$ tail -n 100 /var/log/syslog
2025-11-03T07:04:10.127893+00:00 Arjumand wsl-pro-service[14890]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not read agent port file "/mnt/c/Users/ArjumandM/.ubuntupro/.address": open /mnt/c/Users/ArjumandM/.ubuntupro/.address: no such file or directory
2025-11-03T07:04:38.308783+00:00 Arjumand systemd-resolved[3414]: Clock change detected. Flushing caches.
2025-11-03T07:05:09.250846+00:00 Arjumand wsl-pro-service[14890]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not read agent port file "/mnt/c/Users/ArjumandM/.ubuntupro/.address": open /mnt/c/Users/ArjumandM/.ubuntupro/.address: no such file or directory
2025-11-03T07:05:09.628516+00:00 Arjumand systemd-resolved[3414]: Clock change detected. Flushing caches.
```

**Command: less**

- Description: Similar to `tail`, `less` is used for viewing log files but allows for more controlled navigation through the file.
- Example: `less /var/log/apache2/access.log`
  - This opens the Apache access log file in a scrollable interface for in-depth examination.

**Command: logger**

- Description: The `logger` command is a convenient tool for writing messages to the system log.
- Example: `logger "System backup completed"`
  - This example sends a custom message, "System backup completed," to the system log.

```
Nov 03 04:47:15 Arjumand systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
arjumand@Arjumand:~$ tail -n 100 /var/log/syslog
2025-11-03T07:04:10.127893+00:00 Arjumand wsl-pro-service[14890]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not read agent port file "/mnt/c/Users/ArjumandM/.ubuntupro/.address": open /mnt/c/Users/ArjumandM/.ubuntupro/.address: no such file or directory
2025-11-03T07:04:38.308783+00:00 Arjumand systemd-resolved[3414]: Clock change detected. Flushing caches.
2025-11-03T07:05:09.250846+00:00 Arjumand wsl-pro-service[14890]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not read agent port file "/mnt/c/Users/ArjumandM/.ubuntupro/.address": open /mnt/c/Users/ArjumandM/.ubuntupro/.address: no such file or directory
2025-11-03T07:05:09.628516+00:00 Arjumand systemd-resolved[3414]: Clock change detected. Flushing caches.
2025-11-03T07:05:40.920124+00:00 Arjumand systemd-resolved[3414]: Clock change detected. Flushing caches.
```

```
[2]+  Stopped                  less -n 100 /var/log/syslog
arjumand@Arjumand:~$ logger "System backup completed"
```