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## Linux Commands

### Question 1. Shell Utilities and Shortcuts Commands

#### 1. alias

```
student@student-OptiPlex-3050-A10:~$ alias ll='ls -la'
student@student-OptiPlex-3050-A10:~$ ll
total 124
drwxr-xr-x 27 student student 4096 Sep 18 13:21 .
drwxr-xr-x  6 root    root    4096 Jun  6 05:56 ..
drwxrwxr-x  3 student student 4096 Apr 29 2022 Arduino
drwxrwxr-x  2 student student 4096 Apr 29 2022 .arduino15
-rw-r--r--  1 student student 878 Oct 10 2024 .bash_history
-rw-r--r--  1 student student 228 Apr 29 2022 .bash_logout
-rw-r--r--  1 student student 3771 Apr 29 2022 .bashrc
drwx----- 21 student student 4096 Oct  4 2024 .cache
drwx----- 18 student student 4096 Sep  4 2024 .config
drwxr-xr-x  2 student student 4096 Sep  9 15:13 Desktop
drwxr-xr-x  2 student student 4096 Mar  2 2023 Documents
drwxr-xr-x  2 student student 4096 May 15 15:01 Downloads
drwx-----  3 student student 4096 Apr 29 2022 .phone
drwx-----  3 student student 4096 Sep 20 14:51 .snaps
drwxrwxr-x  3 student student 4096 Apr 29 2022 .java
drwx-----  3 student student 4096 Apr 29 2022 .local
drwx-----  5 student student 4096 Apr 29 2022 .noria
drwxr-xr-x  2 student student 4096 Apr 29 2022 Music
drwxrwxr-x  2 student student 4096 Sep 30 2024 nayan
drwxrwxr-x  2 student student 4096 Apr 29 2022 .oracle_jre_usage
drwxrwxr-x  2 student student 4096 Oct  4 2024 os-lab
drwxr-xr-x  3 student student 4096 Sep 20 14:51 Pictures
-rw-r--r--  1 student student 887 Apr 29 2022 .profile
drwxr-xr-x  2 student student 4096 Apr 29 2022 Public
drwxrwxr-x  2 student student 4096 Sep 19 12:00 Salish
drwxrwxr-x  6 student student 4096 Sep  2 2024 Shree
drwx-----  3 student student 4096 Apr 29 2022 .snap
drwx-----  2 student student 4096 Apr 29 2022 .ssh
-rw-r--r--  1 student student  0 Apr 29 2022 .sudo_as_admin_successful
drwxr-xr-x  2 student student 4096 Apr 29 2022 .templates
drwx-----  6 student student 4096 Aug 19 2024 .thunderbird
drwxr-xr-x  2 student student 4096 Apr 29 2022 Videos
```

#### 2. unalias

```
student@student-OptiPlex-3050-A10:~$ unalias ll
student@student-OptiPlex-3050-A10:~$
student@student-OptiPlex-3050-A10:~$ ll
ll: command not found
```

#### 3. history

```
student@student-OptiPlex-3050-A10:~$ history
1  ls
2  cd Downloads
3  ls
4  ls
5  cd arduino-nightly-linux64
6  ls
7  cd arduino-nightly
8  ls
9  ./install.sh
10 ls
11 ./install.sh
12 sudo ./install.sh
13 sudo apt update
14 sudo apt install postgresql postgresql-contrib
15 sudo systemctl start postgresql.service
16 sudo -i -u postgres
17 ls
18 cd Documents
19 ls
20 cd
21 timedatectl
22 timedatectl
23 timedatectl set-ntp yes
24 timedatectl
25 timedatectl set-ntp no
26 timedatectl set-time 09:55:00
27 timedatectl set-time 2024-09-03
28 $student
29 pw
30 change -l student
31 chage -l student
32 chage -l student
33 $passwd
34 mc@123
35 sudo apt-get install chromium
36 mount -o remount,rw/
37 mount -o remount,rw/password student
38 ls
39 ls -l
40 ls -l
41 ls -la
42 cd ..
43 cd Pictures
```

#### 4. clear

Clear the terminal screen.

#### 5. reboot

Reboot the system.

#### 6. shutdown

Power off the system.

## 7.date

```
student@student-OptiPlex-3050-AIO:~$ date
Saturday 20 September 2025 03:42:38 PM IST
student@student-OptiPlex-3050-AIO:~$
```

## 8.echo

```
student@student-OptiPlex-3050-AIO:~$ echo "Hello"
Hello
student@student-OptiPlex-3050-AIO:~$
```

## 9. sleep

Delay for a specified amount of time.

## 10.time

```
student@student-OptiPlex-3050-AIO:~$ time

real    0m0.000s
user    0m0.000s
sys     0m0.000s
student@student-OptiPlex-3050-AIO:~$
```

## 11.watch

```
student@student-OptiPlex-3050-AIO:~$ watch

Usage:
  watch [options] command

Options:
  -b, --beep             beep if command has a non-zero exit
  -c, --color            interpret ANSI color and style sequences
  -d, --differences[=<permanent>] highlight changes between updates
  -e, --errexit          exit if command has a non-zero exit
  -g, --chgexit          exit when output from command changes
  -n, --interval <secs> seconds to wait between updates
  -p, --precise          attempt run command in precise intervals
  -t, --no-title         turn off header
  -x, --exec             pass command to exec instead of "sh -c"

  -h, --help            display this help and exit
  -v, --version         output version information and exit

For more details see watch(1).
```

## Question 2. File and Directory Commands

## chmod

Change file permissions

## chown

Change file owner

## mount

Mount a filesystem.

## umount

Unmount a filesystem.

```
student@student-OptiPlex-3050-AIO:~$ ls
Arduino  Documents  Music  os-lab  Public  Shree  Templates
Desktop  Downloads  nayan  Pictures  Saish  snap  Videos
student@student-OptiPlex-3050-AIO:~$
```

FIGURE 1. ls

```
student@student-OptiPlex-3050-AIO:~$ cd Desktop
student@student-OptiPlex-3050-AIO:~/Desktop$
```

FIGURE 2. cd

```
student@student-OptiPlex-3050-AIO:~/Desktop$ pwd
/home/student/Desktop
student@student-OptiPlex-3050-AIO:~/Desktop$
```

FIGURE 3. pwd

```
student@student-OptiPlex-3050-AIO:~/Desktop$ mkdir mca
student@student-OptiPlex-3050-AIO:~/Desktop$ cd mca
student@student-OptiPlex-3050-AIO:~/Desktop/mca$
```

FIGURE 4. mkdir

curl

Transfer data using URL syntax.

nc (Netcat)

Network debugging and data transfer.

tcpdump

Capture and analyze network packets.

iptables

Configure firewall rules.

traceroute

Trace the path packets take to a network host.

ssh

Securely connect to a remote host.

htop

Enhanced version of top.

kill

Send a signal to a process.

killall

Kill processes by name.

systemctl

Manage systemd services.

journalctl

```
student@student-OptiPlex-3050-AIO:~/Desktop$ rmdir mca
student@student-OptiPlex-3050-AIO:~/Desktop$ cd mca
bash: cd: mca: No such file or directory
student@student-OptiPlex-3050-AIO:~/Desktop$
```

FIGURE 5. rmdir

```
student@student-OptiPlex-3050-AIO:~$ touch mca.txt
student@student-OptiPlex-3050-AIO:~$ ls
Arduino  Documents  mca      Music  os-lab  Public  Shree  Templates
Desktop  Downloads  mca.txt  nayan  Pictures Saish   snap   Videos
```

FIGURE 6. touch

```
student@student-OptiPlex-3050-AIO:~$ ls
Arduino  Documents  mca      Music  os-lab  Public  Shree  Templates
Desktop  Downloads  mca.txt  nayan  Pictures Saish   snap   Videos
student@student-OptiPlex-3050-AIO:~$ rm mca.txt
student@student-OptiPlex-3050-AIO:~$ ls
Arduino  Documents  mca      nayan  Pictures Saish   snap   Videos
Desktop  Downloads  Music    os-lab  Public   Shree   Templates
student@student-OptiPlex-3050-AIO:~$
```

FIGURE 7. rm

```
student@student-OptiPlex-3050-AIO:~$ cat mca.txt
Hello,i am mca student from vjti.
```

FIGURE 8. cat

View system logs.

usermod

Modify user account

newgrp

Log in to a new group

### Question 3. File Transfer and Synchronization Commands

scp

Securely copy file over SSH

rsync

Efficiently sync files and directories

ftp

Transfer files using the File Transfer Protocol

sftp

Securely transfer files using SSH File Transfer Protocol

wget

Download files from the web

curl

Transfer data from or to a server

```
student@student-OptiPlex-3050-AIO:~$ nano mca.txt
GNU nano 4.8 mca.txt
Hello,i am mca student from vjti.
```

FIGURE 9. nano/vim

```
student@student-OptiPlex-3050-AIO:~$ find . -name "mca1.txt"
./Documents/mca1.txt
```

FIGURE 10. find

```
student@student-OptiPlex-3050-AIO:~$ grep "vjti" mca.txt
Hello,i am mca student from vjti.
```

FIGURE 11. grep

**Question 4. Text Processing Commands**

sed

Stream editor for filtering/modifying text

join

Join lines of two files on a common field

ln

Create symbolic links(shortcuts) to other files

less

Linux commands to display paged outputs in the terminal

apt,pacman,yum,rpm

Package managers depending on the distribution

whereis

Locate the binary, source and manual pages for a command

whatis

Find what a command is used for

zip

Zip files in Linux

unzip

Unzip files in Linux

```
student@student-OptiPlex-3050-AIO:~$ tar -cvf archive.tar mca.txt mca2.txt
mca.txt
mca2.txt
student@student-OptiPlex-3050-AIO:~$ ls
archive.tar  Documents  mca2.txt  nayan      Public  snap
ArduIno     Downloads  mca.txt   os-lab     Saish   Templates
Desktop     mca        Music     Pictures   Shree   Videos
```

FIGURE 12. tar

```
student@student-OptiPlex-3050-AIO:~$ df
Filesystem      1K-blocks      Used Available Use% Mounted on
udev            10132176         0   10132176   0% /dev
tmpfs           2035932         1980    2033952   1% /run
/dev/sda5       959785008 17463048  893493800   2% /
tmpfs           10179652         16   10179636   1% /dev/shm
tmpfs           5120            4       5116   1% /run/lock
tmpfs           10179652         0   10179652   0% /sys/fs/cgroup
/dev/loop1       128            128         0 100% /snap/bare/5
/dev/loop0      65408          65408         0 100% /snap/core20/2571
/dev/loop4      223744         223744         0 100% /snap/gnome-3-34-1804/93
/dev/loop3      224256         224256         0 100% /snap/gnome-3-34-1804/77
/dev/loop2      56832          56832         0 100% /snap/core18/2947
/dev/loop16     12544          12544         0 100% /snap/snap-store/1216
/dev/loop7      354688         354688         0 100% /snap/gnome-3-38-2004/119
/dev/loop17     52096          52096         0 100% /snap/snapd/25202
/dev/loop5      56832          56832         0 100% /snap/core18/2940
/dev/loop8      75776          75776         0 100% /snap/core22/2111
/dev/loop18     50560          50560         0 100% /snap/snapd/24792
/dev/loop9      75776          75776         0 100% /snap/core22/2045
/dev/loop15     13312          13312         0 100% /snap/snap-store/1113
/dev/loop13     83328          83328         0 100% /snap/gtk-common-themes/1534
/dev/loop10     358144         358144         0 100% /snap/gnome-3-38-2004/143
/dev/loop12     517248         517248         0 100% /snap/gnome-42-2204/176
/dev/loop6      65408          65408         0 100% /snap/core20/2599
/dev/loop14     93952          93952         0 100% /snap/gtk-common-themes/1535
/dev/loop11     528512         528512         0 100% /snap/gnome-42-2204/202
/dev/sda1       523248         4        523244   1% /boot/efi
tmpfs           2035928         72    2035856   1% /run/user/1000
```

FIGURE 13. df

```
student@student-OptiPlex-3050-AIO:~$ cd Documents
student@student-OptiPlex-3050-AIO:~/Documents$ du -sh
4.0K .
```

FIGURE 14. du

```
student@student-OptiPlex-3050-AIO:~$ mv mca2.txt /MCA
mv: cannot move 'mca2.txt' to '/MCA': Permission denied
```

FIGURE 15. mv

```
student@student-OptiPlex-3050-AIO:~$ cp mca2.txt /MCA
cp: cannot create regular file '/MCA': Permission denied
```

FIGURE 16. cp

```
student@student-OptiPlex-3050-AIO:~$ ping overleaf.com
PING overleaf.com (34.120.52.64) 56(84) bytes of data:
64 bytes from 64.52.120.34.bc.googleusercontent.com (34.120.52.64): icmp_seq=1 ttl=117 time=3.59 ms
64 bytes from 64.52.120.34.bc.googleusercontent.com (34.120.52.64): icmp_seq=2 ttl=117 time=3.57 ms
^C
--- overleaf.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 3.569/3.581/3.593/0.012 ms
```

FIGURE 17. ping

```
student@student-OptiPlex-3050-AIO:~$ 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
        valid_lft forever preferred_lft forever
2: enp1s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether d8:9e:f3:7c:85:6c brd ff:ff:ff:ff:ff:ff
    inet 172.18.36.104/24 brd 172.18.36.255 scope global dynamic noprefixroute enp1s0
        valid_lft 33621sec preferred_lft 33621sec
    inet6 fe80::49e:e1f7:6f75:e4a8/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: wlp3s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 0c:54:15:1c:91:34 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.126/24 brd 192.168.0.255 scope global dynamic noprefixroute wlp3s0
        valid_lft 3844sec preferred_lft 3844sec
    inet6 fe80::33df:ba2d:199d:f774/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

FIGURE 18. ip/ipconfig

```
student@student-OptiPlex-3050-AIO:~$ ss -tuln
NetId    State   Recv-Q   Send-Q   Local Address:Port   Peer Address:Port   Process
udp      UNCONN  0         0         0.0.0.0:60871        0.0.0.0:*           *
udp      UNCONN  0         0         127.0.0.53%lo:53     0.0.0.0:*           *
udp      UNCONN  0         0         0.0.0.0:51306        0.0.0.0:*           *
udp      UNCONN  0         0         0.0.0.0:5353         0.0.0.0:*           *
udp      UNCONN  0         0         0.0.0.0:42623        0.0.0.0:*           *
udp      UNCONN  0         0         0.0.0.0:59571        0.0.0.0:*           *
udp      UNCONN  0         0         [::]:46504           [::]:*              *
udp      UNCONN  0         0         [::]:5353            [::]:*              *
tcp      LISTEN  0         5         127.0.0.1:631        0.0.0.0:*           *
tcp      LISTEN  0         244        127.0.0.1:5432       0.0.0.0:*           *
tcp      LISTEN  0        4096       127.0.0.53%lo:53     0.0.0.0:*           *
tcp      LISTEN  0         5         [::]:631             [::]:*              *
```

FIGURE 19. netstat/ss

```
student@student-OptiPlex-3050-AIO:~$ nslookup overleaf.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   overleaf.com
Address: 34.120.52.64
```

FIGURE 20. nslookup

```
student@student-OptiPlex-3050-AIO:~$ uptime
 17:26:58 up 3:00, 1 user, load average: 0.68, 0.98, 0.98
student@student-OptiPlex-3050-AIO:~$ whoami
student
student@student-OptiPlex-3050-AIO:~$ env
SHELL=/bin/bash
SESSION_MANAGER=local/student-OptiPlex-3050-AIO:/tmp/.ICE-unix/1660,unix/student-OptiPlex-3050-AIO:/tmp/.ICE-unix/1660
QT_ACCESSIBILITY=1
COLORTERM=truecolor
XDG_CONFIG_DIRS=/etc/xdg/xdg-ubuntu:/etc/xdg
XDG_MENU_PREFIX=gnome-
GNOME_DESKTOP_SESSION_ID=this-is-deprecated
LANGUAGE=en_IN:en
GNOME_SHELL_SESSION_MODE=ubuntu
SSH_AUTH_SOCK=/run/user/1000/keyring/ssh
XMODIFIERS=@xkb:us
DESKTOP_SESSION=ubuntu
SSH_AGENT_PID=1618
GTK_MODULES=gall:atk-bridge
PWD=/home/student
LOGNAME=student
XDG_SESSION_DESKTOP=ubuntu
XDG_SESSION_TYPE=x11
GPG_AGENT_INFO=/run/user/1000/gnupg/s.gpg-agent:0:1
XAUTHORITY=/run/user/1000/gdm/xauthority
GJS_DEBUG_TOPICS=JS ERROR;JS LOG
WINDOWPATH=2
HOME=/home/student
USERNAME=student
IM_CONFIG_PHASE=1
LANG=en_IN
```

FIGURE 21. uptime, whoami,env

```
student@student-OptiPlex-3050-AIO:~$ free -h
             total        used        free      shared  buff/cache   available
Mem:          19Gi         4.3Gi         11Gi        604Mi         3.3Gi         14Gi
Swap:          2.0Gi          0B          2.0Gi

student@student-OptiPlex-3050-AIO:~$ vmstat 1
procs -----memory----- --swap-- -----io----- -system-- -----cpu-----
 r  b  swpd   free   buff   cache   si   so    bi   bo    in   cs  us  sy  td  wa  st
 0   0       0 12361560 120856 3340576    0    0    50    57   415   70  11   2  85   2   0
 0   0       0 12361600 120856 3340972    0    0     0     0    501 1569   2   1  97   0   0
^C
```

FIGURE 22. free, vmstat

```
student@student-OptiPlex-3050-AIO:~$ iostat
Linux 5.15.0-139-generic (student-OptiPlex-3050-AIO) 20/09/25 _x86_64_ (
4 CPU)

avg-cpu:  %user   %nice %system %lowait  %steal   %idle
           11.11    0.04   2.41   1.56    0.00   84.88

Device            tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn
loop0              0.00         0.03         0.00         0.00        349         0
loop1              0.00         0.00         0.00         0.00         17         0
loop10             0.01         0.10         0.00         0.00       1101         0
loop11             0.19         2.33         0.00         0.00      26038         0
loop12             0.00         0.10         0.00         0.00       1074         0
```

FIGURE 23. iostat

```

student@student-OptiPlex-3050-AIO:~$ dmesg
[11163.503098] pcieport 0000:00:1c.6: device [8086:a296] error status/mask=00000001/00002000
[11163.503106] pcieport 0000:00:1c.6: [ 0] RxErr
[11163.605503] pcieport 0000:00:1c.6: AER: Corrected error message received from 0000:00:1c.6
[11163.605526] pcieport 0000:00:1c.6: PCIe Bus Error: severity=Corrected, type=Physical Layer, (Receiver ID)
[11163.605533] pcieport 0000:00:1c.6: device [8086:a296] error status/mask=00000001/00002000
[11163.605540] pcieport 0000:00:1c.6: [ 0] RxErr
[11164.015076] pcieport 0000:00:1c.6: AER: Corrected error message received from 0000:00:1c.6
[11164.015100] pcieport 0000:00:1c.6: PCIe Bus Error: severity=Corrected, type=Physical Layer, (Receiver ID)

```

FIGURE 24. dmesg

```

user@saish-VirtualBox:~$ lsuf
COMMAND  PID  TID TASKCMD  USER  FD  TYPE  DEVIC
E SIZE/OFF
systemd  1    /proc/1/cwd (readlink: Permission denied)  root  cwd  unknown
systemd  1    /proc/1/rtd (readlink: Permission denied)  root  rtd  unknown
systemd  1    /proc/1/root (readlink: Permission denied)  root  txt  unknown
systemd  1    /proc/1/exe (readlink: Permission denied)  root  NOFD
kthreadd 2    /proc/2/cwd (readlink: Permission denied)  root  cwd  unknown
kthreadd 2    /proc/2/rtd (readlink: Permission denied)  root  rtd  unknown
kthreadd 2    /proc/2/root (readlink: Permission denied)  root  txt  unknown
kthreadd 2    /proc/2/exe (readlink: Permission denied)  root  NOFD
rcu_gp   3    /proc/3/fd (opendir: Permission denied)  root  cwd  unknown
rcu_gp   3    /proc/3/cwd (readlink: Permission denied)  root  rtd  unknown
rcu_gp   3    /proc/3/root (readlink: Permission denied)  root  txt  unknown
rcu_gp   3    /proc/3/exe (readlink: Permission denied)  root  NOFD
rcu_gp   3    /proc/3/fd (opendir: Permission denied)  root  cwd  unknown
rcu_par_g 4    /proc/4/cwd (readlink: Permission denied)

```

FIGURE 25. lsuf

```

saish@saish-VirtualBox:~$ passwd saish
Changing password for saish.
Current password:
New password:
Retype new password:
Bad: new and old password are too similar
New password:
Retype new password:
passwd: password updated successfully
saish@saish-VirtualBox:~$ sudo adduser user1
[sudo] password for saish:
Adding user `user1' ...
Adding new group `user1' (1004) ...
Adding new user `user1' (1004) with group `user1' ...
Creating home directory `/home/user1' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for user1
Enter the new value, or press ENTER for the default
Full Name []: User1
Room Number []: -
Work Phone []: -
Home Phone []: -
Other []: -
Is the information correct? [Y/n] y
saish@saish-VirtualBox:~$ sudo deluser user1
Removing user `user1' ...
Warning: group `user1' has no more members.
Done.
saish@saish-VirtualBox:~$

```

FIGURE 26. passwd, adduser, deluser, sudo



```
saish@saish-VirtualBox:~$ awk '{print $1}' file.txt
Hello
saish@saish-VirtualBox:~$ cut -d ':' -f1 /etc/passwd
root
daemon
bin
sys
sync
games
man
lp
mail
news
uucp
proxy
www-data
backup
list
irc
gnats
nobody
```

```
saish@saish-VirtualBox:~$ sort file.txt
Hello i am a student of vjti college
saish@saish-VirtualBox:~$ grep 'vjti' file.txt
Hello i am a student of vjti college
saish@saish-VirtualBox:~$ wc -l file.txt
1 file.txt
saish@saish-VirtualBox:~$ paste file.txt file1.txt
Hello i am a student of vjti college      This is MCA department
```

```
saish@saish-VirtualBox:~$ head -n 10 file.txt
Hello i am a student of vjti college
saish@saish-VirtualBox:~$ tail -n 2 file.txt
Hello i am a student of vjti college
```

```
saish@saish-VirtualBox:~$ diff file.txt file1.txt
1c1
< Hello i am a student of vjti college
---
> This is MCA department
saish@saish-VirtualBox:~$ cmp file.txt file1.txt
file.txt file1.txt differ: byte 1, line 1
saish@saish-VirtualBox:~$ comm file.txt file1.txt
Hello i am a student of vjti college
This is MCA department
saish@saish-VirtualBox:~$ export
declare -x COLORTERM="truecolor"
declare -x DBUS_SESSION_BUS_ADDRESS="unix:path=/run/user/1000/bus"
declare -x DESKTOP_SESSION="ubuntu"
declare -x DISPLAY=:11
declare -x GNOME_SESSION="ubuntu"
declare -x GJS_DEBUG_OUTPUT="stderr"
declare -x GJS_DEBUG_TOPICS="JS ERROR:JS LOG"
declare -x GNOME_DESKTOP_SESSION_ID="this-is-deprecated"
declare -x GNOME_SHELL_SESSION_MODE="ubuntu"
declare -x GNOME_TERMINAL_SCREEN="/org/gnome/Terminal/screen/d6e678fe_c351_4184_823e_199bb88dfce"
declare -x GNOME_TERMINAL_SERVICE="org.gnome.Terminal"
declare -x GPG_AGENT_INFO="/run/user/1000/gnupg/gpg-agent:0:1"
declare -x GTK_MODULES="gall:atk-bridge"
declare -x HOME="/home/saish"
declare -x INVOCATION_PHASE=""
declare -x INVOGATION_ID="19bb2cb6bee4c6bb7d4fd0a2e2a4c20"
declare -x JOURNAL_STREAM="8:75289"
declare -x LANG="en_IN"
declare -x LANGUAGE="en_IN:en"
declare -x LESSCLOSE="/usr/bin/lesspipe %s %s"
declare -x LESSOPEN="| /usr/bin/lesspipe %s"
declare -x LOGNAME="saish"
declare -x LS_COLORS="rs=0:di=01;34:ln=01;36:mh=00:pl=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=00:su=37;41:sg=00;43:ca=00;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.*?=01;31*.tgz=01;31*.arc=01;31*.arj=01;31*.taz=01;31*.lha=01;31*.lz4=01;31*.lzh=01;31*.lza=01;31*.tlz=01;31*.txz=01;31*.tzo=01;31*.tzz=01;31".
```

FIGURE 31. diff,cmp,comm,export

```
saish@saish-VirtualBox:~$ cal
  September 2025
Su Mo Tu We Th Fr Sa
    1  2  3  4  5  6
  7  8  9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30

saish@saish-VirtualBox:~$ dd
^C0+0 records in
0+0 records out
0 bytes copied, 5.86284 s, 0.0 kB/s
```

FIGURE 32. cal,dd