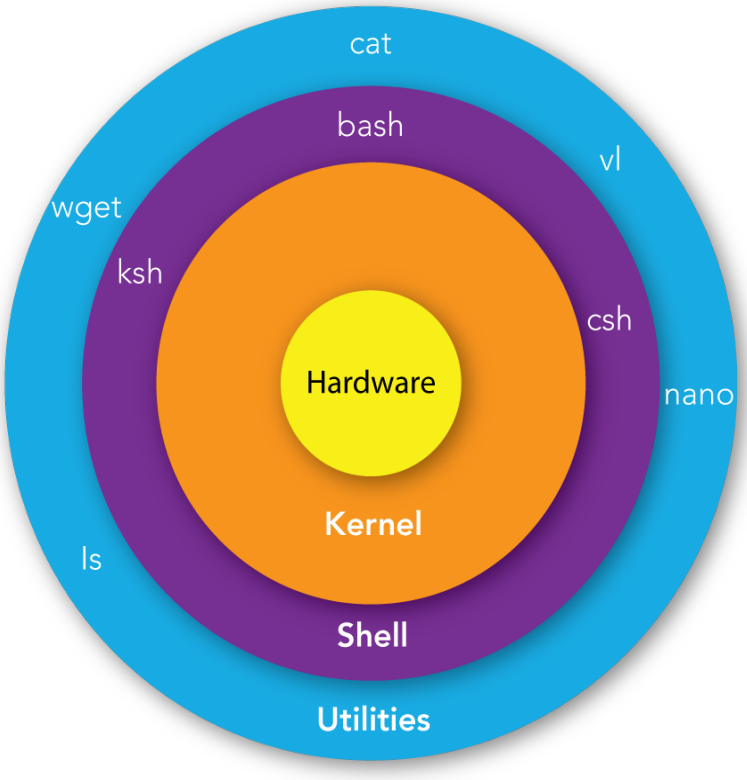
# 1. Basic linux commands

## What is shell?

**A shell** is a special user program that provides an interface for the user to use operating system services. Shell accepts **human-readable commands** from users and converts them into something which **the kernel can understand**. It is a command language interpreter that executes commands read from input devices such as keyboards or from files. The shell gets started when the user logs in or starts the terminal.




Shell can be accessed by users using a command line interface. A special program called Terminal in Linux/macOS, or Command Prompt in Windows OS is provided to type in the human-readable commands such as “cat”, “ls” etc

## Linux Commands

1. `touch` create new file
2. `ls` list contents of directory

```
$ touch new.txt
```

```
$ ls
new.txt
```

3. `pwd` print working directory

```
$ pwd
/home/om_d/college/CC
```

4. `mkdir` make directory
5. `cd` change directory

```
$ mkdir viit

$ ls
new.txt viit

$ cd viit

$ pwd
/home/om_d/college/CC/viit
```

6. `echo` print message to shell

```
$ echo "hellllllo"
hellllllo
```

7. `cmd > file.txt` pass output of cmd in new created file.txt
8. `cmd >> file.txt` append output of cmd in file.txt
9. `cat` print contents of a file

```
$ echo "hellllo world" > file.txt

$ ls
file.txt

$ cat file.txt
hellllo world
```

10. `cp` copy file/directory
11. `mv` move file/directory or rename
12. `rm` remove file/directory

```
$ cp file.txt copied_file.txt

$ ls
copied_file.txt file.txt

$ mv file.txt renamed.txt

$ ls
copied_file.txt renamed.txt

$ rm renamed.txt

$ ls
copied_file.txt
```

13. `$var` return value of var
14. `read` read input from user

```
$ read var
123

$ echo $var is my input
123 is my input
```

15. `man` see manual of a command

```
$ man ls

NAME
       ls - list directory contents

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

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

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

       -a, --all
```

16. `file` checks files type

```
$ file copied_file.txt
copied_file.txt: Unicode text, UTF-8 text
```

17. `zip` creates a zip archive
18. `unzip` extracts zip archive

```
$ cd ..

$ zip viit.zip viit/*

$ ls
new.txt viit.zip viit

$ unzip viit.zip
```

19. `tar` Archives files without compression in a TAR format
20. `grep` searches string within a file and returns lines containing string

```
$ echo this that >> new.file

$ echo his hat >> new.file

$ echo tis that >> new.file

$ cat new.file
this that
his hat
tis tat

$ grep hat new.file
this that
his hat
```

21. `sed` edits strings in a file

```
# we replace mango with apple
$ echo "I like mango" | sed 's/mango/apple/g'
I like apple
```

22. `head` prints first n (default 10) lines in a file

```
# first 10 lines of this README.md file
$ head README.md
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gets started when the user logs in or starts the terminal.

![Shells|400x400](https://cdn.mindmajix.com/blog/images/linux-0203-1919.png)

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program called Terminal in Linux/macOS, or Command Prompt in Windows OS is
provided to type in the human-readable commands such as “cat”, “ls” etc

#### Linux Commands
```

23. `tail` prints last n (default 10) lines in a file

```
$ tail README.md
# last 10 lines of this file
    2 root      20   0       0      0      0 S   0.0   0.0   0:00.01
kthreadd
    3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
    4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
rcu_par+


30. 'uname' Print system information
bash
$ uname -a
Linux deblinu 6.1.0-18-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.76-1 (2024-
02-01) x86_64 GNU/Linux
```

24. `sort` reorders files content

```
$ cat new.txt
abc abc
this that
his this
this is my this
```

```
# sorts contents of new.txt alphabetically
$ sort new.txt
abc abc
his this
this is my this
this that
```

25. `locate` locates file in system and prints all paths

```
# locate all the occurances of .bashrc
$ locate .bashrc
/etc/bash.bashrc
/etc/skel/.bashrc
/home/om_d/.bashrc
/home/om_d/.config/emacs/.local/straight/repos/all-the-
icons.el/test/example-dir/.bashrc
/home/om_d/.vim/undodir/%home%om_d%.bashrc
/usr/share/base-files/dot.bashrc
/usr/share/doc/adduser/examples/adduser.local.conf.examples/bash.bashrc
/usr/share/doc/adduser/examples/adduser.local.conf.examples/skel/dot.bashrc
```

26. `find` outputs a file or folders location, prints all the matching patterns

```
# print all path of file matching with pattern '*.html'
$ find ~/Codes/web/ -name '*.html'
/home/om_d/Codes/web/test-site/index.html
/home/om_d/Codes/web/portfolio/index.html
/home/om_d/Codes/web/birdwaching/index.html
```

27. `chmod` change file permission

```
$ cd viit

$ ls -l
.rw-r--r-- om_d om_d 0 B Fri Jan 19 11:22:32 2024 in_viit_after_touch.txt
.rw-r--r-- om_d om_d 0 B Fri Apr  5 12:45:48 2024 script.sh

$ chmod 744 script.sh
.rw-r--r-- om_d om_d 0 B Fri Jan 19 11:22:32 2024 in_viit_after_touch.txt
.rwxr--r-- om_d om_d 0 B Fri Apr  5 12:45:48 2024 script.sh
# script.sh has permissions changed from rw- to rwx for this user
```

28. 'ps' show running processes

```
$ ps
    PID TTY          TIME CMD
  12655 pts/7    00:00:00 bash
  13551 pts/7    00:00:00 ps

# running top in background
$ top &

$ ps
    PID TTY          TIME CMD
  12655 pts/7    00:00:00 bash
  13596 pts/7    00:00:00 top
  13602 pts/7    00:00:00 ps
```

29. 'top' Monitor system processes in real-time.

```
$ top

%Cpu(s): 1.9 us, 0.4 sy, 0.0 ni, 97.7 id,0.0 wa, 0.0 hi, 0.0 si,0.0 st
MiB Mem : 15736.5 total,  8088.7 free, 4177.5 used,  4596.8 buff/cache
MiB Swap:   977.0 total,   977.0 free,    0.0 used, 11559.0 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
 1701 om_d      20   0  949768 140452  73644 S   5.0   0.9   0:23.12 kitty
11049 om_d      20   0   50908  46380   9248 S   4.3   0.3   0:34.36 nvim
 1284 om_d      20   0 2171304 191944 126208 S   3.0   1.2   3:01.30
kwin_wa+
 2345 om_d      20   0   18.9g 330912  97800 S   3.0   2.1   4:12.58
WebExte+
 2165 om_d      20   0 3949992 529892 224328 S   2.0   3.3  16:34.84
firefox+
 3157 om_d      20   0   45724  40928   3088 S   1.3   0.3   0:09.50 tmux:
s+
   41 root      20   0       0      0      0 S   0.3   0.0   0:00.08
ksoftir+
 1920 om_d      20   0  473556  18452  12012 S   0.3   0.1   0:00.61 xdg-
des+
 8937 root       0 -20       0      0      0 I   0.3   0.0   0:02.74
kworker+
11039 om_d      20   0   13764   8140   6776 S   0.3   0.1   0:01.48 nvim
12445 root      20   0       0      0      0 I   0.3   0.0   0:00.21
kworker+
12611 root      20   0       0      0      0 I   0.3   0.0   0:01.75
```

```
kworker+
13699 om_d      20   0   11628   5096   3196 R   0.3   0.0   0:00.02 top
    1 root      20   0  168188  12924   9268 S   0.0   0.1   0:00.89 systemd
    2 root      20   0       0      0      0 S   0.0   0.0   0:00.01
kthreadd
    3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
    4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
rcu_par+
```

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Linux deblinu 6.1.0-18-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.76-1 (2024-
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```