

=====BY Khalid Madian=====

1 - to list files in directory (ls)

```
khalid@khalid-Victus:~$ ls
Abolftoh file2 hosts odoo18 Templates
Desktop file3 Music Pictures Videos
Documents file4 odoo16 Public
```

2- to list all files and hidden its start with dot (la) or (ls -a)

```
khalid@khalid-Victus:~$ la
Abolftoh .gitconfig .pki
.bash_history .gnupg .profile
.bash_logout .gphoto .psensor
.bashrc hosts .psql_history
.cache .hosts.swp Public
.config .java snap
.dbclient .lessht .ssh
```

3- to list all files hidden and type of files and (ls -alF)

```
khalid@khalid-Victus:~$ ls -alF
total 228
drwxr-x--x 31 khalid khalid 4096  22  17:55 ./
drwxr-xr-x  3 root root  4096  26  21:43 ../
drwxrwxr-x  5 khalid khalid 4096  31  05:05 Abolftoh/
-rw-----  1 khalid khalid 47896 23  05:55 .bash_history
-rw-r--r--  1 khalid khalid  220  26  21:43 .bash_logout
-rw-r--r--  1 khalid khalid  3771 26  21:43 .bashrc
drwx----- 27 khalid khalid  4096  8  18:03 .cache/
drwx----- 28 khalid khalid  4096 20  23:54 .config/
```

4- to clear al command in terminal tab (clear)

5 - to get documintion about about command (-help)

```
khalid@khalid-Victus:~$ ls --help
Usage: ls [OPTION]... [FILE]...
List information about the FILES (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.
```

6 - to get documintion about about command but not pop- uler(man)

7- to get the current path or location (pwd)

```
khalid@khalid-Victus:~$ pwd
/home/khalid
```

8- to get the type of command or location of this app or script “all command is script or app”(type)

```
khalid@khalid-Victus:~$ type -a ls
ls is aliased to `ls --color=auto'
ls is /usr/bin/ls
ls is /bin/ls
```

9 - to know th current user is connect (whoami)

```
khalid@khalid-Victus:~$ whoami
khalid
```

10 - to know the current i connect (ip address)

```
khalid@khalid-Victus:~$ ip address
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: eno1: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state DOWN group default
```

```
link/ether 24:6a:0e:5c:c8:6b brd ff:ff:ff:ff:ff:ff
altname enp3s0
3: wlo1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
link/ether 98:5f:41:b6:0e:22 brd ff:ff:ff:ff:ff:ff
```

11 - to know the current host (hostname)

```
khalid@khalid-Victus:~$ hostname
khalid-Victus
```

12 - to create directory (mkdir)(112233)

13 - to print in terminal (echo “hello khalid sadd”)

```
hello khalid sadd
```

14 - to delete file (rm)

15 - to remove directory (rmdir) or (rm -r)

16 - to create text file or change modification time (touch)

17 - to create text file but more easy and popular(nano)

18 - to create variable and print it (echo with dollar sign)

```
var=20
echo $var
20
```

19 - to create several files in same time or make another operation ({}, [])

```
touch file{2..5}
file2, file3, file4, file5
rm file{1..10}
```

20 - you can do summation as variable(`()`)`bashvar3=[1 + 3]`

21 - to get all variable in your system (set)

```
## 22 - to get all variable in your system with filtertion (set | grep var ) get variable st
```bash
khalid@khalid-Victus:~$ set | grep var
BASHOPTS=checkwinsize:cmdhist:complete_fullquote:expand_aliases:extglob:extquote:force_ign
XDG_DATA_DIRS=/usr/share/ubuntu-xorg:/usr/share/gnome:/usr/local/share/:/usr/share/:/var/lib
var1=50
var3=50
var4=55
```

---

23 - to know the current simple procces (ps)

```
khalid@khalid-Victus:~$ ps
PID TTY TIME CMD
4906 pts/1 00:00:00 bash
6254 pts/1 00:00:00 ps
```

---

24 - to define variable (declare)

```
declare -i num1 ---> -i from integer
declare -i num2
num1=4
num2=$num1*5
echo $num2
20
```

---

## 25 - exprition (expr)

```
khalid@khalid-Victus:~$ expr 1 + 3
4
khalid@khalid-Victus:~$ expr 3 * 4
12
khalid@khalid-Victus:~$ expr 1 = 3
0
```

---

## 26 to store output in variable to use it (>) “command substitution”

```
khalid@khalid-Victus:~$ ls -l ~ > output
khalid@khalid-Victus:~$ cat output
cat: output: No such file or directory
khalid@khalid-Victus:~$ cat output
total 60
drwxrwxr-x 5 khalid khalid 4096 31 05:05 Abolftoh
drwxr-xr-x 2 khalid khalid 4096 27 15:06 Desktop
drwxr-xr-x 2 khalid khalid 4096 27 00:47 Documents
drwxr-xrwx 5 khalid khalid 12288 27 23:28 Downloads
drwxr-xr-x 2 khalid khalid 4096 27 00:47 Music
drwxrwxr-x 8 khalid khalid 4096 14 14:52 odoo16

khalid@khalid-Victus:~$ echo $(date) > today
khalid@khalid-Victus:~$ cat today
28 2025 , + 03 01:55:55
```

## 26 to store output but its error in variable to use it (2>) “command substitution”

```
khalid@khalid-Victus:~$ ls /err
ls: cannot access '/err': No such file or directory
khalid@khalid-Victus:~$ ls /err 2> error
khalid@khalid-Victus:~$ cat error
ls: cannot access '/err': No such file or directory
```

---

## 27 - to search in file about text (grep)

```
khalid@khalid-Victus:~$ cat /etc/hosts
127.0.0.1 localhost
127.0.1.1 khalid-Victus
The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
```

```
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
khalid@khalid-Victus:~$ grep ff00 /etc/hosts
ff00::0 ip6-mcastprefix
```

---

## 27 - to search in file about text but give the count of this text repeated (grep -c)

```
khalid@khalid-Victus:~$ grep -c localhost /etc/hosts
2 -> give you two
khalid@khalid-Victus:~$ grep localhost /etc/hosts
127.0.0.1 localhost
::1 ip6-localhost ip6-loopback
```

---

## 28 - to filter text file and display only the first fifth lines (head) -> can use tail for last lines

```
khalid@khalid-Victus:~$ head -n 5 /var/log/syslog
Sep 28 00:00:30 khalid-Victus systemd[1]: rsyslog.service: Sent signal SIGHUP to main process.
Sep 28 00:00:30 khalid-Victus systemd[1]: logrotate.service: Deactivated successfully.
Sep 28 00:00:30 khalid-Victus systemd[1]: Finished Rotate log files.
Sep 28 00:02:42 khalid-Victus kernel: [289219.528406] audit: type=1400 audit(1759006962.271:100): name="/proc/3199/smmaps_rollup" pid=3199 comm="MemoryInfra" requested_mask="r" denied_mask="r"
Sep 28 00:02:42 khalid-Victus kernel: [289219.530690] audit: type=1400 audit(1759006962.273:100): name="/proc/3199/smmaps_rollup" pid=3199 comm="MemoryInfra" requested_mask="r" denied_mask="r"
```

---

## 29 - this will give you the last fifth lines and will count the words in these lines ( | )

```
khalid@khalid-Victus:~$ head -n 5 /var/log/syslog | wc -w
100
```

---

## 30 - this will transform text (tr)

```
khalid@khalid-Victus:~$ echo "this iss 123 ?" | tr -d 's'
thi i 123 ? --> deleted character 's' from the text

khalid@khalid-Victus:~$ echo "this iss 123 ?" | tr [i] [I]
thIs Iss 123 ? --> change all small i to capital I
```

---

### 31 - transform with squiz (tr -s)

```
khalid@khalid-Victus:~$ echo "this iss 123 ?" | tr -s 's'
this is 123 ? --> change double ss to single s with squiz
```

---

### 31 - transform with squiz (tr [] [])

```
khalid@khalid-Victus:~$ echo "this iss 123 ?" | tr [a-z] [A-Z]
THIS ISS 123 ? --> change all character small to capital
***** another way *****
khalid@khalid-Victus:~$ echo "this is my ball 123" | tr [:lower:] [:upper:]
THIS IS MY BALL 123
```

---

### 32 - delete al digits in text with transform (trs [:digit:])

```
khalid@khalid-Victus:~$ echo "this iss 123 ?" | tr -d [:digit:]
this iss ?
```

---

### 33- to cut full text or sentence (cut)

```
khalid@khalid-Victus:~$ echo "this is str ing of " | cut -c 1
t --> give you the first character
***** to get some characters *****
khalid@khalid-Victus:~$ echo "this is string of " | cut -c 1-10
this is st
```

---

### 34 - to display all users in linux (cat /etc/passwd)

```
khalid@khalid-Victus:~$ cat /etc/passwd | grep khalid
khalid:x:1000:1000:khalid,,,:/home/khalid:/bin/bash
***** root user *****
khalid@khalid-Victus:~$ cat /etc/passwd | grep root
root:x:0:0:root:/root:/bin/bash
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
```

---

### 35 - to show users but with root access only (cat /etc/shadow)

```
root@khalid-Victus:~# cat /etc/shadow
root:yj9T$u5zoC4G8aGTAerkEETAno1$GrdrziqByVVQR88Pgzf0Y8V2.AP2rXqjCCiMYj78v0.:20359:0:99999:
daemon*:19977:0:99999:7:::
bin*:19977:0:99999:7:::
sys*:19977:0:99999:7:::
sync*:19977:0:99999:7:::
games*:19977:0:99999:7:::
man*:19977:0:99999:7:::
lp*:19977:0:99999:7:::
mail*:19977:0:99999:7:::
news*:19977:0:99999:7:::
uucp*:19977:0:99999:7:::
proxy*:19977:0:99999:7:::
www-data*:19977:0:99999:7:::
backup*:19977:0:99999:7:::
list*:19977:0:99999:7:::
irc*:19977:0:99999:7:
```

---

### 36 - to get the groups the current user in it (groups)

```
khalid@khalid-Victus:~$ groups
khalid adm cdrom sudo dip plugdev lpadmin lxd sambashare
```

---

### 37 - to add new group (groupadd)

```
khalid@khalid-Victus:~$ sudo groupadd group1
khalid@khalid-Victus:~$ cat /etc/group | grep group1
group1:x:1001:
```

---

### 38 - to delete group (groupdel)

```
khalid@khalid-Victus:~$ sudo groupdel group1
```

---

## File Management

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### 39 - to know information about file (stat)

```
khalid@khalid-Victus:~$ stat original
File: original
Size: 12 Blocks: 8 IO Block: 4096 regular file
Device: 10306h/66310d Inode: 12165090 Links: 1
Access: (0664/-rw-rw-r--) Uid: (1000/ khalid) Gid: (1000/ khalid)
Access: 2025-09-29 00:15:21.140330679 +0300
Modify: 2025-09-29 00:15:28.848308229 +0300
Change: 2025-09-29 00:15:28.848308229 +0300
Birth: 2025-09-29 00:15:08.314370074 +0300
```

---

### 40 - to create hard link from file like original file (ln original symlink) its same file and content and modified

but if you delete the original file will not delete the hard link file

```
khalid@khalid-Victus:~$ ls -il ori* *link
12165090 -rw-rw-r-- 2 khalid khalid 12 29 00:15 hardlink
12165090 -rw-rw-r-- 2 khalid khalid 12 29 00:15 original
```

---

### 41 - to create soft link from file like shortcut to call original file (ln -s original symlink)

```
khalid@khalid-Victus:~$ ls -il ori* *link
12165090 -rw-rw-r-- 2 khalid khalid 12 29 00:15 hardlink
12165090 -rw-rw-r-- 2 khalid khalid 12 29 00:15 original
12165098 lrwxrwxrwx 1 khalid khalid 8 29 00:20 symlink -> original
```

symlink like pointer and if you delete original file will delete symlink

---

### 42 - to connect in root user (su -)

```
khalid@khalid-Victus:~$ su -
Password:
root@khalid-Victus:~#
```

---

**43 - if you to try connect root user but its refuse you if its your first tim access (sudo passwd root)**

```
khalid@khalid-Victus:~$ sudo passwd root
[sudo] password for khalid:
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
```

---

**44 - to know where th command or file or script (which)**

```
khalid@khalid-Victus:~$ which zip
/usr/bin/zip
khalid@khalid-Victus:~$ which groupadd
/usr/sbin/groupadd
```

---

**45 - to know the version of linux kernel in your device**

```
khalid@khalid-Victus:/boot$ uname -r
6.8.0-83-generic
```

---

**46 - how to know the type of something in directory**

its begin wit (-) so its (file)

```
-rw-r----- 1 syslog adm 59M 4 04:21 syslog
```

its begin wit (d) so its (file)

```
drwxr-xr-x 2 root root 4.0K 27 2024 openvpn
```

---

**47 - to know the type of file (file)**

```
khalid@khalid-Victus:~$ touch newfile
khalid@khalid-Victus:~$ file newfile
newfile: empty
```

its still dosn't contain any data

\*\*\*\*\*but\*\*\*\*\*

```
khalid@khalid-Victus:~$ echo "khalid saad" > newfile
```

```
khalid@khalid-Victus:~$ file newfile
newfile: ASCII text --> give me its ascii text
```

---

48 - to show the file like pages and progress with arrow keys(more)

to show the file like pages and progress with arrow keys(less)

---

49 - the types of files editor(head, tail, more, les, cat, none, vip)

---

50 - to review files like tree or list(tree)

```
root@khalid-Victus:/usr/bin# tree
[
 aa-enabled
 aa-exec
 aa-features-abi
 addpart
```

---

51 - to find a file in another directory not should be direct child with his full name or without (find)

```
root@khalid-Victus:/var# find . -type f -name d*.log --> f for file (d*.log)--> mean start v
./log/dpkg.log --> the result search
```

---

52 - get any file its name start with file and the result execute the line after -I (xargs)

The result put in ->{}

```
root@khalid-Victus:~# touch file{1,2,3}
root@khalid-Victus:~# ls file?
file1 file2 file3
root@khalid-Victus:~# ls file? | xargs -I {} mkdir {}.d
root@khalid-Victus:~# ls
file1 file1.d file2 file2.d file3 file3.d snap
```

---

### 53 - to collect files or file in one file not compress just collect (tar) this's with root

```
root@khalid-Victus:/var# tar -cvf log.tar log/
```

c -> for create f -> for file name v -> verbose (to display operation and files on the screen) log/ -> back slash to tell the bash its directory npt file

```
root@khalid-Victus:/var# ls -dhl log*
drwxrwxr-x 16 root syslog 4.0K 9 00:00 log
-rw-r--r-- 1 root root 2.2G 10 00:24 log.tar
```

---

### 54 - to review the content of ar file without textract

```
root@khalid-Victus:/var# tar -tf log.tar
log/
log/apache2/
log/apache2/error.log.3.gz
log/apache2/error.log.1
log/apache2/error.log.13.gz
log/apache2/access.log.1
log/apache2/error.log.4.gz
```

---

### 55 - to compress file or zip file (gzip)

```
root@khalid-Victus:/var/log# gzip boot.log
```

the result

```
boot.log.gz
```

---

### 56 - to compress file or zip file but with create new incessant without change in original file (gzip -k)

```
root@khalid-Victus:/var/log# gzip -k boot.log
root@khalid-Victus:/var/log# ls -lh boot*
-rw----- 1 root root 29 9 00:00 boot.log.gz
```

---

### 57 - to compress file or unzip fil (gzip -d)

```
root@khalid-Victus:/var/log# gzip -d boot.log.gz
root@khalid-Victus:/var/log# ls -lh boot*
-rw----- 1 root root 0 9 00:00 boot.log
```

---

### 58 - to archive the file and compress in the same time (tar -czvf (file name) (the destination file/))

```
root@khalid-Victus:/var# tar -czvf log.tar.gz log/
root@khalid-Victus:/var# ls -lhd log*
drwxrwxr-x 16 root syslog 4.0K 10 01:02 log
-rw-r--r-- 1 root root 2.2G 10 00:24 log.tar
-rw-r--r-- 1 root root 234M 10 01:14 log.tar.gz
```

---

### 59 - to unarchive the file and compress in the same time (tar -xzvf (file name) location)

```
root@khalid-Victus:/var# tar -xzvf log.tar.gz log/
```

---

### 60 - to know the type of file

```
root@khalid-Victus:/var# file log.tar.gz
log.tar.gz: gzip compressed data, from Unix, original size modulo 2^32 2335201280
```

---

### 61 - to rename the file name (mv)

```
root@khalid-Victus:/var# mv log.tar.gz log.tgz
root@khalid-Victus:/var# ls -lhd log*
-rw-r--r-- 1 root root 234M 10 01:14 log.tgz
root@khalid-Victus:/var# file log.tgz
log.tgz: gzip compressed data, from Unix, original size modulo 2^32 2335201280
```

---

### 62 - file owners and permissions

when you create file its will be have default owner for thr user have created it

```
khalid@khalid-Victus:~$ touch somefile
khalid@khalid-Victus:~$ ls -l | grep somefile
-rw-rw-r-- 1 khalid khalid 0 10 02:44 somefile
```

here in this example this file have owner khalid and khalid have primary group khalid too if you want to change the khalid group you can change it and will display in the screen

---

### 63 - to add user (useradd)

```
sudo useradd user1 -m -s /bin/bash
```

-m /bin/bash -> Creates the user's home directory -s /bin/bash -> Sets Bash as the user's default shell after that you should change the password to can login

---

### 64 - to add user (userdel)

```
khalid@khalid-Victus:/home$ sudo userdel -r user1
```

r -> to remove from home directory (/home/username)

---

### 65 - to change the owner of the file (chown)

```
user1@khalid-Victus:/tmp/dir$ sudo chown user1 file1
-rw-rw-r-- 1 user1 khalid 10 10 02:55 file1
```

### 66 - to change the owner and group of the file (chown user1:user1)

```
user1@khalid-Victus:/tmp/dir$ sudo chown user1 user1 file1
-rw-rw-r-- 1 user1 user1 10 10 02:55 file1
```

### 67 - to change the group of the file (chown :user1)

```
user1@khalid-Victus:/tmp/dir$ sudo chown :user1 file1
-rw-rw-r-- 1 khalid user1 10 10 02:55 file1
```

---

## 68 - to change the group of the file (chgrp admins)

```
user1@khalid-Victus:/tmp/dir$ sudo chown :user1 file1
-rw-rw-r-- 1 user1 admin 10 10 02:55 file1
```

---

## 69 - to change the mode of file or directory (chmod)

we have three types ( owner user \*\* group \*\*\*\* others ) before change without anything -> \*\*

```
khalid@khalid-Victus:/tmp/dir$ ls -l
total 4
-rw-rw-r-- 1 khalid khalid 10 10 02:55 file1
sudo chmod u=rw, g=r, o-r file1 --> o-r (-) mines mean (others) have permission read i dont
khalid@khalid-Victus:/tmp/dir$ sudo chmod u=rw,g=r,o-r file1
khalid@khalid-Victus:/tmp/dir$ ls -l
total 4
-rw-r----- 1 khalid khalid 10 10 02:55 file1
```

access with anther user

```
user1@khalid-Victus:/tmp/dir$ cat file1
cat: file1: Permission denied
khalid@khalid-Victus:/tmp/dir$ sudo chmod o+r file1
user1@khalid-Victus:/tmp/dir$ cat file1
some text
```

---

## 70 - shortcut in permission

```
khalid@khalid-Victus:/tmp/dir$ sudo chmod ug+x file1
khalid@khalid-Victus:/tmp/dir$ ls -l
total 4
-rwxr-xr-- 1 khalid khalid 10 10 02:55 file1
```

---

## 71 - in permission you can numerical as shortcut

4 --> READ  
2 --> WRITE  
1 --> EXECUTE

( 6 4 4 ) owner user -> read + write groups -> read others -> read

```
khalid@khalid-Victus:/tmp/dir$ chmod 644 file1
khalid@khalid-Victus:/tmp/dir$ ls -l
```

```
total 4
-rw-r--r-- 1 khalid khalid 10 10 02:55 file1
```

---

**72 - if you want to give one users in others but not all and not owner user(getfacl)**

( get file access control list )

```
khalid@khalid-Victus:/tmp/dir$ getfacl file2
file: file2
owner: khalid
group: khalid
user::rw-
group::r--
other::r--
```

---

**73 - if you want to give one users in others but not all and not owner user(setfacl)**

( set file access control list )

```
khalid@khalid-Victus:/tmp/dir$ setfacl -m u:user1:r file2
khalid@khalid-Victus:/tmp/dir$ getfacl file2
file: file2
owner: khalid
group: khalid
user::rw-
user:user1:r--
group::r--
mask::r--
other::r--
khalid@khalid-Victus:/tmp/dir$ ls -l
total 8
-rw-r--r-- 1 khalid khalid 10 10 02:55 file1
-rw-r--r--+ 1 khalid khalid 10 10 05:04 file2
```

(+) we have plus sign in file2 (special permission)

---

**74-1 the process is running in the system in simple way (ps)**

```
khalid@khalid-Victus:~$ ps
PID TTY TIME CMD
```



```
60461 pts/2 00:00:00 bash
60492 pts/2 00:00:00 ps\
```

## 74-2 - to use easy shell its name fish for beginner(fish)

```
khalid@khalid-Victus:~$ sudo apt install fish
khalid@khalid-Victus:~$ fish
khalid@khalid-Victus ~-> ps
PID TTY TIME CMD
26429 pts/6 00:00:00 bash
27896 pts/6 00:00:00 fish
28028 pts/6 00:00:00 ps
```

\*\*\* can we see its running

---

## 75 - the all process is running in the system (ps -e)

the first process running is -> systemd

```
khalid@khalid-Victus:~$ ps -e
PID TTY TIME CMD
1 ? 00:00:03 systemd
2 ? 00:00:00 kthreadd
3 ? 00:00:00 pool_workqueue_release
4 ? 00:00:00 kworker/R-rcu_g
5 ? 00:00:00 kworker/R-rcu_p
6 ? 00:00:00 kworker/R-slub_
7 ? 00:00:00 kworker/R-netns
9 ? 00:00:00 kworker/0:0H-events_highpri
```

---

## 76 - to show the process tree with parent

```
khalid@khalid-Victus:~$ pstree
systemd ModemManager 2*[{ModemManager}]
 NetworkManager 2*[{NetworkManager}]
 accounts-daemon 2*[{accounts-daemon}]
 acpid
 apache2 2*[apache2 26*[{apache2}]]
 avahi-daemon avahi-daemon
 bluetoothd
 colord 2*[{colord}]
 cron
 cups-browsed 2*[{cups-browsed}]
 cupsd
```

```
dbus-daemon
fwupd 4*[{fwupd}]
gdm3 gdm-session-wor gdm-x-session Xorg 41*[{Xorg}]
gnome-session-b 2*[{gnome-}
```

---

77- to show the proces running with external ui (htop)

---

78 - to make the process sleep for sometime (sleep (the time))

---

79 - the types of killing process by id (kill)

```
kill -SIGHUP --> -1 , -SIGINT --> -2 , SIGTERM -->-15 , SIGKILL--> -9 PID (Process ID)
```

example

```
kill -9 $(sudo lsof -t -I:8069)
```

---

80 - to kill all process with the same name (killall)

---

## package Management

DEP

```
<package_name>_<version>_<arch>.deb
```

---

81 - to know the packages in your operating system (dpkg -l)

```
khalid@khalid-Victus:~$ dpkg -l
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name Version >
+++=====
ii accountsservice 22.07.5-2ubuntu1.5 >
```

```
ii acl 2.3.1-1 >
ii acpi-support 0.144 >
ii acpid 1:2.0.33-1ubuntu1 >
ii adduser 3.118ubu
```

---

## 82 - to know the packages data with name (dpkg -P)

```
khalid@khalid-Victus:~$ dpkg -p bash
Package: bash
Essential: yes
Priority: required
Section: shells
Installed-Size: 1864
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Architecture: amd64
Multi-Arch: foreign
.....
```

---

## 83 - to download the package (wget)

```
wget http://kr.archive.ubuntu.com/ubuntu/pool/universe/n/nsnake/nsnake_3.0.1-2.1_amd64.deb
```

---

## 84 - to know location of package where downloaded (dpkg -L)

```
dpkg -L nsnake
```

---

## 85-1- to install a .deb package manually on Debian-based systems like Ubuntu(dpkg -i )

```
sudo --> gives you admin (root) permissions.
dpkg --> the Debian package manager.
-i --> means "install".
package.deb --> the file you want to install.
```

## 85-2- to uninstall package (dpkg -r )

```
khalid@khalid-Victus:~$ sudo dpkg -r nsnae
(Reading database ... 256742 files and directories currently installed.)
Removing nsnae (3.0.1-2.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
```

---

## 86 - you can install with apt (APT)

```
khalid@khalid-Victus:~$ sudo apt install nsnae
Reading package lists... Done
Building dependency tree... Done
```

---

## 87 - check the version of packages you have and the repo of location you installed from where and tell you ( aptd update )

### Example

```
khalid@khalid-Victus:~$ dpkg -p bash
Package: bash
Essential: yes
Priority: required
Section: shells
Installed-Size: 1864
Origin: Ubuntu
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Architecture: amd64
Multi-Arch: foreign
Version: 5.1-6ubuntu1 --> when you run (sudo apt update) will take this date like version of
installed and compare it with this package text file in website
```

---

## 88 - to know the size of package or the word of count (wc)

```
khalid@khalid-Victus:~$ wc nsnae_3.0.1-2.1_amd64.deb
432 2336 97128 nsnae_3.0.1-2.1_amd64.deb
count of words , count of line , count of bytes , name of package
```

---

## 89 - to install with (apt-get)

```
khalid@khalid-Victus:~$ sudo apt-get install nsnake
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automa
```

---

## connect to remote server

---

## 90 - to connect to server (cd to /.ssh )

```
ssh 4.236.152.79 or any server
```

---

## 91 - Used to download files or websites from the internet (wget)

```
wget https://example.com/file.zip
```

if you want to download a lot of links tou can put it in text file and add -i with it

```
wget /home/khalid/Desktop/download-links.txt
```

---

## 92 - It's a web browser in the terminal. (w3m)

```
w3m www.google.com
```

---

## shell scripts

---

## 93 - to run shell script in ubuntu(sh , bash)

first step create file

```
khalid@khalid-Victus:~$ nano first_script.sh
```

```
ls
```

```
date --> PUT THIS COMMAND IN FILE
```

```

whoami
echo "hi khalid"
khalid@khalid-Victus:~$ ls -l first_script.sh
-rw-rw-r-- 1 khalid khalid 32 22 08:15 first_script.sh --> not have (x) mean can't execute
khalid@khalid-Victus:~$ chmod +x first_script.sh --> make this file executable
khalid@khalid-Victus:~$ ls -l first_script.sh
-rwxrwxr-x 1 khalid khalid 32 22 08:15 first_script.sh --> include (x)

```

### NOW YOU CAN EXECUTE

```

khalid@khalid-Victus:~$ sh first_script.sh --> WILL DO ALL COMMANDS IN FILE LIKE ls
Abolftoh Downloads nsnake_3.0.1-2.1_amd64.deb odoo18 snap
Desktop first_script.sh odoo16 Pictures Templates
Documents Music odoo17 Public Videos
22 2025 , + 03 08:17:52
khalid
hi khalid

```

### OR

```

khalid@khalid-Victus:~$ bash first_script.sh
Abolftoh Downloads nsnake_3.0.1-2.1_amd64.deb odoo18 snap
Desktop first_script.sh odoo16 Pictures Templates
Documents Music odoo17 Public Videos
22 2025 , + 03 08:18:16
khalid
hi khalid

```

---

### 93 - to run shell script in ubuntu(./ , all PATH)

```

khalid@khalid-Victus:~$./first_script.sh
Abolftoh Downloads nsnake_3.0.1-2.1_amd64.deb odoo18 snap
Desktop first_script.sh odoo16 Pictures Templates
Documents Music odoo17 Public Videos
22 2025 , + 03 09:52:28
khalid
hi khalid
khalid@khalid-Victus:~$ /home/khalid/first_script.sh
Abolftoh Downloads nsnake_3.0.1-2.1_amd64.deb odoo18 snap
Desktop first_script.sh odoo16 Pictures Templates
Documents Music odoo17 Public Videos
22 2025 , + 03 10:02:53
khalid
hi khalid

```

---

94 - if you want to use this shell script with bash if any distru you use (#!/bin/bash)

```
khalid@khalid-Victus:~$ nano first_script.sh
#!/bin/bash
ls |
date |-----> that mean will run with bash first after that execute lines with bash
whoami |
echo "Hello script"
```

---

95 - you can run the script with another thing you want like (/usr/bin/python3)

```
#!/usr/bin/python3
ls |
date |-----> that mean will run with bash first after that execute lines with bash
whoami |
echo "Hello script"
```

if you you don't know the location 'path' of python (env)

```
#!/usr/bin/env python3
```

Explanation:

#! → called shebang, tells system how to run the file  
/usr/bin/env → finds the program in your system PATH  
python3 → the interpreter (Python version 3)

```
#!/usr/bin/env python3
print("Hello Khalid!")
```

---

96 - if you want to type more than onw command in thw same line (;)

```
khalid@khalid-Victus:~/Abolftoh$ cd courses/ ; ls
elzero_html_css github_docs postgresql-course
elzero_python linux_for_data_engineers_course
```

---

97 - if you want to execute the second command depend on the first one. the first should be true ( && )

```
khalid@khalid-Victus:~/Abolftoh$ echo "saad" && echo "good work"
saad --> first
```

```
good work --> second
khalid@khalid-Victus:~/Abolftoh$ sudo apt update && sudo apt full-upgrade -y
this is an example
```

---

**98 - if you want to execute the second command depend on the first one. the first should be false ( || )**

```
khalid@khalid-Victus:~/Abolftoh$ echo "saad" || echo "good work" --> not run because the first command is not found
saad
khalid@khalid-Victus:~/Abolftoh$ false || echo "good work" --> run because the first one is false
good work
khalid@khalid-Victus:~/Abolftoh$ echo 'madian' || echo "good work" --> run because the first command is not found
madian
Command 'ech' not found, did you mean:
good work
```

---

**99 - to install bash kernel (pip install bash\_kernel)**

**1-first something update the system**

```
khalid@khalid-Victus:~/Abolftoh$ sudo apt update && sudo apt upgrade -y
```

**2- install pip**

```
khalid@khalid-Victus:~$ sudo apt install python3-pip -y
```

**3- install bash kernel with pip**

```
khalid@khalid-Victus:~$ pip install bash_kernel
```

**4- activation bash kernel installation**

```
khalid@khalid-Victus:~$ python3 -m bash_kernel.install
```

---

**100 - install jupyter from vs code and create jupyter file with extension so you can read it**

```
khalid@khalid-Victus:~$ touch jup_script.ipynb
```

---



## 101 - play some commands in bash kernel

### 101-1

```
#!/bin/bash
variables
Integer
String
Constant
set -e # stop the process if there is any command not executed
declare -i sum=16 # the -i is for integer data type
declare st="Some String" # here will know its string
declare -r PI=3.14 # -r --> mean its read only
declare -a names=(Ahmed Sami) # -a mean its array
names[2]="Ali" # change array second position
echo $sum
echo $st
echo $PI
echo $names
echo ${names[1]}
echo ${names[2]}
exit 0 --> to quit from loop
```

#### shell scripts result

```
16
Some String
3.14
Ahmed
Sami
Ali
exit
Restarting Bash
```

---

### 101-2

```
#!/bin/bash
ARITHMETIC OPERATION
num=4
echo $((num*5)) # bash
expr $num + 6 # using expr
echo $num ^ 4 | bc # using bash calculater
```

#### shell scripts result

```
20
10
```

---

**101-3**

```
using [[]] with -le -ge -gt -eq
[[1 -le 2]] ; echo $?
using [[]] with == >= <= !=
[[3 == 3]] ; echo $?
[[3 != 3]] ; echo $?
using test command
test 1 -le 5 ; echo $?
#logical file operation
test -f /etc/hosts ; echo $? # -f does file exist
test -r /etc/shadow ; echo $? # -r does the user have the read access ? -w -x
```

shell scripts result

```
0
0
1
0
0
0
1
```

---

**101-4 - run this with the terminal because its interactive**

```
#!/bin/bash
POSITIONAL PARAMETERS

$0 - name of the script
$# - Number of the command-line arguments
$* - List of command-line arguments
@ - same as $* but treats list of args as index array
$1 - 1st positional parameters
$2 - 2nd positional parameters
```

```
echo "the total number of arguments is : $#"
```

```
echo "the arguments are : $#"
```

```
echo "the first args is : $1"
```

**first\_script.sh**

```
khalid@khalid-Victus:~$./first_script.sh Khalid the best
the total number of arguments is : 3
```

the arguments are : 3  
the first args is : Khalid

---

## functions

---

### 102 - how to use functions

```
#!/bin/bash
FUNCTIONS
return
function hello(){
echo "hello Functions"
timestamp
return 0
}
function timestamp(){
echo "hello the time now is $(date +%m/%d/%y" "%R)"
}
hello
echo $?
```

#### shell scripts result

```
hello Functions
hello the time now is 10/25/25 08:16
0
```

---

### 103 - to create input (read)

```
#!/bin/bash
READ FROM STDIN
#read [-option] [variables...]
echo "what is your name ?"
read name --> we will use it to store variable in it
echo "hello, $name!"
```

#### 103-1- to create input in the same line (-p)

```
#!/bin/bash
READ FROM STDIN
#read [-option] [variables...]
read -p "what is your name: " name
```

```
echo "hello, $name!"
khalid@khalid-Victus:~$./first_script.sh
what is your name: khalid
hello, khalid!
```

103-2- to create input invisible during type (-sp)

---

## 104 - FOR loop

```
#!/bin/bash
FOR LOOP
for integer in 1 2 3 4 5 6 7
do
echo $integer
done
```

shell scripts result

```
1
2
3
4
5
6
7
```

---

```
#!/bin/bash
for word in some string statement
do
echo $word
done
```

shell scripts result

```
some
string
statement
```

---

```
#!/bin/bash
for ((i=0 ; i<=10; i++))
do
echo $i
done
```

shell scripts result

```
0
1
2
3
4
5
6
7
8
9
10
```

---

## 105 - WHILE LOOP

```
#!/bin/bash
#while loop
i=0
while [$i -le 10]
do
echo $i
((i++))
done
```

shell scripts result

```
0
1
2
3
4
5
6
7
8
9
10
```

---

## 106 - UNTIL LOOP

while not enter to the loop until the statement be false

```
#!/bin/bash
i=0
until test $i -eq 10
```

```
do
echo $i
((i++))
done
```

shell scripts result

```
0
1
2
3
4
5
6
7
8
9
```

---

## 107 - if statement

```
#!/bin/bash
CONDITIONAL EXPRESSIONS
if ["foo" = "foo"] ; then
echo expression evaluated as true
fi
```

shell scripts result

```
expression evaluated as true
```

---

## 108 - Examples(if, for, function)

./first\_script.sh -->

```
#!/bin/bash
check if number is even
read -p "Enter a Number :" i
if ((i % 2 == 0)); then
echo "$i is even "
fi
```

shell scripts result

```
khalid@khalid-Victus:~$./first_script.sh
Enter a Number :4
4 is even
```

---

### 108-1 Advanced Examples (if, for, function, while)

```
check if a number is even
read -p "Enter a number: " i
else
if ((i % 2 == 0)); then # check if even or odd
echo "$i is even"
else
echo "$i is odd"
fi
fi
```

#### shell scripts result

```
Enter a number: 8
8 is even
Enter a number: 5
5 is odd
```

---

### 108-2 Advanced Examples (if, for, function, while)

check number is integer and is even or odd ./first\_script.sh -->

```
#!/bin/bash
read -p "Enter a number: " i
if ! [["$i" =~ ^[0-9]+$]]; then # check if the input is an integer
echo "Error: Not an integer"
exit 1
else
if ((i % 2 == 0)); then # check if even or odd
echo "$i is even"
else
echo "$i is odd"
fi
fi
```

#### shell scripts result

```
Enter a number: 8
8 is even
Enter a number: 5
5 is odd
Enter a number: hello
Error: Not an integer
```

---

### 108-3 Advanced Examples (if, for, function, while)

check number is integer and is even or odd with function integration

./first\_script.sh -->

```
#!/bin/bash
#check number is integer and is even or odd with function integration
read -p "Enter a Number :" i
function is_int(){
if [["$i" =~ ^[0-9]+$]]; then # check if the input is an integer
return 0
else
return 1
fi
}
[["$i" =~ ^[0-9]+$]] -> $? --> will return 0 if true like every command in shell
if is_int; then
if ((i % 2 == 0)); then
echo "$i is even "
else
echo "$i is odd "
fi
else
echo "Error : not an Integer "
fi
```

shell scripts result

```
khalid@khalid-Victus:~$./first_script.sh
Enter a Number :9
9 is odd
khalid@khalid-Victus:~$./first_script.sh
Enter a Number :8
8 is even
khalid@khalid-Victus:~$./first_script.sh
Enter a Number :d
Error : not an Integer
```

---

### 108-4 Advanced Examples (if, for, function, while)

check number is integer and is even or odd with function integration with while Check if user input is an integer, and if it's even or odd. The loop continues until the user types "khalas". local value="1" → *getsthefirstargument.\*\*\*\*\**["value" =~ <sup>1</sup>+\$ ] → checks if the input has only digits. return 0 → true (integer). return 1 → false (not integer).

---

<sup>1</sup>0-9



Concept	Meaning
<code>[[ ]]</code>	Conditional test (used for strings & regex)
<code>(( ))</code>	Arithmetic test (used for numbers)
<code>\$?</code>	Holds the exit code of the last command (0 = true)
<code>return</code>	Used inside functions to signal success (0) or failure (1)
<code>\${i,,}</code>	Converts string to lowercase
<code>break</code>	Exits the current loop

`./first_script.sh -->`

```
#!/bin/bash
#check number is integer and is even or odd with function integration
function is_int(){
if [["$i" =~ ^[0-9]+$]]; then # check if the input is an integer
return 0
else
return 1
fi
}
while [[${i,,} != 'khalas']]
do
read -p "Enter a Number :" i
if is_int; then
if ((i % 2 == 0)); then
echo "$i is even "
else
echo "$i is odd "
fi
else
echo "Error : not an Integer "
fi
done
```

shell scripts result

```
khalid@khalid-Victus:~$./first_script.sh
Enter a Number :6
6 is even
Enter a Number :7
7 is odd
Enter a Number :5
5 is odd
Enter a Number :f
```

```
Error : not an Integer
Enter a Number :khalas
khalid@khalid-Victus:~$
```

---

## 109 - pro advanced examples (&>)

its meaning take every thing the output and error throw it to a location like redirection

```
sudo apt update &> /dev/null
ls / > out.txt # normal outputs
ls / 2> err.txt # Errors
ls / &> all.txt # outputs & errors
```

---

the end