

2. Compress a file by compress, gzip, pack, zip commands and decompress it again.
State the differences between compress and gzip commands.

1- compress

```
1
rahmasamy@rahmasamy-Vostro-3520:~$ uncompress mycv3
rahmasamy@rahmasamy-Vostro-3520:~$ compress -f mycv3
rahmasamy@rahmasamy-Vostro-3520:~$ echo $?
0
rahmasamy@rahmasamy-Vostro-3520:~$ ls
3mo                               google-chrome-stable_current_amd64.deb  Pictures
3momariam                        Music                                    Public
bash_file                        mycv3.Z                                  rahma
'DB Fundamental  PROJECT.pdf'    my_dir                                   snap
Desktop                          myrm                                     sort_file
Documents                        myteam                                   Templates
Downloads                       nonperm                                  Videos
file                             odpasswd
```

2-gzip

```
rahmasamy@rahmasamy-Vostro-3520:~$ uncompress mycv3
rahmasamy@rahmasamy-Vostro-3520:~$ gzip mycv3
rahmasamy@rahmasamy-Vostro-3520:~$ ls
3mo                               google-chrome-stable_current_amd64.deb  Pictures
3momariam                        Music                                    Public
bash_file                        mycv3.gz                                  rahma
'DB Fundamental  PROJECT.pdf'    my_dir                                   snap
Desktop                          myrm                                     sort_file
Documents                        myteam                                   Templates
Downloads                       nonperm                                  Videos
file                             odpasswd
rahmasamy@rahmasamy-Vostro-3520:~$ ungzip mycv3
Command 'ungzip' not found, did you mean:
  command 'unzip' from deb unzip (6.0-26ubuntu3.1)
  command 'unzzip' from deb zziplib-bin (0.13.72+dfsg.1-1.1)
Try: sudo apt install <deb name>
rahmasamy@rahmasamy-Vostro-3520:~$ gunzip mycv3
rahmasamy@rahmasamy-Vostro-3520:~$ ls
3mo                               google-chrome-stable_current_amd64.deb  Pictures
3momariam                        Music                                    Public
bash_file                        mycv3                                    rahma
'DB Fundamental  PROJECT.pdf'    my_dir                                   snap
Desktop                          myrm                                     sort_file
Documents                        myteam                                   Templates
Downloads                       nonperm                                  Videos
file                             odpasswd
rahmasamy@rahmasamy-Vostro-3520:~$
```

3- zip

```

rahmasamy@rahmasamy-Vostro-3520:~$ zip archivename.zip mycv3 sort_file odpasswd
updating: mycv3 (deflated 27%)
updating: sort_file (deflated 92%)
  adding: odpasswd (deflated 64%)
rahmasamy@rahmasamy-Vostro-3520:~$ unzip archivename.zip
Archive:  archivename.zip
replace mycv3? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: mycv3
replace sort_file? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: sort_file
replace odpasswd? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: odpasswd
rahmasamy@rahmasamy-Vostro-3520:~$ ls
3mo                                file                                odpasswd
3momariam                        google-chrome-stable_current_amd64.deb  Pictures
archivename.zip                  Music                                Public
bash_file                       mycv3                               rahma
'DB Fundamental PROJECT.pdf'    my_dir                             snap
Desktop                         myrm                               sort_file
Documents                      myteam                             Templates
Downloads                      nonperm                            Videos
rahmasamy@rahmasamy-Vostro-3520:~$

```

3. What is the command used to view the content of a compressed file.

```

rahmasamy@rahmasamy-Vostro-3520:~$ gzip mycv3
rahmasamy@rahmasamy-Vostro-3520:~$ zcat mycv3
name:rahmasamy
age:23
experience:frontend&backend usin laravel and reactjs
kills:html,css,js,reactjs,angular,php,laravel
education:computer science cairo university
language:english
rahmasamy@rahmasamy-Vostro-3520:~$

```

4. Backup /etc directory using tar utility.

```

rahmasamy@rahmasamy-Vostro-3520:~$ sudo tar -cpf etcnew.tar /etc
tar: Removing leading '/' from member names
rahmasamy@rahmasamy-Vostro-3520:~$ echo $?
0
rahmasamy@rahmasamy-Vostro-3520:~$ ls
3mo                                Downloads                          myrm                                rahma
3momariam                        etcnew.tar                        myteam                             snap
archivename.zip                  file                              nonperm                            sort_file
bash_file                       google-chrome-stable_current_amd64.deb  odpasswd                          system-back.tar
'DB Fundamental PROJECT.pdf'    Music                             pas_cp                             Templates
Desktop                         mycv3.gz                         Pictures                            Videos
Documents                      my_dir                           Public
rahmasamy@rahmasamy-Vostro-3520:~$

```

5. Starting from your home directory, find all files that were modified in the last two days.

```

rahmasamy@rahmasamy-Vostro-3520:~$ find ~ -mtime -2 -type f

```

```

/sys/module/uvic/uevent
/sys/module/uvic/notes/.note.Linux
/sys/module/uvic/notes/.note.gnu.build-id
/sys/module/uvic/taint
/sys/module/uvic/srcversion
/sys/module/uvic/refcnt
/sys/module/uvic/coresize
/sys/module/uvic/initstate
/sys/module/uvic/sections/__patchable_function_entries
/sys/module/uvic/sections/__kcrctab_gpl
/sys/module/uvic/sections/.note.Linux
/sys/module/uvic/sections/.strtab
/sys/module/uvic/sections/__mcount_loc
/sys/module/uvic/sections/.return_sites
/sys/module/uvic/sections/.gnu.linkonce.this_module
/sys/module/uvic/sections/.symtab
/sys/module/uvic/sections/.rodata
/sys/module/uvic/sections/.note.gnu.build-id
/sys/module/uvic/sections/.text
/sys/module/uvic/sections/.call_sites
/sys/module/uvic/sections/.data
/sys/module/uvic/sections/__ksymtab_strings
/sys/module/uvic/sections/__ksymtab_gpl
/sys/module/uvic/sections/.rodata.str1.8
/sys/module/uvic/sections/.export_symbol
/sys/module/snd_pcm_dmaengine/initsize
/sys/module/snd_pcm_dmaengine/uevent
/sys/module/snd_pcm_dmaengine/notes/.note.Linux
/sys/module/snd_pcm_dmaengine/notes/.note.gnu.build-id
/sys/module/snd_pcm_dmaengine/taint
/sys/module/snd_pcm_dmaengine/srcversion
/sys/module/snd_pcm_dmaengine/refcnt
/sys/module/snd_pcm_dmaengine/coresize
/sys/module/snd_pcm_dmaengine/initstate
/sys/module/snd_pcm_dmaengine/sections/__patchable_function_entries
/sys/module/snd_pcm_dmaengine/sections/__kcrctab_gpl
/sys/module/snd_pcm_dmaengine/sections/.note.Linux
/sys/module/snd_pcm_dmaengine/sections/.static_call_sites
/sys/module/snd_pcm_dmaengine/sections/.strtab
/sys/module/snd_pcm_dmaengine/sections/__mcount_loc
/sys/module/snd_pcm_dmaengine/sections/.return_sites
/sys/module/snd_pcm_dmaengine/sections/.gnu.linkonce.this_module
/sys/module/snd_pcm_dmaengine/sections/.symtab
/sys/module/snd_pcm_dmaengine/sections/.note.gnu.build-id
/sys/module/snd_pcm_dmaengine/sections/.text
/sys/module/snd_pcm_dmaengine/sections/.call_sites
/sys/module/snd_pcm_dmaengine/sections/.data
/sys/module/snd_pcm_dmaengine/sections/.smp_locks
/sys/module/snd_pcm_dmaengine/sections/.text.unlikely
/sys/module/snd_pcm_dmaengine/sections/.retpoline_sites
/sys/module/snd_pcm_dmaengine/sections/__ksymtab_strings
/sys/module/snd_pcm_dmaengine/sections/__ksymtab_gpl
/sys/module/snd_pcm_dmaengine/sections/.rodata.str1.8
/sys/module/snd_pcm_dmaengine/sections/.export_symbol
rahmasamy@rahmasamy-Vostro-3520:~$ find / -mtime -2 -type f

```

6. Starting from /etc, find files owned by root user.

```

/etc/pam.d/gdm-autologin
/etc/pam.d/chfn
/etc/pam.d/sudo
/etc/pam.d/passwd
/etc/pam.d/su-l
/etc/pam.d/runuser-l
/etc/pam.d/chpasswd
/etc/pam.d/common-session
/etc/pam.d/ppp
/etc/pam.d/login
/etc/pam.d/chsh
/etc/pam.d/gdm-smartcard-pkcs11-exclusive
/etc/pam.d/cron
/etc/pam.d/sudo-i
/etc/pam.d/gdm-smartcard-sssd-or-password
/etc/pam.d/gdm-smartcard-sssd-exclusive
/etc/pam.d/polkit-1
/etc/pam.d/common-auth
/etc/pam.d/newusers
/etc/pam.d/gdm-launch-environment
/etc/pam.d/common-account
/etc/pam.d/common-session-noninteractive
/etc/pam.d/other
/etc/pam.d/gdm-fingerprint
/etc/pam.d/su
/etc/pam.d/gdm-password
/etc/pam.d/cups
/etc/pam.d/common-password
/etc/hosts
/etc/dconf/profile/ibus
/etc/dconf/db/ibus.d/00-upstream-settings
/etc/dconf/db/ibus
rahmasamy@rahmasamy-Vostro-3520:~$ find /etc -user root -type f

```

7. Find all directories in your home directory.

```

/home/rahmasamy/.config/ucount
rahmasamy@rahmasamy-Vostro-3520:~$ find ~ -type d

```

8. Write a command to search for all files on the system that, its name is “.profile”.

```

rahmasamy@rahmasamy-Vostro-3520:~$ find / -type f -name ".profile" 2>/dev/null
rahmasamy@rahmasamy-Vostro-3520:~$ find / -type f -name ".profile" 2>/dev/null
/etc/skel/.profile
/snap/core20/2318/etc/skel/.profile
/snap/core22/1380/etc/skel/.profile
/snap/core22/1122/etc/skel/.profile
/home/rahmasamy/.profile
/home/newuser/.profile
rahmasamy@rahmasamy-Vostro-3520:~$

```

9. Identify the file types of the following: /etc/passwd, /dev/pts/0, /etc, /dev/sda

```

rahmasamy@rahmasamy-Vostro-3520:~$ file /etc/passwd
/etc/passwd: ASCII text
rahmasamy@rahmasamy-Vostro-3520:~$ file /dev/pts/0
/dev/pts/0: character special (136/0)
rahmasamy@rahmasamy-Vostro-3520:~$ file /etc
/etc: directory
rahmasamy@rahmasamy-Vostro-3520:~$ file /dev/sda
/dev/sda: cannot open /dev/sda (No such file or directory)
rahmasamy@rahmasamy-Vostro-3520:~$ file /dev/core
/dev/core: symbolic link to /proc/kcore
rahmasamy@rahmasamy-Vostro-3520:~$

```

10. List the inode numbers of /, /etc, /etc/hosts.

```
rahmasamy@rahmasamy-Vostro-3520:~$ ls -li /
total 2097232
13 lrwxrwxrwx 1 root root 7 00:49 22 ملى bin -> usr/bin
4456449 drwxr-xr-x 4 root root 4096 21:00 31 ملى boot
3407873 drwxr-xr-x 2 root root 4096 00:50 22 ملى cdrom
1 drwxr-xr-x 20 root root 5160 12:51 12 يون dev
5242881 drwxr-xr-x 130 root root 12288 13:04 12 يون etc
4325377 drwxr-xr-x 4 root root 4096 11:13 10 يون home
14 lrwxrwxrwx 1 root root 7 00:49 22 ملى lib -> usr/lib
15 lrwxrwxrwx 1 root root 9 00:49 22 ملى lib32 -> usr/lib32
16 lrwxrwxrwx 1 root root 9 00:49 22 ملى lib64 -> usr/lib64
17 lrwxrwxrwx 1 root root 10 00:49 22 ملى libx32 -> usr/libx32
11 drwx----- 2 root root 16384 00:48 22 ملى lost+found
4194305 drwxr-xr-x 3 root root 4096 15:01 8 يون media
2097153 drwxr-xr-x 2 root root 4096 21:22 20 فبراير mnt
4718593 drwxr-xr-x 4 root root 4096 10:48 6 يون opt
1 dr-xr-xr-x 432 root root 0 12:51 12 يون proc
6291457 drwx----- 4 root root 4096 23:41 31 ملى root
1 drwxr-xr-x 36 root root 940 12:52 12 يون run
18 lrwxrwxrwx 1 root root 8 00:49 22 ملى sbin -> usr/sbin
4980737 drwxr-xr-x 16 root root 4096 10:55 6 يون snap
2228225 drwxr-xr-x 2 root root 4096 21:22 20 فبراير srv
12 -rw----- 1 root root 2147483648 00:48 22 ملى swapfile
1 dr-xr-xr-x 13 root root 0 12:51 12 يون sys
2359297 drwxrwxrwt 21 root root 4096 13:45 12 يون tmp
6029313 drwxr-xr-x 14 root root 4096 21:22 20 فبراير usr
2883585 drwxr-xr-x 14 root root 4096 21:27 20 فبراير var
rahmasamy@rahmasamy-Vostro-3520:~$

rahmasamy@rahmasamy-Vostro-3520:~$ ls -li /etc/hosts
5243045 -rw-r--r-- 1 root root 236 00:50 22 ملى /etc/hosts
rahmasamy@rahmasamy-Vostro-3520:~$

rahmasamy@rahmasamy-Vostro-3520:~$ ls -li /etc/hosts
5243045 -rw-r--r-- 1 root root 236 00:50 22 ملى /etc/hosts
rahmasamy@rahmasamy-Vostro-3520:~$
```

11. Copy /etc/passwd to your home directory, use the commands diff and cmp, and

Edit in the file you copied, and then use these commands again, and check the Output.

Diff ⇒ get the difference by comparing two files line by line

cmp ⇒ get the difference by comparing two files byte by byte

```
5243045 -rw-r--r-- 1 root root 236 00:50 22 ملى /etc/hosts
rahmasamy@rahmasamy-Vostro-3520:~$ cp /etc/passwd ~/pas_cp
rahmasamy@rahmasamy-Vostro-3520:~$ diff /etc/passwd ~/pas_cp
rahmasamy@rahmasamy-Vostro-3520:~$ cmp /etc/passwd ~/pas_cp
rahmasamy@rahmasamy-Vostro-3520:~$ vi ~/pas_cp
rahmasamy@rahmasamy-Vostro-3520:~$ diff /etc/passwd ~/pas_cp
51,52d50
< mohamed:x:1002:1002::/home/mohamed:/bin/sh
< newuser:x:1003:1005:,3,01026951655,0203503405:/home/newuser:/bin/bash
rahmasamy@rahmasamy-Vostro-3520:~$ cmp /etc/passwd ~/pas_cp
cmp: EOF on /home/rahmasamy/pas_cp after byte 3005, line 50
rahmasamy@rahmasamy-Vostro-3520:~$
```

12. Create a symbolic link of /etc/passwd in /boot.

```

cmp: EOF on /home/rahmasamy/pas_cp after byte 5003, line 50
rahmasamy@rahmasamy-Vostro-3520:~$ ln -s /etc/passwd /boot/symb
ln: failed to create symbolic link '/boot/symb': Permission denied
rahmasamy@rahmasamy-Vostro-3520:~$ sudo ln -s /etc/passwd /boot/symb
[sudo] password for rahmasamy:
rahmasamy@rahmasamy-Vostro-3520:~$

```

```

rahmasamy@rahmasamy-Vostro-3520:~$ ls -li /boot/symb
4456461 lrwxrwxrwx 1 root root 11 13:54 12 يون /boot/symb -> /etc/passwd
rahmasamy@rahmasamy-Vostro-3520:~$

```

13.Create a hard link of /etc/passwd in /boot. Could you? Why?

No because I can't make hard link in two partitions

```

rahmasamy@rahmasamy-Vostro-3520:~$ ln /etc/passwd /boot
ln: failed to create hard link '/boot/passwd' => '/etc/passwd': Operation not permitted
rahmasamy@rahmasamy-Vostro-3520:~$

```

14.List the user commands that have set-uid permissions in the system.

```

rahmasamy@rahmasamy-Vostro-3520:~$ find / -type f -perm /4000 2>/dev/null
/snap/core20/2318/usr/bin/chfn
/snap/core20/2318/usr/bin/chsh
/snap/core20/2318/usr/bin/gpasswd
/snap/core20/2318/usr/bin/mount
/snap/core20/2318/usr/bin/newgrp
/snap/core20/2318/usr/bin/passwd
/snap/core20/2318/usr/bin/su
/snap/core20/2318/usr/bin/sudo
/snap/core20/2318/usr/bin/umount
/snap/core20/2318/usr/lib/dbus-1.0/dbus-daemon-launch-helper
/snap/core20/2318/usr/lib/openssh/ssh-keysign
/snap/snapd/20671/usr/lib/snapd/snap-confine
/snap/snapd/21759/usr/lib/snapd/snap-confine
/snap/core22/1380/usr/bin/chfn
/snap/core22/1380/usr/bin/chsh
/snap/core22/1380/usr/bin/gpasswd
/snap/core22/1380/usr/bin/mount
/snap/core22/1380/usr/bin/newgrp
/snap/core22/1380/usr/bin/passwd
/snap/core22/1380/usr/bin/su
/snap/core22/1380/usr/bin/sudo
/snap/core22/1380/usr/bin/umount

```

15 -List the user commands that have set-gid permissions in the system.


```
rahmasamy@rahmasamy-Vostro-3520:~$ find / -type f -perm /2000 2>/dev/null
/snap/core20/2318/usr/bin/chage
/snap/core20/2318/usr/bin/expiry
/snap/core20/2318/usr/bin/ssh-agent
/snap/core20/2318/usr/sbin/pam_extrausers_chkpwd
/snap/core20/2318/usr/sbin/unix_chkpwd
/snap/core22/1380/usr/bin/chage
/snap/core22/1380/usr/bin/expiry
/snap/core22/1380/usr/bin/ssh-agent
/snap/core22/1380/usr/bin/wall
/snap/core22/1380/usr/sbin/pam_extrausers_chkpwd
/snap/core22/1380/usr/sbin/unix_chkpwd
/snap/core22/1122/usr/bin/chage
/snap/core22/1122/usr/bin/expiry
/snap/core22/1122/usr/bin/ssh-agent
/snap/core22/1122/usr/bin/wall
/snap/core22/1122/usr/sbin/pam_extrausers_chkpwd
/snap/core22/1122/usr/sbin/unix_chkpwd
/usr/bin/ssh-agent
/usr/bin/chage
/usr/bin/crontab
/usr/bin/expiry
/usr/lib/xorg/Xorg.wrap
/usr/sbin/pam_extrausers_chkpwd
/usr/sbin/unix_chkpwd
/usr/libexec/camel-lock-helper-1.2
rahmasamy@rahmasamy-Vostro-3520:~$
```

16. List the directories that have sticky-bit set in the system.

```
rahmasamy@rahmasamy-Vostro-3520:~$ find / -type d -perm /1000 2>/dev/null
rahmasamy@rahmasamy-Vostro-3520:~$
```