LAB 5:

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

```
mai@Ubuntu:~$ cat touch
i
name: Mai kassem
age: 23
school: Smouha Azher institute
collage: Alexandria Higher Institute for Engineering and technology
Experience: Linux,HTML,CSS,SQL,Python,javaScrip
mai@Ubuntu:~$ compress -v touch
touch:  -- replaced with touch.Z Compression: 4.54%
mai@Ubuntu:~$ uncompress -v touch.Z
touch.Z:          4.5% -- replaced with touch
mai@Ubuntu:~$ gzip -v touch
touch:   18.2% -- replaced with touch.gz
mai@Ubuntu:~$ gunzip -v touch.gz
touch.gz:        18.2% -- replaced with touch
mai@Ubuntu:~$ zip touch

zip error: Nothing to do! (touch.zip)
mai@Ubuntu:~$ zip touch file
  adding: file (stored 0%)
```

Compressing ratio of gzip is much better than compress command because it is following a new algorithm.

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

3. Backup /etc directory using tar utility: tar cvf myarch.tar /etc

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

```
mai@Ubuntu:~$ find ~ -type f -mtime -2
/home/mai/.config/pulse/af22d6bf77a04f7c9f553ab8877384e0-defaul
/home/mai/.config/pulse/af22d6bf77a04f7c9f553ab8877384e0-stream
/home/mai/.config/pulse/af22d6bf77a04f7c9f553ab8877384e0-defaul
/home/mai/.config/dconf/user
/home/mai/.config/gtk-3.0/bookmarks
/home/mai/.config/ibus/bus/af22d6bf77a04f7c9f553ab8877384e0-unix
/home/mai/.config/ibus/bus/af22d6bf77a04f7c9f553ab8877384e0-unix
/home/mai/.cache/event-sound-cache.tdb.af22d6bf77a04f7c9f553ab88
```

5. Starting from /etc, find files owned by root user: sudo find /etc -user root

6. Find all directories in your home directory.

```
mai@Ubuntu:~$ ls -d ~/*/
/home/mai/Desktop/    /home/mai/Music/     /home/mai/snap/
/home/mai/Documents/  /home/mai/Pictures/  /home/mai/Templates/
/home/mai/Downloads/  /home/mai/Public/    /home/mai/Videos/
mai@Ubuntu:~$
```

7. Write a command to search for all files on the system that, its name is ".profile".

```
mai@Ubuntu:~$ sudo find / -name ".profile"
[sudo] password for mai:
/snap/core20/2105/etc/skel/.profile
/snap/core20/2105/root/.profile
/snap/core20/1974/etc/skel/.profile
/snap/core20/1974/root/.profile
/snap/core22/1033/etc/skel/.profile
/snap/core22/1033/root/.profile
/snap/core22/858/etc/skel/.profile
/snap/core22/858/root/.profile
/root/.profile
/home/vboxuser/.profile
/home/newuser/.profile
/home/mai/.profile
```

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

`/etc/passwd`: This file is a plain text-based database that contains information for all user accounts on the Linux system.

`/dev/pts/0`: This file is a character device file that represents a terminal device.

/etc: configuration file .

`/dev/sda`: This file is a block device file that represents a hard disk drive.

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

```
mai@Ubuntu:~$ ls -i /
     13 bin          15 lib32            1 proc            1 sys
 655361 boot         16 lib64      1310721 root       786434 tmp
1310726 cdrom        17 libx32           1 run          262147 usr
      1 dev          11 lost+found      18 sbin        1441793 var
 262145 etc      393217 media       393218 snap
 524289 home     786433 mnt         524290 srv
     14 lib      917505 opt             12 swapfile
```

```
mai@Ubuntu:~$ ls -i /etc
262153 acpi                        262329 machine-id
262283 adduser.conf                262330 magic
262154 alsa                        262331 magic.mime
262155 alternatives                272230 mailcap
262284 anacrontab                  262333 mailcap.order
262285 apg.conf                    262334 manpath.config
262156 apm                         262335 mime.types
262157 apparmor                    262336 mke2fs.conf
```

```
mai@Ubuntu:~$ ls -i /etc/hosts
262310 /etc/hosts
```

10. 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.

```
mai@Ubuntu:~$ cp /etc/passwd f5
mai@Ubuntu:~$ vi f5
mai@Ubuntu:~$ diff /etc/passwd f5
1c1
< root:x:0:0:root:/root:/bin/bash
---
> mai root:x:0:0:root:/root:/bin/bash
mai@Ubuntu:~$
```

11. Create a symbolic link of /etc/passwd in /boot:
12. Create a hard link of /etc/passwd in /boot. Could you? Why?

```
mai@Ubuntu: ~ 102x24
mai@Ubuntu:~$  sudo ln -s /etc/passwd /boot/f6
ln: failed to create symbolic link '/boot/f6': File exists
mai@Ubuntu:~$  sudo ln -s /etc/passwd /boot/f7
mai@Ubuntu:~$ ln /etc/passwd /boot/f8
ln: failed to create hard link '/boot/f8' => '/etc/passwd': Operation not permitted
mai@Ubuntu:~$  sudo ln /etc/passwd /boot/f8
mai@Ubuntu:~$
```