Lab 5 Tasks

1. Compress a file by compress, gzip, zip commands and decompress it again.

=> compress test.txt → not working on my distro

=> uncompress test.txt.Z

=> gzip test.txt

=> gzip -d test.txt.gz

=> zip test.zip test.txt

=> unzip test.zip

State the differences between compress and gzip commands.
- Algorithm: compress uses the LZW algorithm, while gzip uses the Deflate algorithm.
- gzip provides compression ratio better than compress
- Compressed files using compress have the .Z extension, while those using gzip have the .gz extension.

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

=> zcat test.txt.gz

=> zless test.txt.gz
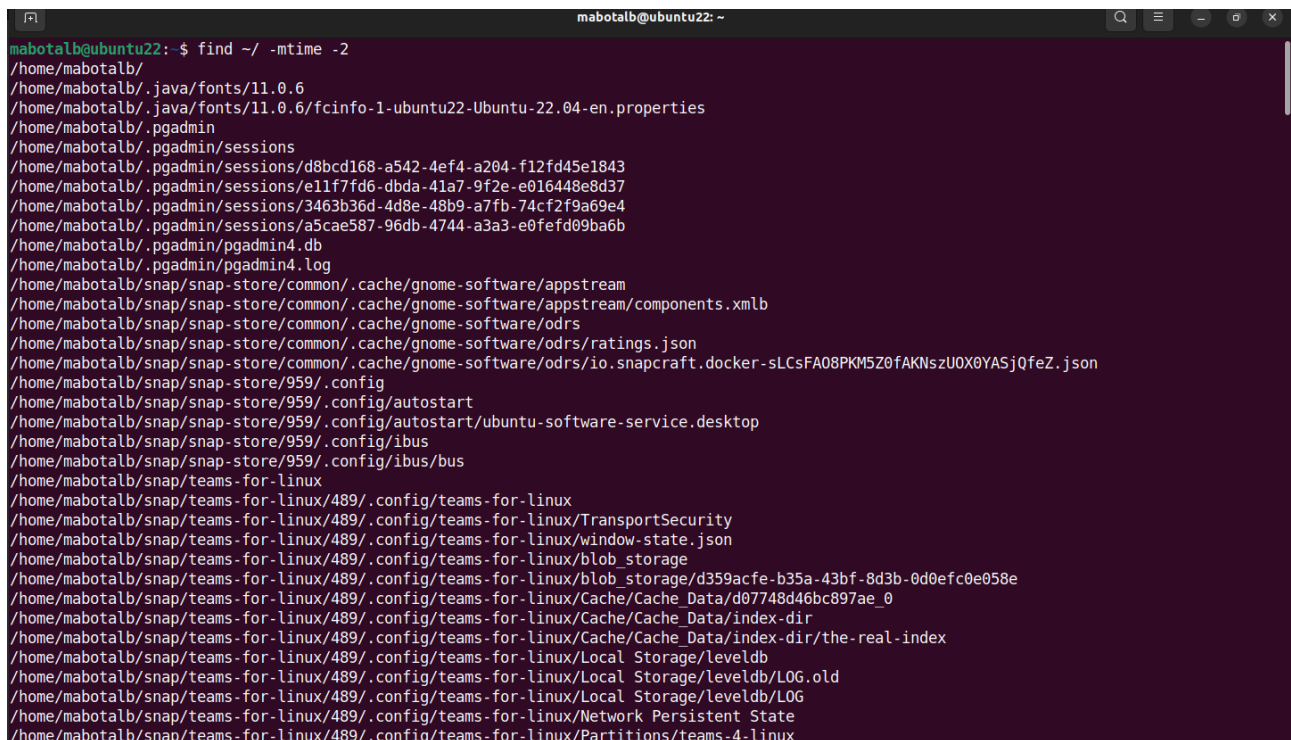
3. Backup /etc directory using tar utility.

=> sudo tar -cvzf etc_backup.tar.gz /etc

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

=> find ~/ -mtime -2

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

=> sudo find /etc -user root

```
                                      mabotalb@ubuntu22: ~                          Q  ≡  _  □  ×
mabotalb@ubuntu22:~$ sudo find /etc -user root
[sudo] password for mabotalb:
/etc
/etc/wgetrc
/etc/networkd-dispatcher
/etc/networkd-dispatcher/off.d
/etc/networkd-dispatcher/no-carrier.d
/etc/networkd-dispatcher/dormant.d
/etc/networkd-dispatcher/routable.d
/etc/networkd-dispatcher/carrier.d
/etc/networkd-dispatcher/degraded.d
/etc/NetworkManager
/etc/NetworkManager/dnsmasq-shared.d
/etc/NetworkManager/NetworkManager.conf
/etc/NetworkManager/conf.d
/etc/NetworkManager/conf.d/default-wifi-powersave-on.conf
/etc/NetworkManager/dispatcher.d
/etc/NetworkManager/dispatcher.d/01-ifupdown
/etc/NetworkManager/dispatcher.d/pre-down.d
/etc/NetworkManager/dispatcher.d/no-wait.d
/etc/NetworkManager/dispatcher.d/pre-up.d
/etc/NetworkManager/dnsmasq.d
/etc/NetworkManager/system-connections
/etc/NetworkManager/system-connections/GW-AC233FC03D71.nmconnection
/etc/NetworkManager/system-connections/GatewayHotspot.nmconnection
/etc/NetworkManager/system-connections/BLUE DRAGON.nmconnection
/etc/NetworkManager/system-connections/Creativa.nmconnection
/etc/NetworkManager/system-connections/WE_C1AFA0.nmconnection
/etc/NetworkManager/system-connections/GW-AC233FC03D33.nmconnection
/etc/NetworkManager/system-connections/Hotspot.nmconnection
/etc/libpaper.d
/etc/openvpn
/etc/openvpn/client
/etc/openvpn/update-resolv-conf
/etc/openvpn/server
/etc/pam.d
/etc/pam.d/common-password
/etc/pam.d/common-session
```

6. Find all directories in your home directory.

=> find ~/ -type d

```
                                      mabotalb@ubuntu22: ~                          Q  ≡  _  □  ×
mabotalb@ubuntu22:~$ find ~/ -type d
/home/mabotalb/
/home/mabotalb/.ssh
/home/mabotalb/docs
/home/mabotalb/.java
/home/mabotalb/.java/.userPrefs
/home/mabotalb/.java/.userPrefs/jetbrains
/home/mabotalb/.java/.userPrefs/jetbrains/jetprofile
/home/mabotalb/.java/.userPrefs/jetbrains/jetprofile/asset
/home/mabotalb/.java/.userPrefs/jetbrains/_!(!!cg"p!(}!}@"j!(k!|w"w!'8!b!"p!':!e@==
/home/mabotalb/.java/fonts
/home/mabotalb/.java/fonts/17.0.9
/home/mabotalb/.java/fonts/21.0.1
/home/mabotalb/.java/fonts/11.0.6
/home/mabotalb/.quokka
/home/mabotalb/.quokka/interactive-examples
/home/mabotalb/.quokka/interactive-examples/JavaScript
/home/mabotalb/.quokka/interactive-examples/JavaScript/string
/home/mabotalb/.quokka/interactive-examples/JavaScript/dataview
/home/mabotalb/.quokka/interactive-examples/JavaScript/array
/home/mabotalb/.quokka/interactive-examples/JavaScript/function
```

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

=> sudo find / -type f -name .profile 2> /dev/null

```
mabotalb@ubuntu22:~$ sudo find / -type f -name .profile 2> /dev/null
/etc/skel/.profile
/snap/core20/2015/etc/skel/.profile
/snap/core20/2015/root/.profile
/snap/core20/2105/etc/skel/.profile
/snap/core20/2105/root/.profile
/snap/core22/1033/etc/skel/.profile
/snap/core22/1033/root/.profile
/snap/core22/864/etc/skel/.profile
/snap/core22/864/root/.profile
/snap/core18/2812/etc/skel/.profile
/snap/core18/2812/root/.profile
/snap/core18/2796/etc/skel/.profile
/snap/core18/2796/root/.profile
/root/.profile
/home/ahmed/.profile
/home/mabotalb/.profile
mabotalb@ubuntu22:~$
```

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

=> file /etc/passwd /*dev*/pts/0 /etc /dev/sda

```
mabotalb@ubuntu22:~$ file /etc/passwd /dev/pts/0 /etc /dev/sda
/etc/passwd: ASCII text
/dev/pts/0:  character special (136/0)
/etc:        directory
/dev/sda:    cannot open `/dev/sda' (No such file or directory)
mabotalb@ubuntu22:~$
```

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

=> ls -i / /etc /etc/hosts

```
mabotalb@ubuntu22:~$ ls -i / /etc /etc/hosts
1966244 /etc/hosts

/:
      13 bin              1 dev       12 install-script.sh   16 lib64      1179649 media        1 proc       18 sbin        1 sys  3014657 var
4718593 boot        1966081 etc       14 lib                 17 libx32      262145 mnt     5373953 root  3538945 snap  2490369 tmp
2621441 cdrom       5505025 home      15 lib32               11 lost+found  524289 opt          1 run   3145729 srv  3670017 usr

/etc:
1966088 acpi                     1966230 debian_version      1966245 hosts.allow      1966267 mailcap.order      1966171 profile.d      1966196 sudoers.d
1966218 adduser.conf             1966116 default             1966246 hosts.deny       1966268 manpath.config     1966284 protocols      1966297 sudo_logsrvd.conf
1966089 alsa                     1966231 deluser.conf        1966137 hp               1966269 mime.types         1966172 pulse          1966299 sysctl.conf
1966090 alternatives             1966117 depmod.d            1966138 ifplugd          1966270 mke2fs.conf        1966173 python3        1966197 sysctl.d
1966219 anacrontab               1966118 dhcp                1966139 init             1966083 ModemManager       1966174 python3.10     1968793 sysstat
1969203 apache2                  1966119 dictionaries-common 1966140 init.d           1966156 modprobe.d         1966175 rc0.d          1966198 systemd
1966220 apg.conf                 1966120 dpkg                1966141 initramfs-tools  1966271 modules            1966176 rc1.d          1966199 terminfo
1966091 apm                      1966232 e2scrub.conf        1966247 inputrc          1966157 modules-load.d     1966177 rc2.d          1966200 thermald
1966092 apparmor                 1966121 emacs               1966142 insserv.conf.d   1966266 mtab               1966178 rc3.d          1966201 thunderbird
1966093 apparmor.d               1966233 environment         1966143 ipp-usb          1966273 nanorc             1966179 rc4.d          1966300 timezone
1966094 apport                   1966122 environment.d       1966144 iproute2         1966274 netconfig          1966180 rc5.d          1966202 tmpfiles.d
1966221 appstream.conf           1966234 ethertypes          1966588 issue            1966158 netplan            1966181 rc6.d          1966203 ubuntu-advantage
1966095 apt                      1966123 firefox             1966593 issue.net        1966159 network            1966182 rcS.d          1966301 ucf.conf
1966096 avahi                    1966124 fonts               1966145 kernel           1966160 networkd-dispatcher 1966285 resolv.conf    1966204 udev
1966222 bash.bashrc              1966235 fprintd.conf        1967146 kernel-img.conf  1966084 NetworkManager     1969464 rmt            1966205 udisks2
1966223 bash_completion          1968697 fstab               1966251 kerneloops.conf  1966275 networks           1966287 rpc            1966206 ufw
1966097 bash_completion.d        1966236 fuse.conf           1966148 ldap             1966161 newt               1966288 rsyslog.conf   1966207 update-manager
1966224 bindresvport.blacklist   1966125 fwupd               1969515 ld.so.cache      1966276 nftables.conf      1966184 rsyslog.d      1966208 update-motd.d
1966098 binfmt.d                 1966237 gai.conf            1966253 ld.so.conf       1966111 nsswitch.conf      1966289 rygel.conf     1966209 update-notifier
1966099 bluetooth                1969497 gamin               1966147 ld.so.conf.d     1969449 openal             1966185 sane.d         1966086 UPower
```

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.

=> cp /etc/passwd passwd

=> diff /etc/passwd passwd

=> cmp /etc/passwd passwd

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

=> sudo ln -s /etc/passwd /boot/symbolic_passwd

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

=> sudo ln /etc/passwd /boot/hardlink_passwd