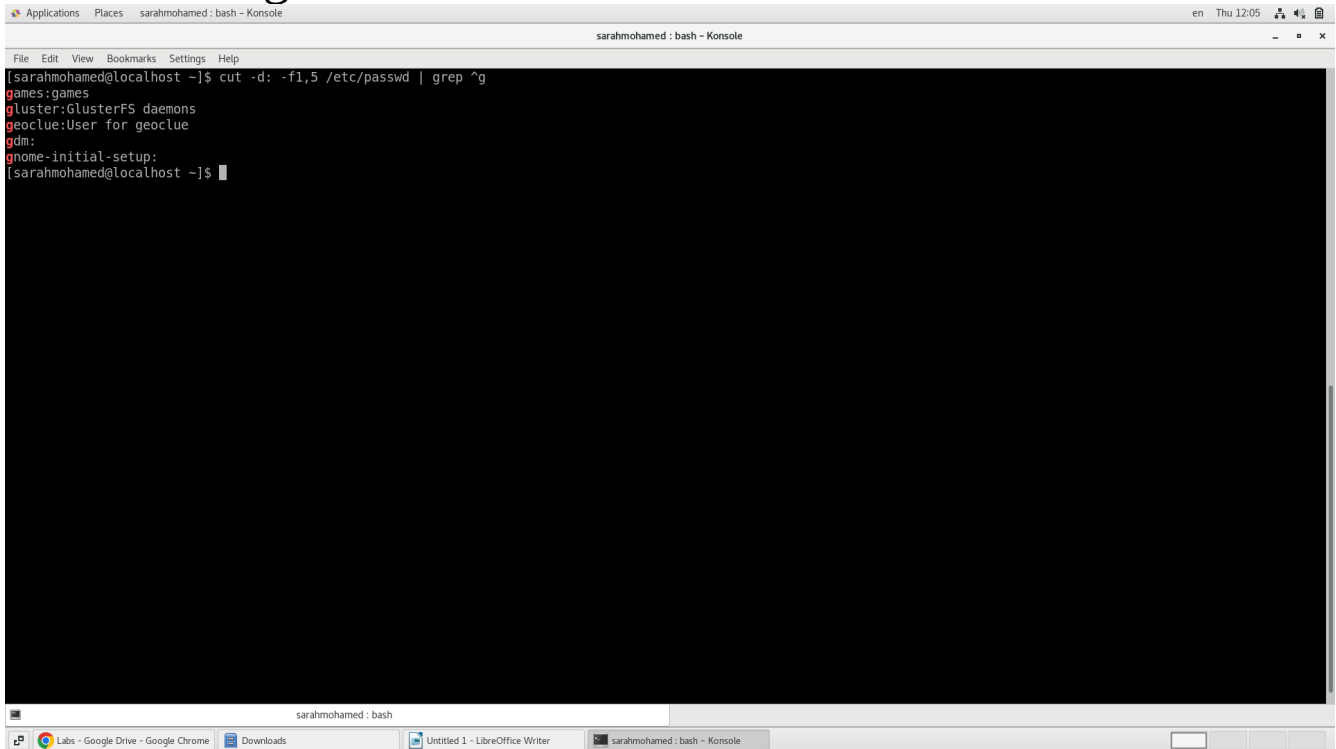


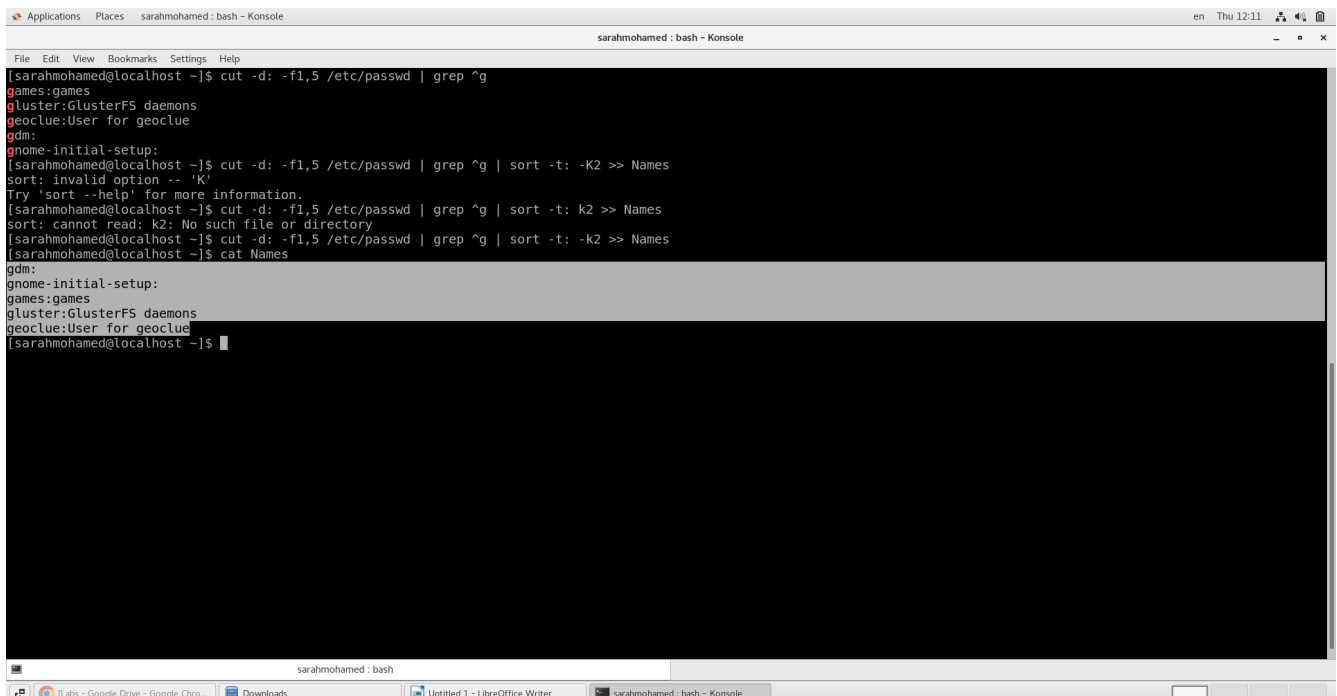
Lab 4

4. Get the logins name and full names (comment) of logins starts with “g”.



```
[sarahmohamed@localhost ~]$ cut -d: -f1,5 /etc/passwd | grep ^g
games:games
gluster:GlusterFS daemons
geoclue:User for geoclue
gdm:
gnome-initial-setup:
[sarahmohamed@localhost ~]$
```

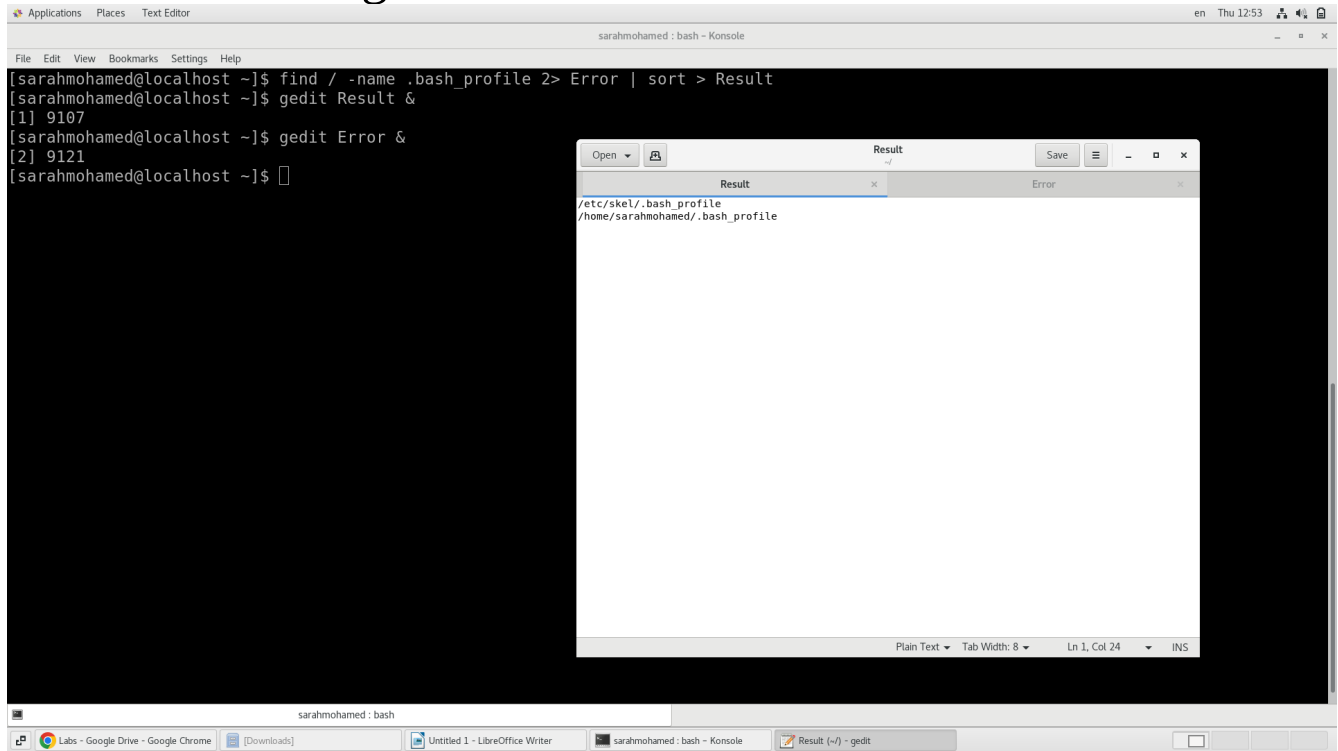
5. Save the output of the last command sorted by their full names in a file.



```
[sarahmohamed@localhost ~]$ cut -d: -f1,5 /etc/passwd | grep ^g
games:games
gluster:GlusterFS daemons
geoclue:User for geoclue
gdm:
gnome-initial-setup:
[sarahmohamed@localhost ~]$ cut -d: -f1,5 /etc/passwd | grep ^g | sort -t: -k2 >> Names
sort: invalid option -- 'K'
Try 'sort --help' for more information.
[sarahmohamed@localhost ~]$ cut -d: -f1,5 /etc/passwd | grep ^g | sort -t: k2 >> Names
sort: cannot read: k2: No such file or directory
[sarahmohamed@localhost ~]$ cut -d: -f1,5 /etc/passwd | grep ^g | sort -t: -k2 >> Names
[sarahmohamed@localhost ~]$ cat Names
gdm:
gnome-initial-setup:
games:games
gluster:GlusterFS daemons
geoclue:User for geoclue
[sarahmohamed@localhost ~]$
```

6. Write two commands:

Second: sorts the output of ls command on / recursively,
Saving their output and error in 2 different files and sending
them to the background.



The screenshot shows a Linux desktop environment. In the foreground, a terminal window titled 'sarahmohamed : bash - Konsole' displays the following commands and output:

```
[sarahmohamed@localhost ~]$ find / -name .bash_profile 2> Error | sort > Result
[sarahmohamed@localhost ~]$ gedit Result &
[1] 9107
[sarahmohamed@localhost ~]$ gedit Error &
[2] 9121
[sarahmohamed@localhost ~]$
```

Overlaid on the terminal is a gedit window titled 'Result' with two tabs: 'Result' and 'Error'. The 'Result' tab is active and shows the output of the find command:

```
/etc/skel/.bash_profile
/home/sarahmohamed/.bash_profile
```

The gedit window has a status bar at the bottom indicating 'Plain Text', 'Tab Width: 8', 'Ln 1, Col 24', and 'INS'.

The desktop taskbar at the bottom shows several open applications: 'Labs - Google Drive - Google Chrome', '[Downloads]', 'Untitled 1 - LibreOffice Writer', 'sarahmohamed : bash - Konsole', and 'Result (~/) - gedit'.

Lab 5

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

```
[sarahmohamed@localhost ~]$ ls
Desktop  docs      Downloads  file1  file3      Music  Names  perl5  Public  Results  Videos
dir1     Documents Error      file2  google-chrome-stable_current_x86_64.rpm myteam oldpasswd Pictures Result Templates

[sarahmohamed@localhost ~]$ compress Names
[sarahmohamed@localhost ~]$ ls
Desktop  docs      Downloads  file1  file3      Music  Names  perl5  Public  Results  Videos
dir1     Documents Error      file2  google-chrome-stable_current_x86_64.rpm myteam oldpasswd Pictures Result Templates

[sarahmohamed@localhost ~]$ uncompress Names.Z
[sarahmohamed@localhost ~]$ ls
Desktop  docs      Downloads  file1  file3      Music  Names  perl5  Public  Results  Videos
dir1     Documents Error      file2  google-chrome-stable_current_x86_64.rpm myteam oldpasswd Pictures Result Templates

[sarahmohamed@localhost ~]$ gzip Result
[sarahmohamed@localhost ~]$ ls
Desktop  Documents  file1  google-chrome-stable_current_x86_64.rpm  Names  Pictures  Results
dir1     Downloads  file2  Music                                     oldpasswd Public    Templates
docs     Error      file3  myteam                                    perl5    Result.gz Videos

[sarahmohamed@localhost ~]$ gunzip Result.gz
[sarahmohamed@localhost ~]$ ls
Desktop  docs      Downloads  file1  file3      Music  Names  perl5  Public  Results  Videos
dir1     Documents Error      file2  google-chrome-stable_current_x86_64.rpm myteam oldpasswd Pictures Result Templates

[sarahmohamed@localhost ~]$ zip Results
zip error: Nothing to do! (Results.zip)
[sarahmohamed@localhost ~]$ zip Results.zip
zip error: Nothing to do! (Results.zip)
[sarahmohamed@localhost ~]$ zip Results.zip Results
  adding: Results (deflated 77%)
[sarahmohamed@localhost ~]$ ls
Desktop  Documents  file1  google-chrome-stable_current_x86_64.rpm  Names  Pictures  Results  Videos
dir1     Downloads  file2  Music                                     oldpasswd Public    Results.zip

[sarahmohamed@localhost ~]$
```

```
[sarahmohamed@localhost ~]$ zip Results
zip error: Nothing to do! (Results.zip)
[sarahmohamed@localhost ~]$ zip Results.zip
zip error: Nothing to do! (Results.zip)
[sarahmohamed@localhost ~]$ zip Results.zip Results
  adding: Results (deflated 77%)
[sarahmohamed@localhost ~]$ ls
Desktop  Documents  file1  google-chrome-stable_current_x86_64.rpm  Names  Pictures  Results  Videos
dir1     Downloads  file2  Music                                     oldpasswd Public    Results.zip
docs     Error      file3  myteam                                    perl5    Result    Templates

[sarahmohamed@localhost ~]$ unzip Results.zip
Archive: Results.zip
replace Results? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: Results
[sarahmohamed@localhost ~]$ ls
Desktop  Documents  file1  google-chrome-stable_current_x86_64.rpm  Names  Pictures  Results  Videos
dir1     Downloads  file2  Music                                     oldpasswd Public    Results.zip
docs     Error      file3  myteam                                    perl5    Result    Templates

[sarahmohamed@localhost ~]$
```

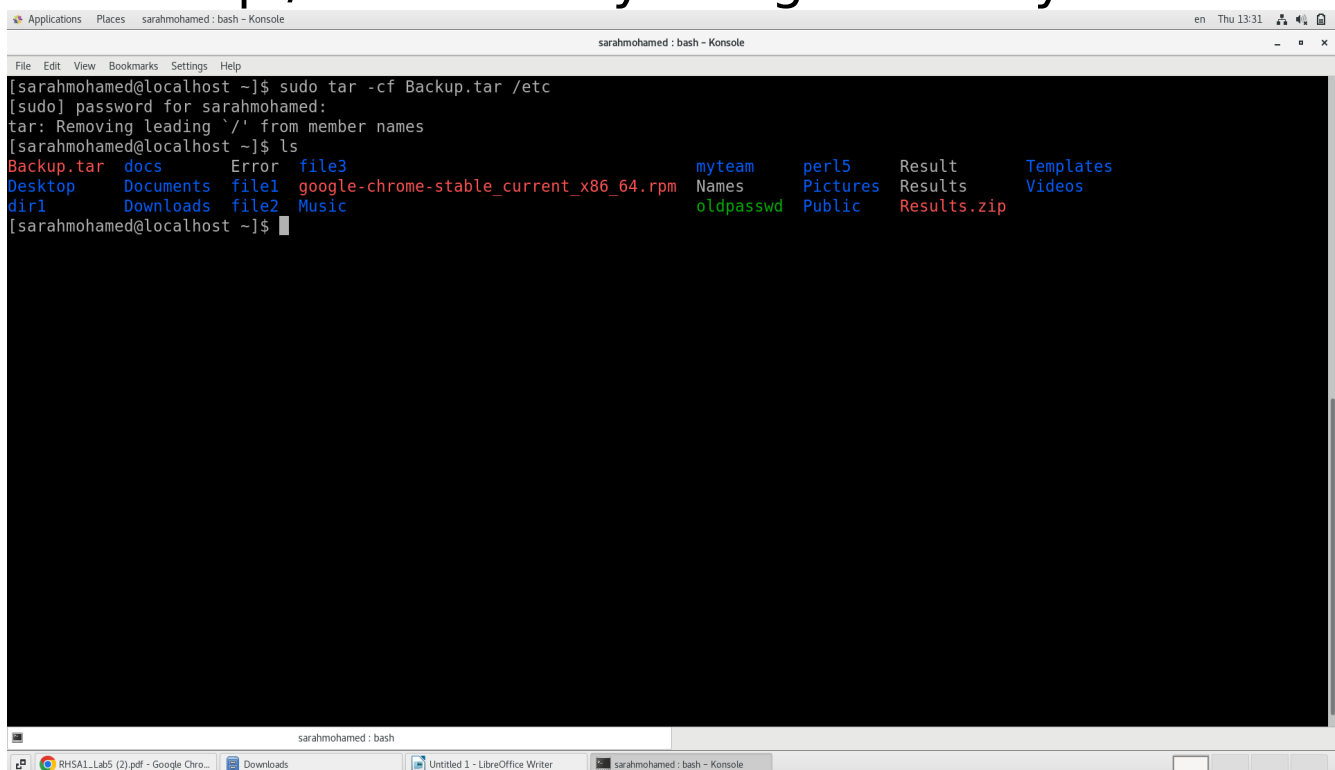
State the differences between compress and gzip commands

=> **gzip** provides better compression and decompression speeds than **compress**.

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

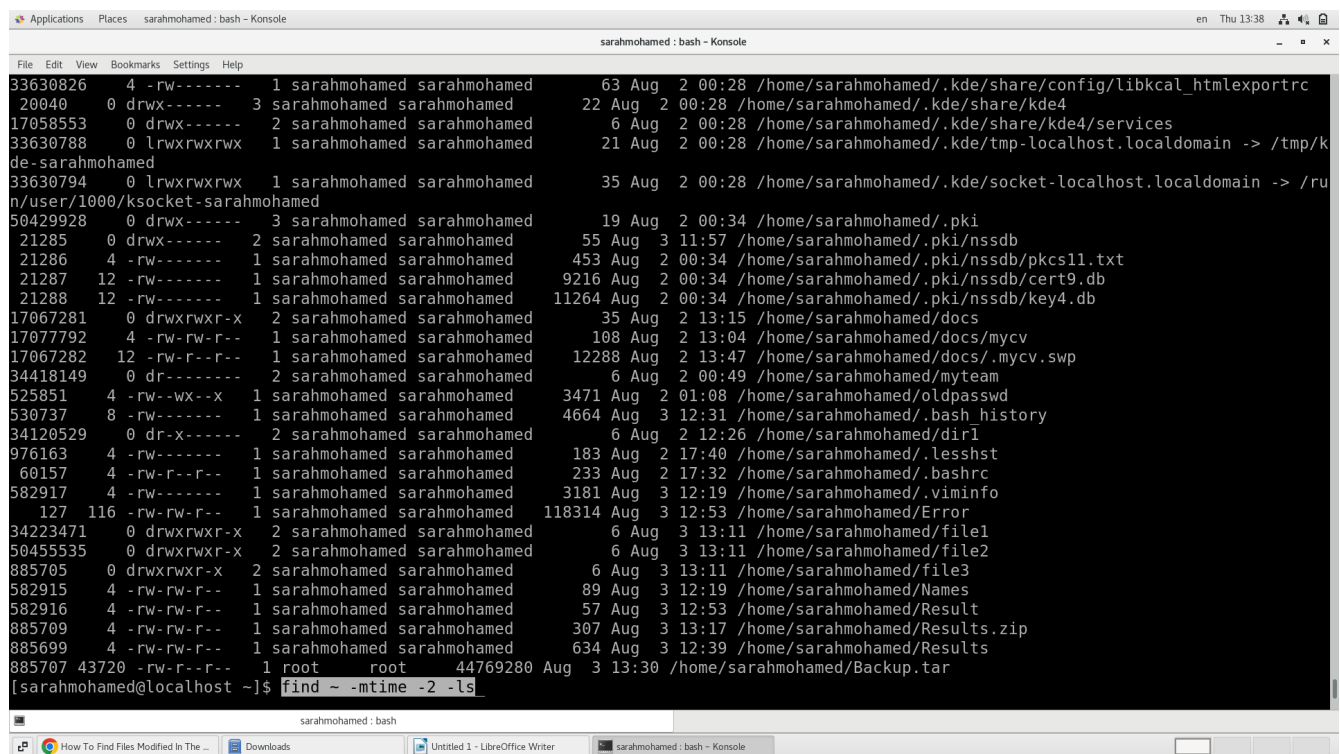
=> **zcat**, **bzcat**

3. Backup /etc directory using tar utility.



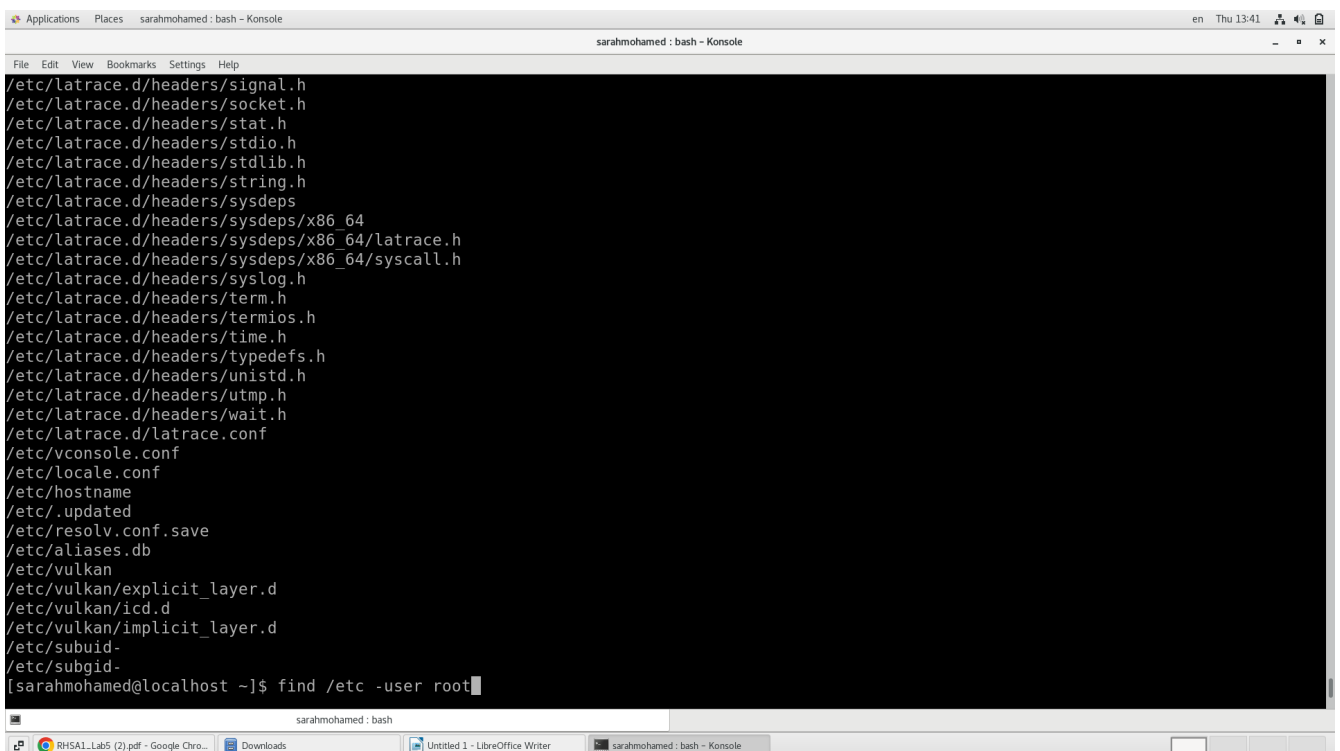
```
[sarahmohamed@localhost ~]$ sudo tar -cf Backup.tar /etc
[sudo] password for sarahmohamed:
tar: Removing leading '/' from member names
[sarahmohamed@localhost ~]$ ls
Backup.tar  docs          Error  file3
Desktop    Documents    file1  google-chrome-stable_current_x86_64.rpm  myteam  perl5  Result  Templates
dir1       Downloads    file2  Music                                     oldpasswd  Public  Results  Videos
[sarahmohamed@localhost ~]$
```

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



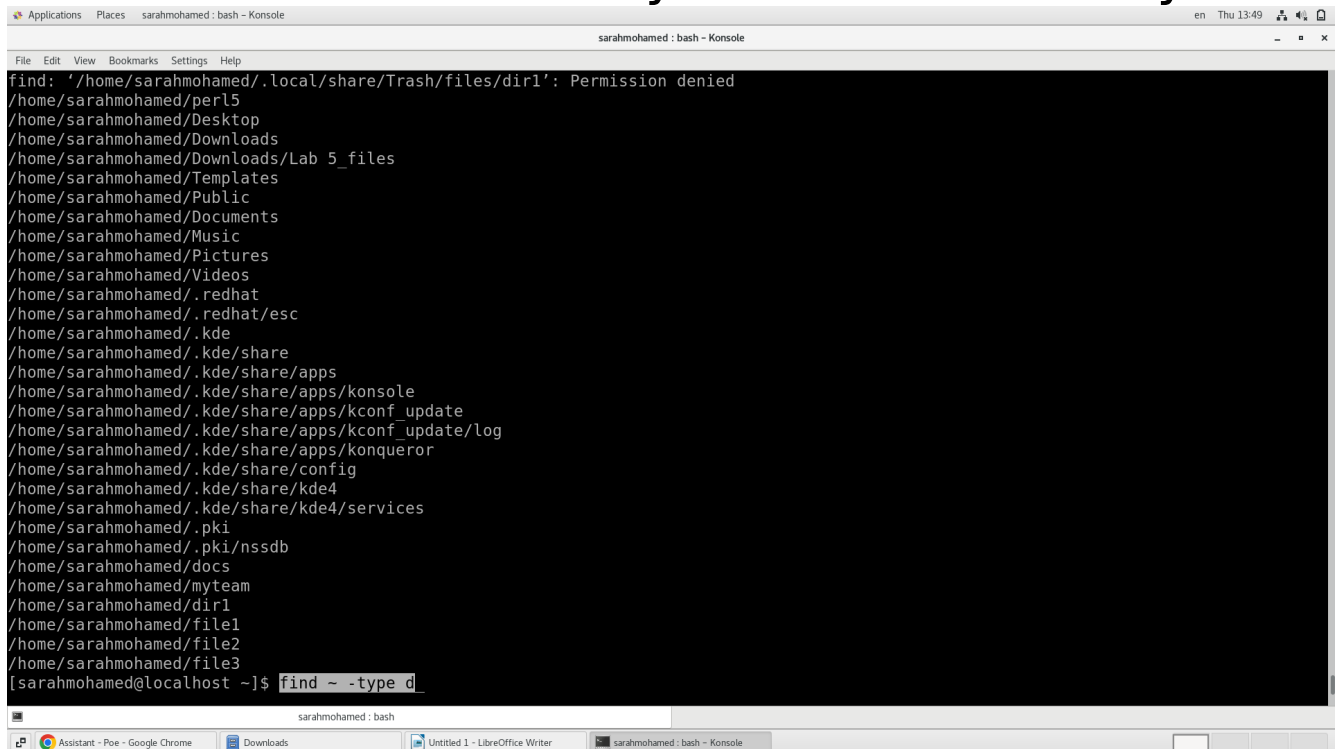
```
File Edit View Bookmarks Settings Help
33630826 4 -rw----- 1 sarahmohamed sarahmohamed 63 Aug 2 00:28 /home/sarahmohamed/.kde/share/config/libkcal_htmlexportrc
20040 0 drwx----- 3 sarahmohamed sarahmohamed 22 Aug 2 00:28 /home/sarahmohamed/.kde/share/kde4
17058553 0 drwx----- 2 sarahmohamed sarahmohamed 6 Aug 2 00:28 /home/sarahmohamed/.kde/share/kde4/services
33630788 0 lrwxrwxrwx 1 sarahmohamed sarahmohamed 21 Aug 2 00:28 /home/sarahmohamed/.kde/tmp-localhost.localdomain -> /tmp/k
de-sarahmohamed
33630794 0 lrwxrwxrwx 1 sarahmohamed sarahmohamed 35 Aug 2 00:28 /home/sarahmohamed/.kde/socket-localhost.localdomain -> /ru
n/user/1000/ksocket-sarahmohamed
50429928 0 drwx----- 3 sarahmohamed sarahmohamed 19 Aug 2 00:34 /home/sarahmohamed/.pki
21285 0 drwx----- 2 sarahmohamed sarahmohamed 55 Aug 3 11:57 /home/sarahmohamed/.pki/nssdb
21286 4 -rw----- 1 sarahmohamed sarahmohamed 453 Aug 2 00:34 /home/sarahmohamed/.pki/nssdb/pkcs11.txt
21287 12 -rw----- 1 sarahmohamed sarahmohamed 9216 Aug 2 00:34 /home/sarahmohamed/.pki/nssdb/cert9.db
21288 12 -rw----- 1 sarahmohamed sarahmohamed 11264 Aug 2 00:34 /home/sarahmohamed/.pki/nssdb/key4.db
17067281 0 drwxrwxr-x 2 sarahmohamed sarahmohamed 35 Aug 2 13:15 /home/sarahmohamed/docs
17077792 4 -rw-rw-r-- 1 sarahmohamed sarahmohamed 108 Aug 2 13:04 /home/sarahmohamed/docs/mycv
17067282 12 -rw-r--r-- 1 sarahmohamed sarahmohamed 12288 Aug 2 13:47 /home/sarahmohamed/docs/mycv.swp
34418149 0 dr----- 2 sarahmohamed sarahmohamed 6 Aug 2 00:49 /home/sarahmohamed/myteam
525851 4 -rw--wx--x 1 sarahmohamed sarahmohamed 3471 Aug 2 01:08 /home/sarahmohamed/oldpasswd
530737 8 -rw----- 1 sarahmohamed sarahmohamed 4664 Aug 3 12:31 /home/sarahmohamed/.bash_history
34120529 0 dr-x----- 2 sarahmohamed sarahmohamed 6 Aug 2 12:26 /home/sarahmohamed/dir1
976163 4 -rw----- 1 sarahmohamed sarahmohamed 183 Aug 2 17:40 /home/sarahmohamed/.lessht
60157 4 -rw-r--r-- 1 sarahmohamed sarahmohamed 233 Aug 2 17:32 /home/sarahmohamed/.bashrc
582917 4 -rw----- 1 sarahmohamed sarahmohamed 3181 Aug 3 12:19 /home/sarahmohamed/.viminfo
127 116 -rw-rw-r-- 1 sarahmohamed sarahmohamed 118314 Aug 3 12:53 /home/sarahmohamed/Error
34223471 0 drwxrwxr-x 2 sarahmohamed sarahmohamed 6 Aug 3 13:11 /home/sarahmohamed/file1
50455535 0 drwxrwxr-x 2 sarahmohamed sarahmohamed 6 Aug 3 13:11 /home/sarahmohamed/file2
885705 0 drwxrwxr-x 2 sarahmohamed sarahmohamed 6 Aug 3 13:11 /home/sarahmohamed/file3
582915 4 -rw-rw-r-- 1 sarahmohamed sarahmohamed 89 Aug 3 12:19 /home/sarahmohamed/Names
582916 4 -rw-rw-r-- 1 sarahmohamed sarahmohamed 57 Aug 3 12:53 /home/sarahmohamed/Result
885709 4 -rw-rw-r-- 1 sarahmohamed sarahmohamed 307 Aug 3 13:17 /home/sarahmohamed/Results.zip
885699 4 -rw-rw-r-- 1 sarahmohamed sarahmohamed 634 Aug 3 12:39 /home/sarahmohamed/Results
885707 43720 -rw-r--r-- 1 root root 44769280 Aug 3 13:30 /home/sarahmohamed/Backup.tar
[sarahmohamed@localhost ~]$ find ~ -mtime -2 -ls
```

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



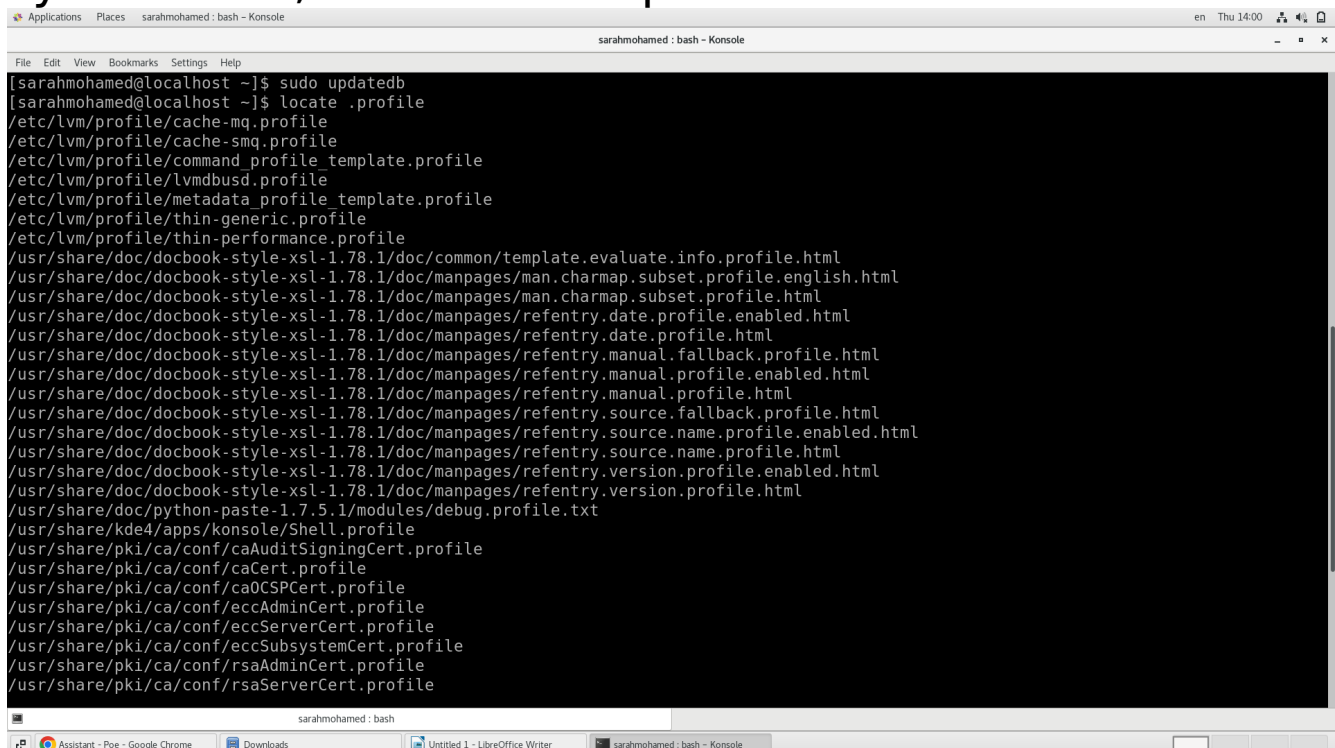
```
File Edit View Bookmarks Settings Help
/etc/latrace.d/headers/signal.h
/etc/latrace.d/headers/socket.h
/etc/latrace.d/headers/stat.h
/etc/latrace.d/headers/stdio.h
/etc/latrace.d/headers/stdlib.h
/etc/latrace.d/headers/string.h
/etc/latrace.d/headers/sysdeps
/etc/latrace.d/headers/sysdeps/x86_64
/etc/latrace.d/headers/sysdeps/x86_64/latrace.h
/etc/latrace.d/headers/sysdeps/x86_64/syscall.h
/etc/latrace.d/headers/syslog.h
/etc/latrace.d/headers/term.h
/etc/latrace.d/headers/termios.h
/etc/latrace.d/headers/time.h
/etc/latrace.d/headers/typedefs.h
/etc/latrace.d/headers/unistd.h
/etc/latrace.d/headers/utmp.h
/etc/latrace.d/headers/wait.h
/etc/latrace.d/latrace.conf
/etc/vconsole.conf
/etc/locale.conf
/etc/hostname
/etc/updated
/etc/resolv.conf.save
/etc/aliases.db
/etc/vulkan
/etc/vulkan/explicit_layer.d
/etc/vulkan/icd.d
/etc/vulkan/implicit_layer.d
/etc/subuid
/etc/subgid
[sarahmohamed@localhost ~]$ find /etc -user root
```

6. Find all directories in your home directory.



```
Applications  Places  sarahmohamed : bash - Konsole
sarahmohamed : bash - Konsole
File Edit View Bookmarks Settings Help
find: '/home/sarahmohamed/.local/share/Trash/files/dir1': Permission denied
/home/sarahmohamed/perl5
/home/sarahmohamed/Desktop
/home/sarahmohamed/Downloads
/home/sarahmohamed/Downloads/Lab 5_files
/home/sarahmohamed/Templates
/home/sarahmohamed/Public
/home/sarahmohamed/Documents
/home/sarahmohamed/Music
/home/sarahmohamed/Pictures
/home/sarahmohamed/Videos
/home/sarahmohamed/.redhat
/home/sarahmohamed/.redhat/esc
/home/sarahmohamed/.kde
/home/sarahmohamed/.kde/share
/home/sarahmohamed/.kde/share/apps
/home/sarahmohamed/.kde/share/apps/konsole
/home/sarahmohamed/.kde/share/apps/kconf_update
/home/sarahmohamed/.kde/share/apps/kconf_update/log
/home/sarahmohamed/.kde/share/apps/konqueror
/home/sarahmohamed/.kde/share/config
/home/sarahmohamed/.kde/share/kde4
/home/sarahmohamed/.kde/share/kde4/services
/home/sarahmohamed/.pki
/home/sarahmohamed/.pki/nssdb
/home/sarahmohamed/docs
/home/sarahmohamed/myteam
/home/sarahmohamed/dir1
/home/sarahmohamed/file1
/home/sarahmohamed/file2
/home/sarahmohamed/file3
[sarahmohamed@localhost ~]$ find ~ -type d
```

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



```
Applications  Places  sarahmohamed : bash - Konsole
sarahmohamed : bash - Konsole
File Edit View Bookmarks Settings Help
[sarahmohamed@localhost ~]$ sudo updatedb
[sarahmohamed@localhost ~]$ locate .profile
/etc/lvm/profile/cache-mq.profile
/etc/lvm/profile/cache-smq.profile
/etc/lvm/profile/command_profile_template.profile
/etc/lvm/profile/lvmdbusd.profile
/etc/lvm/profile/metadata_profile_template.profile
/etc/lvm/profile/thin-generic.profile
/etc/lvm/profile/thin-performance.profile
/usr/share/doc/docbook-style-xsl-1.78.1/doc/common/template.evaluate.info.profile.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/man.charmap.subset.profile.english.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/man.charmap.subset.profile.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.date.profile.enabled.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.date.profile.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.manual.fallback.profile.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.manual.profile.enabled.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.manual.profile.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.source.fallback.profile.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.source.name.profile.enabled.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.source.name.profile.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.version.profile.enabled.html
/usr/share/doc/docbook-style-xsl-1.78.1/doc/manpages/refentry.version.profile.html
/usr/share/doc/python-paste-1.7.5.1/modules/debug.profile.txt
/usr/share/kde4/apps/konsole/Shell.profile
/usr/share/pki/ca/conf/caAuditSigningCert.profile
/usr/share/pki/ca/conf/caCert.profile
/usr/share/pki/ca/conf/caOCSPCert.profile
/usr/share/pki/ca/conf/eccAdminCert.profile
/usr/share/pki/ca/conf/eccServerCert.profile
/usr/share/pki/ca/conf/eccSubsystemCert.profile
/usr/share/pki/ca/conf/rsaAdminCert.profile
/usr/share/pki/ca/conf/rsaServerCert.profile
```

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

- /etc/passwd: This is a text file containing information about the system's users and is typically used for authentication.
- /dev/pts/0: This is a character device file representing a terminal.
- /etc: This is a directory containing system configuration files.
- /dev/sda: This is a block device file representing a hard disk drive.

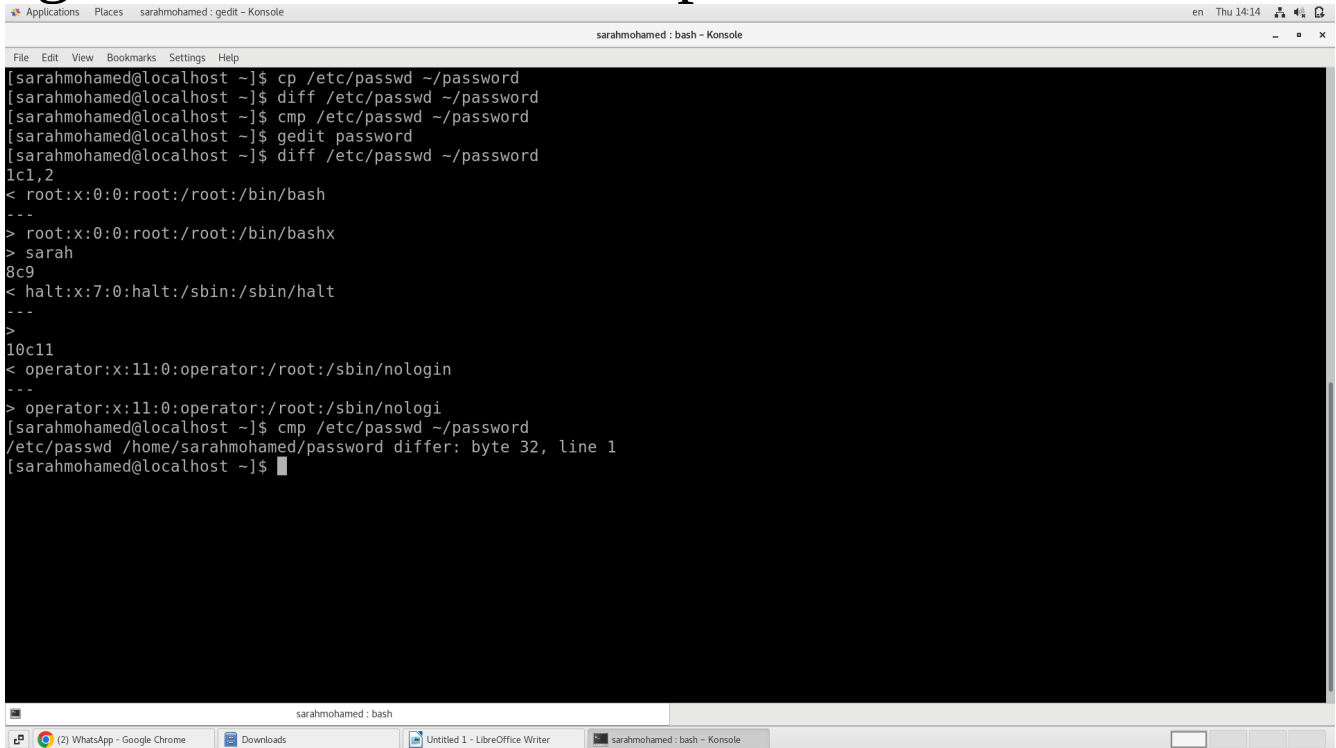
9. List the inode numbers of /, /etc, /etc/hosts

```
Applications Places sarahmohamed : bash - Konsole en Thu 14:08
sarahmohamed : bash - Konsole
File Edit View Bookmarks Settings Help
[sarahmohamed@localhost ~]$ ls -li /etc /etc/hosts
67191260 /etc/hosts

/:
10662 bin 67157953 etc 115 lib64 101013187 opt 1420 run 1 sys 101 var
96 boot 96 home 33630047 media 1 proc 117 sbin 67157960 tmp
1025 dev 113 lib 67191278 mnt 100663393 root 114 srv 101013022 usr

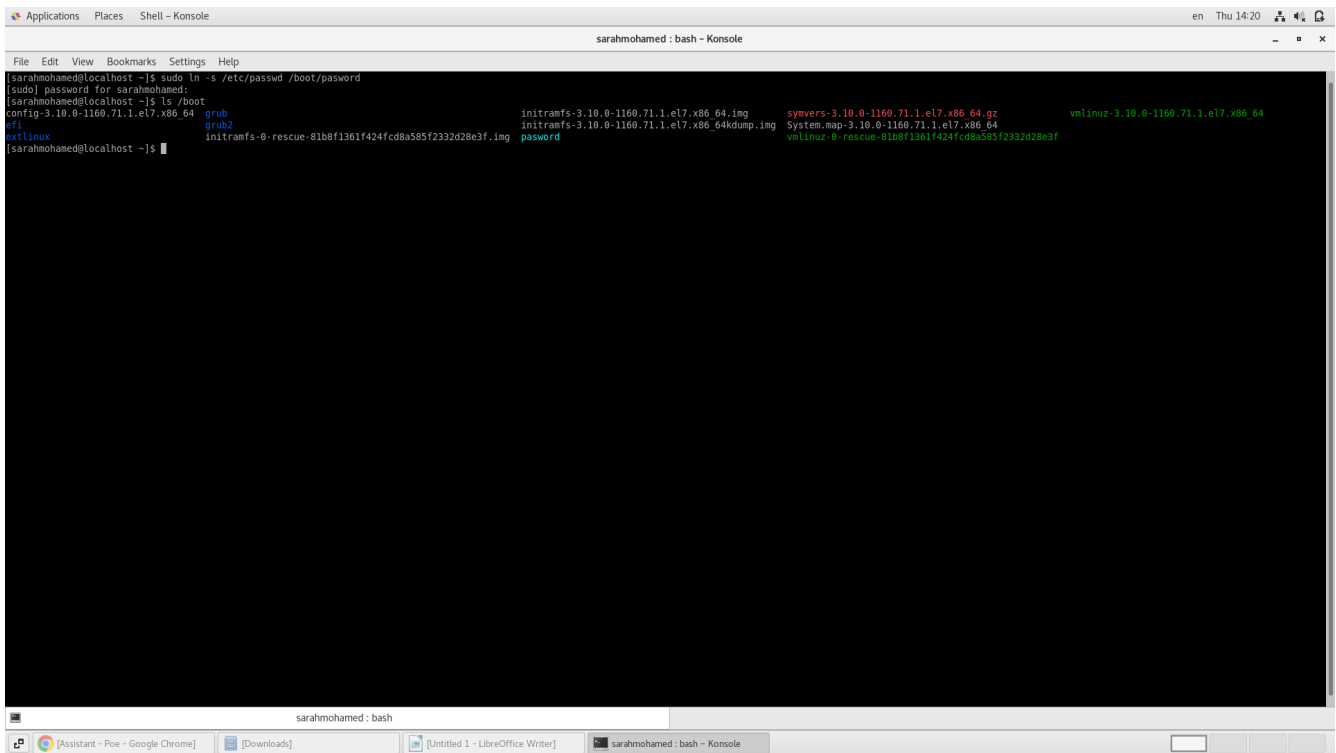
/etc:
102323957 abrt 328450 gcrypt 103938273 mcelog 67159376 redhat-release
68668503 adjtime 67381678 gdbinit 67193191 mime.types 67341010 request-key.conf
1672783 akonadi 101160872 gdbinit.d 67380934 mke2fs.conf 33802531 request-key.d
67191250 aliases 37869491 gdm 1157136 modprobe.d 71218535 resolv.conf
67158634 aliases.db 36587148 geoclue 35267069 modules-load.d 67158630 resolv.conf.save
102069511 alsa 67936855 GeoIP.conf 67191264 motd 67203009 rpc
18804 alternatives 68620690 ghostscript 4098737 mstflint 101013121 rpm
69010497 amanda 68677681 gimp 67157956 mtab 68580098 rsyncd.conf
68645762 anacrontab 333492 glvnd 67506096 mtools.conf 70058860 rsyslog.conf
67341629 asound.conf 68126986 gnupg 69503073 multipath 101721061 rsyslog.d
68584278 at.deny 67304705 GREP_COLORS 67341927 my.cnf 68668507 rwtab
102370145 audisp 333892 groff 335528 my.cnf.d 33952217 rwtab.d
36431757 audit 70827371 group 102545334 named 102009132 samba
68583648 autofs.conf 68111684 group- 70300578 named-chroot.files 1597393 sane.d
68583649 autofs_ldap_auth.conf 68972229 grub2.cfg 69834112 named.conf 101128469 sasl2
68583612 auto.master 67191242 grub.d 69834113 named.iscdlv.key 38757515 scl
1934125 auto.master.d 70827369 gshadow 69834114 named.rfc1912.zones 67191269 securetty
68583613 auto.misc 68111682 gshadow- 69834117 named.root.key 101170615 security
68583614 auto.net 33802977 gss 70804338 nanorc 101649356 selinux
68583615 auto.smb 35774632 gssproxy 35800007 ndctl 67191270 services
103905235 avahi 34872419 highlight 67355256 netconfig 68470714 sestatus.conf
67191275 bash_completion.d 67191259 host.conf 68668495 NetworkManager 36994356 setroubleshoot
67191251 bashrc 67157966 hostname 68668505 networks 103782384 setupptool.d
```

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.



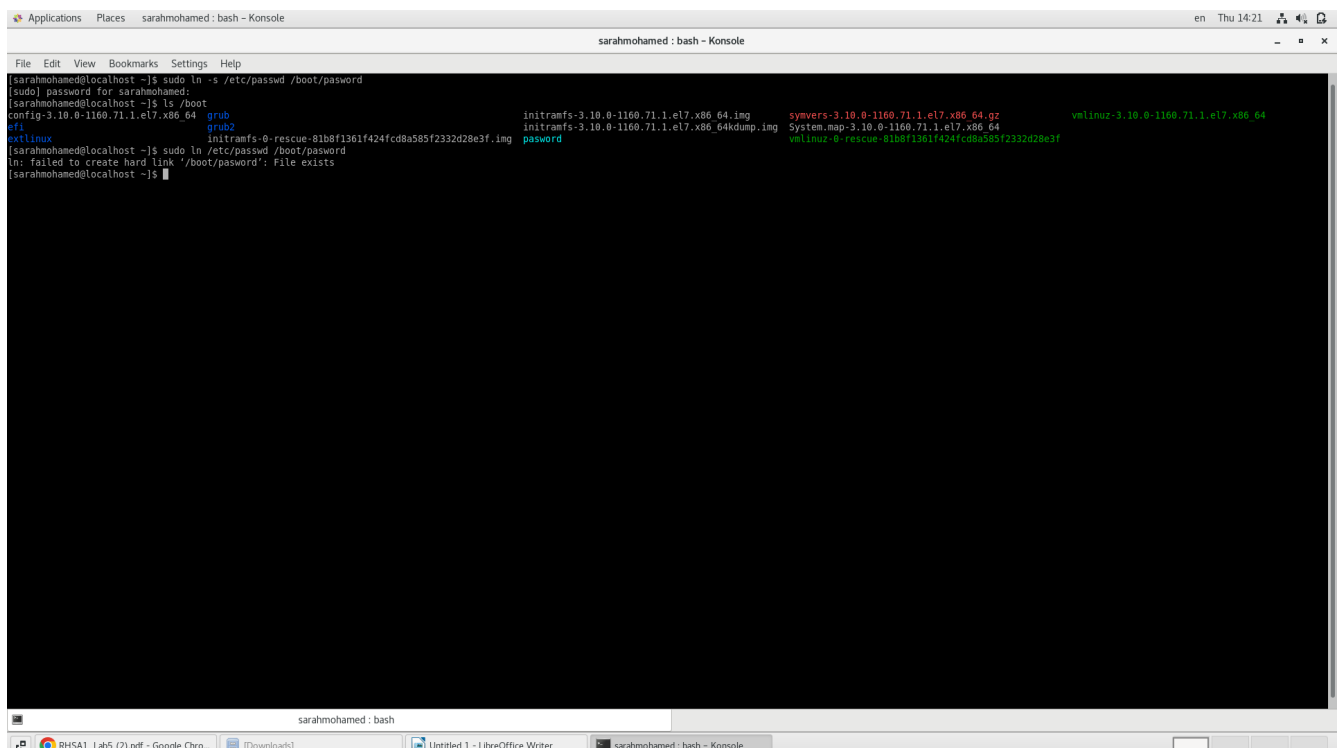
```
sarahmohamed@localhost: gedit - Konsole
sarahmohamed : bash - Konsole
File Edit View Bookmarks Settings Help
[sarahmohamed@localhost ~]$ cp /etc/passwd ~/password
[sarahmohamed@localhost ~]$ diff /etc/passwd ~/password
[sarahmohamed@localhost ~]$ cmp /etc/passwd ~/password
[sarahmohamed@localhost ~]$ gedit password
[sarahmohamed@localhost ~]$ diff /etc/passwd ~/password
1c1,2
< root:x:0:0:root:/root:/bin/bash
---
> root:x:0:0:root:/root:/bin/bashx
> sarah
8c9
< halt:x:7:0:halt:/sbin:/sbin/halt
---
>
10c11
< operator:x:11:0:operator:/root:/sbin/nologin
---
> operator:x:11:0:operator:/root:/sbin/nologi
[sarahmohamed@localhost ~]$ cmp /etc/passwd ~/password
/etc/passwd /home/sarahmohamed/password differ: byte 32, line 1
[sarahmohamed@localhost ~]$
```


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



```
sarahmohamed@localhost ~$ sudo ln -s /etc/passwd /boot/passwd
[sudo] password for sarahmohamed:
[sarahmohamed@localhost ~]$ ls /boot
config-3.10.0-1160.71.1.el7.x86_64  grub  initramfs-3.10.0-1160.71.1.el7.x86_64.img  symvers-3.10.0-1160.71.1.el7.x86_64.gz  vmlinuz-3.10.0-1160.71.1.el7.x86_64
efi  grub2  initramfs-3.10.0-1160.71.1.el7.x86_64kdump.img  System.map-3.10.0-1160.71.1.el7.x86_64  vmlinuz-0-rescue-81b8f1361f424fcd8a585f2332d28e3f
extlinux  initramfs-0-rescue-81b8f1361f424fcd8a585f2332d28e3f.img  password
```

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



```
sarahmohamed@localhost ~$ sudo ln /etc/passwd /boot/passwd
[sudo] password for sarahmohamed:
[sarahmohamed@localhost ~]$ ls /boot
config-3.10.0-1160.71.1.el7.x86_64  grub  initramfs-3.10.0-1160.71.1.el7.x86_64.img  symvers-3.10.0-1160.71.1.el7.x86_64.gz  vmlinuz-3.10.0-1160.71.1.el7.x86_64
efi  grub2  initramfs-3.10.0-1160.71.1.el7.x86_64kdump.img  System.map-3.10.0-1160.71.1.el7.x86_64  vmlinuz-0-rescue-81b8f1361f424fcd8a585f2332d28e3f
extlinux  initramfs-0-rescue-81b8f1361f424fcd8a585f2332d28e3f.img  password
[sarahmohamed@localhost ~]$ sudo ln /etc/passwd /boot/passwd
ln: failed to create hard link '/boot/passwd': File exists
[sarahmohamed@localhost ~]$
```

I cannot create a hard link of `/etc/passwd` in the `/boot` directory because hard links can only be created between files on the same file system, and `/etc` and `/boot` are typically on separate file systems.