

## Task 2

### Exercise 1: Permissions

1-Create a file called secret.txt with some content

```
ubuntu@ubuntu:/home$ sudo vim secret.txt  
ubuntu@ubuntu:/home$
```

```
pwd  
ll  
echo "hello world"  
ls -la  
~  
~
```

2-Check its permissions with ls -l

```
ubuntu@ubuntu:/home$ ls -la secret.txt  
-rw-r--r-- 1 root root 33 Oct 17 21:51 secret.txt  
ubuntu@ubuntu:/home$
```

3-. Change permissions to 600 (owner read/write only)

```
ubuntu@ubuntu:/home$ sudo chmod 600 secret.txt  
ubuntu@ubuntu:/home$ ls -la secret.txt  
-rw----- 1 root root 33 Oct 17 21:51 secret.txt  
ubuntu@ubuntu:/home$
```

#### 4-Try to read it as another user

```
info: Adding user `menna' to group `users' ...  
ubuntu@ubuntu:/home$ sudo su menna  
menna@ubuntu:/home$ ls -la secret.txt  
-rw----- 1 root root 33 Oct 17 21:51 secret.txt  
menna@ubuntu:/home$ cat secret.txt  
cat: secret.txt: Permission denied  
menna@ubuntu:/home$
```

#### 5-. Change permissions back to 644

```
-rw----- 1 root    root      33 Oct 17 21:51 secret.txt
-rw-r--r-- 1 root    root    12288 Oct 17 21:52 .secret.txt.swp
drwxr-x--- 17 ubuntu  ubuntu   460 Oct 17 22:12 ubuntu
menna@ubuntu:/home$ sudo chown menna:menna secret.txt
menna@ubuntu:/home$ ls -la
total 16
drwxr-xr-x 1 root    root      140 Oct 17 21:55 .
drwxr-xr-x 1 root    root      240 Oct 17 21:40 ..
drwxr-x--- 3 installer installer 120 Oct 17 21:40 installer
drwxr-x--- 5 menna   menna     220 Oct 17 22:48 menna
-rw----- 1 menna   menna      33 Oct 17 21:51 secret.txt
-rw-r--r-- 1 root    root    12288 Oct 17 21:52 .secret.txt.swp
drwxr-x--- 17 ubuntu  ubuntu   460 Oct 17 22:12 ubuntu
menna@ubuntu:/home$ chmod 644 secret.txt
menna@ubuntu:/home$ ls -la
total 16
drwxr-xr-x 1 root    root      140 Oct 17 21:55 .
drwxr-xr-x 1 root    root      240 Oct 17 21:40 ..
drwxr-x--- 3 installer installer 120 Oct 17 21:40 installer
drwxr-x--- 5 menna   menna     220 Oct 17 22:48 menna
-rw-r--r-- 1 menna   menna      33 Oct 17 21:51 secret.txt
-rw-r--r-- 1 root    root    12288 Oct 17 21:52 .secret.txt.swp
drwxr-x--- 17 ubuntu  ubuntu   460 Oct 17 22:12 ubuntu
menna@ubuntu:/home$
```

## Exercise 2: Text Processing

1-Create a file with the following content

```
ubuntu@ubuntu:~$ cat > task
jone,25,Engineer
jane,30,Manager
Bob,22,Developer
Alice,28,Designer

^C
ubuntu@ubuntu:~$ cat task
jone,25,Engineer
jane,30,Manager
Bob,22,Developer
Alice,28,Designer

ubuntu@ubuntu:~$
```

2-Use grep to find lines containing "Engineer"

```
ubuntu@ubuntu:~$ cat task
jone,25,Engineer
jane,30,Manager
Bob,22,Developer
Alice,28,Designer

ubuntu@ubuntu:~$ grep "Engineer" task
jone,25,Engineer
ubuntu@ubuntu:~$
```

3-Use awk to print only names and ages

```
ubuntu@ubuntu:~$ awk -F ',' '{print $1 , $2}' task
jone 25
jane 30
Bob 22
Alice 28

ubuntu@ubuntu:~$ awk -F ',' '{printf "Name: %s, Age: %i \n", $1 , $2}' task
Name: jone, Age: 25
Name: jane, Age: 30
Name: Bob, Age: 22
Name: Alice, Age: 28
Name: , Age: 0
ubuntu@ubuntu:~$
```

#### 4- Use sed to change "Developer" to "Programmer"

```
ubuntu@ubuntu:~$ sed "s/Developer/Programmers/" task
jone,25,Engineer
jane,30,Manager
Bob,22,Programmers
Alice,28,Designer

ubuntu@ubuntu:~$ cat task
jone,25,Engineer
jane,30,Manager
Bob,22,Developer
Alice,28,Designer

ubuntu@ubuntu:~$
```

### Exercise 3: Pipes and Redirection

#### 1-List all files in your home directory

```
ubuntu@ubuntu:~$ ls -la /home
total 16
drwxr-xr-x  1 root    root    140 Oct 17 21:55 .
drwxr-xr-x  1 root    root    240 Oct 17 21:40 ..
drwxr-x---  3 installer installer 120 Oct 17 21:40 installer
drwxr-x---  5 menna   menna   220 Oct 17 22:57 menna
-rw-r--r--  1 menna   menna    33 Oct 17 21:51 secret.txt
-rwxrwxr-x  1 menna   menna  12288 Oct 17 21:52 .secret.txt.swp
drwxr-x--- 17 ubuntu  ubuntu  480 Oct 17 22:58 ubuntu
ubuntu@ubuntu:~$
```

2- Save the list to a file called filelist.txt

aw

```
ubuntu@ubuntu:~$ ls -la /home
total 16
drwxr-xr-x  1 root    root    140 Oct 17 21:55 .
drwxr-xr-x  1 root    root    240 Oct 17 21:40 ..
drwxr-x---  3 installer installer 120 Oct 17 21:40 installer
drwxr-x---  5 menna   menna   220 Oct 17 22:57 menna
-rw-r--r--  1 menna   menna    33 Oct 17 21:51 secret.txt
-rwxrwxr-x  1 menna   menna  12288 Oct 17 21:52 .secret.txt.swp
drwxr-x--- 17 ubuntu  ubuntu  480 Oct 17 22:58 ubuntu
ubuntu@ubuntu:~$ ls -la /home > filelist.txt
ubuntu@ubuntu:~$ cat filelist.txt
total 16
drwxr-xr-x  1 root    root    140 Oct 17 21:55 .
drwxr-xr-x  1 root    root    240 Oct 17 21:40 ..
drwxr-x---  3 installer installer 120 Oct 17 21:40 installer
drwxr-x---  5 menna   menna   220 Oct 17 22:57 menna
-rw-r--r--  1 menna   menna    33 Oct 17 21:51 secret.txt
-rwxrwxr-x  1 menna   menna  12288 Oct 17 21:52 .secret.txt.swp
drwxr-x--- 17 ubuntu  ubuntu  500 Oct 17 23:09 ubuntu
ubuntu@ubuntu:~$
```

3-Count how many files you have

```
ubuntu@ubuntu:~$ find -type f | wc
    196      196    10637
ubuntu@ubuntu:~$ find -type f | wc -l
196
ubuntu@ubuntu:~$
```

#### 4-. Find the largest file in your home directory

```
ubuntu@ubuntu:/home$ find . -type f -exec du -sh {} + | sort -rh
2.8M    ./ubuntu/.cache/tracker3/files/meta.db-wal
1.7M    ./ubuntu/.cache/tracker3/files/http%3A%2F%2Ftracker.api.gnome.org%2Fontology%2Fv3%2Ftracker%23FileSystem.db-wal
1.7M    ./ubuntu/.cache/tracker3/files/http%3A%2F%2Ftracker.api.gnome.org%2Fontology%2Fv3%2Ftracker%23Documents.db-wal
1.5M    ./ubuntu/.cache/tracker3/files/http%3A%2F%2Ftracker.api.gnome.org%2Fontology%2Fv3%2Ftracker%23Software.db-wal
1.4M    ./ubuntu/.cache/tracker3/files/http%3A%2F%2Ftracker.api.gnome.org%2Fontology%2Fv3%2Ftracker%23Video.db-wal
1.4M    ./ubuntu/.cache/tracker3/files/http%3A%2F%2Ftracker.api.gnome.org%2Fontology%2Fv3%2Ftracker%23Pictures.db-wal
1.4M    ./ubuntu/.cache/tracker3/files/http%3A%2F%2Ftracker.api.gnome.org%2Fontology%2Fv3%2Ftracker%23Audio.db-wal
1.3M    ./ubuntu/.cache/mesa_shader_cache_db/index
420K    ./ubuntu/.cache/gstreamer-1.0/registry.x86_64.bin
360K    ./ubuntu/.cache/ibus/bus/registry
296K    ./ubuntu/.local/share/nautilus/tags/meta.db
92K     ./ubuntu/.local/share/evolution/addressbook/system/contacts.db
32K     ./ubuntu/.local/share/gvfs-metadata/root-4c3a95fc.log
32K     ./ubuntu/.local/share/gvfs-metadata/home-00d666ec.log
32K     ./ubuntu/.cache/tracker3/files/meta.db-shm
32K     ./ubuntu/.cache/tracker3/files/http%3A%2F%2Ftracker.api.gnome.org%2Fontology%2Fv3%2Ftracker%23Audio.db-wal
```

### Exercise 4: File Operations

#### 1. Create a directory called backup

```
ubuntu@ubuntu:~$ mkdir backup
ubuntu@ubuntu:~$ ll
total 12
drwxr-x--- 18 ubuntu ubuntu 440 Oct 18 10:58 ./
drwxr-xr-x  1 root  root   80 Oct 18 10:56 ../
drwxrwxr-x  2 ubuntu ubuntu  40 Oct 18 10:58 backup/
-rw-r--r--  1 ubuntu ubuntu 220 Oct 18 10:55 .bash_logout
-rw-r--r--  1 ubuntu ubuntu 3771 Oct 18 10:55 .bashrc
drwx----- 10 ubuntu ubuntu 220 Oct 18 10:57 .cache/
drwxr-xr-x 12 ubuntu ubuntu 400 Oct 18 10:57 .config/
drwxr-xr-x  2 ubuntu ubuntu  60 Oct 18 10:55 Desktop/
```

## 2- Copy some files to the backup directory

```
ubuntu@ubuntu:~$ cp .profile backup/
ubuntu@ubuntu:~$ cp .bashrc backup/
ubuntu@ubuntu:~$ cp .bash_logout backup/
ubuntu@ubuntu:~$ ls -la backup/
total 12
drwxrwxr-x  2 ubuntu ubuntu 100 Oct 18 11:00 .
drwxr-x--- 18 ubuntu ubuntu 440 Oct 18 10:58 ..
-rw-r--r--  1 ubuntu ubuntu 220 Oct 18 11:00 .bash_logout
-rw-r--r--  1 ubuntu ubuntu 3771 Oct 18 11:00 .bashrc
-rw-r--r--  1 ubuntu ubuntu 807 Oct 18 11:00 .profile
ubuntu@ubuntu:~$
```

## 3- . Create a tar archive of the backup directory



```
ubuntu@ubuntu:~$ tar cvf backup.tar backup/
backup/
backup/.bash_logout
backup/.bashrc
backup/.profile
ubuntu@ubuntu:~$ ls -l
total 12
drwxrwxr-x 2 ubuntu ubuntu 100 Oct 18 11:00 backup
-rw-rw-r-- 1 ubuntu ubuntu 10240 Oct 18 11:04 backup.tar
drwxr-xr-x 2 ubuntu ubuntu 60 Oct 18 10:55 Desktop
drwxr-xr-x 2 ubuntu ubuntu 40 Oct 18 10:56 Documents
drwxr-xr-x 2 ubuntu ubuntu 40 Oct 18 10:56 Downloads
drwxr-xr-x 2 ubuntu ubuntu 40 Oct 18 10:56 Music
drwxr-xr-x 2 ubuntu ubuntu 40 Oct 18 10:56 Pictures
drwxr-xr-x 2 ubuntu ubuntu 40 Oct 18 10:56 Public
drwx----- 5 ubuntu ubuntu 100 Oct 18 10:58 snap
drwxr-xr-x 2 ubuntu ubuntu 40 Oct 18 10:56 Templates
drwxr-xr-x 2 ubuntu ubuntu 40 Oct 18 10:56 Videos
ubuntu@ubuntu:~$
```

#### 4- Remove the original backup directory

```
ubuntu@ubuntu:~$ rm -rf backup
ubuntu@ubuntu:~$ ll
total 24
drwxr-x--- 17 ubuntu ubuntu 440 Oct 18 11:06 ./
drwxr-xr-x 1 root root 80 Oct 18 10:56 ../
-rw-rw-r-- 1 ubuntu ubuntu 10240 Oct 18 11:04 backup.tar
-rw-r--r-- 1 ubuntu ubuntu 220 Oct 18 10:55 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Oct 18 10:55 .bashrc
drwx----- 10 ubuntu ubuntu 220 Oct 18 10:57 .cache/
drwxr-xr-x 12 ubuntu ubuntu 400 Oct 18 10:57 .config/
```

#### 5- Extract the archive to verify it works

```
ubuntu@ubuntu:~$ tar xvf backup.tar
backup/
backup/.bash_logout
backup/.bashrc
backup/.profile
ubuntu@ubuntu:~$ ll
total 24
drwxr-x--- 18 ubuntu ubuntu 460 Oct 18 11:07 ./
drwxr-xr-x  1 root  root   80 Oct 18 10:56 ../
drwxrwxr-x  2 ubuntu ubuntu 100 Oct 18 11:00 backup/
-rw-rw-r--  1 ubuntu ubuntu 10240 Oct 18 11:04 backup.tar
-rw-r--r--  1 ubuntu ubuntu 220 Oct 18 10:55 .bash_logout
```

## 9. Homework

1. Create a script that:

Finds all .log files in /var/log

```
ubuntu@ubuntu:~$ find /var/log -name "*.log"
/var/log/alternatives.log
/var/log/apt/history.log
/var/log/bootstrap.log
/var/log/dpkg.log
/var/log/fontconfig.log
find: '/var/log/private': Permission denied
find: '/var/log/speech-dispatcher': Permission denied
find: '/var/log/sss': Permission denied
/var/log/unattended-upgrades/unattended-upgrades-shutdown.log
find: '/var/log/gdm3': Permission denied
/var/log/apport.log
/var/log/auth.log
/var/log/kern.log
/var/log/gpu-manager.log
/var/log/boot.log
/var/log/cloud-init.log
/var/log/cloud-init-output.log
/var/log/casper.log
/var/log/installer/subiquity-server-debug.log
/var/log/installer/subiquity-server-info.log
/var/log/installer/block/discover.log
/var/log/installer/ubuntu_bootstrap.log
```

Searches for "error" in each file

```
ubuntu@ubuntu:~$ grep -r "error" /var/log
/var/log/apt/history.log:Commandline: apt-get --yes -oDebug::pkgDepCache::AutoInstall=yes install accountsservice acl adduser adwaita-icon-theme alsa-base alsa-topology-conf alsa-ucm-conf alsa-utils anacron apg apparmor apport apport-core-dump-handler apport-gtk apport-symptoms appstream apt apt-config-icons apt-config-icons-hidpi aptdaemon aptdaemon-data aspell aspell-en at-spi2-common at-spi2-core avahi-daemon baobab base-files base-passwd bash bash-completion bc bind9-dnssutils bind9-host bind9-libs binutils binutils-common binutils-x86-64-linux-gnu bluez bluez-cups bluez-obexd bolt brltty bsdxtrutils bsdxtrutils bubblewrap busybox-initramfs busybox-static ca-certificates cloud-guest-utils cloud-init cloud-init-base colord colord-data command-not-found console-setup console-setup-linux coreutils cpdb-backend-cups cpio cpp cpp-14 cpp-14-x86-64-linux-gnu cpp-x86-64-linux-gnu cracklib-runtime crash cron cron-daemon-common cups cups-browsed cups-bsd cups-client cups-common cups-core-drivers cups-daemon cups-filters cups-filters-core-drivers cups-ipp-utils cups-pk-helper cups-ppdc cups-server-common dash db
```

```
/var/log/syslog:2025-10-18T10:57:21.166215+00:00 ubuntu gnome-shell[2246]: Received error from D-Bus search provider org.gnome.Terminal.desktop: Gio.IOErrorEnum: Cannot invoke method; proxy is for the well-known name org.gnome.Terminal without an owner, and proxy was constructed with the G_DBUS_PROXY_FLAGS_DO_NOT_AUTO_START flag
/var/log/syslog:2025-10-18T10:57:21.626612+00:00 ubuntu gnome-shell[2246]: Received error from D-Bus search provider org.gnome.Terminal.desktop: Gio.IOErrorEnum: Cannot invoke method; proxy is for the well-known name org.gnome.Terminal without an owner, and proxy was constructed with the G_DBUS_PROXY_FLAGS_DO_NOT_AUTO_START flag
/var/log/syslog:2025-10-18T10:57:23.620233+00:00 ubuntu gnome-shell[2246]: Received error from D-Bus search provider org.gnome.Terminal.desktop: Gio.IOErrorEnum: Cannot invoke method; proxy is for the well-known name org.gnome.Terminal without an owner, and proxy was constructed with the G_DBUS_PROXY_FLAGS_DO_NOT_AUTO_START flag
/var/log/syslog:2025-10-18T10:58:23.690347+00:00 ubuntu gnome-shell[2246]: libinput error: event2 - VirtualPS/2 VMware VMMouse: client bug: event processing lagging behind by 40ms, your system is too slow
/var/log/syslog:2025-10-18T10:58:23.836643+00:00 ubuntu kernel: traps: ubuntu_botstraf2931l general protection fault ip:701b2f7dbfd9 sp:7ffe05943520 error:0 in
```

Saves the results to error\_report.txt

```
ubuntu@ubuntu:~$ grep -r "error" /var/log > error_report.txt
grep: /var/log/btmp: Permission denied
grep: /var/log/journal/b4afcc0dd10b47a0bd76ba39b7abca63/user-1000.journal: binary file matches
grep: /var/log/journal/b4afcc0dd10b47a0bd76ba39b7abca63/system.journal: binary file matches
grep: /var/log/private: Permission denied
grep: /var/log/speech-dispatcher: Permission denied
grep: /var/log/sss: Permission denied
grep: /var/log/gdm3: Permission denied
grep: /var/log/boot.log: Permission denied
grep: /var/log/installer/subiquity-server-debug.log.4094: Permission denied
grep: /var/log/installer/subiquity-server-info.log.4094: Permission denied
ubuntu@ubuntu:~$
```