

# *Operating Systems*

## **Lab Assignment 1**

*Labs 2+3*



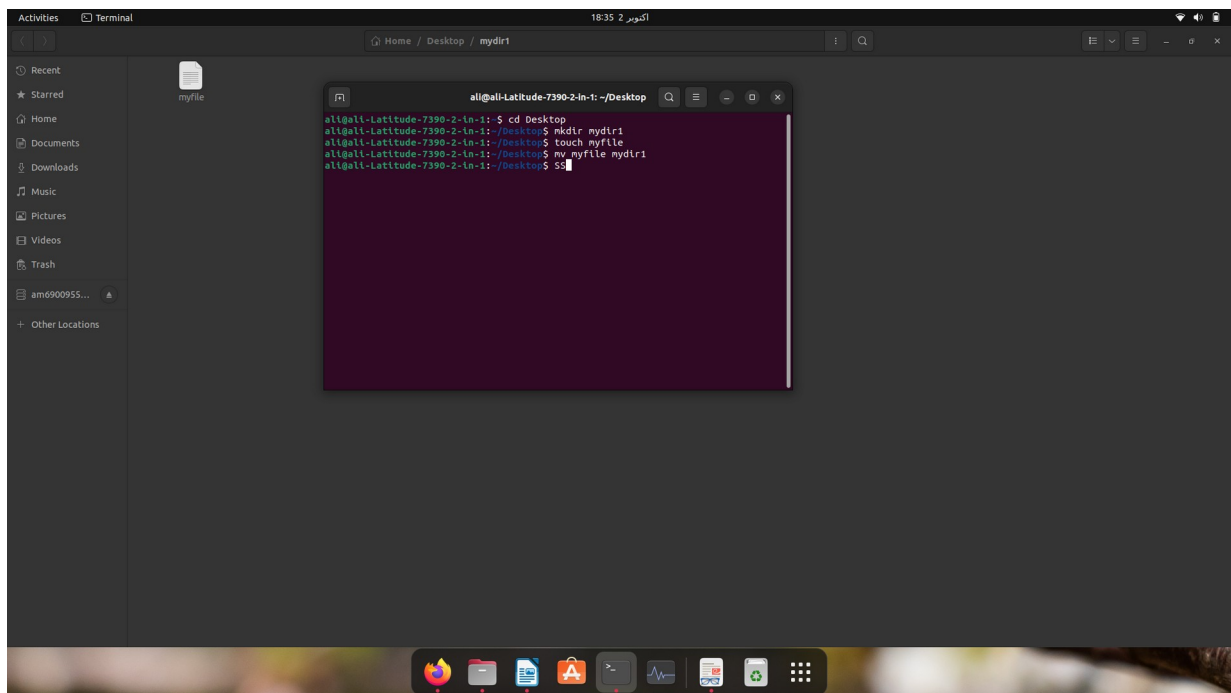
SUBMITTED TO :  
DR. RUBINA ADNAN

SUBMITTED BY:  
MUHAMMAD ALI AWAN  
SP21-BCS-056

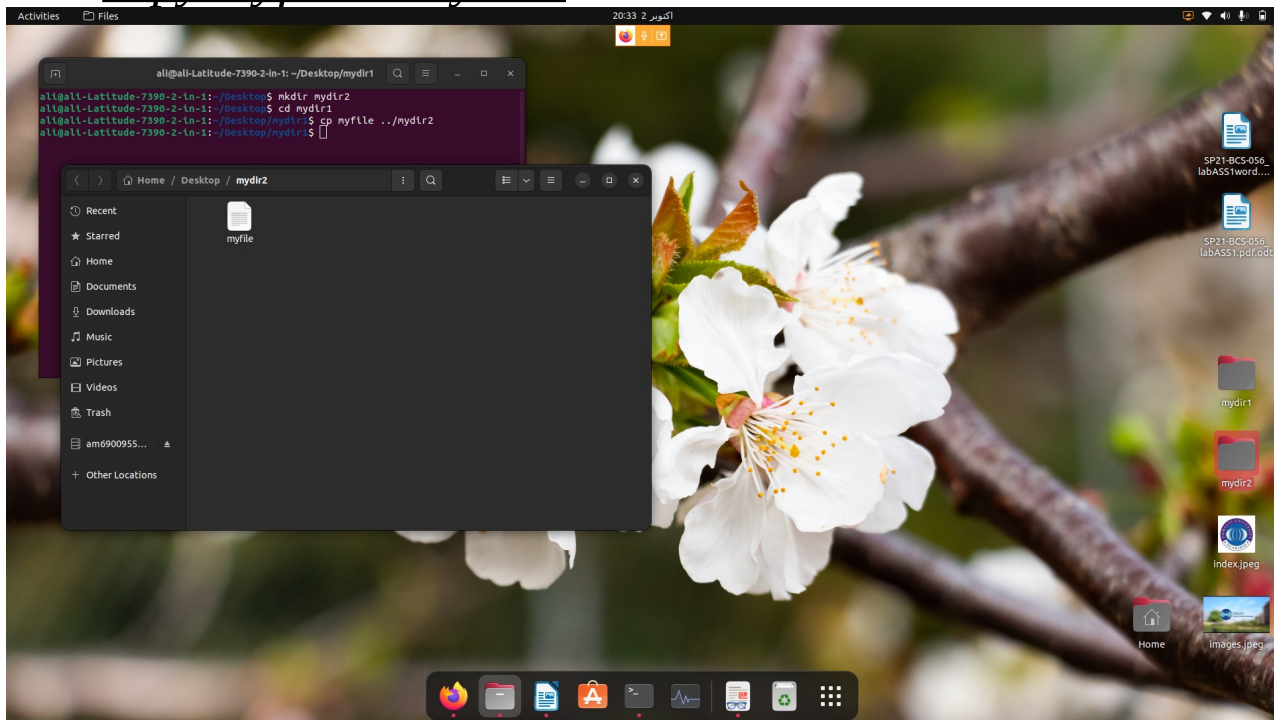
# Lab 2

## Graded Task 1:

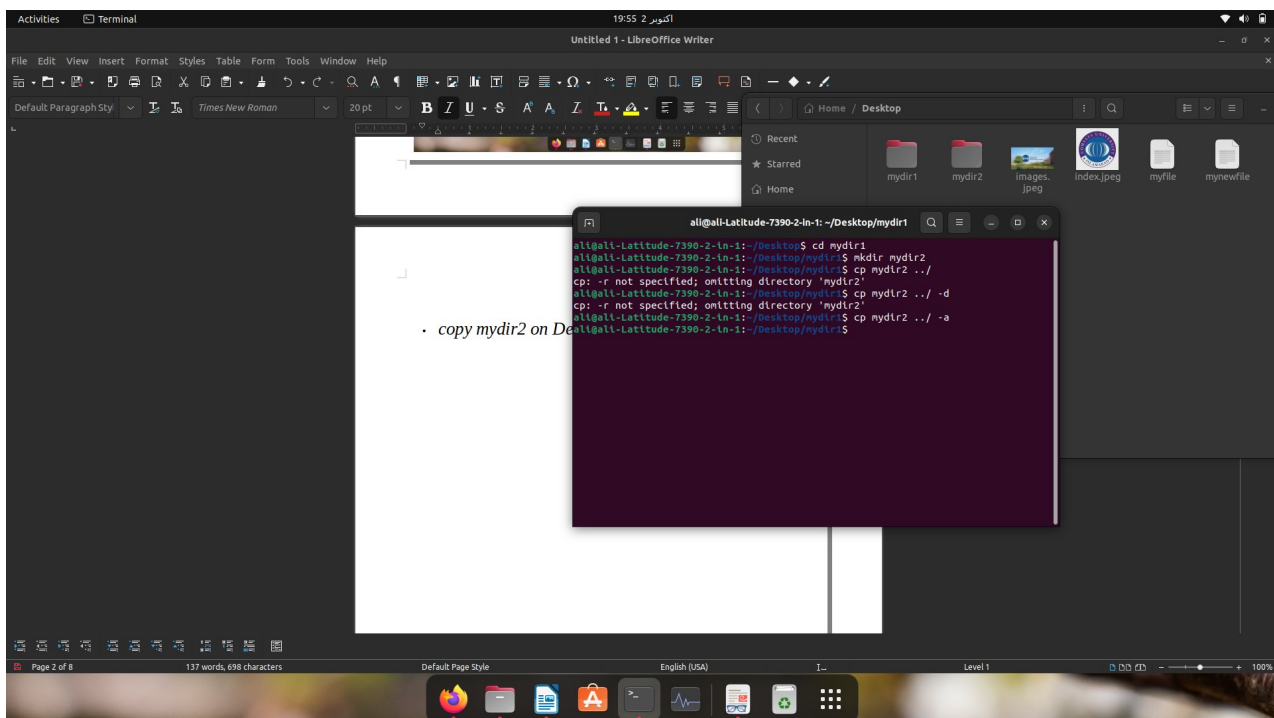
- move myfile to mydir1



- copy myfile to mydir2

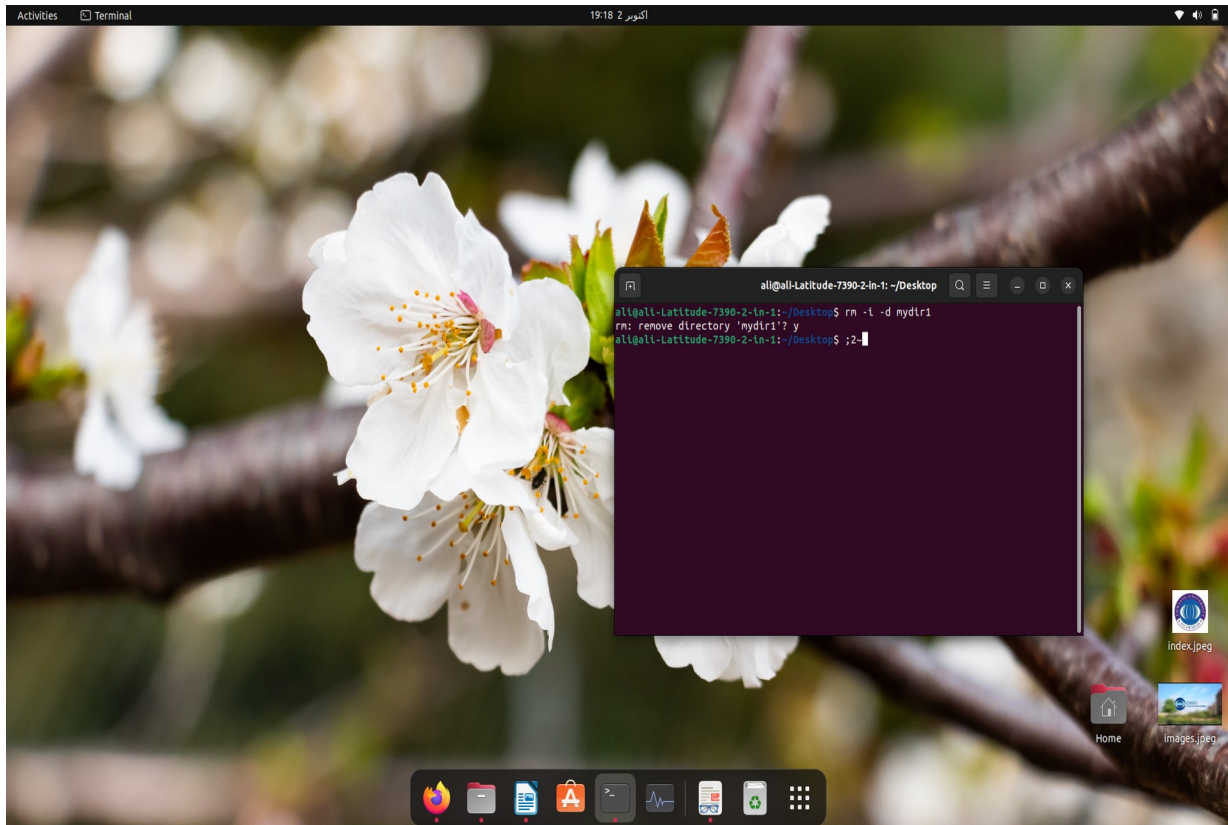


- copy mydir2 on Desktop

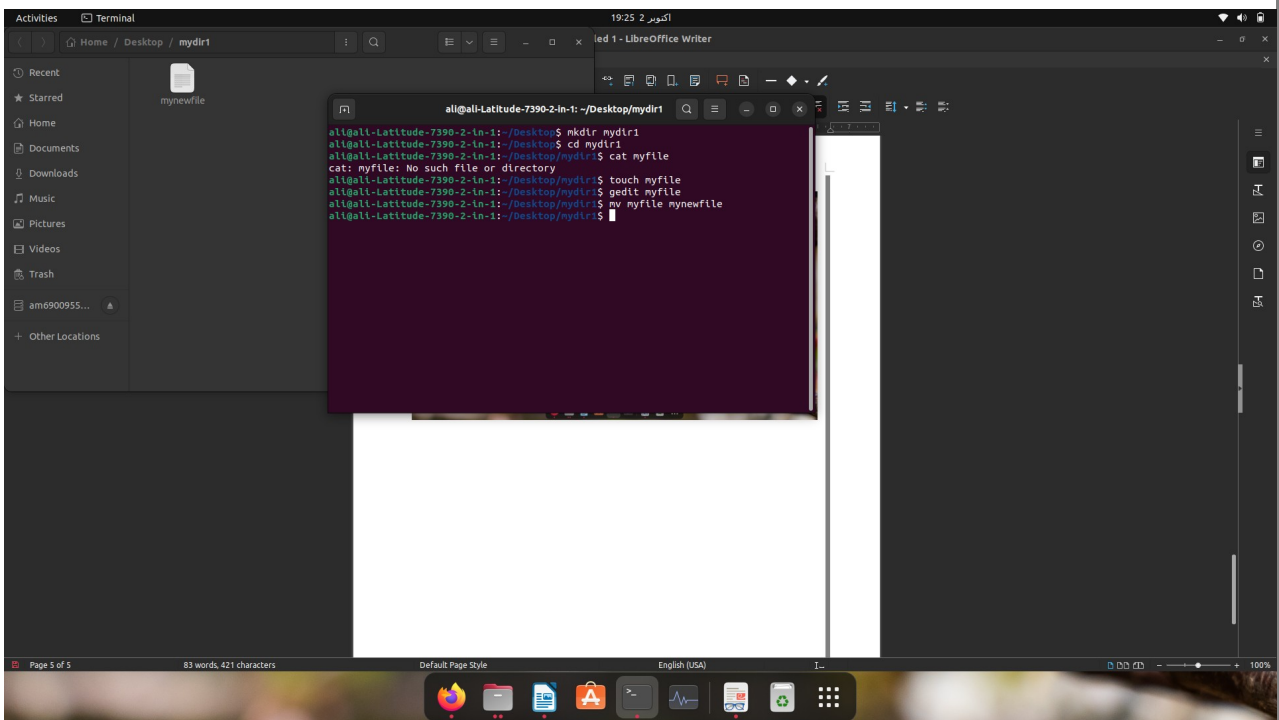
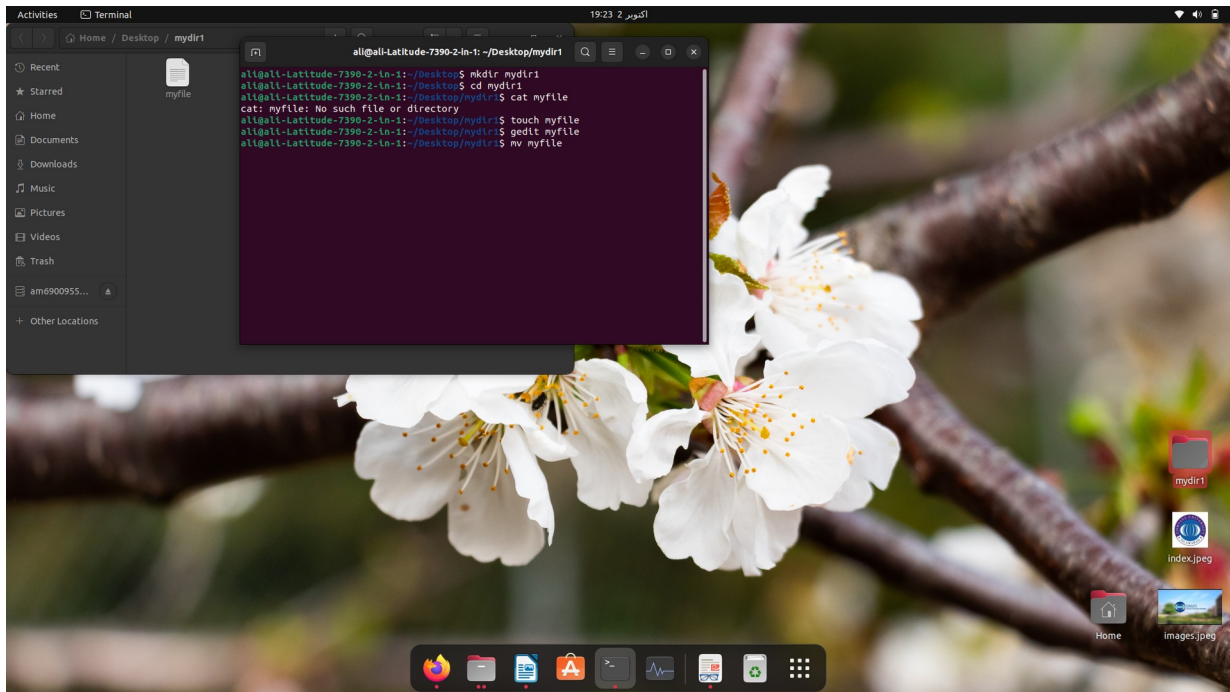


- *delete mydir1 (get confirmation before deleting)*

The directory is gone from desktop. The ‘ -i ‘ operator is used to ask permission and the ‘ -d ‘ operator is used to delete a directory that is empty.

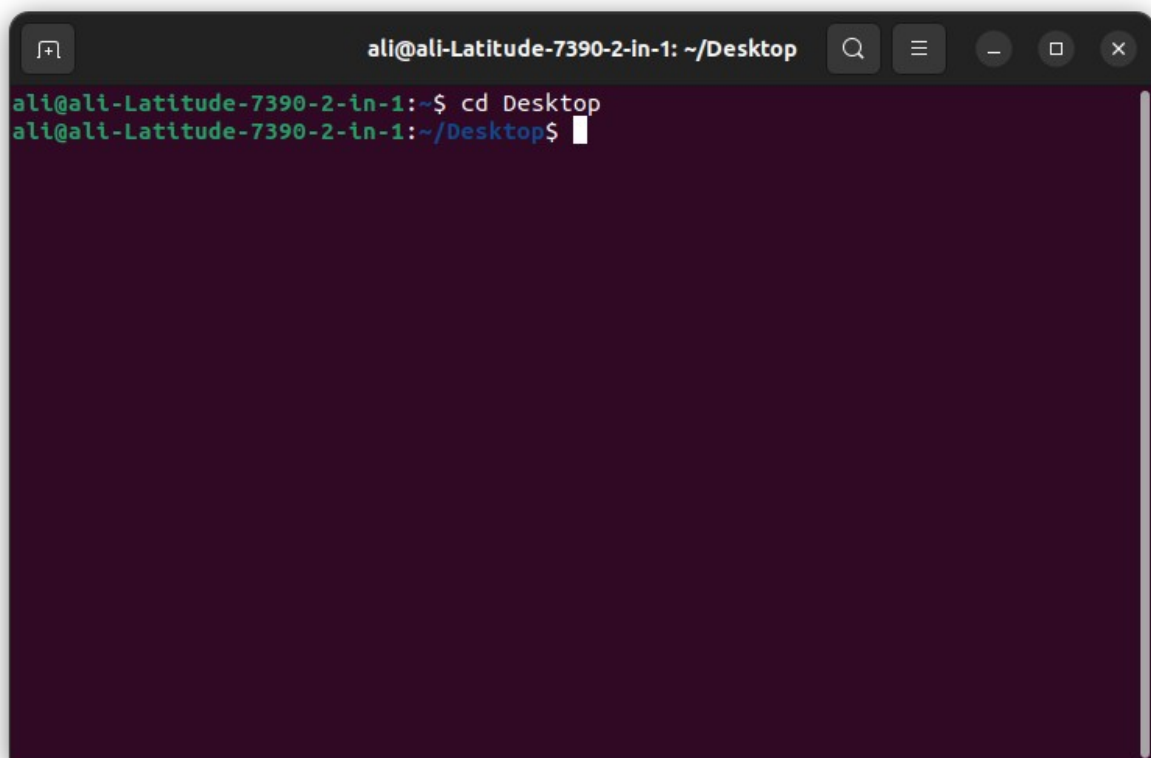


- Rename myfile to mynewfile



# Graded Task 2:

- Go to Desktop directory

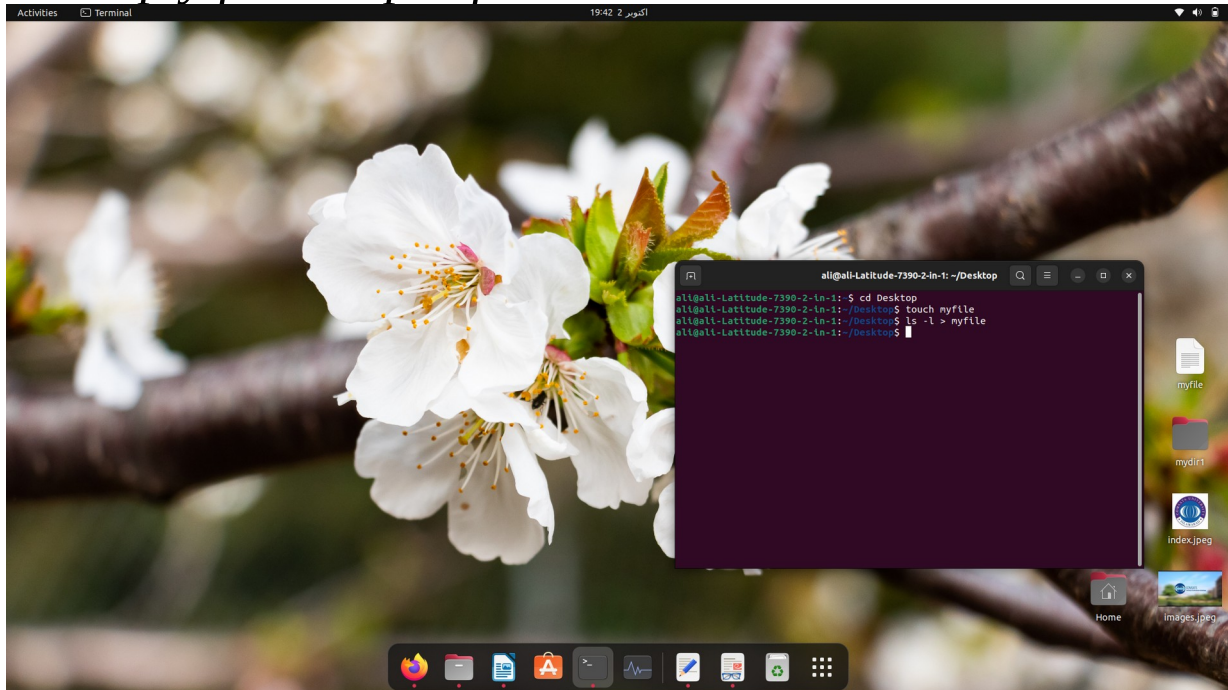


```
ali@ali-Latitude-7390-2-in-1: ~/Desktop
ali@ali-Latitude-7390-2-in-1:~$ cd Desktop
ali@ali-Latitude-7390-2-in-1:~/Desktop$
```

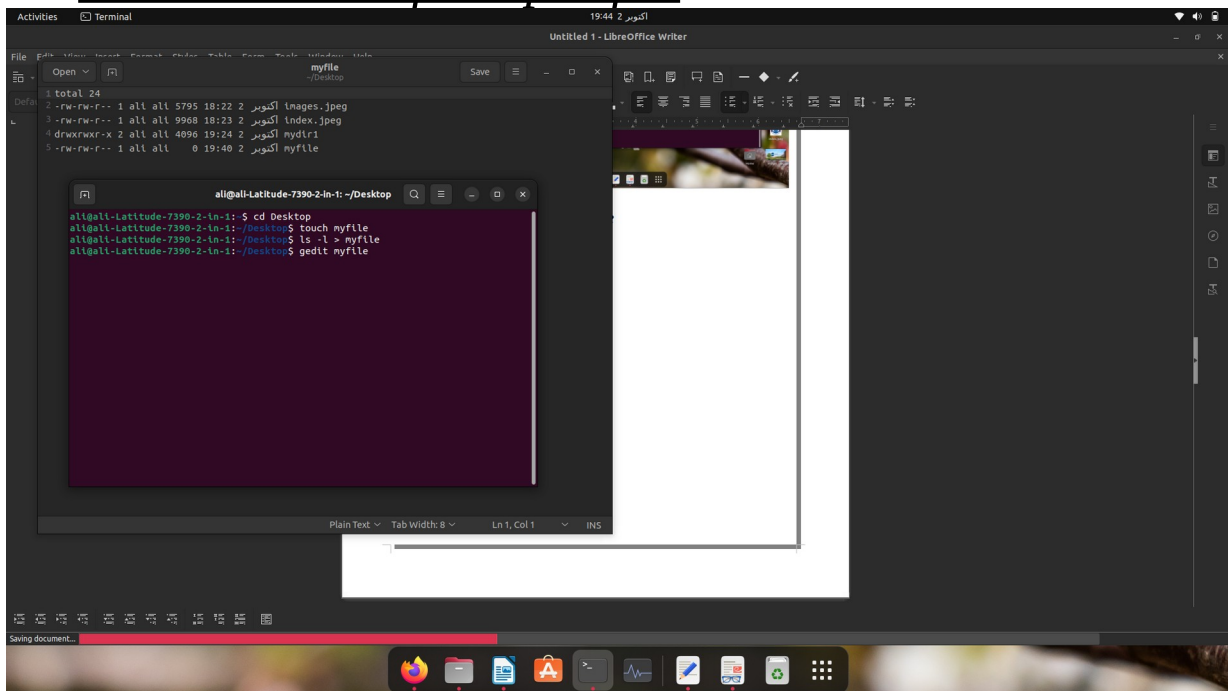
A terminal window with a dark background. The title bar shows the user 'ali' and the current directory '~/Desktop'. The terminal text shows the user navigating from their home directory to the Desktop directory using the 'cd' command.



- Write the long-listing of contents of Desktop on an empty file out-put-file



- View contents of out-put-file

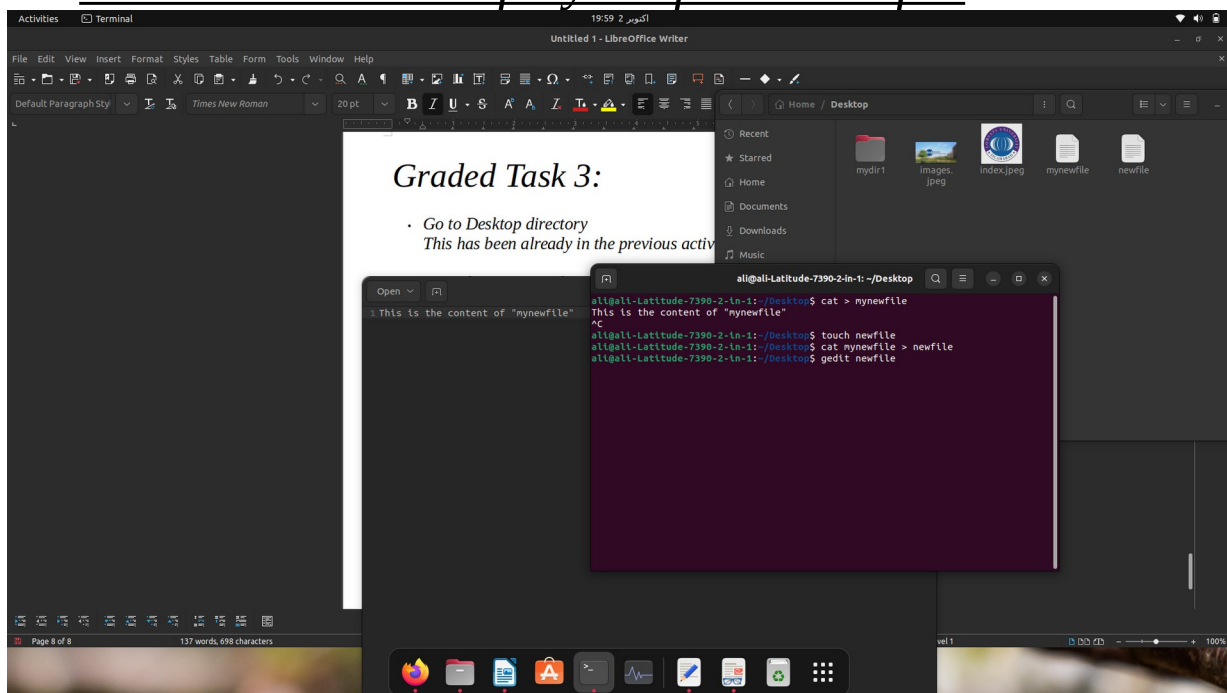


# Graded Task 3:

- Go to Desktop directory

*This has been already in the previous activities*

- write the contents of mynewfile to newfile

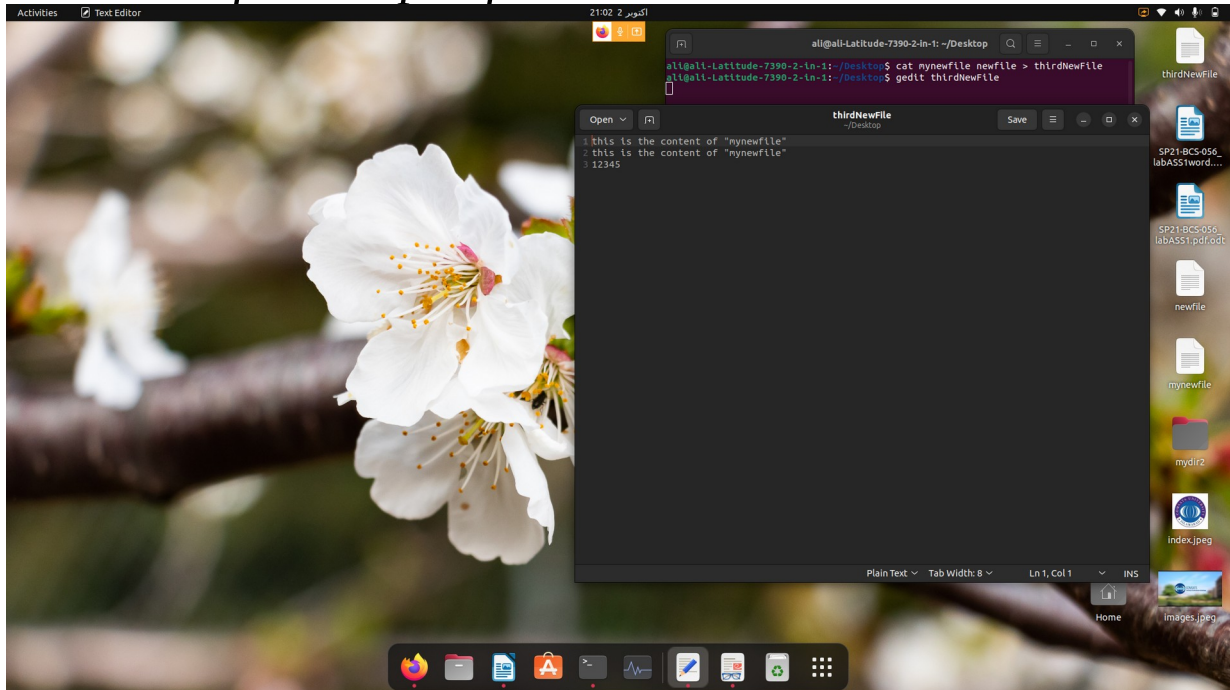


- View contents of out-put-file

*This is already done in the previous activity, we used the 'gedit' command to display the contents of the new file!*

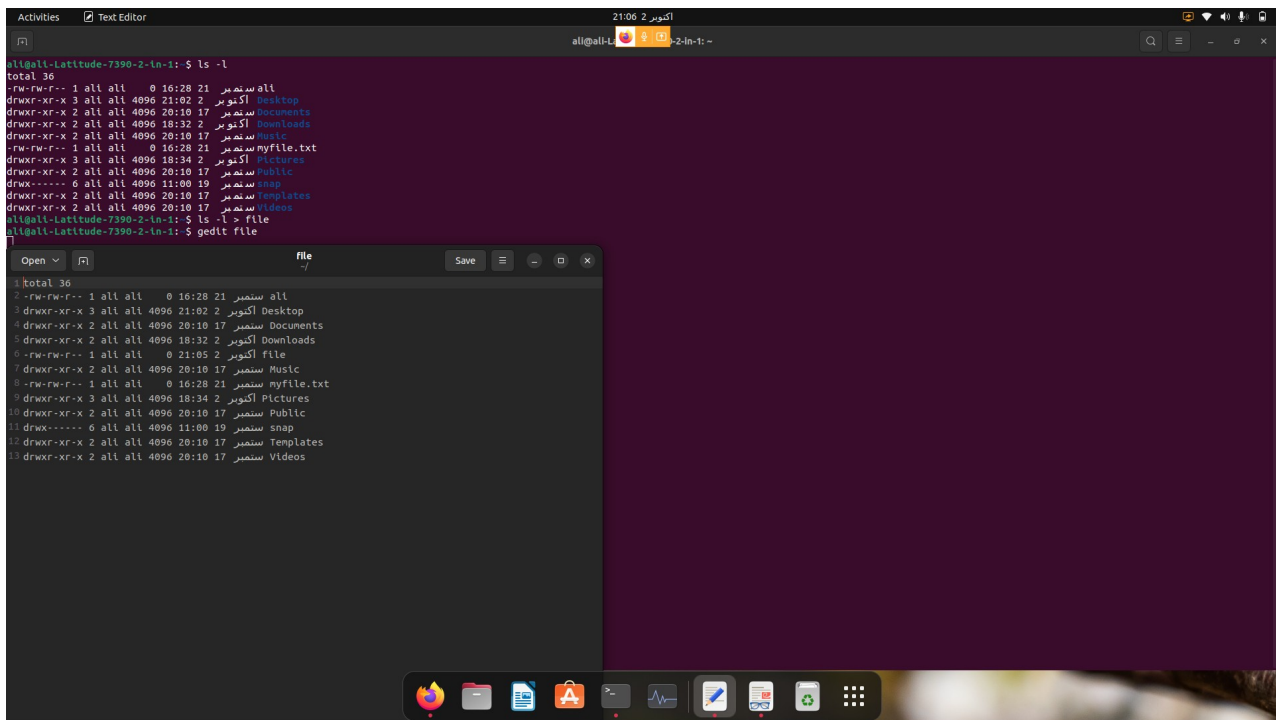


- write the combined output of mynewfile and newfile to a third file out-put-file



# Graded Task 4:

- Long list all files and directories in your system and write out-put on a text-file.



```
allgali-Latitude-7390-2-ln-1: $ ls -l
total 36
-rw-rw-r-- 1 all all 0 16:28 21 ستمبر all
drwxr-xr-x 3 all all 4096 21:02 2 اكتوبر Desktop
drwxr-xr-x 2 all all 4096 20:10 17 ستمبر Documents
drwxr-xr-x 2 all all 4096 18:32 2 اكتوبر Downloads
drwxr-xr-x 2 all all 4096 20:10 17 ستمبر Music
-rw-rw-r-- 1 all all 0 16:28 21 ستمبر myfile.txt
drwxr-xr-x 3 all all 4096 18:34 2 اكتوبر Pictures
drwxr-xr-x 2 all all 4096 20:10 17 ستمبر Public
drwxr-xr-x 2 all all 4096 11:00 19 ستمبر snap
drwxr-xr-x 2 all all 4096 20:10 17 ستمبر Templates
drwxr-xr-x 2 all all 4096 20:10 17 ستمبر Videos
allgali-Latitude-7390-2-ln-1: $ ls -l file
allgali-Latitude-7390-2-ln-1: $ gedit file
```

# Lab 3

You are familiar with `adduser` command using: `man adduser/useradd`, `man groupadd` `useradd` - create a new user or update default new user information. Create 3 user accounts (`user1`, `user2`, `user3`) and add 2 groups (`gr1`, `gr2`). add `user1` to `gr1` and add `user2`, `user2` to `gr2`.

Check user ID (UID) and group ID (GID) by listing file `/etc/passwd`. Find lines with added user. What is the UID and GID for these accounts?

```
Activities Terminal 17:51 4 أكتوبر
ali@ali-Latitude-7390-2-in-1: ~$ sudo adduser user1
[sudo] password for ali:
Adding user 'user1' ...
Adding new group 'user1' (1002) ...
Adding new user 'user1' (1002) with group 'user1' ...
Creating home directory '/home/user1' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for user1
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
ali@ali-Latitude-7390-2-in-1: ~$ sudo adduser user2
Adding user 'user2' ...
Adding new group 'user2' (1003) ...
Adding new user 'user2' (1003) with group 'user2' ...
Creating home directory '/home/user2' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for user2
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
ali@ali-Latitude-7390-2-in-1: ~$ sudo adduser user3
Adding user 'user3' ...
Adding new group 'user3' (1004) ...
Adding new user 'user3' (1004) with group 'user3' ...
Creating home directory '/home/user3' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for user3
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
ali@ali-Latitude-7390-2-in-1: ~$
```

```
ali@ali-Latitude-7390-2-in-1: ~  
ali@ali-Latitude-7390-2-in-1:~$ sudo groupadd gr1  
[sudo] password for ali:  
ali@ali-Latitude-7390-2-in-1:~$ sudo groupadd gr2  
ali@ali-Latitude-7390-2-in-1:~$ sudo usermod -a -  
usermod: user '-' does not exist  
ali@ali-Latitude-7390-2-in-1:~$ sudo usermod -a -G gr1 user1  
ali@ali-Latitude-7390-2-in-1:~$ sudo usermod -a -G gr2 user2  
ali@ali-Latitude-7390-2-in-1:~$ sudo usermod -a -G gr3 user3
```

```
ali@ali-Latitude-7390-2-in-1: ~  
ali@ali-Latitude-7390-2-in-1:~$ cat /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin  
messagebus:x:102:105:/:nonexistent:/usr/sbin/nologin  
systemd-timesync:x:103:106:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin  
syslog:x:104:111:/:home/syslog:/usr/sbin/nologin  
_apt:x:105:65534:/:nonexistent:/usr/sbin/nologin  
tss:x:106:112:TPM software stack,,,:/var/lib/tpm:/bin/false  
uidd:x:107:115:/:run/uidd:/usr/sbin/nologin  
systemd-oom:x:108:116:systemd Userspace OOM Killer,,,:/run/systemd:/usr/sbin/nologin  
tcpdump:x:109:117:/:nonexistent:/usr/sbin/nologin  
avahi-autoipd:x:110:119:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin  
usbmux:x:111:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
avahi:x:114:121:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin  
cups-pk-helper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
rtkit:x:116:123:RealtimeKit,,,:/proc:/usr/sbin/nologin  
whoopsie:x:117:124:/:nonexistent:/bin/false  
sssd:x:118:125:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin  
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false  
nm-openvpn:x:120:126:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin  
saned:x:121:128:/:var/lib/saned:/usr/sbin/nologin  
colord:x:122:129:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
geoclue:x:123:130:/:var/lib/geoclue:/usr/sbin/nologin  
pulse:x:124:131:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin  
gnome-initial-setup:x:125:65534:/:run/gnome-initial-setup:/bin/false  
hplip:x:126:7:HPLIP system user,,,:/run/hplip:/bin/false  
gdm:x:127:133:Gnome Display Manager:/var/lib/gdm3:/bin/false  
ali:x:1000:1000:ali,,,:/home/ali:/bin/bash  
awan:x:1001:1001:,,,:/home/awan:/bin/bash  
user1:x:1002:1002:,,,:/home/user1:/bin/bash  
user2:x:1003:1003:,,,:/home/user2:/bin/bash  
user3:x:1004:1004:,,,:/home/user3:/bin/bash  
ali@ali-Latitude-7390-2-in-1:~$
```

```
ali@ali-Latitude-7390-2-in-1: ~  
ali@ali-Latitude-7390-2-in-1:~$ id -u  
1000  
ali@ali-Latitude-7390-2-in-1:~$ id -g  
1000  
ali@ali-Latitude-7390-2-in-1:~$ id -u user1  
1002  
ali@ali-Latitude-7390-2-in-1:~$ id -g user1  
1002  
ali@ali-Latitude-7390-2-in-1:~$ id -u user2  
1003  
ali@ali-Latitude-7390-2-in-1:~$ id -g user2  
1003  
ali@ali-Latitude-7390-2-in-1:~$ id -u user3  
1004  
ali@ali-Latitude-7390-2-in-1:~$ id -g user3  
1004  
ali@ali-Latitude-7390-2-in-1:~$
```

- *create 3 files with touch command: files1, files2, files3.*

```
ali@ali-Latitude-7390-2-in-1: ~/De...  
ali@ali-Latitude-7390-2-in-1:~$ cd Desktop  
ali@ali-Latitude-7390-2-in-1:~/Desktop$ touch file1  
ali@ali-Latitude-7390-2-in-1:~/Desktop$ touch file2  
ali@ali-Latitude-7390-2-in-1:~/Desktop$ touch file3  
ali@ali-Latitude-7390-2-in-1:~/Desktop$
```

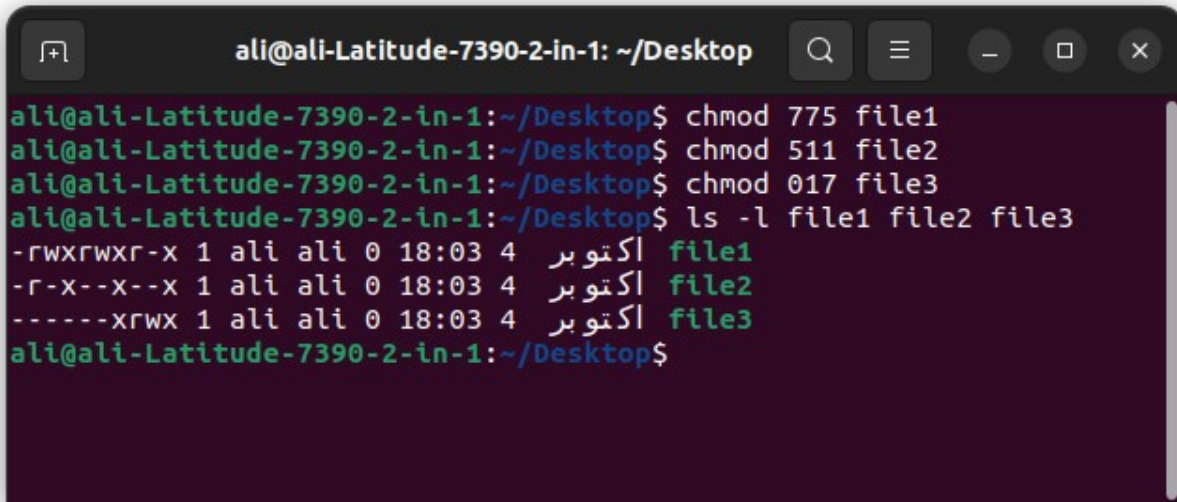


- Write the command line by using letters with chmod to set the following permissions:

*rw-rw-r-x* for file1

*r-x--x--x* for file2

*--x-rwx* for file3



```
ali@ali-Latitude-7390-2-in-1: ~/Desktop
ali@ali-Latitude-7390-2-in-1:~/Desktop$ chmod 775 file1
ali@ali-Latitude-7390-2-in-1:~/Desktop$ chmod 511 file2
ali@ali-Latitude-7390-2-in-1:~/Desktop$ chmod 017 file3
ali@ali-Latitude-7390-2-in-1:~/Desktop$ ls -l file1 file2 file3
-rwxrwxr-x 1 ali ali 0 18:03 4 اكتوبر file1
-r-x--x--x 1 ali ali 0 18:03 4 اكتوبر file2
-----x-rwx 1 ali ali 0 18:03 4 اكتوبر file3
ali@ali-Latitude-7390-2-in-1:~/Desktop$
```

Create two user accounts: *tst1* and *tst2* Logging in id: *tst1*, group users, with bash shell, home directory

*/home/tst1* Logging in id: *tst2*, group public, with bash shell, home directory *home/tst2* For the two

accounts set a password.

Logging in as *tst1* and copy */bin/ls* into *tst1* home directory as *mys* file. Change the owner of *mys* to

*tst1* and the permissions to *0710*. What does this permission value mean?

Logging in as *tst2* and try to use */home/tst1/mys* to list your current directory. Does it work

? **ANS: NO**

Create a new group *labo* with *tst1* and *tst2*. Change the owner group of *mys* file to *labo*. Try again from

*tst2* account to execute */home/tst1/mys* to list your current directory. Does it work? **ANS : NO**

```
ali@ali-Latitude-7390-2-in-1: ~  
ali@ali-Latitude-7390-2-in-1:~$ sudo adduser tst1  
[sudo] password for ali:  
Adding user `tst1' ...  
Adding new group `tst1' (1007) ...  
Adding new user `tst1' (1005) with group `tst1' ...  
Creating home directory `/home/tst1' ...  
Copying files from `/etc/skel' ...  
New password:  
Retype new password:  
passwd: password updated successfully  
Changing the user information for tst1  
Enter the new value, or press ENTER for the default  
    Full Name []:  
    Room Number []:  
    Work Phone []:  
    Home Phone []:  
    Other []:  
Is the information correct? [Y/n] y  
ali@ali-Latitude-7390-2-in-1:~$ sudo adduser tst2  
Adding user `tst2' ...  
Adding new group `tst2' (1008) ...  
Adding new user `tst2' (1006) with group `tst2' ...  
Creating home directory `/home/tst2' ...  
Copying files from `/etc/skel' ...  
New password:  
Retype new password:  
passwd: password updated successfully  
Changing the user information for tst2  
Enter the new value, or press ENTER for the default  
    Full Name []:  
    Room Number []:  
    Work Phone []:  
    Home Phone []:  
    Other []:  
Is the information correct? [Y/n] y  
ali@ali-Latitude-7390-2-in-1:~$ su - tst1  
Password:  
tst1@ali-Latitude-7390-2-in-1:~$ touch myls  
tst1@ali-Latitude-7390-2-in-1:~$ cp /bin/ls /home/tst1/myls  
tst1@ali-Latitude-7390-2-in-1:~$ chmod 710 /home/tst1/myls  
tst1@ali-Latitude-7390-2-in-1:~$ su - tst2  
Password:  
tst2@ali-Latitude-7390-2-in-1:~$ /home/tst1/myls  
-bash: /home/tst1/myls: Permission denied  
tst2@ali-Latitude-7390-2-in-1:~$ exit  
logout  
tst1@ali-Latitude-7390-2-in-1:~$ exit  
logout  
ali@ali-Latitude-7390-2-in-1:~$
```

```
tst2@ali-Latitude-7390-2-in-1: ~
tst1@ali-Latitude-7390-2-in-1:~$ exit
logout
ali@ali-Latitude-7390-2-in-1:~$ sudo groupadd labo
ali@ali-Latitude-7390-2-in-1:~$ sudo usermod -a -G labo tst1
ali@ali-Latitude-7390-2-in-1:~$ sudo usermod -a -G labo tst2
ali@ali-Latitude-7390-2-in-1:~$ sudo chgrp labo myls
chgrp: cannot access 'mysls': No such file or directory
ali@ali-Latitude-7390-2-in-1:~$ sudo chgrp labo /home/tst1/mysls
ali@ali-Latitude-7390-2-in-1:~$ su - tst2
Password:
tst2@ali-Latitude-7390-2-in-1:~$ /home/tst1/mysls
-bash: /home/tst1/mysls: Permission denied
tst2@ali-Latitude-7390-2-in-1:~$
```

*The End!*