

1-

```

mohammed@mohammed: ~
mohammed@mohammed: ~ 80x24
mohammed@mohammed:~$ mkdir myteam
mohammed@mohammed:~$ chmod u-w my
myDirectory/ myteam/
mohammed@mohammed:~$ chmod u-w myteam/
mohammed@mohammed:~$ ls -l my
myDirectory/ myteam/
mohammed@mohammed:~$ ls -l myteam/
total 0
mohammed@mohammed:~$ ls -l
total 704
-rw-rw-r-- 1 mohammed mohammed 450742 Dec  4 02:11 archive.tar.gz
-rwxrwxr-x 1 mohammed mohammed   286 Nov 22 17:33 bestdayever.sh
-rw-rw-r-- 1 mohammed mohammed   161 Nov 22 09:16 "bestdayever.sh'"
-rwxrwxr-x 1 mohammed mohammed    57 Dec  4 19:56 dangerous.sh
drwxr-xr-x 4 mohammed mohammed  4096 Aug  3 10:53 Desktop
drwxrwxr-x 3 mohammed mohammed  4096 Nov 20 10:07 dir1
drwxrwxr-x 2 mohammed mohammed  4096 Dec  4 21:35 docs
drwxr-xr-x 2 mohammed mohammed  4096 Dec 11 17:51 Documents
drwxr-xr-x 3 mohammed mohammed  4096 Dec  5 02:50 Downloads
-rwxrwxr-x 1 mohammed mohammed   874 Nov 23 10:22 eldenring.sh
drwxrwxr-x 5 mohammed mohammed  4096 Dec  5 02:19 embedded_fady
drwxrwxr-x 7 mohammed mohammed  4096 Dec  4 21:41 Embedded-Linux
-rw-rw-r-- 1 mohammed mohammed  3457 Mar 11 2023 example.txt
-rw-rw-r-- 1 mohammed mohammed    0 Dec  4 20:53 file{1..5}.txt

```

2-

```

mohammed@mohammed: ~
mohammed@mohammed: ~ 80x24
drwxrwxr-x 2 mohammed mohammed  4096 Dec  4 21:37 script_exercise
-rwxrwxr-x 1 mohammed mohammed   419 Dec  4 21:34 script_exercise.sh
drwx----- 12 mohammed mohammed  4096 Dec  4 00:28 snap
drwxr-xr-x 2 mohammed mohammed  4096 Mar  1 2023 Templates
-rwxrwxr-x 1 mohammed mohammed   237 Dec  4 04:25 trail.sh
-rwxrwxr-x 1 mohammed mohammed   739 Dec  5 00:48 until_example.sh
-rwxrwxr-x 1 mohammed mohammed   254 Dec 11 18:30 usergroup.sh
drwxr-xr-x 3 mohammed mohammed  4096 Dec  4 00:23 Videos
mohammed@mohammed:~$ chmod u-x myteam/
mohammed@mohammed:~$ ls
archive.tar.gz      Embedded-Linux      passwd              ros2_ws_second
bestdayever.sh      example.txt          Pictures            ros5_ws
"bestdayever.sh'"  file{1..5}.txt      Public              script_exercise
dangerous.sh         first_bash_script.sh pushups.sh          script_exercise.sh
Desktop             fname               read_example.sh     snap
dir1                getrichquick.sh     ros2_example_1      Templates
docs                hamlet              ros2_example_2      trail.sh
Documents           kk.coffee           ros2_example_3      until_example.sh
Downloads           Music               ros2_ws             usergroup.sh
eldenring.sh        myDirectory         ros2_ws3            Videos
embedded_fady       myteam             ros2_ws4
mohammed@mohammed:~$ ls -l
total 704
-rw-rw-r-- 1 mohammed mohammed 450742 Dec  4 02:11 archive.tar.gz

```

```
mohammed@mohammed: ~
mohammed@mohammed: ~ 80x24
mohammed@mohammed:~$ ls -l | grep my
myDirectory/ myteam/
mohammed@mohammed:~$ ls -l | grep myteam/
mohammed@mohammed:~$ ls -l | grep myteam
dr--rwxr-x  2 mohammed mohammed  4096 Dec 11 21:57 myteam
mohammed@mohammed:~$
```

3-

```
anas@mohammed: /home/mohammed/myteam
anas@mohammed: /home/mohammed/myteam 108x42
sudo: "cd" is a shell built-in command, it cannot be run directly.
sudo: the -s option may be used to run a privileged shell.
sudo: the -D option may be used to run a command in a specific directory.
anas@mohammed:~$ ;s
-bash: syntax error near unexpected token `;'
anas@mohammed:~$ ls
anas@mohammed:~$ cd
anas@mohammed:~$ cd /
anas@mohammed:/$ cd /home/
anas/      mohammed/ youName/
anas@mohammed:/$ cd /home/mohammed/
-bash: cd: /home/mohammed/: Permission denied
anas@mohammed:/$ sudo cd /home/mohammed/
sudo: cd: command not found
sudo: "cd" is a shell built-in command, it cannot be run directly.
sudo: the -s option may be used to run a privileged shell.
sudo: the -D option may be used to run a command in a specific directory.
anas@mohammed:/$ cd /home/mohammed/
-bash: cd: /home/mohammed/: Permission denied
anas@mohammed:/$ cd /home/
anas@mohammed:/home$ ls -l
total 12
drwxr-x---  4 anas      anas      4096 Dec  9 09:46 anas
drwxr-x--- 45 mohammed mohammed 4096 Dec 11 21:57 mohammed
drwxr-x---  2 youName  youName  4096 Dec 11 18:30 youName
anas@mohammed:/home$ chmod o+rx mohammed/
chmod: changing permissions of 'mohammed/': Operation not permitted
anas@mohammed:/home$ sudo chmod o+rx mohammed/
anas@mohammed:/home$ cd
anas@mohammed:~$ cd /home/mohammed/
.cache/      embedded_fady/ .mozilla/      ros2_example_1/ .rviz2/        .var/
.config/     Embedded-Linux/ Music/          ros2_example_2/ script_exercise/ Videos/
Desktop/     .gazebo/       myDirectory/   ros2_example_3/ .sdformat/     .vscode/
dir1/        .gnupg/        myteam/        ros2_ws/         .shutter/
docs/        .gz/           Pictures/       ros2_ws3/        snap/
Documents/   .ignition/     .pki/          ros2_ws4/        .ssh/
.dotnet/     .java/         Public/        ros2_ws_second/  Templates/
Downloads/   .local/        .ros/          ros5_ws/         .thunderbird/
anas@mohammed:~$ cd /home/mohammed/my
myDirectory/ myteam/
anas@mohammed:~$ cd /home/mohammed/myteam/
anas@mohammed:/home/mohammed/myteam$
```

4-

a-

using the chmod u+rw-x then chmod g+wx-r then chmod o+x-rw
or chmod 631 oct representation

b-

```
mohammed@mohammed: ~  
mohammed@mohammed: ~ 108x42  
mohammed@mohammed:~$ umask 035  
mohammed@mohammed:~$
```

C-

```
mohammed@mohammed: ~  
mohammed@mohammed: ~ 120x42  
mohammed@mohammed:~$ #the maximum permission for a file by default is rw-rw-rw- and for a directory is rwxrwxrwx  
mohammed@mohammed:~$
```

d-

```
mohammed@mohammed: ~
mohammed@mohammed: ~ 120x42
mohammed@mohammed:~$ #the maximum permission for a file by default is rw-rw-rw- and for a directory is rwxrwxrwx
mohammed@mohammed:~$ umask 0777
mohammed@mohammed:~$ mkdir test1
mohammed@mohammed:~$ touch test1
mohammed@mohammed:~$ ls -l | gr
graphml2gv      groupdel      grub-editenv   grub-mkdevicemap  grub-mount
grdctl          groupmns     grub-file      grub-mkfont        grub-ntldr-img
grep            groupmod     grub-fstest    grub-mkimage       grub-probe
gresource       groups       grub-glue-efi  grub-mklayout      grub-reboot
groff           grpck        grub-install   grub-mknetdir       grub-render-label
grog            grpconv      grub-kbdcomp   grub-mkpasswd-pbkdf2  grub-script-check
grops           grpunconv    grub-macbless  grub-mkrelpath     grub-set-default
grotty          grub-bios-setup  grub-menulst2cfg  grub-mkrescue      grub-syslinux2cfg
groupadd        grub-customizer grub-mkconfig    grub-mkstandalone
mohammed@mohammed:~$ ls -l | grep t
test1/  trail.sh
mohammed@mohammed:~$ ls -l | grep test1
d----- 2 mohammed mohammed 4096 Dec 11 22:58 test1
mohammed@mohammed:~$
```

e-

The root user can change this or any user with sudo

5-

you can't remove this file as its permissions are r--r--r-- which mean the file is write protected and we can not delete it

```
mohammed@mohammed: ~  
mohammed@mohammed: ~ 80x24  
Mon Dec 11 11:24:32 PM EET 2023  
mohammed@mohammed:~$ su -  
Password:  
su: Authentication failure  
mohammed@mohammed:~$ su -  
Password:  
su: Authentication failure  
mohammed@mohammed:~$ sudo su -  
[sudo] password for mohammed:  
root@mohammed:~# su -  
root@mohammed:~# su - m  
mail      man      mark      messagebus  mohammed  
root@mohammed:~# su - mohammed  
Mon Dec 11 11:25:09 PM EET 2023  
mohammed@mohammed:~$ umask  
0002  
mohammed@mohammed:~$ touch perm  
mohammed@mohammed:~$ chmod 444  
chmod: missing operand after '444'  
Try 'chmod --help' for more information.  
mohammed@mohammed:~$ chmod 444 perm  
mohammed@mohammed:~$ vim perm  
mohammed@mohammed:~$ rm perm  
rm: remove write-protected regular empty file 'perm'? █
```

6-x for a file means it can be executed but for a directory the executions means you can access it like using cd command

```
mohammed@mohammed: ~  
mohammed@mohammed: ~ 80x24  
mohammed@mohammed:~$ # for a file the x to execute the file but for a directory  
to access it with using cd commad to execute the directory
```

1-

```
mohammed@mohammed: ~  
mohammed@mohammed: ~ 80x24  
.bash_history  
.bash_logout  
.bashrc  
.bashrc.swp  
bestdayever.sh  
bestdayever.sh'  
.cache/  
.config/  
dangerous.sh  
Desktop/  
dir1/  
docs/  
Documents/  
.dotnet/  
Downloads/  
eldenring.sh  
embedded_fady/  
Embedded-Linux/  
example.txt  
.example.txt.swp  
file{1..5}.txt  
first_bash_script.sh  
mohammed@mohammed:~$ chmod +t inTheEnd  
mohammed@mohammed:~$  
.pam_environment  
passwd  
perm  
permission  
permission2  
Pictures/  
.pki/  
.profile  
Public/  
pushups.sh  
read_example.sh  
.ros/  
ros2_example_1/  
ros2_example_2/  
ros2_example_3/  
ros2_ws/  
ros2_ws3/  
ros2_ws4/  
ros2_ws_second/  
ros5_ws/  
.rviz2/  
script_exercise/
```

2-


```
mohammed@mohammed: ~
mohammed@mohammed: ~ 80x24
mohammed@mohammed:~$ chmod u+s inTheEnd/
mohammed@mohammed:~$
```

3-

```
mohammed@mohammed: ~
mohammed@mohammed: ~ 80x24
mohammed@mohammed:~$ chmod u+s inTheEnd/
mohammed@mohammed:~$ tail /etc/p
pam.conf      passwd-      pm/          printcap     pulse/
pam.d/        pcmcia/      pnm2ppa.conf profile       python3/
papersize     perl/        polkit-1/    profile.d/    python3.10/
passwd        pki/         ppp/         protocols
mohammed@mohammed:~$ tail /etc/passwd
gnome-initial-setup:x:126:65534::/run/gnome-initial-setup:/bin/false
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false
mohammed:x:1000:1000:mohammed,,,:/home/mohammed:/bin/bash
_flatpak:x:129:138:Flatpak system-wide installation helper,,,:/nonexistent:/usr/
sbin/nologin
mark:x:1001:1003::/home/mark:/bin/sh
zezo:x:1002:1004::/home/zezo:/bin/sh
youName:x:1004:1007:fadyAssigment,2032,,:/home/youName:/bin/bash
anas:x:1003:1005:anas,2032,01015986302,5555555,0:/home/anas:/bin/bash
ahmed:x:1005:30001::/home/ahmed:/bin/sh
mohammed@mohammed:~$
```

4-

```
anas@mohammed: /home/mohammed/inTheEnd
anas@mohammed: /home/mohammed/inTheEnd 80x24
mohammed@mohammed:~$ ls -l | grep inTheEnd/
mohammed@mohammed:~$ ls -l | grep inTheEnd
drwsrwxr-t  2 mohammed mohammed  4096 Dec 11 23:32 inTheEnd
mohammed@mohammed:~$ chmod 777 inTheEnd
mohammed@mohammed:~$ ls -l | grep inTheEnd
drwsrwxrwx  2 mohammed mohammed  4096 Dec 11 23:32 inTheEnd
mohammed@mohammed:~$ chmod u+s inTheEnd/
mohammed@mohammed:~$ ls -l | grep inTheEnd
drwsrwxrwx  2 mohammed mohammed  4096 Dec 11 23:32 inTheEnd
mohammed@mohammed:~$ chmod +t inTheEnd
mohammed@mohammed:~$ ls -l | grep inTheEnd
drwsrwxrwt  2 mohammed mohammed  4096 Dec 11 23:32 inTheEnd
mohammed@mohammed:~$ su - anas
Password:
anas@mohammed:~$ cd /home/mohammed/inTheEnd/
anas@mohammed:/home/mohammed/inTheEnd$ touch file1.c
anas@mohammed:/home/mohammed/inTheEnd$ touch file2.c
anas@mohammed:/home/mohammed/inTheEnd$ mkdir numb
anas@mohammed:/home/mohammed/inTheEnd$ ls
file1.c file2.c numb
anas@mohammed:/home/mohammed/inTheEnd$
```

5-

```
youName@mohammed: /home/mohammed/inTheEnd
youName@mohammed: /home/mohammed/inTheEnd 80x24
youName@mohammed:/home/mohammed/inTheEnd$ rm -f file1.c
rm: cannot remove 'file1.c': Operation not permitted
youName@mohammed:/home/mohammed/inTheEnd$
```



```
youName@mohammed: /home/mohammed/inTheEnd
youName@mohammed: /home/mohammed/inTheEnd 80x24
youName@mohammed:/home/mohammed/inTheEnd$ #as the sticky bit make each user can
not modify on the other users' files and directories by deleting or removing or
editing
```

7-

```
anas@mohammed: /home/mohammed
anas@mohammed: /home/mohammed 80x24
anas@mohammed:/home/mohammed$ ls -l | i
Display all 113 possibilities? (y or n)
anas@mohammed:/home/mohammed$ ls -l | gre
grep      gresource
anas@mohammed:/home/mohammed$ ls -l | grep inTheEnd
drwsrwxrwt  3 mohammed mohammed  4096 Dec 11 23:59 inTheEnd
anas@mohammed:/home/mohammed$
```

8-

```
mohammed@mohammed: /bin
mohammed@mohammed: /bin 80x24
Documents/      .mozilla/      ros2_ws3/      .thunderbird/
.dotnet/        Music/         ros2_ws4/      .var/
Downloads/      myDirectory/   ros2_ws_second/ Videos/
embedded_fady/  myteam/       ros5_ws/       .vscode/
Embedded-Linux/ Pictures/      .rviz2/
.gazebo/        .pki/         script_exercise/
.gnupg/         Public/       .sdformat/
mohammed@mohammed:~$ cd /
bin/      etc/      lib64/     mnt/      run/      sys/
boot/     home/     libx32/    opt/      sbin/     tmp/
cdrom/    lib/      lost+found/ proc/     snap/     usr/
dev/      lib32/    media/     root/     srv/      var/
mohammed@mohammed:~$ cd /b
bin/ boot/
mohammed@mohammed:~$ cd /bin
mohammed@mohammed:/bin$ ls -l | grep p
Display all 371 possibilities? (y or n)
mohammed@mohammed:/bin$ ls -l | grep passwd
Display all 2288 possibilities? (y or n)
mohammed@mohammed:/bin$ ls -l | grep passwd
-rwsr-xr-x 1 root root      72072 Nov 24  2022 gpasswd
-rwxr-xr-x 1 root root    262352 Dec 18  2022 grub-mkpasswd-pbkdf2
-rwsr-xr-x 1 root root      59976 Nov 24  2022 passwd
mohammed@mohammed:/bin$
```

```
mohammed@mohammed: ~
mohammed@mohammed: ~ 80x24
mohammed@mohammed:~$ # to prevent other users deleting or modifying its content unless it is the root user
```