Day 6

- **Section 1**
  1. Create a folder called myteam in your home directory and change its permissions to read only for the owner.
  2. Log out and log in by another user
  3. Try to access (by cd command) the folder (myteam)

```
yara@yara:~$ ls -lh |grep myteam
dr-------- 2 yara yara 4.0K Dec 20 12:24 myteam
yara@yara:~$ chmod 630 myteam
yara@yara:~$ ls -lh |grep myteam
drw--wx--- 2 yara yara 4.0K Dec 20 12:24 myteam
yara@yara:~$ chmod o+x myteam
yara@yara:~$ ls -lh |grep myteam
drw--wx--x 2 yara yara 4.0K Dec 20 12:24 myteam
```

```
yara@yara:~$ su sara
Password:
sara@yara:/home/yara$ ls
ls: cannot open directory '.': Permission denied
sara@yara:/home/yara$ ls
a1.exe   Desktop     file1_try.c  file2_try.c   Music      Public     Videos
a2.exe   Documents   file1.txt    file2.txt     myteam     snap
a.exe    Downloads   file2.exe    ITI_Embedded  Pictures   Templates
sara@yara:/home/yara$ cd myteam/
bash: cd: myteam/: Permission denied
sara@yara:/home/yara$
```

  4. Using the command Line
     a. Change the permissions of oldpasswd (using chmod in 2 different ways)

```
yara@yara:~$ ls -lh |grep oldpasswd
-rw-r--r-- 1 yara yara 3.2K Dec 20 23:12 oldpasswd
yara@yara:~$ chmod 63 oldpasswd && ls -l oldpasswd
----rw--wx 1 yara yara 3188 Dec 20 23:12 oldpasswd
yara@yara:~$ chmod 630 oldpasswd && ls -l oldpasswd
-rw--wx--- 1 yara yara 3188 Dec 20 23:12 oldpasswd
yara@yara:~$ chmod o+x oldpasswd && ls -l oldpasswd
-rw--wx--x 1 yara yara 3188 Dec 20 23:12 oldpasswd
yara@yara:~$
```

b. Change your default permissions to be as above.

```
export PS2=": "
export PATH=$PATH:/usr/local/bin
export HELLO=$HOSTNAME
export LOCAL=$(whoami)
umask 146
"~/.bashrc" 123L, 3945B                                          123,9
```

```
drwxr-xr-x 2 yara yara 4.0K Dec  4 18:14 Videos
yara@yara:~$ vim ~/.bashrc
yara@yara:~$ source ~/.bashrc
yara@yara:~$ mkdir dir1234
yara@yara:~$ ls -lh
total 132K
-rwxrwxr-x 1 yara yara  16K Dec 15 19:15 a1.exe
-rwxrwxr-x 1 yara yara  16K Dec 15 19:15 a2.exe
-rwxrwxr-x 1 yara yara  16K Dec 15 18:19 a.exe
drwxr-xr-x 2 yara yara 4.0K Dec 20 15:10 Desktop
drwx-wx--x 2 yara yara 4.0K Dec 26 16:32 dir123
drw--wx--x 2 yara yara 4.0K Dec 26 16:33 dir1234
drwxr-xr-x 2 yara yara 4.0K Dec  4 18:14 Documents
```

c. What is the maximum permission a file can have, by default when it is just created? And what is that for directory.
   i.   **Files**: Maximum default permission is **666**.
   ii. **Directories**: Maximum default permission is **777**.
   iii. Actual permissions depend on the **umask** value

d. Change your default permissions to be no permission to everyone then create directory and a file to verify.

```
yara@yara:~$ vim ~/.bashrc
yara@yara:~$ source ~/.bashrc
yara@yara:~$ mkdir dir1
yara@yara:~$ touch file_no_perm.txt
yara@yara:~$ ls -lh
total 132K
-rwxrwxr-x 1 yara yara  16K Dec 15 19:15 a1.exe
-rwxrwxr-x 1 yara yara  16K Dec 15 19:15 a2.exe
-rwxrwxr-x 1 yara yara  16K Dec 15 18:19 a.exe
drwxr-xr-x 2 yara yara 4.0K Dec 20 15:10 Desktop
d--------- 2 yara yara 4.0K Dec 26 16:53 dir1
d--------- 2 yara yara 4.0K Dec 26 16:50 dir12345
drwxr-xr-x 2 yara yara 4.0K Dec  4 18:14 Documents
drwxr-xr-x 2 yara yara 4.0K Dec 25 21:44 Downloads
-rw-rw-r-- 1 yara yara 2.8K Dec 15 19:10 file1_try.c
-rw-rw-r-- 1 yara yara    7 Dec  7 20:13 file1.txt
-rwxrwxr-x 1 yara yara  16K Dec 15 18:28 file2.exe
-rw-rw-r-- 1 yara yara 3.7K Dec 15 19:17 file2_try.c
--------- 1 yara yara    0 Dec 26 16:54 file_no_perm.txt
```

e. State who can access a this file if any with proof.

```
yara@yara:~$ sudo cd -s dir1
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.
yara@yara:~$ sudo cat file_no_perm.txt
yara@yara:~$ sudo vim file_no_perm.txt
yara@yara:~$ echo "hello world" >> file_no_perm.txt
bash: file_no_perm.txt: Permission denied
yara@yara:~$ sudo echo "hello world" >> file_no_perm.txt
bash: file_no_perm.txt: Permission denied
```

- **Create a new directory.**
    1. Set the sticky bit on the newly created directory.
    2. set the setgui bit on the created directory

```
yara@yara:~$ mkdir shared_dir
yara@yara:~$ ls -ld shared_dir/
drwxrwxr-x 2 yara yara 4096 Dec 27 12:30 shared_dir/
yara@yara:~$ chmod +t shared_dir/
yara@yara:~$ ls -ld shared_dir/
drwxrwxr-t 2 yara yara 4096 Dec 27 12:30 shared_dir/
yara@yara:~$ chmod g+s shared_dir/
yara@yara:~$ ls -ld shared_dir/
drwxrwsr-t 2 yara yara 4096 Dec 27 12:30 shared_dir/
yara@yara:~$ ▯
```

    3. Create multiple user accounts.

```
yara@yara:~$ sudo adduser user1
[sudo] password for yara:
Adding user `user1' ...
Adding new group `user1' (1003) ...
Adding new user `user1' (1003) with group `user1' ...
Creating home directory `/home/user1' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password contains the user name in some form
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: The password fails the dictionary check - it is too simplistic/systematic
Retype new password:
Sorry, passwords do not match.
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
yara@yara:~$ sudo adduser user2
Adding user `user2' ...
Adding new group `user2' (1004) ...
Adding new user `user2' (1004) 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 []:
```

4. Allow these users to create files within the directory and directory.

```
yara:$y$j91$ruauvLuusunuugtnur4nv1ythnjsusngneunnnpg
yara@yara:~$ sudo cat /etc/group | grep yara
adm:x:4:syslog,yara
cdrom:x:24:yara
sudo:x:27:yara
dip:x:30:yara
plugdev:x:46:yara
lpadmin:x:122:yara
lxd:x:135:yara
yara:x:1000:
sambashare:x:136:yara
yara@yara:~$ ls -lh |grep shared_dir
drwxrwsr-t 2 yara yara 4.0K Dec 27 12:30 shared_dir
yara@yara:~$ sudo usermod -a -G yara user1
yara@yara:~$ sudo usermod -a -G yara user2
yara@yara:~$ sudo cat /etc/group | grep yara
adm:x:4:syslog,yara
cdrom:x:24:yara
sudo:x:27:yara
dip:x:30:yara
plugdev:x:46:yara
lpadmin:x:122:yara
lxd:x:135:yara
yara:x:1000:user1,user2
sambashare:x:136:yara
yara@yara:~$
```

5. Attempt to delete or rename each other's files.

6. Provide a clear output demonstrating the impact of the sticky bit on file deletion and renaming within the directory.

```
yara@yara:~$ cd shared_dir/
yara@yara:~/shared_dir$ su user1
Password:
user1@yara:/home/yara/shared_dir$ echo "Hello from user 1">>user1_file
user1@yara:/home/yara/shared_dir$ su user2
Password:
su: Authentication failure
user1@yara:/home/yara/shared_dir$ su user2
Password:
user2@yara:/home/yara/shared_dir$ echo "Hello from user 2">>user2_file
user2@yara:/home/yara/shared_dir$ ls
user1_file  user2_file
user2@yara:/home/yara/shared_dir$ cat user1_file
Hello from user 1
user2@yara:/home/yara/shared_dir$ vim user1_file
user2@yara:/home/yara/shared_dir$ mv user1_file user1_edit
mv: cannot move 'user1_file' to 'user1_edit': Operation not permitted
user2@yara:/home/yara/shared_dir$ rm user1_file
rm: cannot remove 'user1_file': Operation not permitted
user2@yara:/home/yara/shared_dir$ vim user1_file
user2@yara:/home/yara/shared_dir$ 
```

```
"user1_file"
"user1_file" E212: Can't open file for writing
Press ENTER or type command to continue
```

```
user2@yara:/home/yara/shared_dir$ su user1
Password:
user1@yara:/home/yara/shared_dir$ cat user2_file
Hello from user 2
user1@yara:/home/yara/shared_dir$ rm user2_file
rm: cannot remove 'user2_file': Operation not permitted
user1@yara:/home/yara/shared_dir$ mv user2_file user2_edit
mv: cannot move 'user2_file' to 'user2_edit': Operation not permitted
user1@yara:/home/yara/shared_dir$ 
```

7. Provide a clear output for the directory created.

```
user1@yara:/home/yara/shared_dir$ ls -lh
total 8.0K
-rw-rw-r-- 1 user1 yara 18 Dec 30 19:19 user1_file
-rw-rw-r-- 1 user2 yara 18 Dec 30 19:20 user2_file
user1@yara:/home/yara/shared_dir$ cd ..
user1@yara:/home/yara$ ls -lh | grep shared_dir
drwxrwsr-t 2 yara yara 4.0K Dec 30 19:23 shared_dir
user1@yara:/home/yara$ 
```

- **List the permission passwd command has and explain why it has S**

  ○
  ```
  yara@yara:~$ ls -l /usr/bin/passwd
  -rwsr-xr-x 1 root root 59976 Feb  6  2024 /usr/bin/passwd
  yara@yara:~$ ▯
  ```

  ○ **The setuid bit allows a program to run with the privileges of the file's owner (`root`)**

  ○ **It modifies the `/etc/shadow` file, where hashed passwords are stored. This file is owned by `root` and is not directly accessible to regular users.**

  ○
  ```
  yara@yara:~$ ls -l /etc/shadow
  -rw-r----- 1 root shadow 1916 Dec 30 18:41 /etc/shadow
  yara@yara:~$ ▯
  ```