Current file permissions

This document displays the file structure of the `/home/researcher2/projects` directory and the permissions of the files and subdirectory it contains.

In the `/home/researcher2/projects` directory, there are five files with the following names and permissions:

- `project_k.txt`
  - User = read, write,
  - Group = read, write
  - Other = read, write
- `project_m.txt`
  - User = read, write
  - Group = read
  - Other = none
- `project_r.txt`
  - User= read, write
  - Group = read, write
  - Other = read
- `project_t.txt`
  - User = read, write
  - Group = read, write
  - Other = read
- `.project_x.txt`
  - User = read, write
  - Group = write
  - Other = none

There is also one subdirectory inside the `projects` directory named `drafts`. The permissions on `drafts` are:

- User = read, write, execute
- Group = execute
- Other = none

Check file and directory details

- In order to check the permissions set for files and subdirectories in the "projects" directory, we must first navigate to the file
    - Using the pwd command we can see that we are currently located in home/researcher2
    - Inputting the command ls will list the directories and files we can interact with currently
        - The "projects" subdirectory is the only item available
    - Using "cd projects" will take us to the directory

```
researcher2@293846bff653:~$ pwd
/home/researcher2
researcher2@293846bff653:~$ ls
projects
researcher2@293846bff653:~$ cd projects/
researcher2@293846bff653:~/projects$
```

- To check the permissions of the files within the projects directory, we input the command "ls -la" to view all files and their respective permissions. This will also list hidden files

```
researcher2@293846bff653:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 22 05:00 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 22 06:03 ..
-rw--w---- 1 researcher2 research_team   46 Aug 22 05:00 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 22 05:00 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Aug 22 05:00 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 22 05:00 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 22 05:00 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 22 05:00 project_t.txt
researcher2@293846bff653:~/projects$
```

- To explain these permission in depth, let's use the first text file, ".project_x.txt" as an example. The "." before the file name indicates that it is a hidden file
    - The permissions are listed as "-rw--w----"
        - User = Read and Write
        - Groups = Write
        - Other = none
        - The dash that precedes the first r means it is a file, not a subdirectory

Change file permissions

The organization does not allow other to have write access to any files. To accurately reflect this, we must change the permissions wherever the "other" section has read, write, or execute permissions.

The permissions for the following must be modified:

- project_k.txt
- project_r.txt
- project_t.txt

project_k.txt has the other section with read and write permissions. To revoke these, we input the command "chmod o-rw project_k.tct"

Both project_r.txt and project_t.txt need read permissions revoked from other. We input the commands, "chmod o-r project_r.txt" and "chmod o-r project_t.txt."

```
researcher2@293846bff653:~/projects$ chmod o-rw project_k.txt
researcher2@293846bff653:~/projects$ chmod o-r project_r.txt
researcher2@293846bff653:~/projects$ chmod o-r project_t.txt
researcher2@293846bff653:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 22 05:00 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 22 06:03 ..
-rw--w---- 1 researcher2 research_team   46 Aug 22 05:00 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 22 05:00 drafts
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 22 05:00 project_m.txt
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_r.txt
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_t.txt
researcher2@293846bff653:~/projects$
```

As we can see here, the last three characters on the permission list are "---" meaning the other group does not have any permissions.

Change file permissions on a hidden file

The research team has archived `.project_x.txt`, which is why it's a hidden file. This file should not have write permissions for anyone, but the user and group should be able to read the file.

To accomplish this, we will list the files, including hidden ones, using "ls -la"

This is the current configuration of ".project_x.txt"

```
-rw--w---- 1 researcher2 research_team   46 Aug 22 05:00 .project_x.txt
```

To explain the permissions in writing:

- `.project_x.txt`
  - User = read, write
  - Group = write
  - Other = none

To remove user write permissions, we input the command "chmod u-w .project_x.txt"
Now, the user permissions are read-only.

To remove group write permissions and add read, we input the following commands

- chmod g-w .project_x.txt
- chmod g+r .project_x.txt

```
researcher2@293846bff653:~/projects$ chmod u-w .project_x.txt
researcher2@293846bff653:~/projects$ chmod g-w .project_x.txt
researcher2@293846bff653:~/projects$ chmod g+r .project_x.txt
researcher2@293846bff653:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 22 05:00 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 22 06:03 ..
-r--r----- 1 researcher2 research_team   46 Aug 22 05:00 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 22 05:00 drafts
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 22 05:00 project_m.txt
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_r.txt
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_t.txt
researcher2@293846bff653:~/projects$ ls -la .project_x.txt
-r--r----- 1 researcher2 research_team 46 Aug 22 05:00 .project_x.txt
researcher2@293846bff653:~/projects$
```

Now, the user and group have read-only permissions for the hidden file .projects_x.txt

Change directory permissions

The files and directories in the projects directory belong to the researcher2 user. Only researcher2 should be allowed to access the drafts directory and its contents. Use a Linux command to modify the permissions accordingly.

```
drwx--x--- 2 researcher2 research team 4096 Aug 22 05:00 drafts
```

To modify the permissions according to the instructions, we input the command, “chmod g-x drafts/” to remove the execute permissions from the group

```
researcher2@293846bff653:~/projects$ chmod g-x drafts/
researcher2@293846bff653:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research team 4096 Aug 22 05:00 drafts
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 22 05:00 project_m.txt
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_r.txt
-rw-rw---- 1 researcher2 research_team   46 Aug 22 05:00 project_t.txt
researcher2@293846bff653:~/projects$
```

The drafts/ subdirectory is now only accessible to researcher2

In this lab, we looked at file permissions within the Linux Command-Line Interface, Bash. We learned how to display a list of files within a directory. Among these files, some of them may be hidden, in which case we use the “ls -la” command to view all files and directories. All files and directories have the option of adding and removing read, right, and execute permissions. The purpose of this lab was to gain hands-on experience in adjusting file permissions to suit the organization's needs.