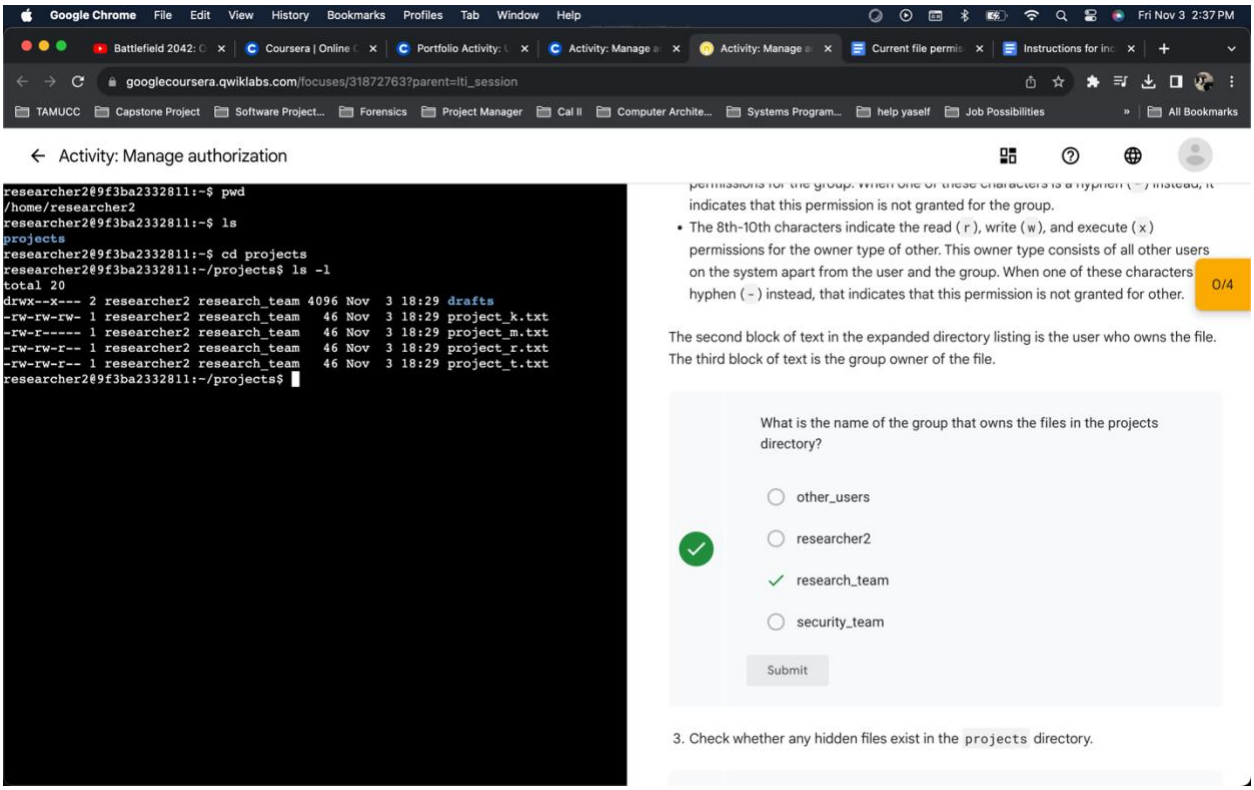
File permissions in Linux

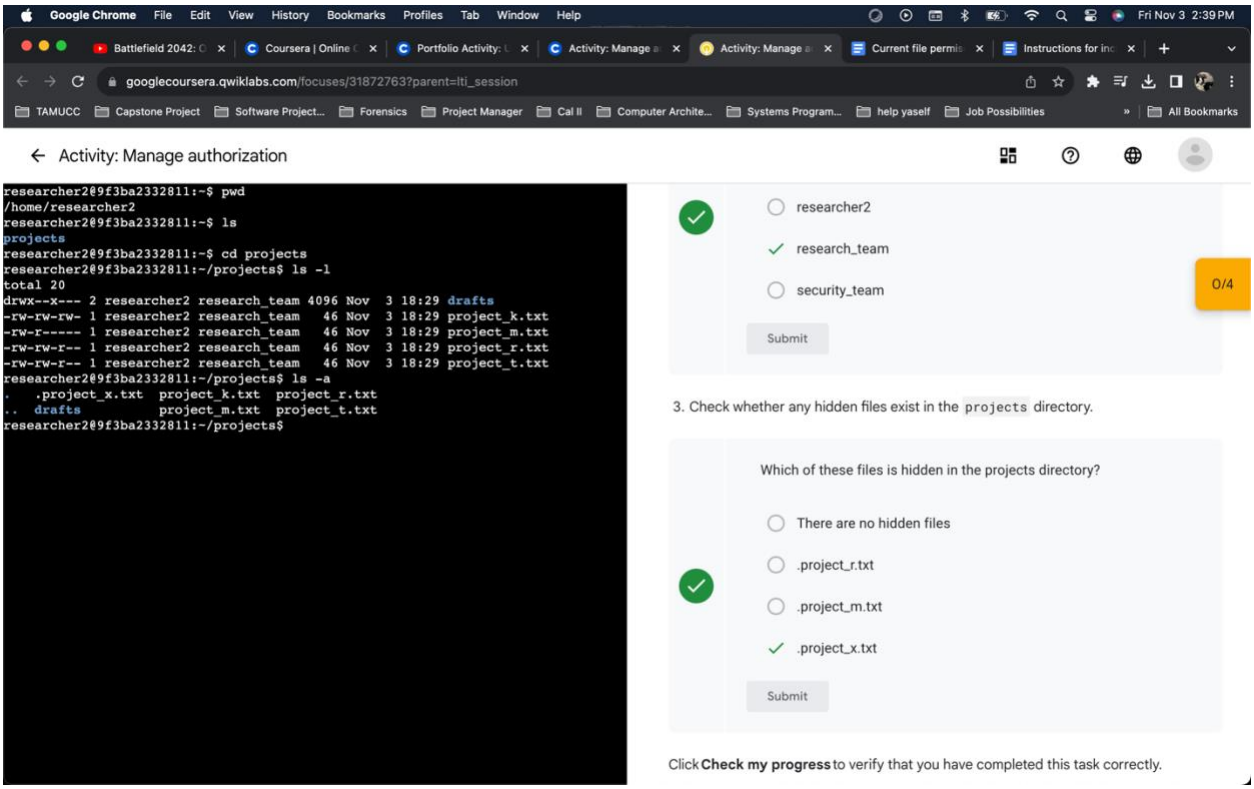
Project description

In this project, we go through basic, but critical, Linux commands that help the administrator adjust file and directory privileges for the three types of users.

Check file and directory details

Command: ls -l checks the permission types of all user groups in that directory, including the directory itself.
Command ls -la checks the permission types of all users and includes hidden files and directories.



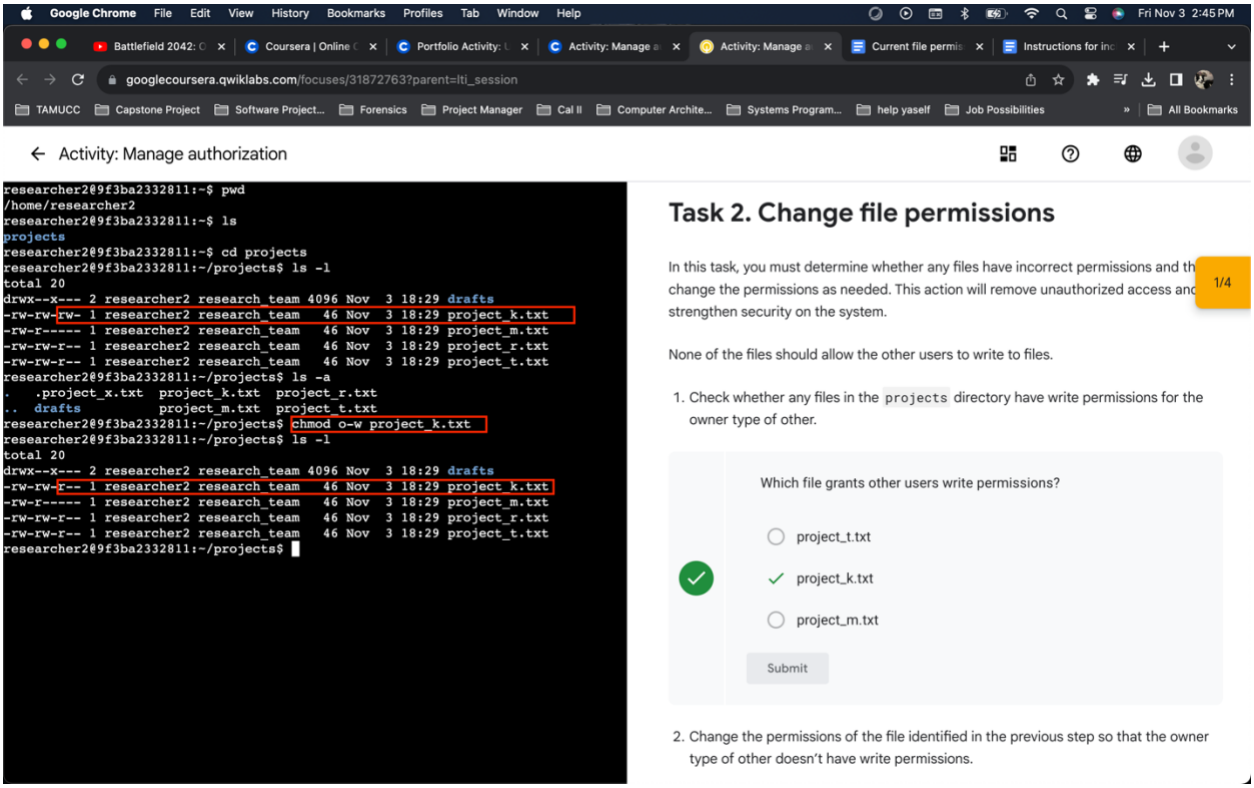


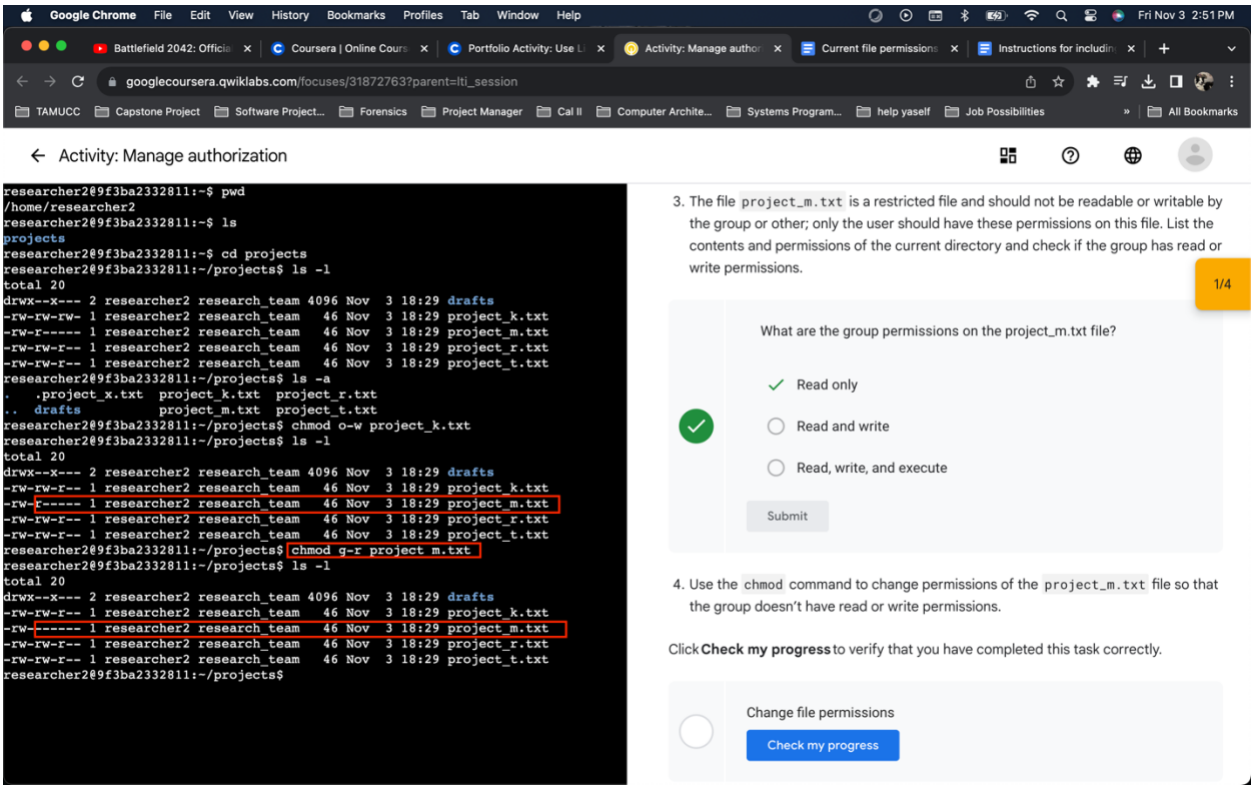
Describe the permissions string

drwxrwxrwx – in a directory, this string lists the privileges of all groups starting with the user, group, and then other.
-rwxrwxrws – this lists the privileges of all groups for a file. The 10 character string that begins with the dash indicates that we're dealing with a file, and not a directory.

Change file permissions

Here in this part of the project, we're checking to see if there's a file in this directory that allows the other group to write to any files. We check the 10 character string to see the permissions of the user groups in all the files within that directory. By looking at the string, we see that there is a file that allows the other group to write to it. To fix this, we use chmod o-w projects_k.txt to remove the write permission of the other – 'o' group.

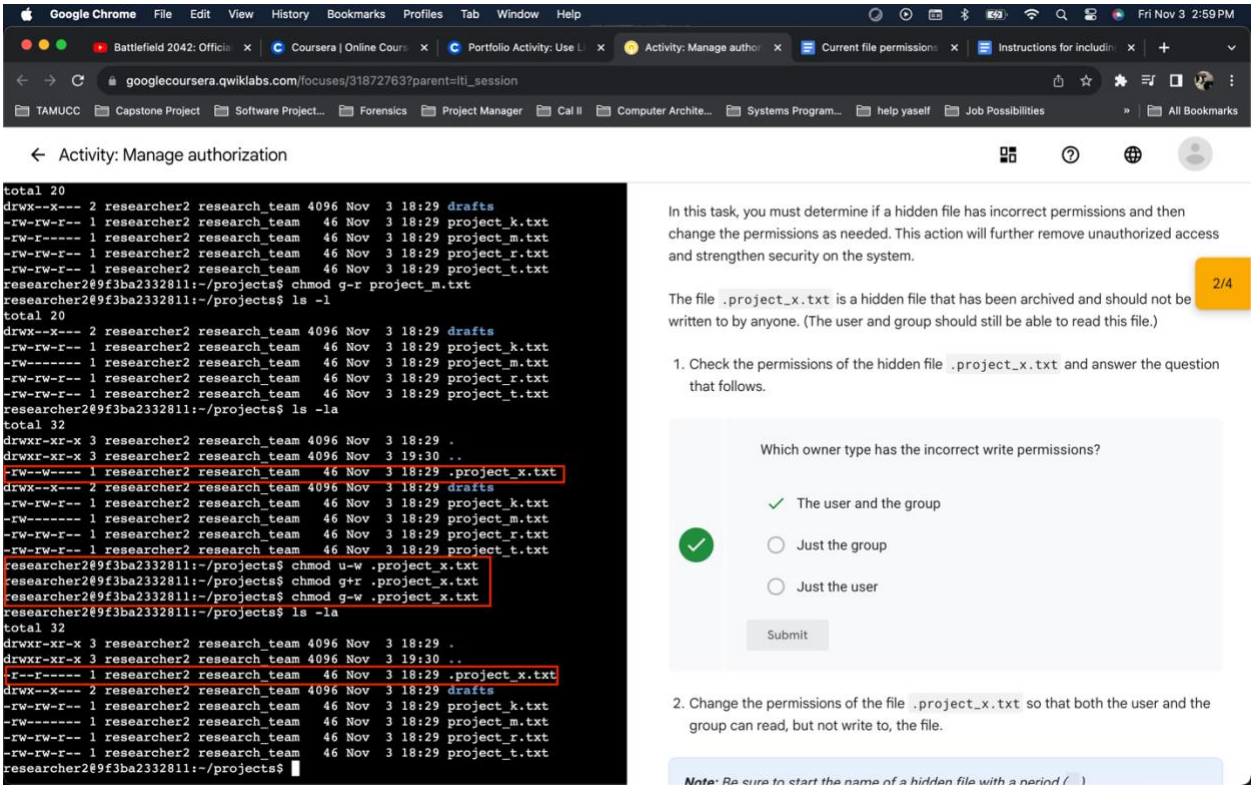




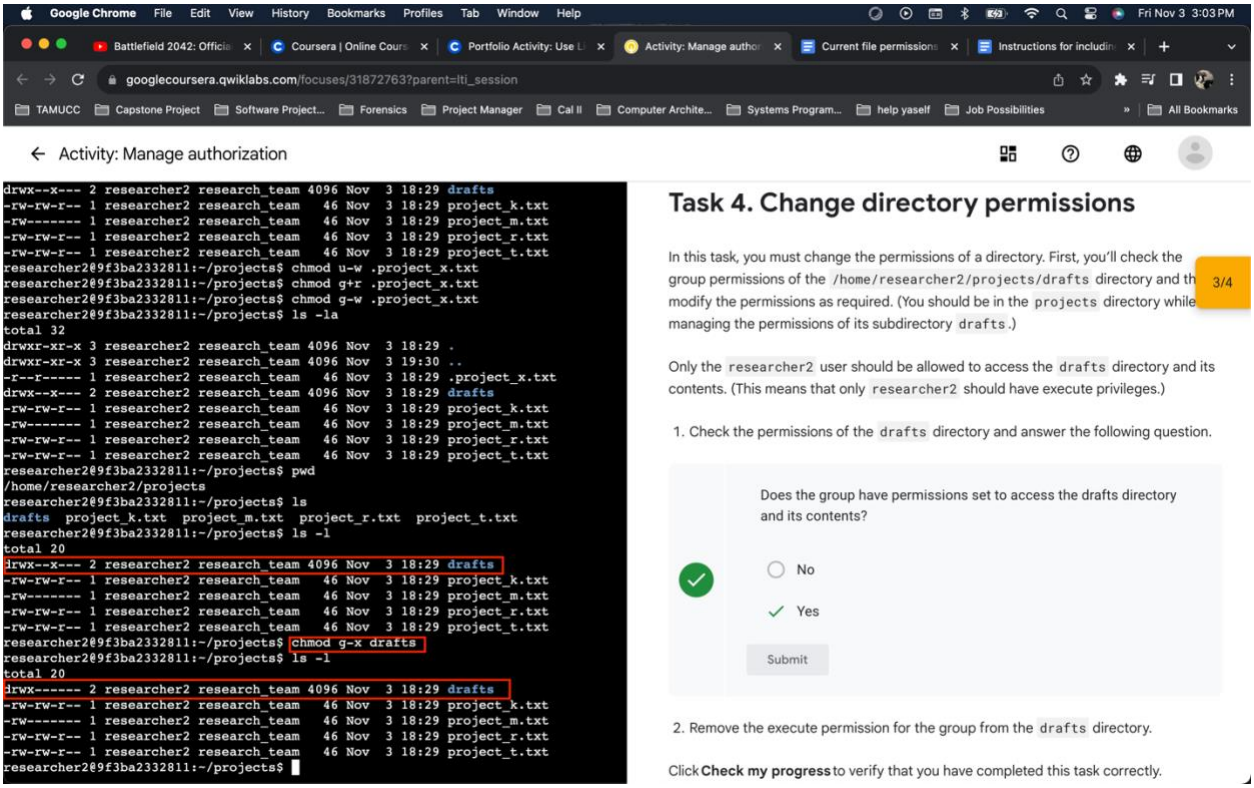
Here in the above screenshot we want to make sure that only the user group can read and write to the project_m.txt file. We notice by looking at the string of characters that the group permissions are read only. We need to fix this by using chmod g-r project m.txt. Now, when checking the string again, we see that for the file, only the user is capable of reading and writing.

Change file permissions on a hidden file

Here we want to adjust the permissions for the groups on a hidden file. To find hidden files along with the permissions, we use the command: ls -la. We find that there is a file, .project_x.txt. It has been archived, and should not be written by anyone. But we see that this isn't true. To change this, we enter in the commands: chmod u-w .project_x.txt to remove the write permission for the user, chmod g+r .project_x.txt so the group can read the file, and chmod g-w .project_x.txt to remove the write permission for the group. Voila.



Change directory permissions



In the above screenshot, we see that changing the directory permissions is almost the same as changing a file's permissions! The only difference is that we're not including a file extension.

Summary

Well, it was a short project. We see that using ls -l, ls -la, and chmod are critical commands in processing the permissions of users. It's vital for good security practices, as operating on least privilege principle, we want the right people to view and adjust the files they need, while keeping other less qualified, and sometimes dangerous actors, out of the picture.