# File permissions in Linux

## Project description

Using Linux commands, you can check the file and directory permissions to make sure that users, groups, and other owner types have the correct permissions. Then, you can change the file permissions to make sure that they reflect organization policy. This can also be done to hidden files. In this project, the steps to checking the permissions of owner types and changing their permissions for all files, including hidden, is explored for the ‘/home/researcher2/projects’ directory.

## Check file and directory details

**ls -la**: This checks the details for all of the files and directories for the current directory.

## Describe the permissions string

**-rw- - w- - - - 1 researcher2 research\_team 46 Sep 30 21:24 .project\_x.txt**:

The output of the previous command will look something like the bold text above. The 10 character string at the beginning represents the permissions of the different owner types. The first character describes whether it is a file or directory, this one being a file because of the ‘-’ character. The next 3 characters describe the permissions of the user, being rwx or ‘-’ if they do not have that permission. The next 3 characters describe the same thing for the group owner. The last 3 characters describe the same thing for the other owner. Following the permission string is the user. The next string is the group. Following that is the date and time. Lastly, the name of the file or directory is listed.

## Change file permissions

**chmod u=r,g= .project\_x.txt**:

The bold text above shows the input to change the permissions to the file. ‘u=r’ overwrites the whole permission set for the user, making the only permission now available to them being ‘r’ or read. ‘g=’ overwrites the whole permission set for the group, not giving them any permissions. This overwrites their old permissions and takes away the ‘w’ or write permission. Lastly, the name of the document is used to identify which document is having it’s permission changed.

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## Change directory permissions

Changing directory permissions would follow the same format as the previous commands with one small difference. In place of the file name in the command, you would use the directory name. For example:

**chmod u=rwx,g=r,u=r logs/**

## Summary

One can use commands in Linux to do a lot with files and directories. Making sure that the correct permissions for each owner type over all files in a database is essential to security. Linux makes the task of viewing and changing those permissions very easy.