File permissions in Linux

Project description

This project focuses on managing file and directory permissions in Linux to ensure compliance with organizational security policies. I analyzed current file permissions through a series of Linux commands, interpreted their meaning, and updated them to meet specific requirements. These tasks included working with hidden files and directories, and demonstrating how to secure sensitive files.

Check file and directory details

Command Used: `ls -la`

- **Explanation:**
  The `ls -la` command lists all files and subdirectories, including hidden files (those starting with a dot), and displays their permissions in a 10-character string.

Output Example:
```
-rw--w---- 1 researcher2 research_team   46 Dec  2 20:47 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec  2 20:47 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Dec  2 20:47 project_k.txt
```

Describe the permissions string

Example String: `-rw--w----`
Explanation:

- `-`: Indicates this is a regular file.
- `rw-`: The owner (user) can read and write the file.
- `-w-`: The group can only write to the file.
- `---`: Others have no permissions.

Change file permissions

- **Scenario:** The organization does not allow write permissions for "others."

Command Used: `chmod u=r,g=r,o= project_k.txt`

- **Explanation:**
  The `chmod` command updates permissions. The `u=r,g=r,o=` argument sets user and group to read-only and removes all permissions for others.

Result: `-r--r----- 1 researcher2 research_team   46 Dec  2 20:47 project_k.txt`

Change file permissions on a hidden file

- **Scenario:** The `.project_x.txt` file is a hidden archive that should not have write permissions but should remain readable by the user and group.

Command Used: `chmod u=r,g=r .project_x.txt`

- **Explanation:**
  This command sets read-only permissions for the user and group on `.project_x.txt`. The file remains hidden because of its name prefix (`.`).

Result: `-r--r----- 1 researcher2 research_team   46 Dec  2 20:47 .project_x.txt`

Change directory permissions

Scenario: The `drafts` directory must only be accessible to the `researcher2` user.
Command Used: `chmod g-x drafts`

Explanation:
The `chmod` command removes execute permissions for the group (`g-x`), restricting access to the directory to only the owner.
Result: `drwx------ 2 researcher2 research_team 4096 Dec  2 20:47 drafts`

Summary

I managed file and directory permissions in this project to meet organizational security policies using Linux commands. The tasks involved checking current permissions with `ls -la`, interpreting the 10-character permissions string, and modifying permissions with `chmod`. I ensured hidden files like `.project_x.txt` were appropriately secured and limited directory

access to authorized users. This project demonstrates the critical role of authorization in system security and how Linux tools can enforce it effectively.