File permissions in Linux

By Jovworie Tanshi

Project description

Objective: The goal of this project is to manage and secure file system permissions on a Linux system. You will learn how to check, describe, and modify file and directory permissions using Linux commands.

Check file and directory details

Content: Describe how to check the details of files and directories, including their permissions.

1. **List Files and Directories:** Use the `ls -l` command to list files and directories along with their permissions.

ls -l /path/to/directory
Output example:
drwxr-xr-x 2 user group 4096 Jul 13 10:00 directory_name
-rw-r--r-- 1 user group 123 Jul 13 10:00 file_name

Describe the permissions string

Content: Explain the components of the permissions string for files and directories.

1. **Understanding the Permissions String:**
    - The permissions string has ten characters.
    - The first character indicates the file type (e.g., `-` for a file, `d` for a directory).
    - The next nine characters are divided into three sets of three, representing the permissions for the owner, group, and others.
2. Example:

-rwxr-xr--

`-`: Regular file
`rwx`: Owner permissions (read, write, execute)

`r-x`: Group permissions (read, execute)
`r--`: Others permissions (read)

Change file permissions

Content: Describe how to modify file permissions using the `chmod` command.

1. **Change Permissions Using Symbolic Mode:**
- chmod u+rw file_name # Add read and write permissions for the owner
- chmod g+x file_name # Add execute permission for the group
- chmod o-r file_name # Remove read permission for others
2. **Change Permissions Using Numeric Mode:**

chmod 764 file_name

- 7: Owner permissions (read, write, execute)
- 6: Group permissions (read, write)
- 4: Others permissions (read)

Change file permissions on a hidden file

Content: Explain how to modify permissions on hidden files (files starting with a dot).

1. **Change Permissions on Hidden Files:**

chmod u+rw .hidden_file
chmod 600 .hidden_file # Owner read and write, no permissions for group and others

Change directory permissions

Content: Describe how to change permissions for directories.

1. **Change Directory Permissions:**

chmod u+rwx /path/to/directory # Add read, write, and execute permissions for the owner
chmod g+rx /path/to/directory # Add read and execute permissions for the group
chmod o-rwx /path/to/directory # Remove all permissions for others

Summary

Content: Summarize the key points covered in the project and the importance of managing file system permissions.

1. **Key Takeaways:**
    - Understanding and managing file and directory permissions is crucial for system security.
    - Linux commands like `ls`, `chmod`, and `chown` are essential tools for this task.
    - Proper permissions ensure that only authorized users have access to sensitive data.