

lab 2: file permissions v3

iteration note:

- updated it to say file permissions, not user permissions.

Overview

This lab is designed to help you learn how to set the right permissions for users and place them in the appropriate groups on your system. You will step into the role of a System Administrator at Gourmet, a company that specializes in smart kitchen appliances and recipe apps. Your mission is to ensure that access control is implemented so that all users can access the files they need for their duties.

Setting up user permissions and access control is crucial for preventing data cross-contamination and ensuring that sensitive information remains private. Throughout this lab, you will engage in practical exercises that simulate real-world scenarios faced by System Administrators. By configuring the right permissions and assigning users to their respective groups, you will gain valuable skills essential for managing a secure system.

Objectives

By the end of this lab, you will be able to:

- Create and manage user accounts and groups.
- Set up a structured directory system with appropriate ownership.
- Apply basic file and directory permissions using command-line tools.
- Change ownership of files and directories using `chown` and `chgrp`.
- Verify file and directory permissions using `ls -l`.
- Test access control by switching between user accounts.

Instructions

Understanding that what we're working with today, we can begin implementing the access control today, let's begin implementing the system for Gourmet. Make sure you read and follow the instructions carefully, and if you feel like you're stuck on anything, you find the solutions at the end of this lab.

Part One: Creating Our Users and Groups

In this section, we will set up the main directory for our lab and create the necessary user accounts and groups.

1. Create the Main Directory:

- Create a directory named `gourmet_recipes` in your home directory.

2. Create Subdirectories:

- Inside `gourmet_recipes`, create the following subdirectories:
 - `recipe_drafts`
 - `recipe_reviews`
 - `published_recipes`

3. Create User Accounts:

- Set up the following user accounts:
 - `chef`
 - `editor`
 - `tester`

4. Set the Passwords for the Users:

- Set up the passwords to the newly created user accounts to: `lab2`

5. Create Groups:

- Establish the following groups:
 - `recipe_team`
 - `testers`
- Add `chef` and `editor` to the `recipe_team` supplementary group.
- Add `tester` to the `testers` supplementary group.

Part Two: Setting Up Directory Structure and Ownership

Now, we will set up the directory structure under your home directory and assign ownership.

1. Set Up Directory Structure:

- Create a structured directory system under `~/gourmet_recipes/` with the subdirectories created earlier (`recipe_drafts`, `recipe_reviews`, `published_recipes`).

2. Change Ownership:

- Assign ownership of the directories as follows:
 - `~/gourmet_recipes`: owned by your user account (the administrator)
 - All subdirectories (`recipe_drafts`, `recipe_reviews`, `published_recipes`): owned by `chef`

Part Three: Applying and Verifying Permissions

In this part, we will apply basic permissions to each directory and verify them.

1. Apply Basic Permissions:

- Use the `chmod` command to set appropriate permissions for each directory.

1. For the `~/gourmet_recipes` directory, set permissions so that:

- The owner (you) has full control (`rwX`).
- Others have only read and execute permissions to subdirectories (`r-x`).
- This setup allows you to manage the directory while enabling others to access its contents without making changes.

2. For the `~/gourmet_recipes/recipe_drafts` directory, set permissions so that:

- Chef has full control to create and modify drafts (`rwX`).
- The `recipe_team` group has read and write access to suggest changes (`rw-`).
- Others has no access (`---`).
- This is because you want only authorized users to modify drafts while keeping them secure from unauthorized access.

3. For the `~/gourmet_recipes/recipe_reviews` directory, set permissions so that:

- Chef has full control (`rwX`).
- The `recipe_team` group has full control (`rwX`).
- Others has no access (`---`).
- This allows collaboration among chefs and team members while restricting access to outsiders.

4. For the ~/gourmet_recipes/published_recipes directory, set permissions so that:

- Chef has read and write access (rw-).
- Editor has read access only (r--).
- Tester has full control (rwx).
- This setup allows chefs to finalize recipes, editors to review them, and testers to ensure quality without compromising security.

2. Verify Permissions:

- Ensure that permissions and ownership are set correctly for each directory.

Part Four: Testing Access Control

Finally, we will test access control by switching between user accounts.

1. Test Access Control:

- Switch to each user account (chef, editor, and tester) and perform the following tasks:
 - List the contents of each directory.
 - Attempt to create a file in each directory.
 - Attempt to modify a file in each directory.

2. Confirmation:

- Ensure that each user can access their designated directories as intended, based on the permissions set.

Part Five: Cleaning Up

Finally, let's clean up after our work and remove all the content for our next lab:

- 1. Remove the gourmet_recipes**
- 2. Remove the newly created users from the system**

Solutions for Lab 2: File Permissions

Part One: Creating Our Users and Groups

1. Create the Main Directory:

```
mkdir ~/gourmet_recipes
```

2. Create Subdirectories:

```
mkdir ~/gourmet_recipes/recipe_drafts
```

```
mkdir ~/gourmet_recipes/recipe_reviews
```

```
mkdir ~/gourmet_recipes/published_recipes
```

3. Create User Accounts:

```
sudo adduser chef
```

```
sudo adduser editor
```

```
sudo adduser tester
```

4. Set Users Passwords:

```
sudo passwd chef
```

```
sudo passwd editor
```

```
sudo passwd editor
```

5. Create Groups:

```
sudo groupadd recipe_team
```

```
sudo groupadd testers
```

```
sudo usermod -aG recipe_team chef
```

```
sudo usermod -aG recipe_team editor
```

```
sudo usermod -aG testers tester
```

Part Two: Setting Up Directory Structure and Ownership

1. Change Ownership:

```
sudo chown yourusername:yourusername ~/gourmet_recipes
```

```
sudo chown chef:recipe_team ~/gourmet_recipes/recipe_drafts
```

```
sudo chown chef:recipe_team ~/gourmet_recipes/recipe_reviews
```

```
sudo chown chef:recipe_team ~/gourmet_recipes/published_recipes
```

Part Three: Applying and Verifying Permissions

1. Apply Basic Permissions:

```
chmod 755 ~/gourmet_recipes
chmod 760 ~/gourmet_recipes/recipe_drafts
chmod 770 ~/gourmet_recipes/recipe_reviews
chmod 647 ~/gourmet_recipes/published_recipes
```

2. Verify Permissions:

```
ls -l ~/gourmet_recipes/
```

Part Four: Testing Access Control

1. Test Access Control:

- **For chef:**

```
su - chef
ls ~/gourmet_recipes/recipe_drafts/
touch ~/gourmet_recipes/recipe_drafts/test_file
```

- **For editor:**

```
su - editor
ls ~/gourmet_recipes/recipe_reviews/
touch ~/gourmet_recipes/recipe_reviews/test_file
```

- **For tester:**

```
su - tester
ls ~/gourmet_recipes/published_recipes/
touch ~/gourmet_recipes/published_recipes/test_file
```

Part Five: Cleaning Up

1. Remove the gourmet_recipes Directory:

```
rm -r ~/gourmet_recipes
```

2. Remove the Newly Created Users from the System

```
sudo userdel -r chef
sudo userdel -r editor
sudo userdel -r tester
```