

Permissions

Exercise 1: Understanding File Permissions

Objective: Learn how to view and understand file permissions.

1. Create a new file called "permissions.txt":

```
touch permissions.txt
```

2. Check the permissions of "permissions.txt" using the ls -l command:

```
ls -l permissions.txt
```

3. Analyze the output:

- What do the first ten characters represent? (Hint: Look for -rwxrwxrwx format)
- Identify which permissions are granted to the owner, group, and others.

Exercise 2: Changing File Permissions

Objective: Learn to change file permissions using the chmod command.

1. Change the permissions of "permissions.txt" to allow read and write for the owner, and read for the group and others:

```
chmod 644 permissions.txt
```

2. Verify the changes by checking the permissions again:

```
ls -l permissions.txt
```

3. Change the permissions to allow everyone to read, write, and execute the file:

```
chmod 777 permissions.txt
```

4. Confirm the permissions have changed:

```
ls -l permissions.txt
```

Exercise 3: Using Symbolic Modes with chmod

Objective: Change file permissions using symbolic notation.

1. Reset the permissions of "permissions.txt" back to 644:

```
chmod 644 permissions.txt
```

2. Now, give the group execute permission using symbolic notation:

```
chmod g+x permissions.txt
```

3. Check the permissions to verify the change:

```
ls -l permissions.txt
```

4. Remove the write permission for the group:

```
chmod g-x permissions.txt
```

5. Confirm the change:

```
ls -l permissions.txt
```

Exercise 4: Understanding Ownership

Objective: Learn about file ownership and how to change it.

1. Check the ownership of "permissions.txt" using:

```
ls -l permissions.txt
```

- Note the owner and group associated with the file.

2. Create a new user (if you have permission) or identify an existing user. You can check existing users with:

```
cat /etc/passwd | cut -d: -f1
```

3. Change the owner of "permissions.txt" to another user (replace other_username with an actual username):

```
sudo chown other_username permissions.txt
```

4. Verify the change in ownership:

```
ls -l permissions.txt
```

Exercise 5: Changing Group Ownership

Objective: Change the group ownership of a file.

1. Identify your current group using:

```
groups
```

2. Create a new group (if you have permission) or identify an existing group. You can check existing groups with:

```
cat /etc/group | cut -d: -f1
```

3. Change the group ownership of "permissions.txt" to another group (replace other_groupname with an actual group):

```
sudo chown :other_groupname permissions.txt
```

4. Confirm the group ownership has changed:

```
ls -l permissions.txt
```

Exercise 6: Recursive Changes

Objective: Learn to change permissions and ownership recursively.

1. Create a new directory called "test_dir" and navigate into it:

```
mkdir test_dir  
cd test_dir
```

2. Create a few files within "test_dir":

```
touch file1.txt file2.txt file3.txt
```

3. Change the permissions of all files in "test_dir" to be readable and writable by the owner and readable by everyone else:

```
chmod 644 *
```

4. Change the ownership of all files in "test_dir" to another user (replace other_username with an actual username):

```
sudo chown other_username *
```

5. Verify the changes by checking the permissions and ownership of the files:

```
ls -l
```

These exercises will help learners understand file permissions and ownership in Linux, how to modify them, and the implications of different permission settings.