# Week 6 Linux Projects - Chapter 4 Linux Filesystem Management

Activities

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## Update Kali Linux

In Kali Linux in the terminal.

|  |
| --- |
| sudo apt update  sudo apt dist-upgrade -y |

# Project 4-6: System Information

There are some utilities that will give a look at the system and system resources.

1. At the terminal: **top**
2. Paste a screenshot.

Click or tap here to enter text.

1. Describe 3 items of interest.

Click or tap here to enter text.

1. Type **q** to quit.

We will be installing some programs

1. Type: **sudo apt update**
2. Type: **htop**
3. You will receive a message that Command htop not found. Yes, you want to install it.
4. Type: **htop** to run the program.
5. Paste a screenshot.

Click or tap here to enter text.

1. Describe 3 items of interest.

Click or tap here to enter text.

1. Type **q** to quit.
2. Same installation routing with **btop**
3. Resize your terminal if necessary.
4. Paste a screenshot.

Click or tap here to enter text.

1. Describe 3 items of interest.

Click or tap here to enter text.

1. Type **q** to quit.

# Project 4-7: Permissions

Time required: 30 minutes

In this hands-on project, you apply and modify access permissions on files and directories and test their effects.

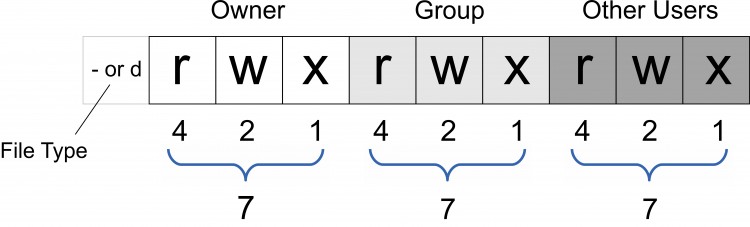
Linux access permissions regulate the level of access users and groups have to files and directories. There are three basic permissions:

* **Read (r)**: Allows viewing and reading the content of a file or listing the contents of a directory.
* **Write (w)**: Permits modifying or deleting a file, and for directories, it allows creating, deleting, and renaming files within the directory.
* **Execute (x)**: For files, it allows executing or running the file as a program. For directories, it enables accessing the contents of the directory.

Permissions are assigned to three categories:

* **Owner (u)**: The user who owns the file or directory.
* **Group (g)**: A group of users to which the file or directory belongs.
* **Others (o)**: All other users who are neither the owner nor in the group.

Combining these elements, permissions are represented by a three-digit octal number. For instance, "chmod 755" means the owner has read, write, and execute permissions, the group has read and execute permissions, and others have read and execute permissions.



1. Log in using the user name of **user** and the password of **Password01**

We will need another user later in these tutorials. **-m** adds the home directory.

1. **sudo useradd -m user1**
2. Add or change a password on a user account
3. **sudo passwd user1**
4. Use **Password01**
5. **touch permsample**

**chmod** is a command in Unix and Unix-like operating systems used to change the permissions of files and directories. It stands for **change mode** The command allows users to modify the read, write, and execute permissions for the owner, group, and others.

**chmod 777** grants full read, write, and execute permissions to the owner, group, and others for a file or directory in Unix-like operating systems. It provides unrestricted access, allowing anyone to perform any operation on the file or directory. It's a powerful setting but should be used cautiously due to security implications.

1. **chmod 777 permsample**
2. **ls -l**
3. Who has permissions to this file?

Click or tap here to enter text.

1. **chmod 000 permsample**

**ls -l** is used to list detailed information about files and directories in a long format. The output includes various details such as permissions, ownership, file size, modification date, and the name of each file or directory.

* **Column 1**: File type and permissions (e.g., -rw-r--r--).
* **Column 2**: Number of hard links to the file or directory.
* **Column 3**: Owner of the file or directory.
* **Column 4**: Group associated with the file or directory.
* **Column 5**: Size of the file in bytes.
* **Column 6-8**: Date and time of the last modification.
* **Column 9**: Name of the file or directory.Type **ls –l** and press **Enter**.

A group of numbers on a black background

Description automatically generated

* **file1.txt** is a regular file with read and write permissions for the owner and read-only permissions for others.
* **directory** is a directory with read, write, and execute permissions for the owner, and read and execute permissions for others.
* **script.sh** is an executable script with read, write, and execute permissions for the owner, and execute permissions for others.

1. **ls -l**
2. Who has permissions to this file? What does chmod 000 do?

Click or tap here to enter text.

Try removing the file

1. **rm permsample**
2. Were you able to delete this file? Why?

Click or tap here to enter text.

1. Change to the root folder
2. **cd /**
3. Show the present working directory.
4. **pwd**
5. What directory are you in?

Click or tap here to enter text.

1. **ls –F**
2. What directories do you see?

Click or tap here to enter text.

1. Type **ls –l** and press **Enter** to view the owner, group owner, and permissions on the foruser1 directory created earlier.
2. Who is the owner and group owner?

Click or tap here to enter text.

1. If you were logged in as the user user1, in which category would you be placed (user, group, other)?

Click or tap here to enter text.

1. What permissions do you have as this category (read, write, execute)?

Click or tap here to enter text.

1. **cd /home/user**
2. **cp /etc/hosts** **hosts**
3. Type **ls** at the command prompt and press **Enter** to ensure that a copy of the hosts file was made in your current directory.

**su** – Switch users

1. **su user1**
2. **ls**
3. Were you able to see the contents of the directory? Why?

Click or tap here to enter text.

1. **su user**
2. Were you successful? Why?

Click or tap here to enter text.

1. Type **nano hosts** at the command prompt to open the hosts file in the nano editor. Delete the first line of this file and save your changes.
2. Were you successful? Why? Exit the nano editor.

Click or tap here to enter text.

1. Type **exit** and press **Enter** to log out of your shell.

# Project 4-9: Change Ownership

Time required: 15 minutes

In this hands-on project, you view and change file and directory ownership using the **chown** and **chgrp** commands.

1. Login with **user** and the password of **Password01**.
2. Change to /home/user **cd ~**
3. At the command prompt, type **touch ownersample** and press **Enter**.
4. Type **mkdir ownerdir** at the command prompt and press **Enter**.
5. Type **ls –l** at the command prompt and press **Enter** to verify that the file **ownersample** and directory **ownerdir** were created and that user is the owner and group owner of each.
6. Type **chgrp sys owner\*** and press **Enter** to change the group ownership to the sys group for both ownersample and ownerdir.
7. Why were you successful?

Click or tap here to enter text.

1. Type **sudo chown user1 owner\*** and press **Enter** to change the ownership to the user1 user for both ownersample and ownerdir.
2. Why were you successful?

Click or tap here to enter text.

1. At the command prompt, type **sudo chown user owner\*** and press **Enter** to change the ownership and group ownership back to the root user for both ownersample and ownerdir.
2. Type **mv ownersample ownerdir** and press **Enter**.
3. Type **ls –lR** at the command prompt and press **Enter** to note that the ownersample file now exists within the ownerdir directory and that both are owned by root.
4. Type **chown -R user1 ownerdir** and press **Enter**.
5. Type **ls –l** at the command prompt and press **Enter**.
6. Who owns the ownerdir directory and ownersample file? Why?

Click or tap here to enter text.

1. Type **rm -R ownerdir** and press **Enter**.
2. Why were you able to delete this directory without being the owner of it?

Click or tap here to enter text.

1. Type **poweroff** to shut down Kali.

## Assignment Submission

Submit this completed document in Blackboard.