Linux Assignment 1

This document contains the breakdown of tasks for Assignment 1 including commands used, step-by-step explanations, and screenshots.

Task 1: Basic Linux Commands in a Real-World Scenario

Scenario: Your manager asks you to set up a project directory for a new team and verify system details before installation.

Check current logged-in user and system information

Command:
whoami
uname -a

Explanation: Displays the current user and system information.

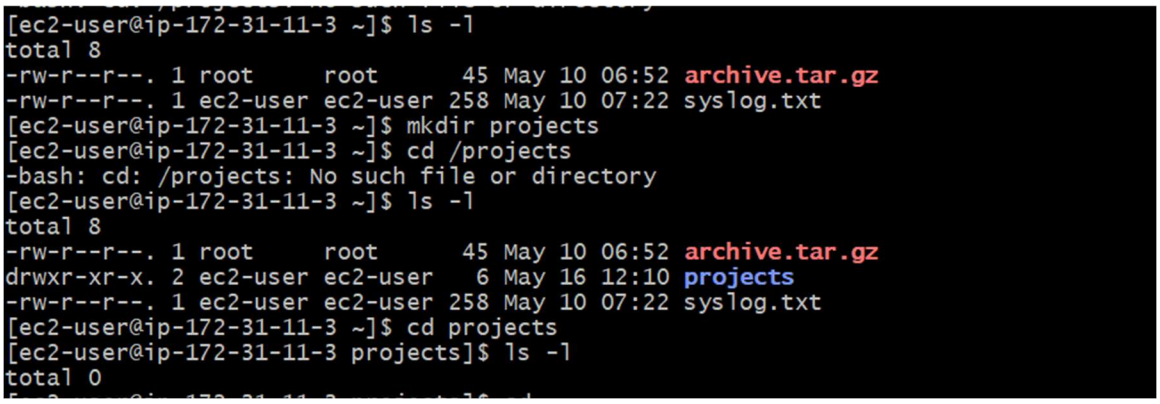
Screenshot:

Navigate to the /projects directory and list contents

Command:
cd /projects
ls -l

Explanation: Navigates to the /projects directory and lists its contents.

Screenshot:

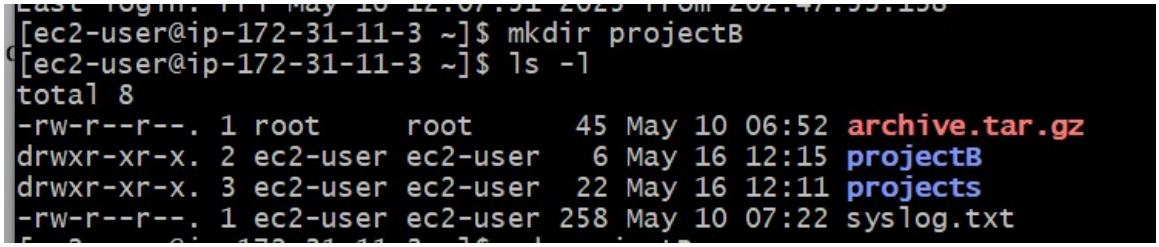


Create a new project directory and verify it

Command:
mkdir projectB
ls -l

Explanation: Creates a directory named projectB and verifies it exists.

Screenshot:

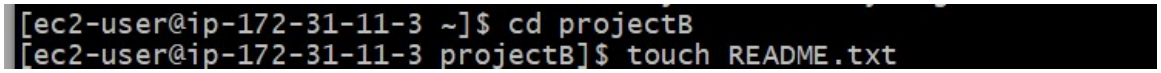


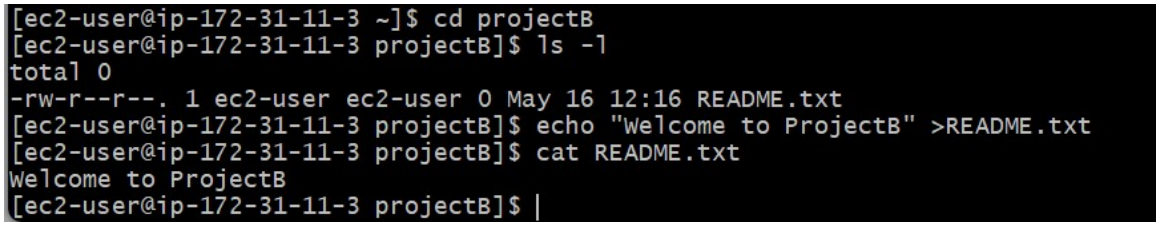
Create a sample file inside projectB

Command:
touch projectB/README.txt
echo "Welcome to Project B" > projectB/README.txt
cat projectB/README.txt

Explanation: Creates a README file with sample text and displays its content.

Screenshot:





Task 2: User and Group Permissions Management

Scenario: A new employee, John, joins the developers team. He needs access to projectB, but shouldn't be able to modify system files.

Create a new user john and add him to the developers group

Command:
sudo useradd -m -G developers john
sudo passwd john

Explanation: Creates a user 'john' with a home directory and adds him to the developers group.

Screenshot:

```
[ec2-user@ip-172-31-11-3 projectB]$ sudo groupadd developers
[ec2-user@ip-172-31-11-3 projectB]$ sudo useradd -m -G developersjohn
useradd: group 'developersjohn' does not exist
[ec2-user@ip-172-31-11-3 projectB]$ sudo useradd -m -G developers john
[ec2-user@ip-172-31-11-3 projectB]$ sudo passwd john
Changing password for user john.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: The password fails the dictionary check - it is too simplistic/sys
tematic
Retype new password:
passwd: all authentication tokens updated successfully.
```

Verify user and group

Command:
id john

Explanation: Verifies the user ID and group memberships of 'john'.

Screenshot:

```
[ec2-user@ip-172-31-11-3 projectB]$ id john
uid=1001(john) gid=1002(john) groups=1002(john),1001(developers)
```

Change group ownership of projectB to developers

Command:
sudo chown :developers /projects/projectB

Explanation: Changes the group ownership of projectB to 'developers'.

Screenshot:

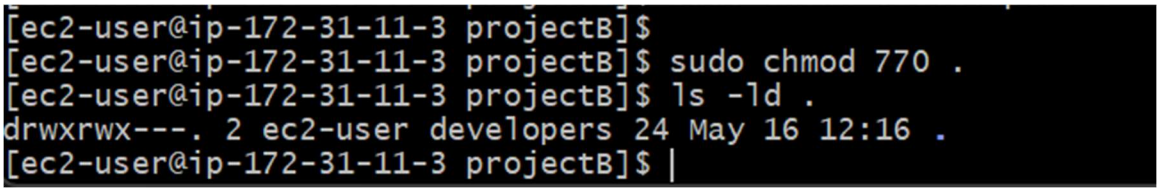
```
[ec2-user@ip-172-31-11-3 ~]$ cd projectB
[ec2-user@ip-172-31-11-3 projectB]$ sudo chown :developers .
[ec2-user@ip-172-31-11-3 projectB]$
```

Modify permissions so that only the group can write

Command:
sudo chmod 770 /projects/projectB
ls -ld /projects/projectB

Explanation: Sets read, write, and execute permissions for owner and group only.

Screenshot:



Task 3: Changing File Ownership

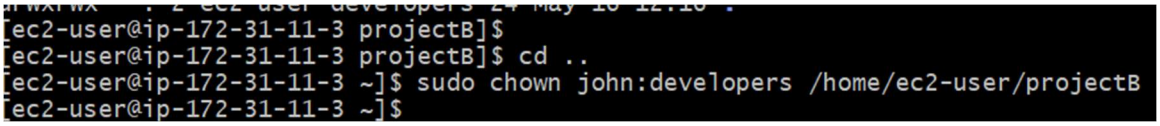
Scenario: John is now the lead developer and should be the owner of projectB.

Change ownership of projectB to john

Command:
sudo chown john:developers /projects/projectB

Explanation: Changes the ownership of projectB to user 'john' and group 'developers'.

Screenshot:



Verify the ownership change

Command:
ls -ld /projects/projectB

Explanation: Lists detailed info about projectB to confirm the ownership change.

Screenshot:

Task 4: System-Level Monitoring Commands

Scenario: Your manager asks you to check system resource usage before installing a heavy application.

Check system uptime

Command:
uptime

Explanation: Displays how long the system has been running and the average system load.

Screenshot:

```
[ec2-user@ip-172-31-11-3 ~]$
[ec2-user@ip-172-31-11-3 ~]$ uptime
 12:53:45 up  1:19,  3 users,  load average: 0.00, 0.00, 0.00
[ec2-user@ip-172-31-11-3 ~]$
```

Monitor disk usage

Command:
df -h

Explanation: Shows disk space usage in human-readable format.

Screenshot:

```
[ec2-user@ip-172-31-11-3 ~]$
[ec2-user@ip-172-31-11-3 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M     0  4.0M   0% /dev
tmpfs           475M     0  475M   0% /dev/shm
tmpfs           190M  460K  190M   1% /run
/dev/xvda1      8.0G  1.6G  6.4G  20% /
tmpfs           475M     0  475M   0% /tmp
/dev/xvda128     10M  1.3M  8.7M  13% /boot/efi
tmpfs            95M     0   95M   0% /run/user/1000
[ec2-user@ip-172-31-11-3 ~]$
```

Check memory usage

Command:
free -m

Explanation: Displays memory usage in megabytes.

Screenshot:

```
[ec2-user@ip-172-31-11-3 ~]$ free -m
               total        used        free      shared  buff/cache   available
Mem:             949         121         588           0         239         690
Swap:              0           0           0
[ec2-user@ip-172-31-11-3 ~]$
```

Monitor running processes

Command:
ps aux --sort=-%mem | head -5

Explanation: Shows top 5 memory-consuming processes.

Screenshot: