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## Linux Operating System -Tasks

**Task 1:** Linux History and Philosophy Objective: Write a brief explanation of the history of Linux and its philosophy. Action Items: Open a terminal. Use nano to create a .txt file named LinuxHistory.txt. Within the file, summarize the origins of Linux and the principles of the GNU/Linux system. Save and close the file.

**Task 2:** File Navigation and Directory Structure Objective: Demonstrate basic file navigation and directory structure understanding. Action Items: List all files in the home directory using a single command. Display the absolute path of the current working directory. Create a new directory called Practice in the home directory and navigate into it.

**Task 3:** File Management Commands Objective: Use file management commands to organize files and directories. Action Items: In the Practice directory, create a new file called sample.txt. Copy sample.txt to a new file called duplicate.txt. Delete duplicate.txt using a command-line command.

**Task 4:** Using grep to Search within Files Objective: Utilize grep to search text within files. Action Items: Use grep to find all instances of the word "Linux" in the LinuxHistory.txt file. Redirect the output to a new file called LinuxInstances.txt.

**Task 5:** Permissions and Ownership Objective: Understand and modify file permissions and ownership. Action Items: View the current permissions for sample.txt. Change the permissions to read-only for the owner and no permissions for others. Change the ownership of LinuxHistory.txt to another user (assuming one exists).

**Task 6:** Remote System Access Objective: Practice accessing a remote system and transferring files. Action Items: Use ssh to connect to a remote system (this can be a local VM for practice). Once connected, use scp to copy LinuxHistory.txt from the local machine to the remote system.

## Outputs:

```
iteradmin@D001-38: ~/2141018011_Los
iteradmin@D001-38:~$ mkdir 2141018011_Los
iteradmin@D001-38:~$ cd 2141018011_Los
iteradmin@D001-38:~/2141018011_Los$ nano LinuxHistory.txt
iteradmin@D001-38:~/2141018011_Los$ ls
LinuxHistory.txt
iteradmin@D001-38:~/2141018011_Los$ pwd
/home/iteradmin/2141018011_Los
iteradmin@D001-38:~/2141018011_Los$ mkdir practice
iteradmin@D001-38:~/2141018011_Los$ cd practice
iteradmin@D001-38:~/2141018011_Los/practice$ touch sample.txt
iteradmin@D001-38:~/2141018011_Los/practice$ cp sample.txt duplicate.txt
iteradmin@D001-38:~/2141018011_Los/practice$ rm duplicate.txt
iteradmin@D001-38:~/2141018011_Los/practice$ cd ..
iteradmin@D001-38:~/2141018011_Los$ grep "linux" LinuxHistory.txt > LinuxInstances.txt
iteradmin@D001-38:~/2141018011_Los$ ls -l sample.txt
ls: cannot access 'sample.txt': No such file or directory
iteradmin@D001-38:~/2141018011_Los/practice$ ls -l sample.txt
-rw-rw-r-- 1 iteradmin iteradmin 0 Apr 12 12:21 sample.txt
iteradmin@D001-38:~/2141018011_Los/practice$ chmod 400 sample.txt
iteradmin@D001-38:~/2141018011_Los/practice$ sudo chown Anotheruser LinuxHistory.txt
[sudo] password for iteradmin:
chown: invalid user: 'Anotheruser'
iteradmin@D001-38:~/2141018011_Los/practice$ sudo chown student LinuxHistory.txt
chown: cannot access 'LinuxHistory.txt': No such file or directory
iteradmin@D001-38:~/2141018011_Los/practice$ cd ..
iteradmin@D001-38:~/2141018011_Los$ sudo chown student LinuxHistory.txt
iteradmin@D001-38:~/2141018011_Los$ ssh iteradmin@172.30.4.206
^Z
[1]+  Stopped                  ssh iteradmin@172.30.4.206
iteradmin@D001-38:~/2141018011_Los$ ssh iteradmin@172.30.4.209
The authenticity of host '172.30.4.209 (172.30.4.209)' can't be established.
ECDSA key fingerprint is SHA256:VN6HCzhAalxi9ivkr3VBZ3lhkS+f2qrFBGd+m0HaLEI.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.30.4.209' (ECDSA) to the list of known hosts.
iteradmin@172.30.4.209's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-136-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

1 device has a firmware upgrade available.
Run 'fwupdmgtr get-upgrades' for more information.
```

```
iteradmin@D001-38:~/2141018011_Los$ ssh iteradmin@172.30.4.206
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1 device has a firmware upgrade available.
Run 'fwupdmgtr get-upgrades' for more information.

Expanded Security Maintenance for Applications is not enabled.

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

44 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

New release '22.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Sat Apr 12 12:26:20 2025 from 172.30.4.216
iteradmin@D001-38:~$ exit
logout
Connection to 172.30.4.209 closed.
iteradmin@D001-38:~/2141018011_Los$ scp LinuxHistory.txt iteradmin@172.30.4.206:~
^Z
[2]+  Stopped                  scp LinuxHistory.txt iteradmin@172.30.4.206:~
iteradmin@D001-38:~/2141018011_Los$ scp LinuxHistory.txt iteradmin@172.30.4.209:~
iteradmin@172.30.4.209's password:
LinuxHistory.txt
iteradmin@D001-38:~/2141018011_Los$ ls
LinuxHistory.txt  LinuxInstances.txt  practice
iteradmin@D001-38:~/2141018011_Los$
```

```
Activities Terminal Apr 12 12:49 PM iteradmin@D001-38: ~/2141018011_Los/practice

[2]+ Stopped scp LinuxHistory.txt iteradmin@172.30.4.206:~
iteradmin@D001-38:~/2141018011_Los$ scp LinuxHistory.txt iteradmin@172.30.4.209:~
iteradmin@172.30.4.209's password:
LinuxHistory.txt 100% 2554 1.3MB/s 00:00
iteradmin@D001-38:~/2141018011_Los$ ls
LinuxHistory.txt LinuxInstances.txt practice
iteradmin@D001-38:~/2141018011_Los$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp2s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether aa:bb:dd:8a:0b:e4 brd ff:ff:ff:ff:ff:ff
    inet 172.30.4.162/22 brd 172.30.7.255 scope global dynamic noprefixroute enp2s0
        valid_lft 78647sec preferred_lft 78647sec
    inet6 fe80::133e:3af7:3586:d31e/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: wlp3s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 10:51:07:af:9e:57 brd ff:ff:ff:ff:ff:ff
    inet 100.109.56.129/17 brd 100.109.127.255 scope global noprefixroute wlp3s0
        valid_lft forever preferred_lft forever
    inet6 fe80::52bd:1906:2387:45b4/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
iteradmin@D001-38:~/2141018011_Los$ cd Practice
bash: cd: Practice: No such file or directory
iteradmin@D001-38:~/2141018011_Los$ cd practice
iteradmin@D001-38:~/2141018011_Los/practice$ chmod +x login_audit.sh
iteradmin@D001-38:~/2141018011_Los/practice$ sudo ./login_audit
[sudo] password for iteradmin:
sudo: ./login_audit: command not found
iteradmin@D001-38:~/2141018011_Los/practice$ sudo ./login_audit.sh
Processing login attempts and errors...
Extracting error messages...
Done. Output written to:
- login_attempts.txt (login attempts and usernames)
- error_messages.txt (error messages)
iteradmin@D001-38:~/2141018011_Los/practice$ cat login_attempts.txt
Login Attempts:
Apr 12 12:33:34 D001-38 sshd[9538]: Accepted password for iteradmin from 172.30.4.222 port 35490 ssh2
Attempted Usernames:
iteradmin@D001-38:~/2141018011_Los/practice$ cat error_messages.txt
iteradmin@D001-38:~/2141018011_Los/practice$
```