TASK : Linux Fundamental Practice Questions
SUB : AWS re/Start
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● File and Directory Management
1. Create Project Structure
Create a directory named aws_restart in your home folder. Inside it, create
two subdirectories: linux_basics and cloud_practice.

```
[ec2-user@ip-172-31-2-152 ~]$ mkdir aws_restart
[ec2-user@ip-172-31-2-152 ~]$ cd aws_restart
[ec2-user@ip-172-31-2-152 aws_restart]$ mkdir linux_basics
[ec2-user@ip-172-31-2-152 aws_restart]$ mkdir cloud_practice
[ec2-user@ip-172-31-2-152 aws_restart]$

[ec2-user@ip-172-31-2-152 aws_restart]$ tree
.
├── cloud_practice
└── linux_basics

2 directories, 0 files
[ec2-user@ip-172-31-2-152 aws_restart]$
```

2. Log File Setup
Inside linux_basics, create a text file named log_summary.txt and add today's
date to it using a command (not manual editing).

```
[ec2-user@ip-172-31-2-152 aws_restart]$ cd linux_basics/
[ec2-user@ip-172-31-2-152 linux_basics]$ touch log_summary.txt
[ec2-user@ip-172-31-2-152 linux_basics]$ date > log_summary.txt
[ec2-user@ip-172-31-2-152 linux_basics]$ cat log_summary.txt
Mon Jul 14 06:42:26 UTC 2025
[ec2-user@ip-172-31-2-152 linux_basics]$
```

3. Copy Files with Pattern
Copy all .txt files from linux_basics to cloud_practice using a single command.

```
[ec2-user@ip-172-31-2-152 aws_restart]$ cp linux_basics/*.txt cloud_practi
ce/
[ec2-user@ip-172-31-2-152 aws_restart]$ cd cloud_practice/
[ec2-user@ip-172-31-2-152 cloud_practice]$ ls
log_summary.txt
[ec2-user@ip-172-31-2-152 cloud_practice]$
```

4. Find & Archive

Find all .sh files in your home directory and compress them into a .tar.gz archive called scripts_backup.tar.gz.

```
[ec2-user@ip-172-31-1-94 ~]$ tar -czvf scripts_bakup.tar.gz *.sh
tar: *.sh: Cannot stat: No such file or directory
```

● User and Permissions

5. Add a New User

Create a new user called devuser. Set a password for the user and make the user's shell /bin/bash.

```
[ec2-user@ip-172-31-2-152 aws_restart]$ sudo useradd devuser
[ec2-user@ip-172-31-2-152 aws_restart]$ sudo passwd devuser
Changing password for user devuser.
New password:
BAD PASSWORD: The password fails the dictionary check - it is too simplist
ic/systematic
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-2-152 aws_restart]$ sudo usermod -s /bin/bash devuser
usermod: no changes
[ec2-user@ip-172-31-2-152 aws_restart]$
```

6. Permission Practice

Give devuser read and write access to log_summary.txt but remove execute permission for all users.

```
[ec2-user@ip-172-31-13-92 linux_basics]$ sudo chown nikhil log_summary.txt
[ec2-user@ip-172-31-13-92 linux_basics]$ sudo chmod 666 log_summary.txt
[ec2-user@ip-172-31-13-92 linux_basics]$
```

7. Ownership Change

Change the ownership of the cloud_practice directory to devuser. System Monitoring & Management.

```
[ec2-user@ip-172-31-2-152 linux_basics]$ cd ..
[ec2-user@ip-172-31-2-152 aws_restart]$ sudo chown devuser cloud_practice
[ec2-user@ip-172-31-2-152 aws_restart]$
```

8. Check Running Services
List all services currently running on your system.

```
[ec2-user@ip-172-31-2-152 ~]$ systemctl list-units --type=service --state=
running
  UNIT                          LOAD   ACTIVE SUB     DESCRIPTION
  acpid.service                 loaded active running ACPI Event Daemon
  amazon-ssm-agent.service      loaded active running amazon-ssm-agent
  atd.service                   loaded active running Deferred execution sch>
  auditd.service                loaded active running Security Auditing Serv>
  chronyd.service               loaded active running NTP client/server
  dbus-broker.service           loaded active running D-Bus System Message B>
  getty@tty1.service            loaded active running Getty on tty1
  gssproxy.service              loaded active running GSSAPI Proxy Daemon
  libstoragemgmt.service        loaded active running libstoragemgmt plug-in>
  serial-getty@ttyS0.service    loaded active running Serial Getty on ttyS0
  sshd.service                  loaded active running OpenSSH server daemon
  systemd-homed.service         loaded active running Home Area Manager
  systemd-journald.service      loaded active running Journal Service
  systemd-logind.service        loaded active running User Login Management
  systemd-networkd.service      loaded active running Network Configuration
  systemd-resolved.service      loaded active running Network Name Resolution
  systemd-udevd.service         loaded active running Rule-based Manager for>
  systemd-userdbd.service       loaded active running User Database Manager
  user@1000.service             loaded active running User Manager for UID 1>
```

9. Memory Usage Check
Display system memory usage and save the output in a file called mem_report.txt.

```
[ec2-user@ip-172-31-1-126 ~]$ top -b -n 1 > mem_report.txt
[ec2-user@ip-172-31-1-126 ~]$ cat mem_report.txt
top - 05:40:15 up 2 min,  1 user,  load average: 0.12, 0.14, 0.06
Tasks: 101 total,   1 running, 100 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  6.2 sy,  0.0 ni, 93.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    949.4 total,    623.9 free,    116.7 used,    208.8 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    695.4 avail Mem
```

10. Top CPU Consuming Process
Find and display the top 5 processes consuming the most CPU.

```
[ec2-user@ip-172-31-1-126 ~]$ top -b -o %CPU -n 1 | head -n 12
top - 05:42:50 up 5 min,  1 user,  load average: 0.01, 0.08, 0.05
Tasks: 100 total,   1 running,  99 sleeping,   0 stopped,   0 zombie
%Cpu(s):  6.2 us,  0.0 sy,  0.0 ni, 93.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    949.4 total,    623.6 free,    116.8 used,    208.9 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    695.2 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
      1 root      20   0  106796  17144  10680 S   0.0   1.8   0:00.93 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kthreadd
      3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 slub_flushwq
[ec2-user@ip-172-31-1-126 ~]$
```

● Scheduling & Crontab

11. Setup a Cron Job

Schedule a cron job that appends the output of date to a file /home/ec2-user/cron_log.txt every 5 minutes.

```
*/5 * * * * date >> /home/ec2-user/cron_log.txt
```

12. List Cron Jobs

View all cron jobs set for the current user.

```
[ec2-user@ip-172-31-1-126 ~]$ crontab -i
crontab: usage error: file name or - (for stdin) must be specified
Usage:
 crontab [options] file
 crontab [options]
 crontab -n [hostname]

Options:
 -u <user>  define user
 -e         edit user's crontab
 -l         list user's crontab
 -r         delete user's crontab
 -i         prompt before deleting
 -n <host>  set host in cluster to run users' crontabs
 -c         get host in cluster to run users' crontabs
 -T <file>  test a crontab file syntax
 -s         selinux context
 -V         print version and exit
 -x <mask>  enable debugging

Default operation is replace, per 1003.2
[ec2-user@ip-172-31-1-126 ~]$
```

● Networking & Connectivity

13. Check Network Info

Display the IP address, hostname, and DNS configuration of your system.

```
    3 root        0 -20        0        0        0 I  0.0   0.0   0:00.00 stub_ptushwq
[ec2-user@ip-172-31-1-126 ~]$ ip addr
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 noprefixroute
       valid_lft forever preferred_lft forever
2: enX0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc fq_codel state UP group default qlen 1000
    link/ether 0a:4a:a9:7a:ed:71 brd ff:ff:ff:ff:ff:ff
    altname eni-059e834c1395d56f9
    altname device-number-0.0
    inet 172.31.1.126/20 metric 512 brd 172.31.15.255 scope global dynamic enX0
       valid_lft 3260sec preferred_lft 3260sec
    inet6 fe80::84a:a9ff:fe7a:ed71/64 scope link proto kernel_ll
       valid_lft forever preferred_lft forever
[ec2-user@ip-172-31-1-126 ~]$
```

```
[ec2-user@ip-172-31-1-126 ~]$ hostname
ip-172-31-1-126.ap-south-1.compute.internal
[ec2-user@ip-172-31-1-126 ~]$
```

```
[ec2-user@ip-172-31-1-126 ~]$ cat /etc/resolv.conf
# This is /run/systemd/resolve/resolv.conf managed by man:systemd-resolved(8).
# Do not edit.
#
# This file might be symlinked as /etc/resolv.conf. If you're looking at
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients directly to
# all known uplink DNS servers. This file lists all configured search domains.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

nameserver 172.31.0.2
search ap-south-1.compute.internal
[ec2-user@ip-172-31-1-126 ~]$
```

14. Ping Test
Ping www.google.com and save the result to ping_result.txt.

```
[ec2-user@ip-172-31-1-126 ~]$ ping www.google.com -c 3 > ping_result.txt
[ec2-user@ip-172-31-1-126 ~]$ cat ping_result.txt
PING www.google.com (142.250.67.228) 56(84) bytes of data.
64 bytes from bom07s24-in-f4.1e100.net (142.250.67.228): icmp_seq=1 ttl=114 time=1.18 ms
64 bytes from bom07s24-in-f4.1e100.net (142.250.67.228): icmp_seq=2 ttl=114 time=1.18 ms
64 bytes from bom07s24-in-f4.1e100.net (142.250.67.228): icmp_seq=3 ttl=114 time=1.18 ms

--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 1.179/1.181/1.183/0.002 ms
[ec2-user@ip-172-31-1-126 ~]$
```

15. Port Scan
Check if port 22 (SSH) is open using telnet or nc.

```
[ec2-user@ip-172-31-1-126 ~]$ ping www.google.com -c 3 > ping_result.txt
[ec2-user@ip-172-31-1-126 ~]$ cat ping_result.txt
PING www.google.com (142.250.67.228) 56(84) bytes of data.
64 bytes from bom07s24-in-f4.1e100.net (142.250.67.228): icmp_seq=1 ttl=114 time=1.18 ms
64 bytes from bom07s24-in-f4.1e100.net (142.250.67.228): icmp_seq=2 ttl=114 time=1.18 ms
64 bytes from bom07s24-in-f4.1e100.net (142.250.67.228): icmp_seq=3 ttl=114 time=1.18 ms

--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 1.179/1.181/1.183/0.002 ms
[ec2-user@ip-172-31-1-126 ~]$
```

● Disk Usage and Mounting

16. Check Disk Space

Display disk usage of all mounted file systems in human-readable format.

```
[ec2-user@ip-172-31-1-126 ~]$ 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  436K  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-172-31-1-126 ~]$
```

17. Mount a Drive

Mount a temporary disk (e.g., /dev/xvdf) to a folder /mnt/data. Ensure it persists across reboots (just simulate fstab entry).

● Bonus – Shell Scripting

18. Write a Script

Create a script sys_health.sh that:
- ✓ Shows current user
- ✓ Displays disk usage
- ✓ Lists top 3 memory-consuming processes

```bash
#!/bin/bash
whoami
df -h
ps aux --sort=%mem | head -n 4
~
```

19. Make It Executable

Grant execute permission to the script and run it.

```
[ec2-user@ip-172-31-1-126 ~]$ vi sys_health.sh
[ec2-user@ip-172-31-1-126 ~]$ sudo chmod 555 sys_health.sh
[ec2-user@ip-172-31-1-126 ~]$ ./sys_health.sh
ec2-user
Filesystem       Size  Used Avail Use% Mounted on
devtmpfs         4.0M     0  4.0M   0% /dev
tmpfs            475M     0  475M   0% /dev/shm
tmpfs            190M  436K  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
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           2  0.0  0.0      0     0 ?        S    05:37   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        I<   05:37   0:00 [rcu_gp]
root           4  0.0  0.0      0     0 ?        I<   05:37   0:00 [rcu_par_gp]
[ec2-user@ip-172-31-1-126 ~]$
```

20. Log Output to File

Modify the script to save the output to a file health_report.txt.

```bash
#!/bin/bash
{
whoami
df -h
ps aux --sort=%mem | head -n 4
} > health_report.txt
```

```
[ec2-user@ip-172-31-1-126 ~]$ ./sys_health.sh
[ec2-user@ip-172-31-1-126 ~]$ cat health_report.txt
ec2-user
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M     0  4.0M   0% /dev
tmpfs           475M     0  475M   0% /dev/shm
tmpfs           190M  436K  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
USER        PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root          2  0.0  0.0      0     0 ?        S    05:37   0:00 [kthreadd]
root          3  0.0  0.0      0     0 ?        I<   05:37   0:00 [rcu_gp]
root          4  0.0  0.0      0     0 ?        I<   05:37   0:00 [rcu_par_gp]
[ec2-user@ip-172-31-1-126 ~]$
```