

### **Question 1 (2024eb03003):**

You have just joined lxD Systems as a junior systems engineer. On your first day, the Linux administrator asks you to perform a basic environment verification on the lab machine using your own login account.

#### **1. User Identity Verification**

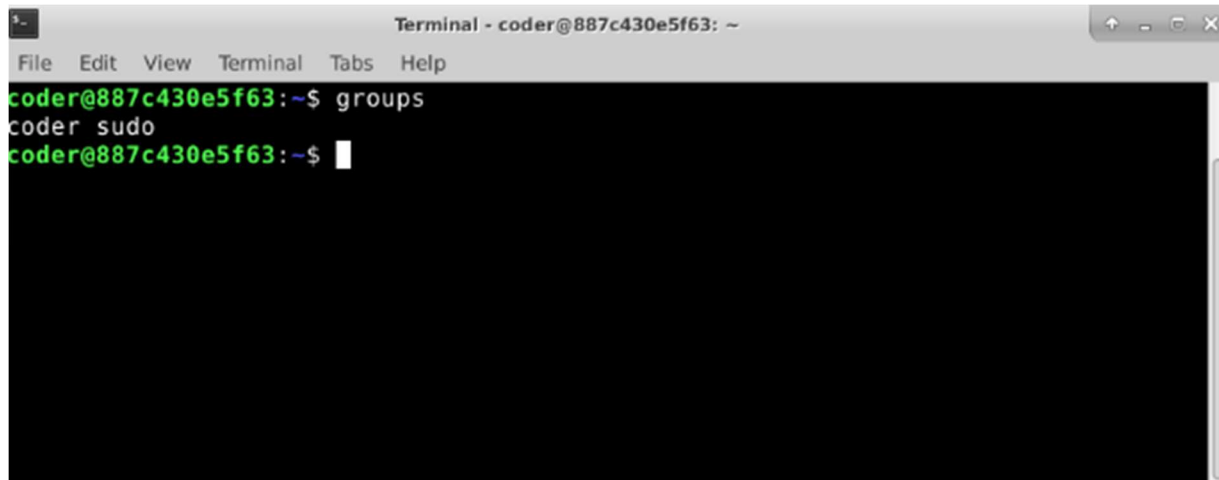
Display your currently logged-in username and all groups your user account belongs to.

Your name or login ID must appear in the output.

**whoami** (prints the current username, as I logged in through coder ID, so my login ID will appear in the output is showing as coder)

A screenshot of a Linux terminal window. The title bar reads "Terminal - coder@887c430e5f63: ~". The menu bar includes "File", "Edit", "View", "Terminal", "Tabs", and "Help". The terminal content shows the prompt "coder@887c430e5f63:~\$" followed by the command "whoami". The output of the command is "coder", displayed on the next line. The prompt "coder@887c430e5f63:~\$" is shown again on the following line, with a cursor at the end.

**groups** (prints all groups coder user belongs to, including primary group and any supplementary groups)

A terminal window titled "Terminal - coder@887c430e5f63: ~" with a menu bar (File, Edit, View, Terminal, Tabs, Help). The prompt is "coder@887c430e5f63:~\$". The command "groups" has been entered, and the output "coder sudo" is displayed on the next line. The prompt "coder@887c430e5f63:~\$" is shown again with a cursor.

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ groups
coder sudo
coder@887c430e5f63:~$
```

## 2. Workspace Validation

Display the current working directory and list all files and directories in that location using long format listing.

**pwd** [prints the current working directory (workspace path)]

A terminal window titled "Terminal - coder@887c430e5f63: ~" with a menu bar (File, Edit, View, Terminal, Tabs, Help). The prompt is "coder@887c430e5f63:~\$". The command "pwd" has been entered, and the output "/home/coder" is displayed on the next line. The prompt "coder@887c430e5f63:~\$" is shown again with a cursor.

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ pwd
/home/coder
coder@887c430e5f63:~$
```

**ls -l** (lists all files and directories in long format (permissions, owner, group, size, timestamps) in that directory)

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ ls -l
total 27
drwxrwxrwx  3 nobody nogroup  6144 Dec 26 23:45 coursera
drwxr-xr-x  2 nobody nogroup  6144 Dec 17 04:25 coursera-ro
drwxr-xr-x  3 coder  coder    3 Jun 26 2023 data
drwxr-xr-x  2 coder  coder    6 Jun 26 2023 Desktop
drwxr-xr-x  2 coder  coder    4 Jun 26 2023 Desktop.save
drwxr-xr-x  2 coder  coder    2 Dec 26 23:45 Documents
drwxr-xr-x  2 coder  coder    2 Dec 26 23:45 Downloads
drwxr-xr-x  2 coder  coder   13 Jun 26 2023 install
drwxr-xr-x  2 coder  coder    2 Dec 26 23:45 Music
drwxr-xr-x 20 coder  coder   21 Jun 26 2023 node_modules
drwxr-xr-x  9 coder  coder   20 Jun 26 2023 noVNC
-rw-r--r--  1 coder  coder    75 Jun 26 2023 package.json
-rw-r--r--  1 coder  coder  11316 Jun 26 2023 package-lock.json
drwxr-xr-x  2 coder  coder    2 Dec 26 23:45 Pictures
drwxr-xr-x  2 coder  coder    2 Dec 26 23:45 Public
drwxr-xr-x  2 coder  coder    2 Dec 26 23:45 Templates
drwxr-xr-x  2 coder  coder    2 Dec 26 23:45 Videos
-rw-r--r--  1 coder  coder    60 Dec 26 23:45 wm.log
-rwxr-xr-x  1 coder  coder   308 Jun 26 2023 wm_startup.sh
drwxr-xr-x  2 coder  coder    2 Jun 26 2023 workspace
-rwxr-xr-x  1 coder  coder   314 Jun 26 2023 wrapper_process.sh
coder@887c430e5f63:~$
```

### 3. Environment Confirmation File

Create a file named `user_info.txt` and write the line:

&quot;Linux user environment verified&quot;;

**echo "Linux user environment verified" > user\_info.txt** (This command creates `user_info.txt` if it does not exist and writes exactly that line into it.)

**cat user\_info.txt** (This confirms redirection the output into `user_info.txt` file)

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ echo "Linux user environment verified" >user_info.txt
coder@887c430e5f63:~$ ls
coursera Downloads package-lock.json wm.log
coursera-ro install Pictures wm_startup.sh
data Music Public workspace
Desktop node_modules Templates wrapper_process.sh
Desktop.save noVNC user_info.txt
Documents package.json Videos
coder@887c430e5f63:~$ cat user_info.txt
Linux user environment verified
coder@887c430e5f63:~$
```

#### 4. File Integrity Check

Display the number of characters present in user\_info.txt.

**wc -m user\_info.txt** (This command prints the number of characters in user\_info.txt, followed by the filename)

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ wc -m user_info.txt
32 user_info.txt
coder@887c430e5f63:~$
```

#### 5. Learning the Tools

Access the manual page of the mkdir command. Identify one useful option and briefly explain what it does.

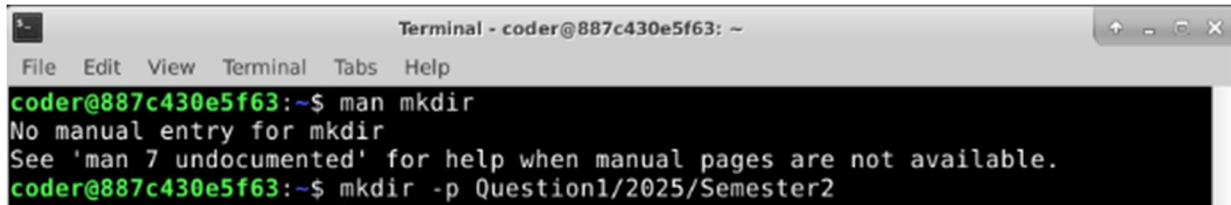
**man mkdir**

A useful option is -p (or --parents).

This option tells mkdir to create parent directories as needed and not error if they already exist. For example:

**mkdir -p Question1/2025/Semester2**

This command creates Question1, then 2025, then Semester2 in one command, even if some of them do not exist yet.



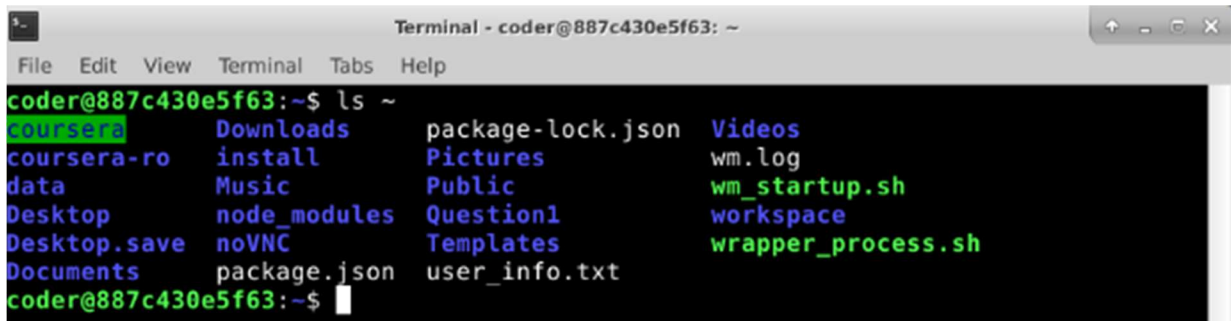
```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ man mkdir
No manual entry for mkdir
See 'man 7 undocumented' for help when manual pages are not available.
coder@887c430e5f63:~$ mkdir -p Question1/2025/Semester2
```

## 6. Home Directory Inspection

List the contents of your home directory sorted alphabetically.

**ls ~**

The **ls** command sorts entries alphabetically by name by default, so this will list all files and directories in the home directory in alphabetical order.



```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ ls ~
coursera      Downloads    package-lock.json  Videos
coursera-ro  install     Pictures           wm.log
data         Music       Public            wm_startup.sh
Desktop      node_modules Question1         workspace
Desktop.save noVNC       Templates        wrapper_process.sh
Documents    package.json user_info.txt
```

## 7. Log Investigation

Search for the word "admin" inside a file named log.txt and display only the matching lines.

**grep "admin" log.txt** (This command scans log.txt and outputs every line that contains the word admin)

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ grep "admin" log.txt
grep: log.txt: No such file or directory
coder@887c430e5f63:~$
```

## 8. System Information Check

Display the Linux kernel version currently running.

**uname -r** (This command prints the kernel release version of the Linux system that is currently running (for example, 6.5.0-1024-aws))

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ uname -r
6.5.0-1024-aws
coder@887c430e5f63:~$
```

## 9. Network Connectivity Test

Verify network connectivity by sending ICMP packets to [www.google.com](http://www.google.com).

**ping [www.google.com](http://www.google.com)** (This command sends ICMP echo request packets to [www.google.com](http://www.google.com) and shows replies, round-trip times, and packet loss, confirming network connectivity if responses are received)

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ ping www.google.com
PING www.google.com (192.178.218.99) 56(84) bytes of data.
From ip-172-18-0-1.ec2.internal (172.18.0.1) icmp_seq=1 Destination Port Unreachable
From ip-172-18-0-1.ec2.internal (172.18.0.1) icmp_seq=2 Destination Port Unreachable
From ip-172-18-0-1.ec2.internal (172.18.0.1) icmp_seq=3 Destination Port Unreachable
From ip-172-18-0-1.ec2.internal (172.18.0.1) icmp_seq=4 Destination Port Unreachable
From ip-172-18-0-1.ec2.internal (172.18.0.1) icmp_seq=5 Destination Port Unreachable
From ip-172-18-0-1.ec2.internal (172.18.0.1) icmp_seq=6 Destination Port Unreachable
^C
--- www.google.com ping statistics ---
6 packets transmitted, 0 received, +6 errors, 100% packet loss, time 5077ms
coder@887c430e5f63:~$
```

## 10. System Health Awareness

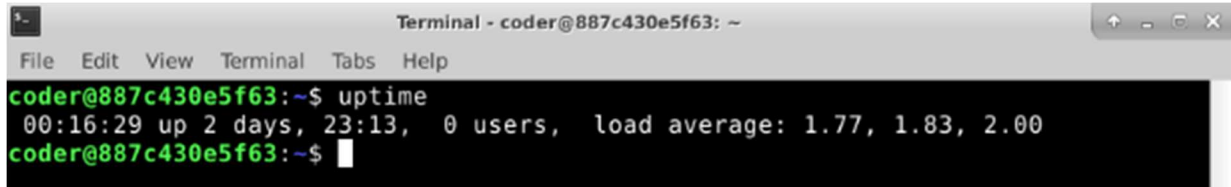
Display the command used to check system uptime and briefly explain its output (uptime duration, number of users, load average).

## uptime

Typical output looks like:

**00:16:29 up 2 days, 23:13, 0 users, load average: 1.77, 1.83, 2.00**

- Uptime duration: up 2 days, 23:13 shows how long the system has been running since the last reboot.
- Number of users: 0 users is how many user sessions are currently logged in.
- Load average: 1.77, 1.83, 2.00 are the average system loads over the last 1, 5, and 15 minutes, indicating how busy the CPU has been.

A screenshot of a terminal window titled "Terminal - coder@887c430e5f63: ~". The terminal has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The prompt is "coder@887c430e5f63:~\$". The command "uptime" has been entered, and the output is "00:16:29 up 2 days, 23:13, 0 users, load average: 1.77, 1.83, 2.00". The prompt "coder@887c430e5f63:~\$" is shown again with a cursor.

```
Terminal - coder@887c430e5f63: ~
File Edit View Terminal Tabs Help
coder@887c430e5f63:~$ uptime
00:16:29 up 2 days, 23:13, 0 users, load average: 1.77, 1.83, 2.00
coder@887c430e5f63:~$
```