Assignment 2: Bash Shell Basics

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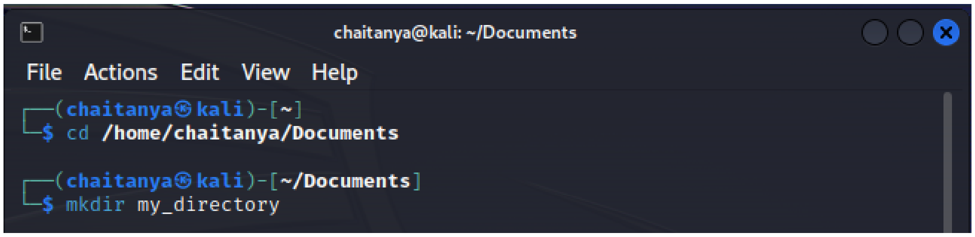
VIT – AP

Task 1: File and Directory Manipulation

1. Create a directory called "my_directory".

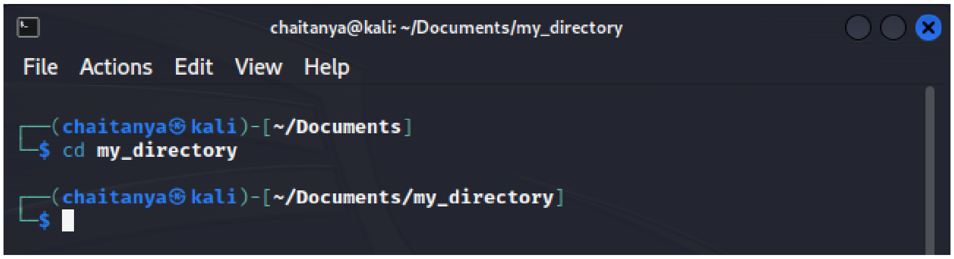


```
┌──(chaitanya㉿kali)-[~]
└─$ cd /home/chaitanya/Documents

┌──(chaitanya㉿kali)-[~/Documents]
└─$ mkdir my_directory
```

This command creates a new directory named "my_directory" in the current working directory.

2. Navigate into the "my_directory".



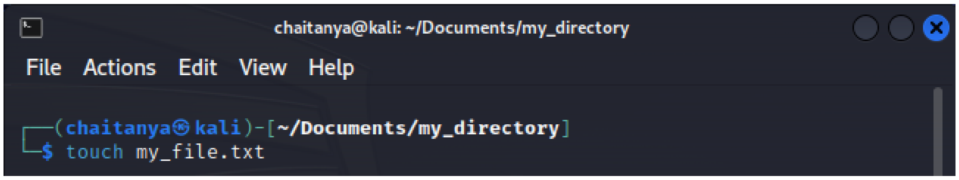
chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents]
└─$ cd my_directory

┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ 
```

This command changes the current working directory to "my_directory".

3. Create an empty file called "my_file.txt".

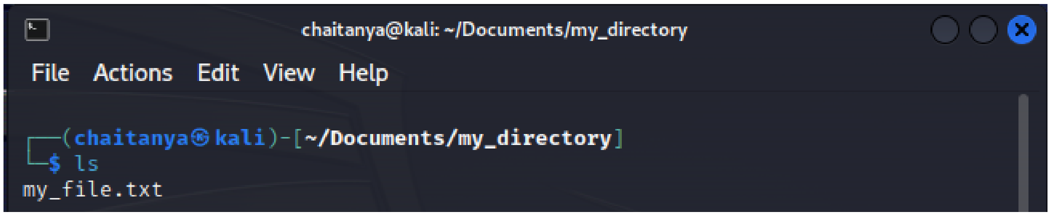


chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ touch my_file.txt
```

The touch command is used to create an empty file. In this case, it creates a file named "my_file.txt" in the current directory.

4. List all the files and directories in the current directory.

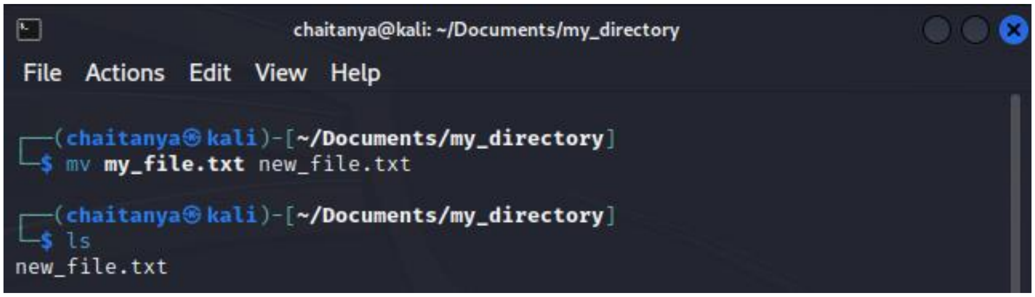


chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ls
my_file.txt
```

The ls command lists the files and directories in the current directory.

5. Rename "my_file.txt" to "new_file.txt".



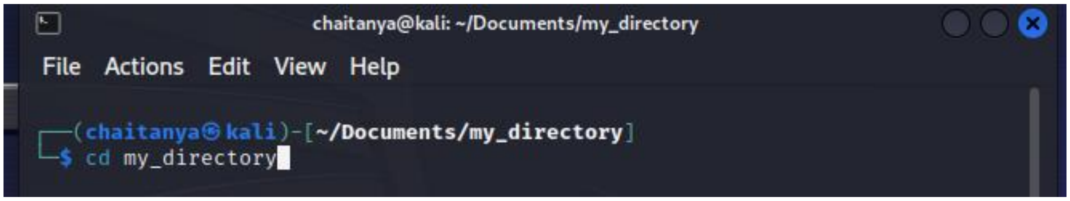
chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ mv my_file.txt new_file.txt

┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ls
new_file.txt
```

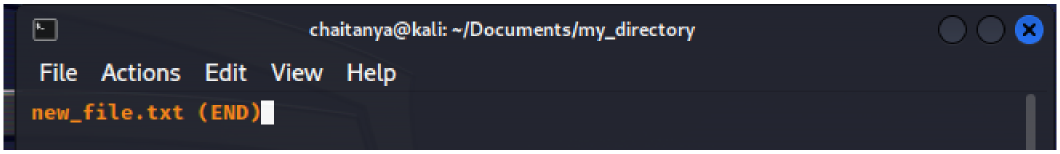
The mv command is used to move or rename files. In this case, it renames the file "my_file.txt" to "new_file.txt"

6. Display the content of "new_file.txt" using a pager tool of your choice



chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ cd my_directory
```

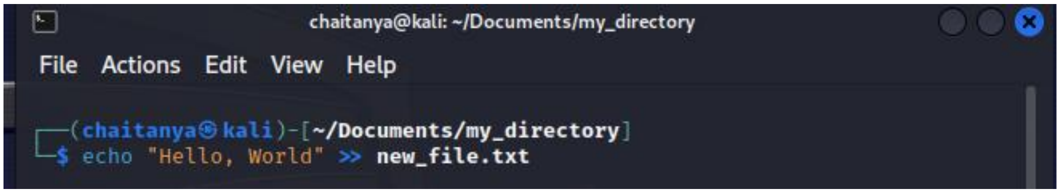


chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
new_file.txt (END)
```

The less command is a pager tool that allows you to view the content of a file page by page. In this case, it displays the content of the file "new_file.txt". You can scroll through the content using the arrow keys and press "q" to exit.

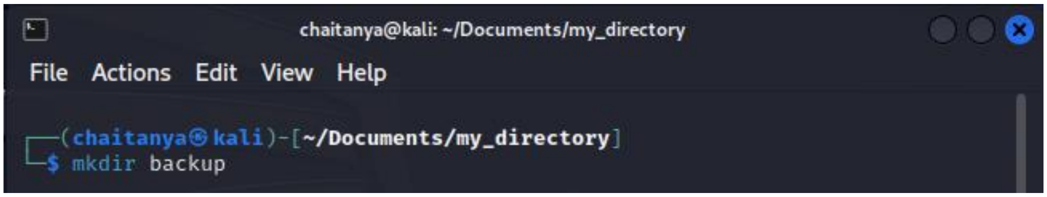
7. Append the text "Hello, World!" to "new_file.txt".



```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ echo "Hello, World" >> new_file.txt
```

The echo command is used to print text. The >> operator is used to append the output to a file. In this case, it appends the text "Hello, World!" to the file "new_file.txt"

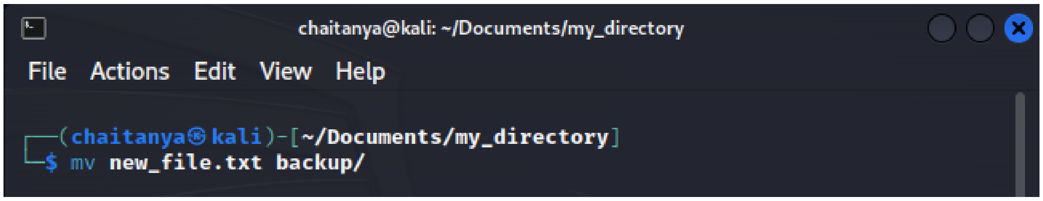
8. Create a new directory called "backup" within "my_directory".



```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ mkdir backup
```

This command creates a new directory named "backup" within the "my_directory" directory.

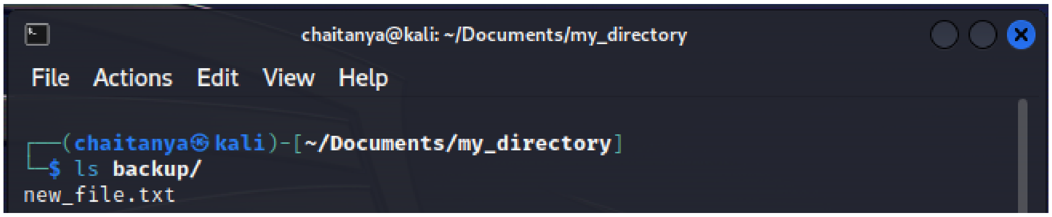
9. Move "new_file.txt" to the "backup" directory.



```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ mv new_file.txt backup/
```

This command moves the file "new_file.txt" to the "backup" directory.

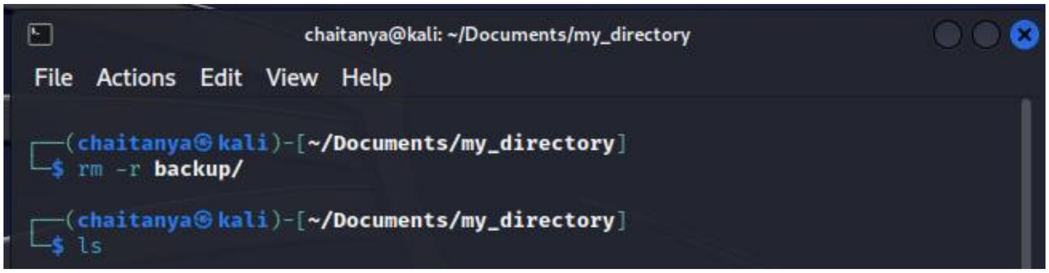
10. Verify that "new_file.txt" is now located in the "backup" directory.


chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ls backup/
new_file.txt
```

This command lists the contents of the "backup" directory to verify that "new_file.txt" is present there.

11. Delete the "backup" directory and all its contents.


chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

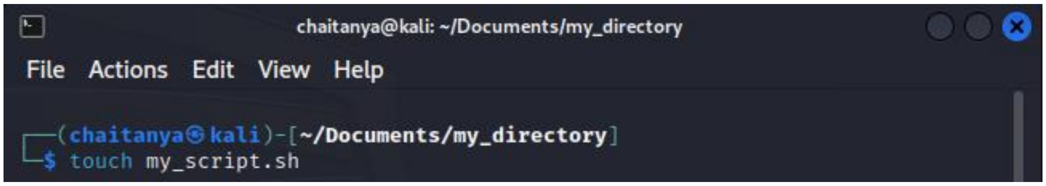
```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ rm -r backup/

┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ls
```

The rm command is used to remove files and directories. The -r option is used to recursively remove directories and their contents. In this case, it deletes the "backup" directory and all its contents.

Task 2: Permissions and Scripting

1. Create a new file called "my_script.sh".

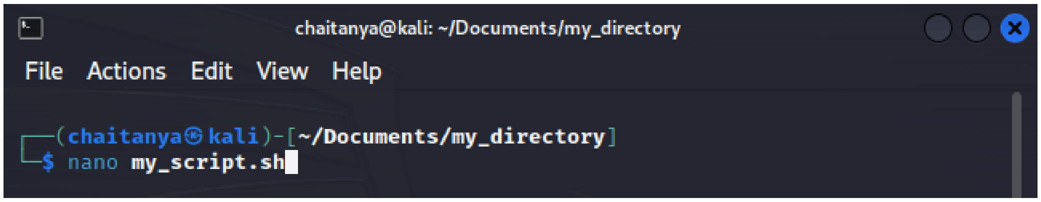

chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ touch my_script.sh
```

This command creates a new file named "my_script.sh" in the current directory.

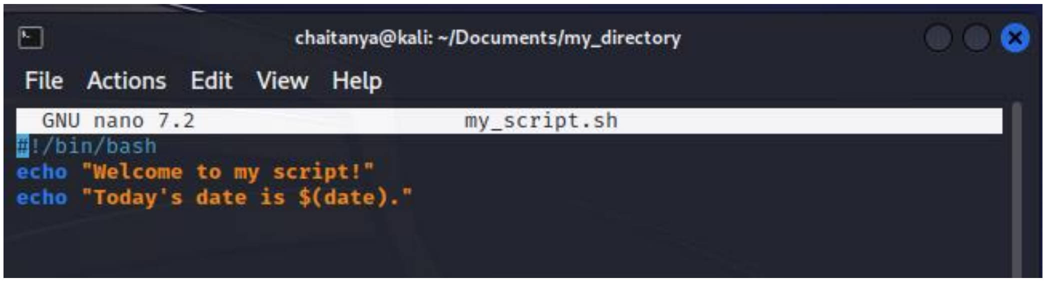
2. Edit "my_script.sh" using a text editor of your choice and add the following lines:
bash

#!/bin/bash
echo "Welcome to my script!"
echo "Today's date is $(date)."
Save and exit the file.



```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ nano my_script.sh
```

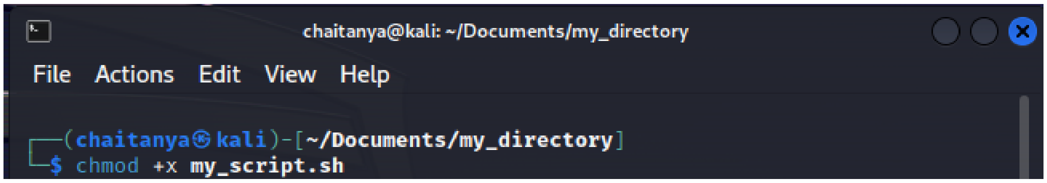
This command opens the "my_script.sh" file in the nano text editor, allowing you to edit the file



```
#!/bin/bash
echo "Welcome to my script!"
echo "Today's date is $(date)."
```

These lines are added to the "my_script.sh" file. The first line specifies the interpreter (#!/bin/bash), and the subsequent lines use the echo command to print text.

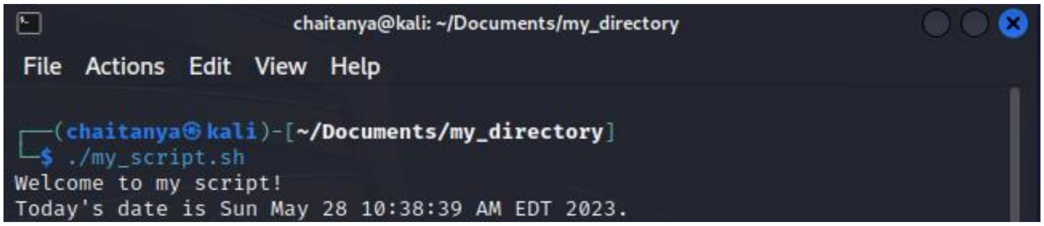
3. Make "my_script.sh" executable



```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ chmod +x my_script.sh
```

The chmod command is used to change the permissions of a file. The +x option makes the file executable, allowing it to be run as a script.

4. Run "my_script.sh" and verify that the output matches the expected result.

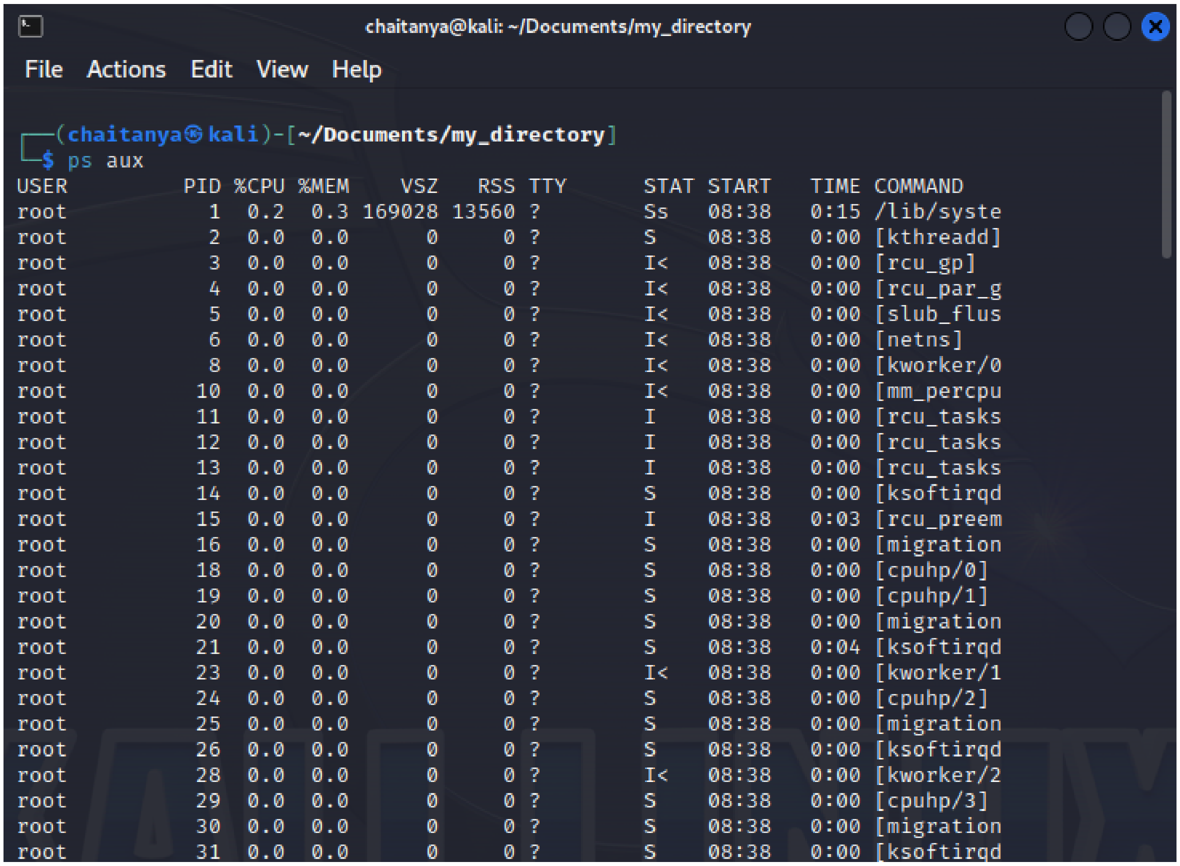

chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ./my_script.sh
Welcome to my script!
Today's date is Sun May 28 10:38:39 AM EDT 2023.
```

This command executes the "my_script.sh" file, and the output should display the text specified in the script, including the current date and time

Task 3: Command Execution and Pipelines

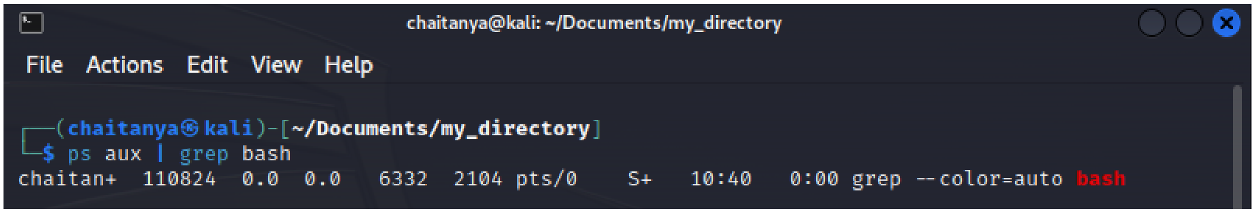
1. List all the processes running on your system using the "ps" command.


chaitanya@kali: ~/Documents/my_directory
File Actions Edit View Help

```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.2  0.3 169028 13560 ?        Ss   08:38   0:15 /lib/syste
root           2  0.0  0.0      0     0 ?        S    08:38   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        I<   08:38   0:00 [rcu_gp]
root           4  0.0  0.0      0     0 ?        I<   08:38   0:00 [rcu_par_g
root           5  0.0  0.0      0     0 ?        I<   08:38   0:00 [slub_flus
root           6  0.0  0.0      0     0 ?        I<   08:38   0:00 [netns]
root           8  0.0  0.0      0     0 ?        I<   08:38   0:00 [kworker/0
root          10  0.0  0.0      0     0 ?        I<   08:38   0:00 [mm_percpu
root          11  0.0  0.0      0     0 ?        I    08:38   0:00 [rcu_tasks
root          12  0.0  0.0      0     0 ?        I    08:38   0:00 [rcu_tasks
root          13  0.0  0.0      0     0 ?        I    08:38   0:00 [rcu_tasks
root          14  0.0  0.0      0     0 ?        S    08:38   0:00 [ksoftirqd
root          15  0.0  0.0      0     0 ?        I    08:38   0:03 [rcu_preem
root          16  0.0  0.0      0     0 ?        S    08:38   0:00 [migration
root          18  0.0  0.0      0     0 ?        S    08:38   0:00 [cpuhp/0]
root          19  0.0  0.0      0     0 ?        S    08:38   0:00 [cpuhp/1]
root          20  0.0  0.0      0     0 ?        S    08:38   0:00 [migration
root          21  0.0  0.0      0     0 ?        S    08:38   0:04 [ksoftirqd
root          23  0.0  0.0      0     0 ?        I<   08:38   0:00 [kworker/1
root          24  0.0  0.0      0     0 ?        S    08:38   0:00 [cpuhp/2]
root          25  0.0  0.0      0     0 ?        S    08:38   0:00 [migration
root          26  0.0  0.0      0     0 ?        S    08:38   0:00 [ksoftirqd
root          28  0.0  0.0      0     0 ?        I<   08:38   0:00 [kworker/2
root          29  0.0  0.0      0     0 ?        S    08:38   0:00 [cpuhp/3]
root          30  0.0  0.0      0     0 ?        S    08:38   0:00 [migration
root          31  0.0  0.0      0     0 ?        S    08:38   0:00 [ksoftirqd
```

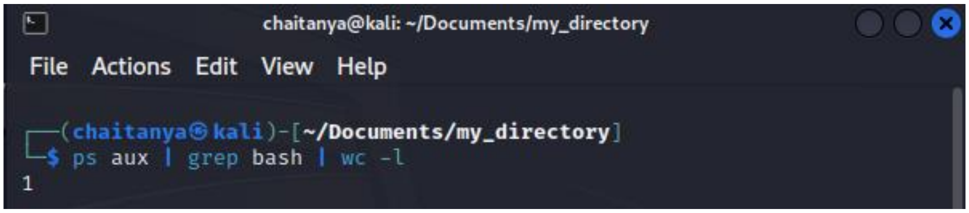
The ps command is used to display information about active processes. The aux options provide a detailed list of all processes running on the system.

2. Use the "grep" command to filter the processes list and display only the processes with "bash" in their name.



```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ps aux | grep bash
chaitan+  110824  0.0  0.0   6332  2104 pts/0    S+   10:40   0:00 grep --color=auto bash
```

The grep command is used to search for specific patterns in the input. In this case, it filters the output of the ps aux command to display only the processes that contain the word "bash"
cl
3. Use the "wc" command to count the number of lines in the filtered output.



```
┌──(chaitanya㉿kali)-[~/Documents/my_directory]
└─$ ps aux | grep bash | wc -l
1
```

The wc command is used to count the number of lines, words, and characters in the input. The -l option tells wc to count only the lines. In this case, it counts the number of lines in the filtered output of the previous command, giving the total number of processes with "bash" in their name.