

Operating System

Lab Assignment-1

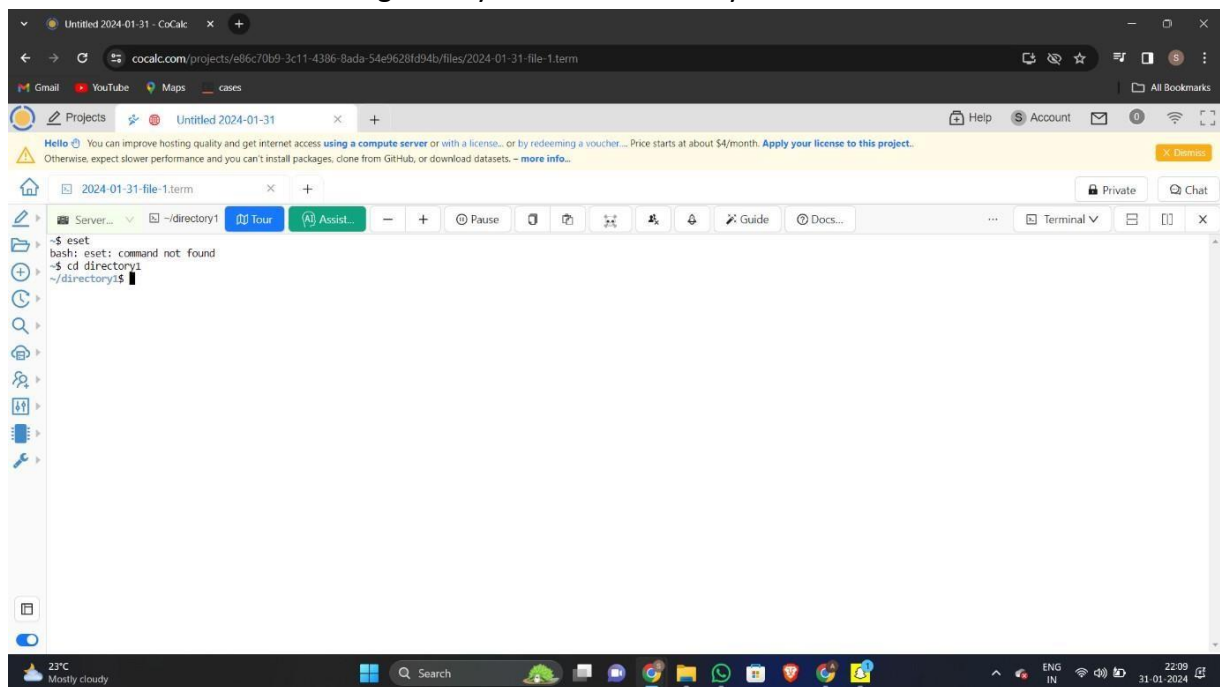
Name: Akula Rajeshwari

Hall Ticket Number: 2203A51531

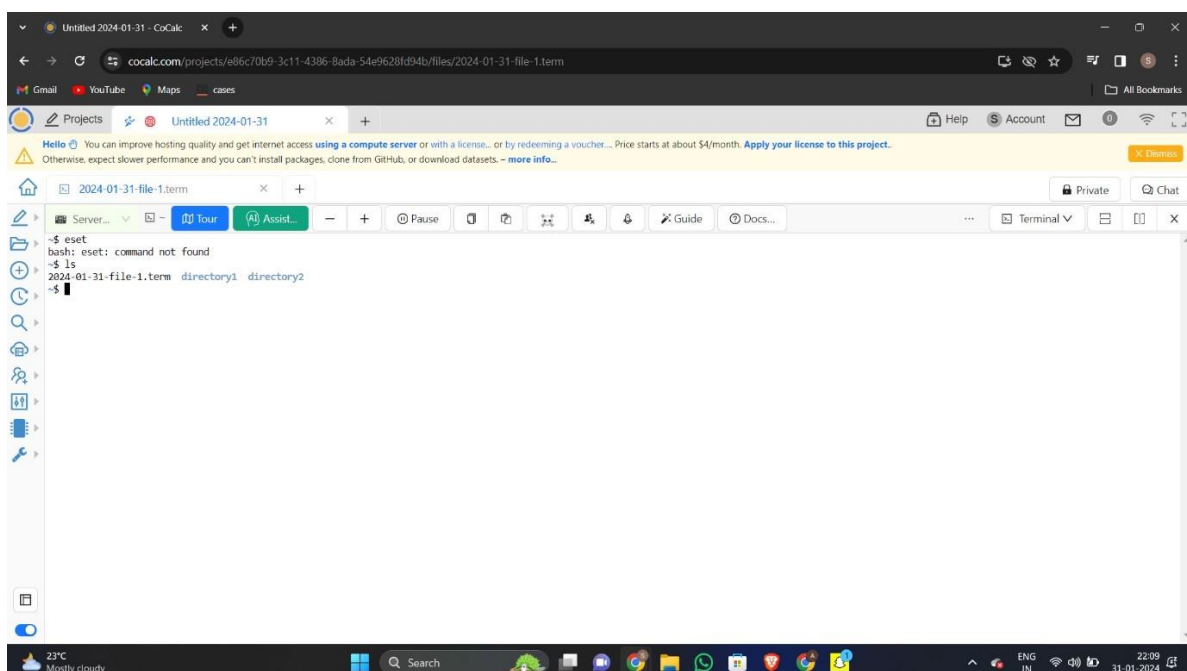
Batch: 10

Task 1: Navigate and List

1. Use the cd command to navigate to your home directory.

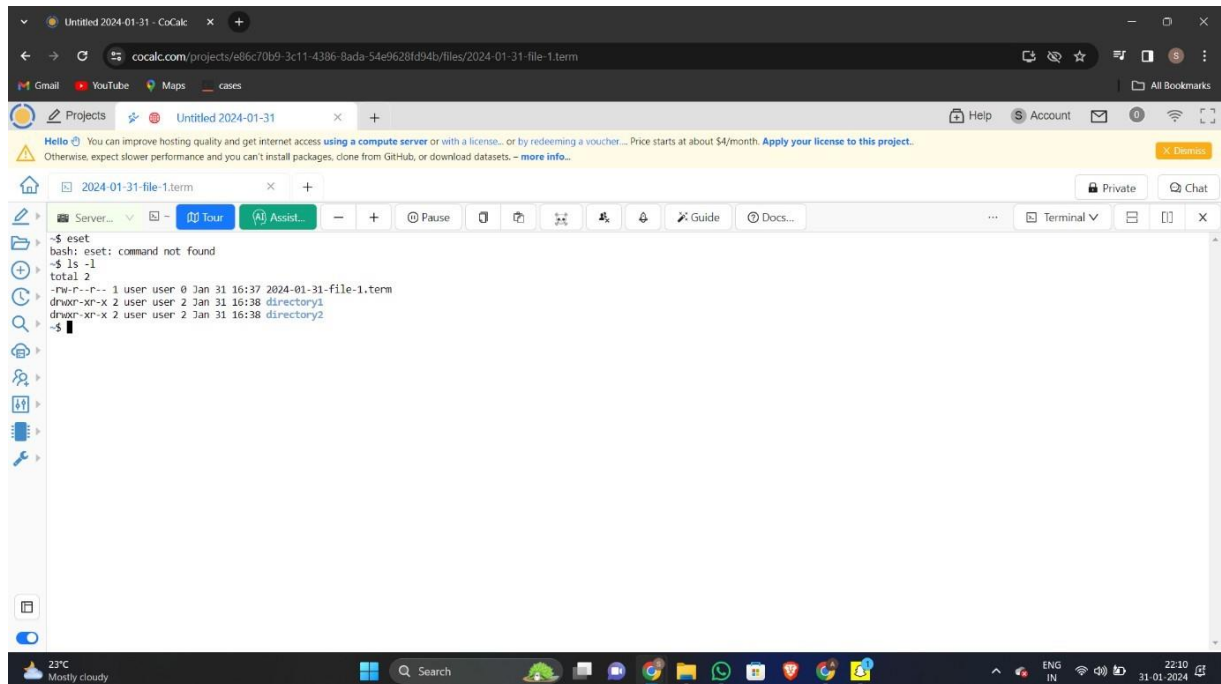


The screenshot shows a web browser window with a terminal interface. The terminal prompt is `~/directory1$`. The user has entered `eset`, which resulted in the error `bash: eset: command not found`. Then, the user entered `cd directory1`, and the prompt changed to `~/directory1$`. The terminal interface includes a sidebar with icons for file operations and a top bar with navigation and help options.



The screenshot shows the same web-based terminal environment. The user has entered `ls`, and the terminal displays the output: `2024-01-31-file-1.term directory1 directory2`. The terminal interface remains the same as in the previous screenshot.

2. Use `ls` to list the contents of your home directory.
3. Use `ls -l` to display detailed information about the files in your home directory



The screenshot shows a web browser window with a terminal interface. The terminal output is as follows:

```
$ eset
bash: eset: command not found
~$ ls -l
total 2
-rw-r--r-- 1 user user 0 Jan 31 16:37 2024-01-31-file-1.term
drwxr-xr-x 2 user user 2 Jan 31 16:38 directory1
drwxr-xr-x 2 user user 2 Jan 31 16:38 directory2
~$
```

Task 2: File Manipulation

4. Create an empty file named `example.txt` using the `touch` command.

The screenshot shows a web browser window with the CoCalc interface. The terminal window is titled '2024-01-31-file-1.term'. The command history shows: `~$ eset`, `bash: eset: command not found`, `~$ touch example.txt`, and `~$`. The browser's address bar shows the URL `cocalc.com/projects/e86c70b9-3c11-4386-8ada-54e9628fd94b/files/2024-01-31-file-1.term`. The browser's status bar at the bottom shows the date and time as 22:11 on 31-01-2024.

5. Use `cat` to display the contents of `example.txt`.

The screenshot shows the same CoCalc terminal window. The command history now includes: `~$ eset`, `bash: eset: command not found`, `~$ cat example.txt`, `hello world`, and `~$`. The browser's status bar at the bottom shows the date and time as 22:12 on 31-01-2024.

6. Copy `example.txt` to a new file named `backup.txt` using the `cp` command.

Untitled 2024-01-31 - CoCalc

cocalc.com/projects/e86c70b9-3c11-4386-8ada-54e9628fd94b/files/2024-01-31-file-1.term

Projects Untitled 2024-01-31

2024-01-31-file-1.term

```
~$ eset
bash: eset: command not found
~$ cp example.txt backup.txt
~$ cat backup.txt
hello world
~$
```

7. Move backup.txt to a directory named backup_folder using the mv command.

Untitled 2024-01-31 - CoCalc

cocalc.com/projects/e86c70b9-3c11-4386-8ada-54e9628fd94b/files/

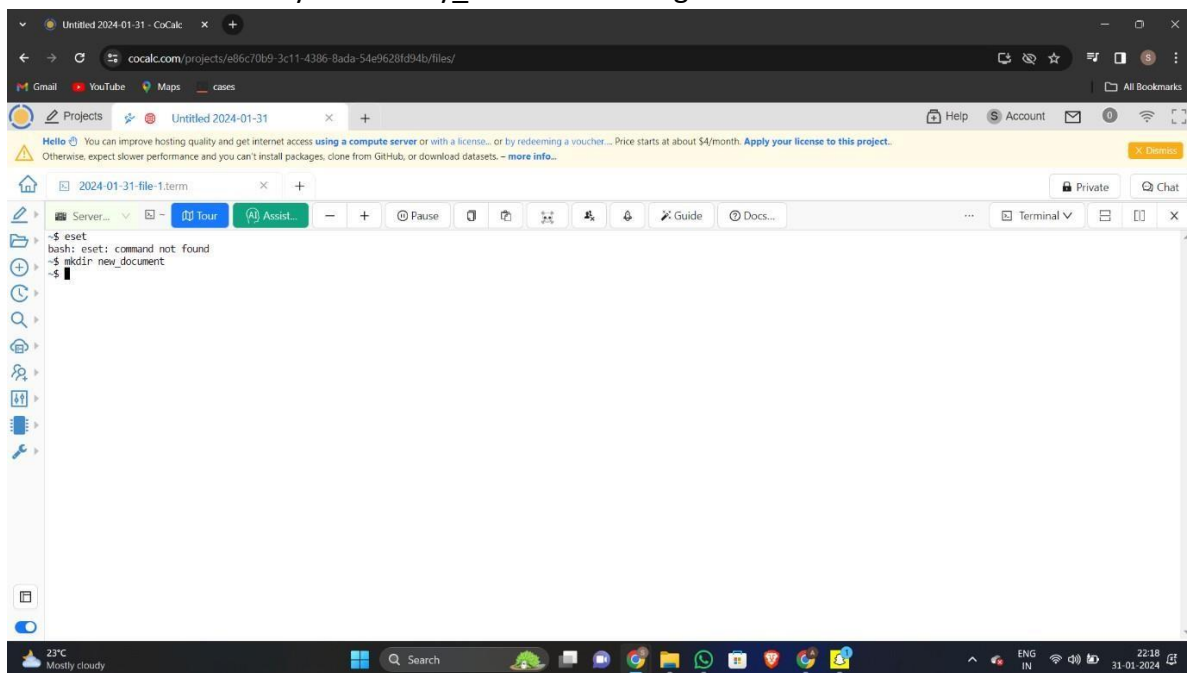
Projects Untitled 2024-01-31

2024-01-31-file-1.term

```
~$ eset
bash: eset: command not found
~$ mv backup.txt backup_folder
~$
```

Task 3: Directory Operations

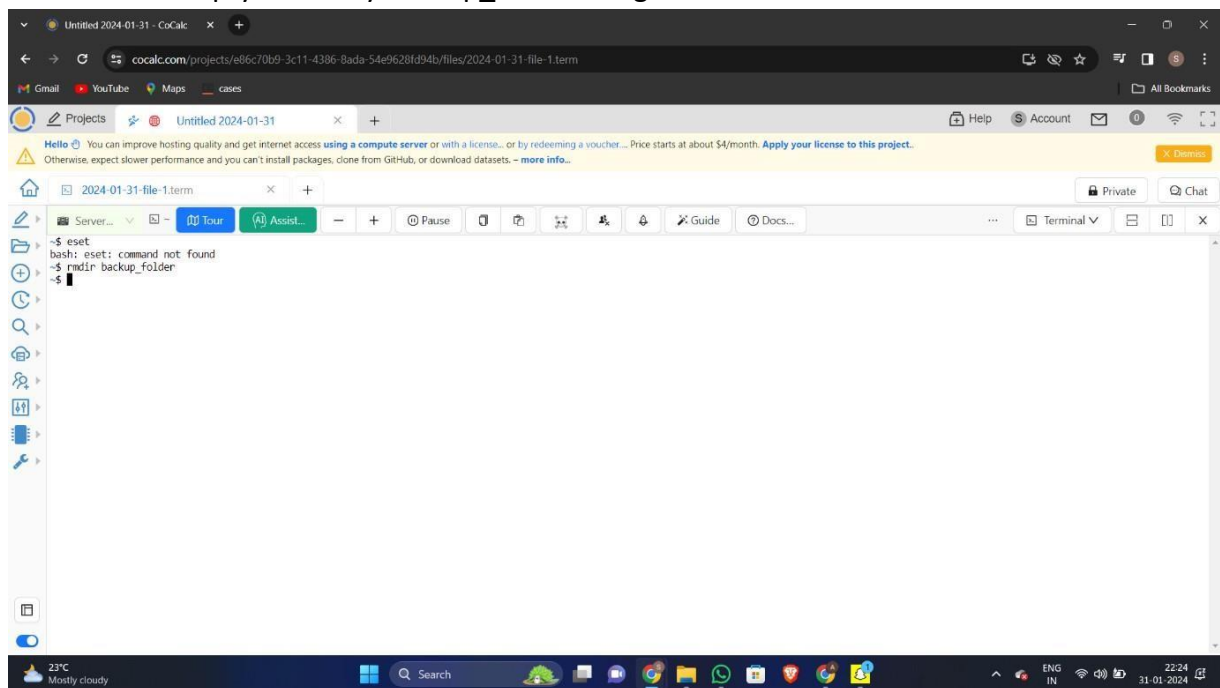
8. Create a new directory named my_documents using the mkdir command.



The screenshot shows a web browser window with a terminal interface. The terminal prompt is `~$`. The user enters `set`, which results in a `bash: set: command not found` error. Then, the user enters `mkdir new_document`, and the prompt returns to `~$`. The terminal window is titled "2024-01-31-file-1.term" and is part of a project named "Untitled 2024-01-31". The browser's address bar shows the URL `cocalc.com/projects/e86c70b9-3c11-4386-8ada-54e9628d94b/files/`. The Windows taskbar at the bottom shows the date as 31-01-2024 and the time as 22:18.

```
~$ set
bash: set: command not found
~$ mkdir new_document
~$
```

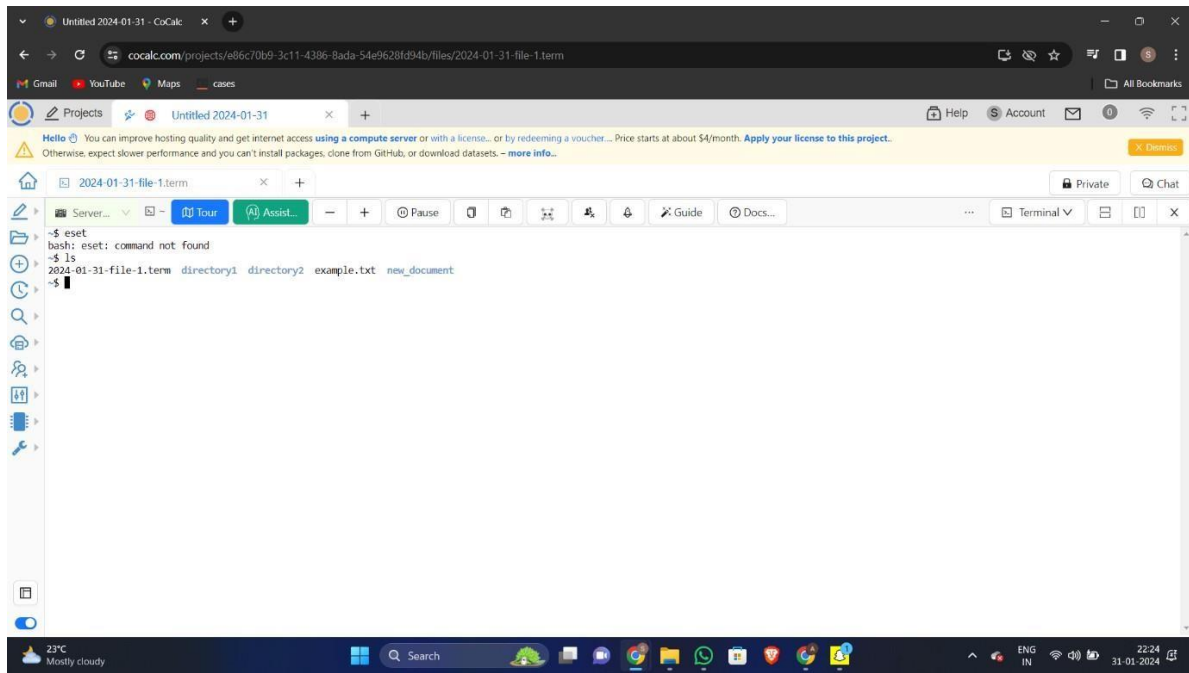
9. Remove the empty directory backup_folder using the rmdir command



The screenshot shows the same web-based terminal interface. The terminal prompt is `~$`. The user enters `set`, resulting in a `bash: set: command not found` error. Then, the user enters `rmdir backup_folder`, and the prompt returns to `~$`. The terminal window is titled "2024-01-31-file-1.term". The browser's address bar shows the URL `cocalc.com/projects/e86c70b9-3c11-4386-8ada-54e9628d94b/files/2024-01-31-file-1.term`. The Windows taskbar at the bottom shows the date as 31-01-2024 and the time as 22:24.

```
~$ set
bash: set: command not found
~$ rmdir backup_folder
~$
```

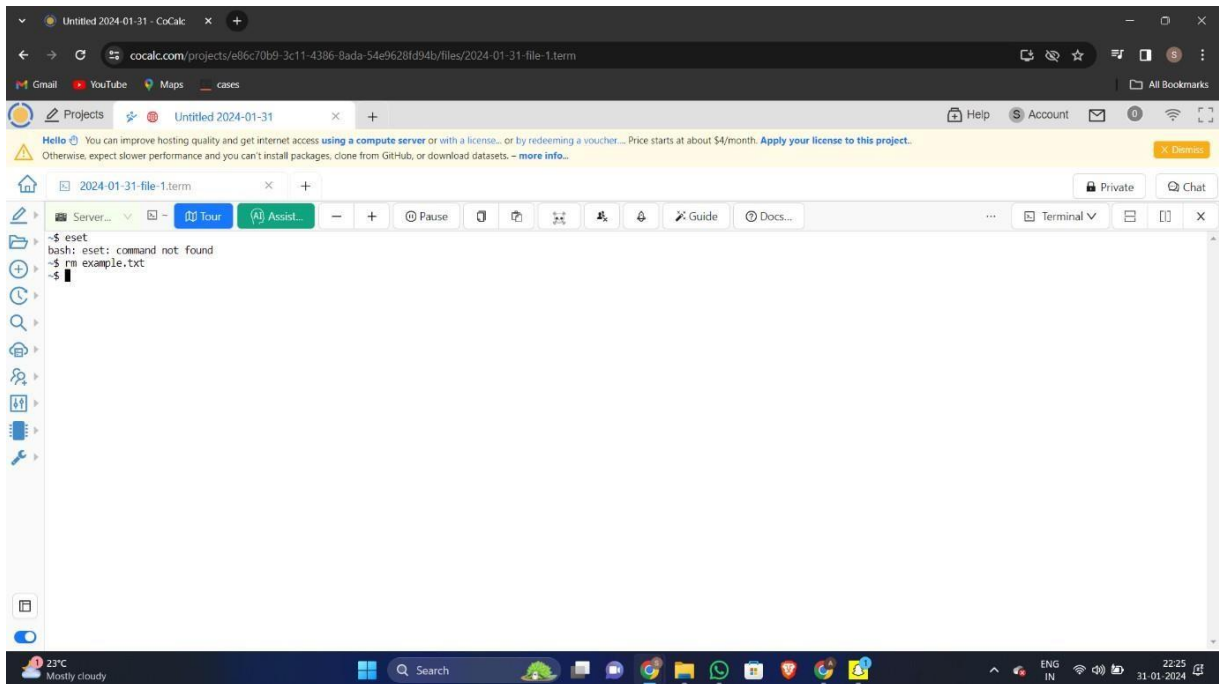
10. Use ls to verify that the backup_folder directory has been removed.



Task 4:

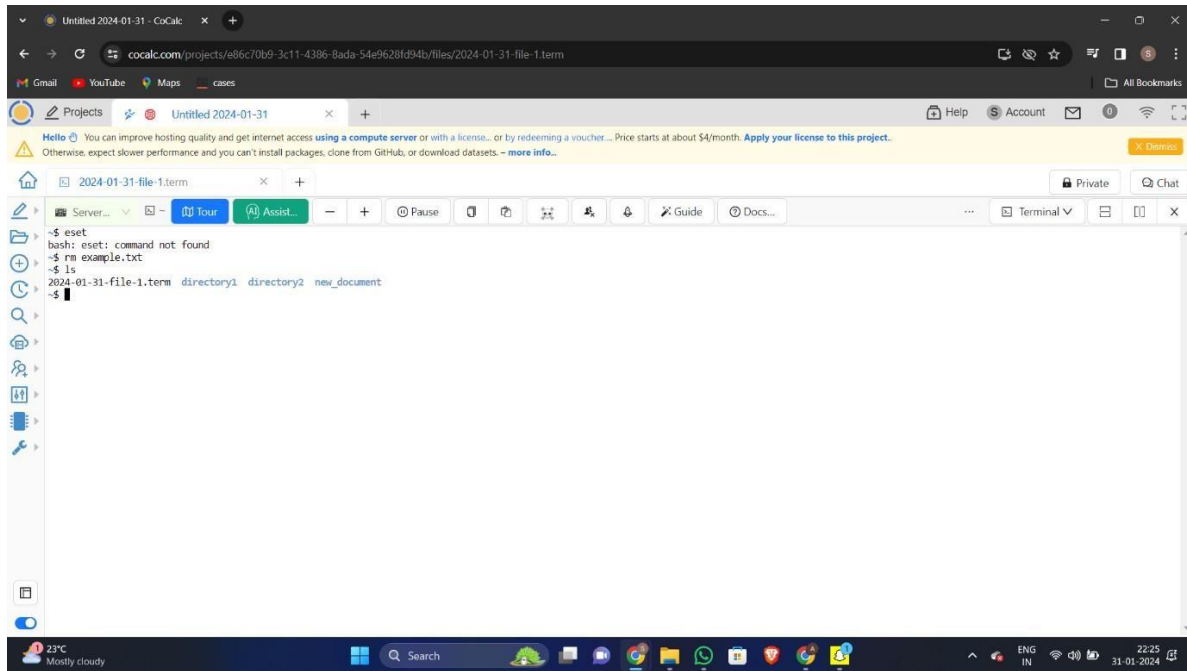
File Removal

11. Remove the file `example.txt` using the `rm` command.



12. Use `ls` to confirm that `example.txt` has been deleted.

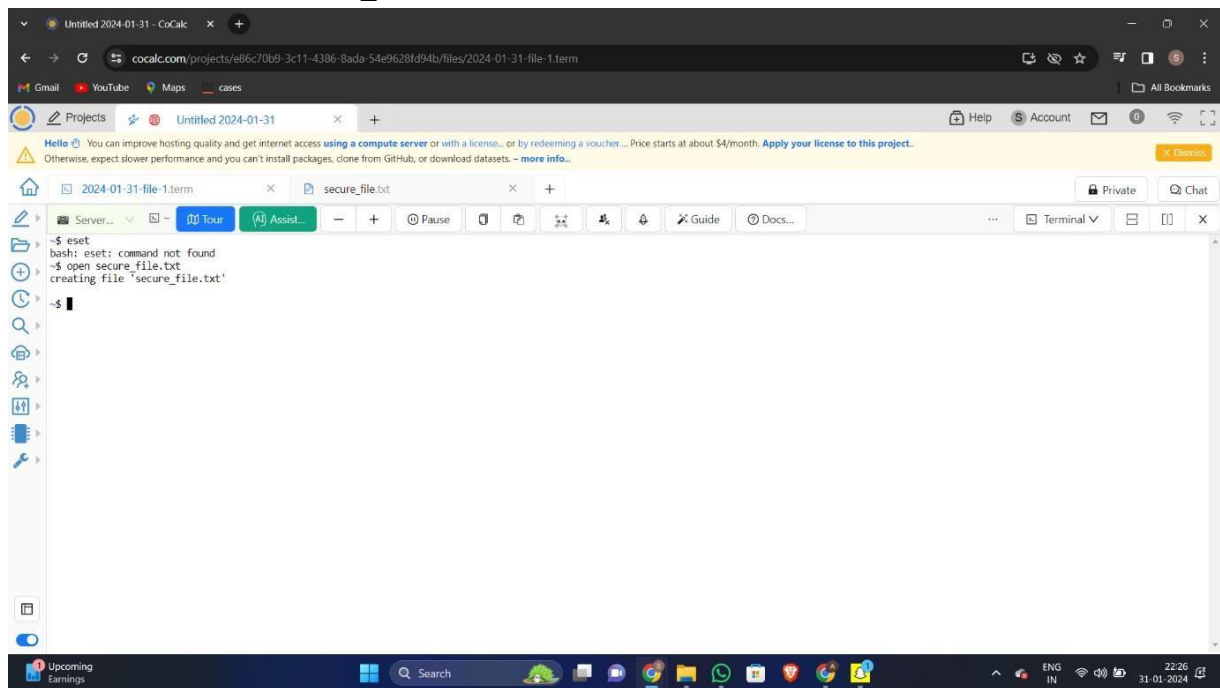
Task 5:



```
~$ eset
bash: eset: command not found
~$ rm example.txt
~$ ls
2024-01-31-file-1.term  directory1  directory2  new_document
~$
```

Permissions and Security 13.

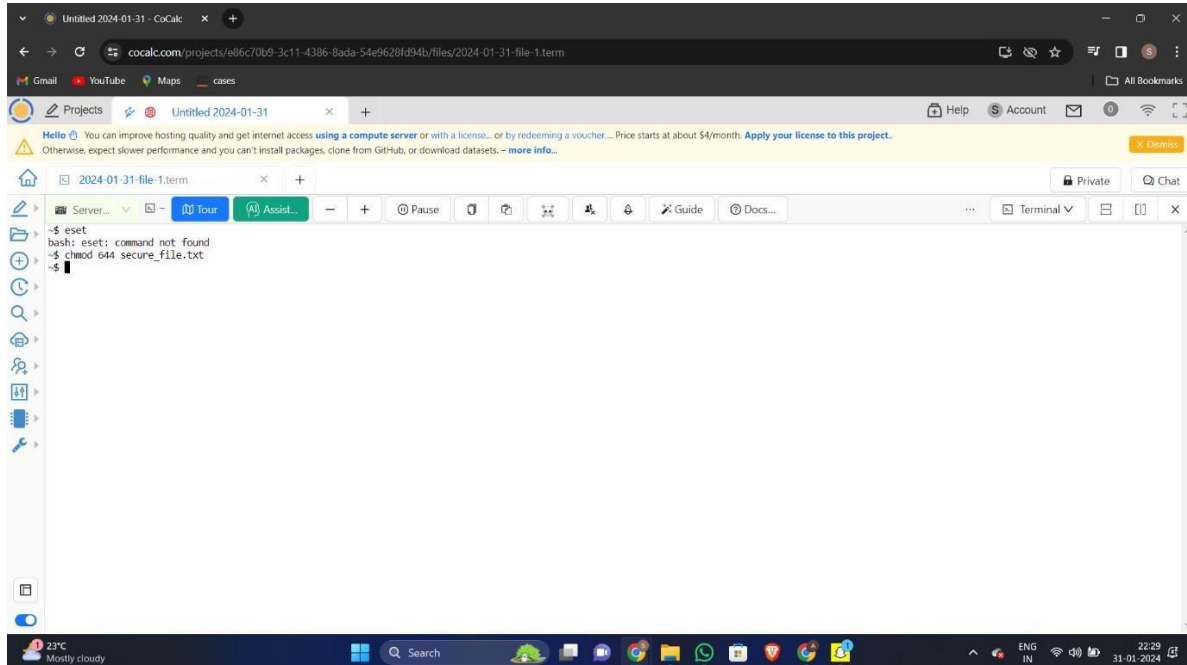
Create a new file named `secure_file.txt`.



```
~$ eset
bash: eset: command not found
~$ open secure_file.txt
creating file 'secure_file.txt'
~$
```


Task 6:

14. Use `chmod` to set the permissions of `secure_file.txt` to read and write for the owner and read only for others.

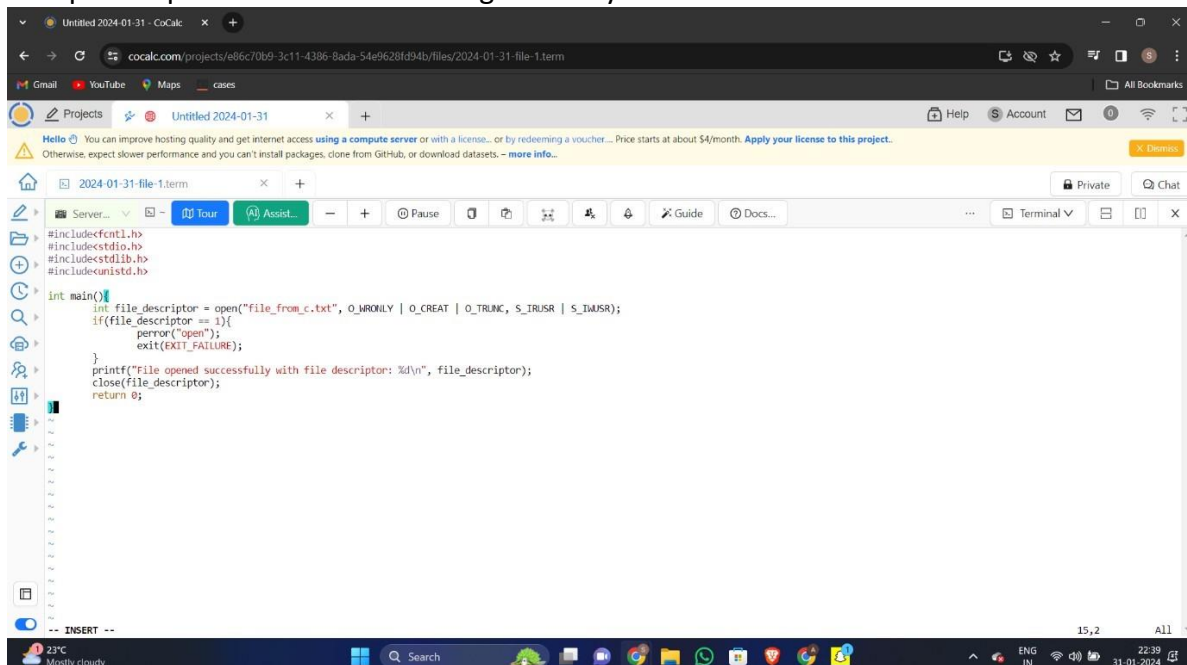


The screenshot shows a web browser window with a terminal interface. The terminal prompt is `~$`. The user enters `eset`, which results in a `bash: eset: command not found` error. Then, the user enters `chmod 644 secure_file.txt`, and the prompt returns to `~$`. The terminal window is titled "2024-01-31-file-1.term" and is part of a project named "Untitled 2024-01-31". The browser address bar shows the URL `cocalc.com/projects/e06c70b9-3c11-4386-8ada-54e9628fd94b/files/2024-01-31-file-1.term`. The Windows taskbar at the bottom shows the date as 31-01-2024 and the time as 22:29.

```
~$ eset
bash: eset: command not found
~$ chmod 644 secure_file.txt
~$
```

Print Working Directory

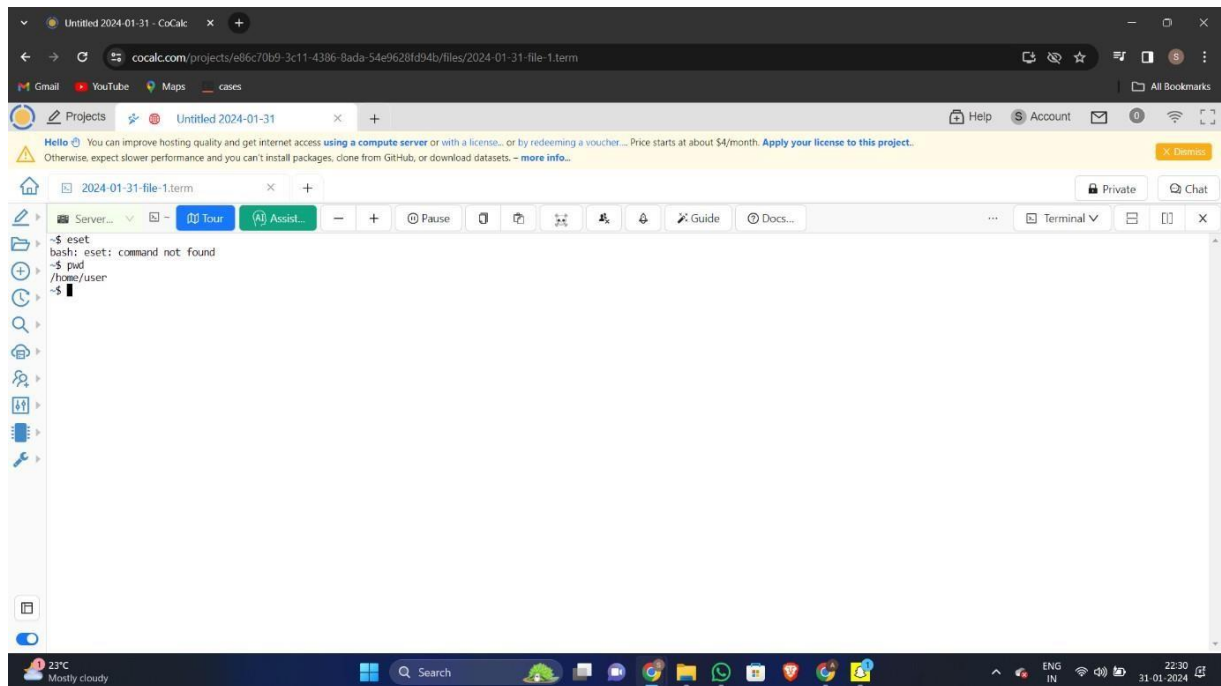
15. Use `pwd` to print the current working directory



The screenshot shows the same web browser window with the terminal interface. The terminal prompt is `~$`. The user enters `pwd`, and the terminal displays the current working directory: `/home/runner/.cocalc/projects/e06c70b9-3c11-4386-8ada-54e9628fd94b/files/2024-01-31-file-1.term`. The terminal window is titled "2024-01-31-file-1.term" and is part of a project named "Untitled 2024-01-31". The browser address bar shows the URL `cocalc.com/projects/e06c70b9-3c11-4386-8ada-54e9628fd94b/files/2024-01-31-file-1.term`. The Windows taskbar at the bottom shows the date as 31-01-2024 and the time as 22:39.

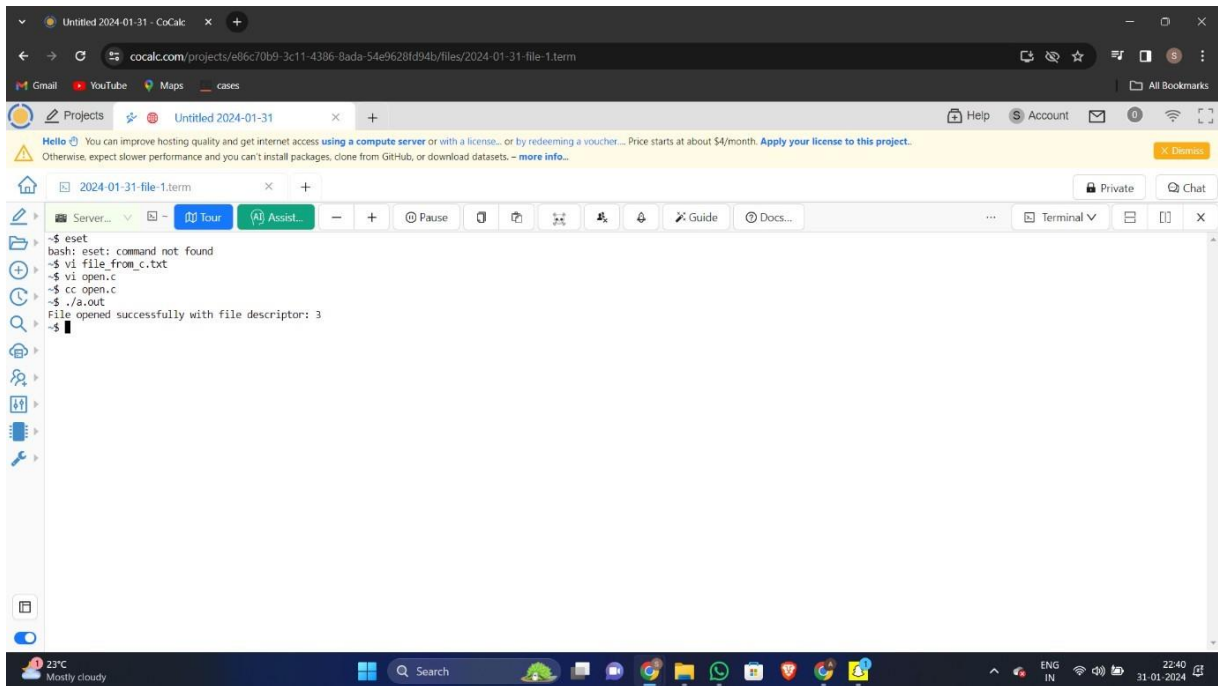
```
~$ pwd
/home/runner/.cocalc/projects/e06c70b9-3c11-4386-8ada-54e9628fd94b/files/2024-01-31-file-1.term
~$
```

Task 7:



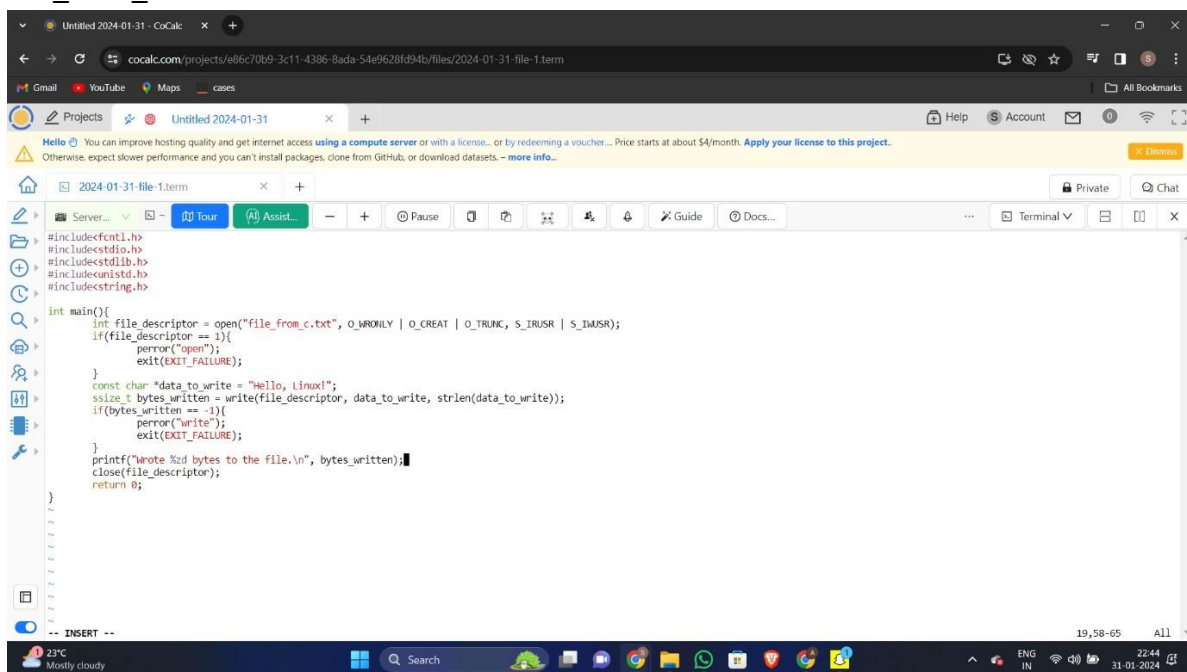
Task 7: System Calls

16. Write a simple C program that uses the open system call to create a new file named file_from_c.txt.



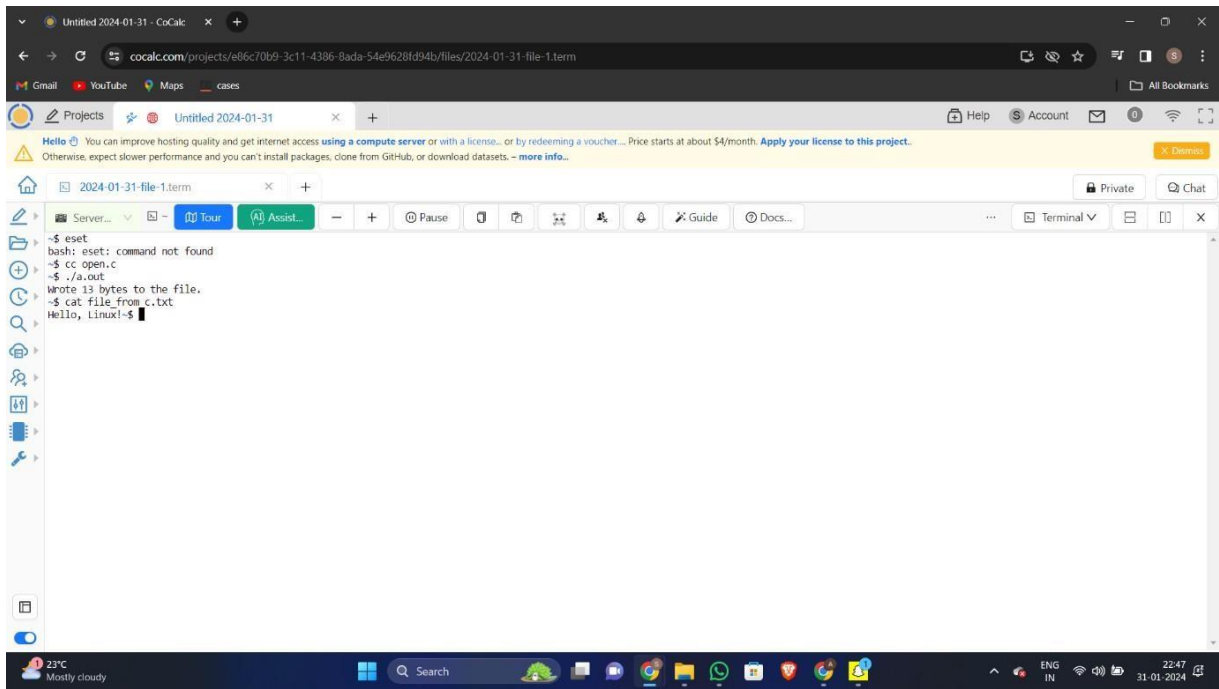
```
~$ eset
bash: eset: command not found
~$ vi file_from_c.txt
~$ vi open.c
~$ cc open.c
~$ ./a.out
File opened successfully with file descriptor: 3
~$
```

17. Extend the program to use the write system call to write "Hello, Linux!" into file_from_c.txt.

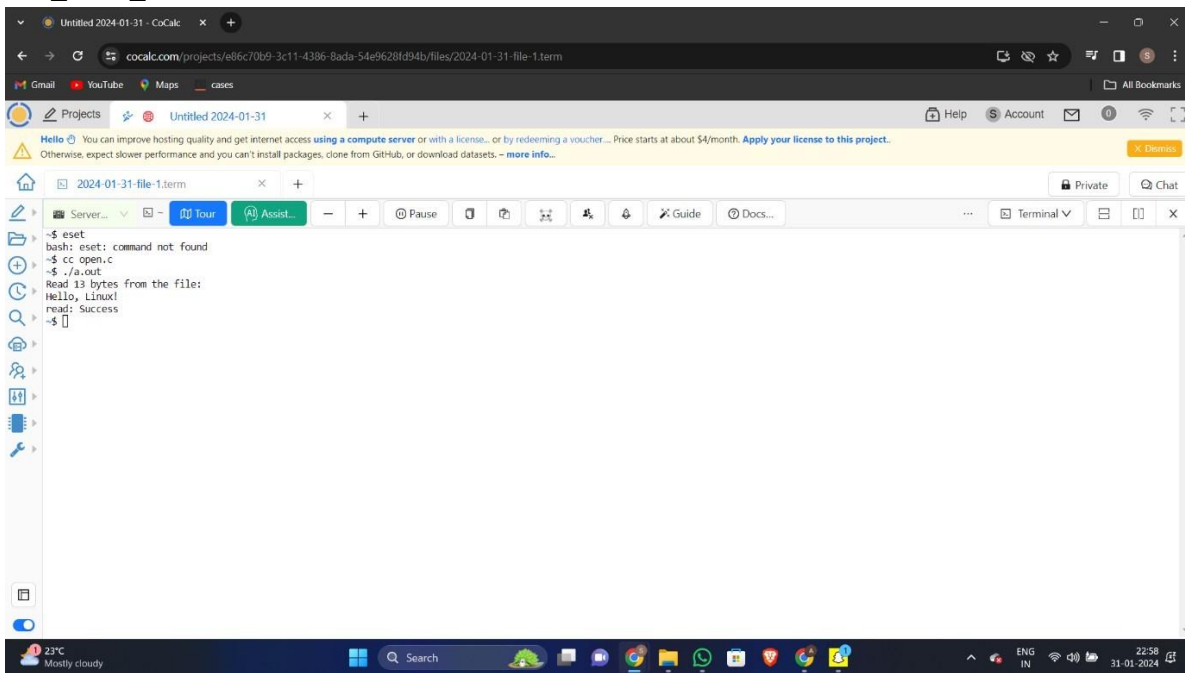


```
#include<fcntl.h>
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<string.h>

int main(){
    int file_descriptor = open("file_from_c.txt", O_WRONLY | O_CREAT | O_TRUNC, S_IRUSR | S_IWUSR);
    if(file_descriptor == 1){
        perror("open");
        exit(EXIT_FAILURE);
    }
    const char *data_to_write = "Hello, Linux!";
    ssize_t bytes_written = write(file_descriptor, data_to_write, strlen(data_to_write));
    if(bytes_written == -1){
        perror("write");
        exit(EXIT_FAILURE);
    }
    printf("Wrote %d bytes to the file.\n", bytes_written);
    close(file_descriptor);
    return 0;
}
```



18. Modify the program to use the read system call to read and display the content of `file_from_c.txt`.



Untitled 2024-01-31 - CoCalc

cocalc.com/projects/e86c70b9-3c11-4386-8ada-54e9628fd34b/files/2024-01-31-file-1.term

Projects Untitled 2024-01-31

Help Account

2024-01-31-file-1.term

Server... Tour Assist... Pause

```
#include <fcntl.h>
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>

#define BUFFER_SIZE 1024

int main() {
    int file_descriptor = open("file_from_c.txt", O_RDONLY);
    if (file_descriptor == -1) {
        perror("open");
        exit(EXIT_FAILURE);
    }
    char buffer[BUFFER_SIZE];
    ssize_t bytes_read = read(file_descriptor, buffer, sizeof(buffer));
    if (bytes_read == -1) {
        perror("read");
        exit(EXIT_FAILURE);
    }
    printf("Read %zd bytes to the file.\n", bytes_read, buffer);
    perror("read");
    close(file_descriptor);
    return 0;
}
```

20,17-24 All

Show desktop

23°C Mostly cloudy

22:52 31-01-2024