

## Lab 03 – Navigating

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Course/Section: IS-1003-<your-ON3>

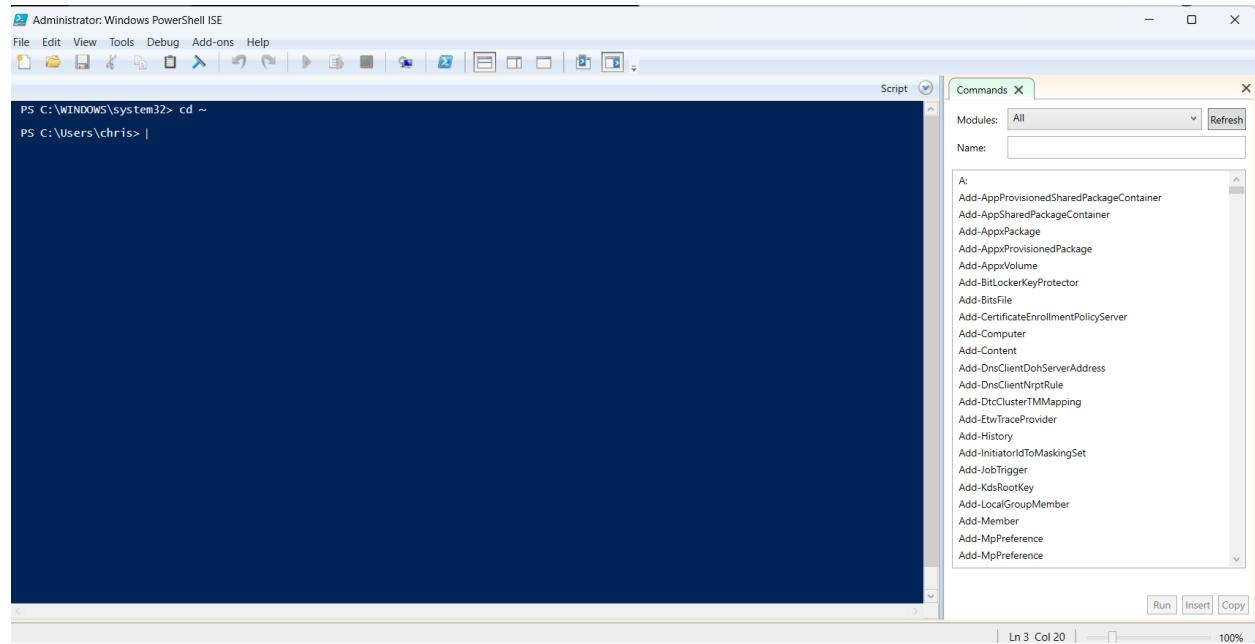
Date: <09/28/2025>

### INTRODUCTION

An important part of cyber security is learning and knowing how to navigate a terminal and knowing how to get from one directory or location within your system to another. In this Lab I was able to practice this using the windows PowerShell and the Linux Terminal.

### BREAKPOINT 1

In order to access my Linux terminal, I opened up my Kali Linux virtual machine and used the Ctrl+Alt+T shortcut to open the terminal where I adjusted the font size and the color scheme to my preferences. For the PowerShell on my host system I used the Windows Key where I typed “Windows PowerShell ISE”. This landed me in the system32 directory in which I used “ cd ~ ” to get back to my user directory. My host system is a Windows machine.



The screenshot shows the Windows PowerShell ISE interface. The title bar reads "Administrator: Windows PowerShell ISE". The menu bar includes File, Edit, View, Tools, Debug, Add-ons, and Help. The toolbar contains various icons for file operations. The main area is a dark blue terminal window showing command history:

```
PS C:\WINDOWS\system32> cd ~  
PS C:\Users\chris> |
```

To the right of the terminal is a "Commands" pane with a search bar and dropdown menus for Modules and Name. A scrollable list of cmdlets is displayed under the letter "A", starting with:

- Add-AppProvisionedSharedPackageContainer
- Add-AppSharedPackageContainer
- Add-AppxPackage
- Add-AppxProvisionedPackage
- Add-AppVolume
- Add-BitLockerKeyProtector
- Add-BitsFile
- Add-CertificateEnrollmentPolicyServer
- Add-Computer
- Add-Content
- Add-DnsClientDohServerAddress
- Add-DnsClientNrrRule
- Add-DtcClusterIMapping
- Add-EtwTraceProvider
- Add-History
- Add-InitiatorIdToMaskingSet
- Add-JobTrigger
- Add-KdsRootKey
- Add-LocalGroupMember
- Add-Member
- Add-MpPreference
- Add-MpPreference

At the bottom of the interface are buttons for Run, Insert, and Copy, along with status information: Ln 3 Col 20 and 100%.

Figure 1:Windows PowerShell 17:13 09/27/2025

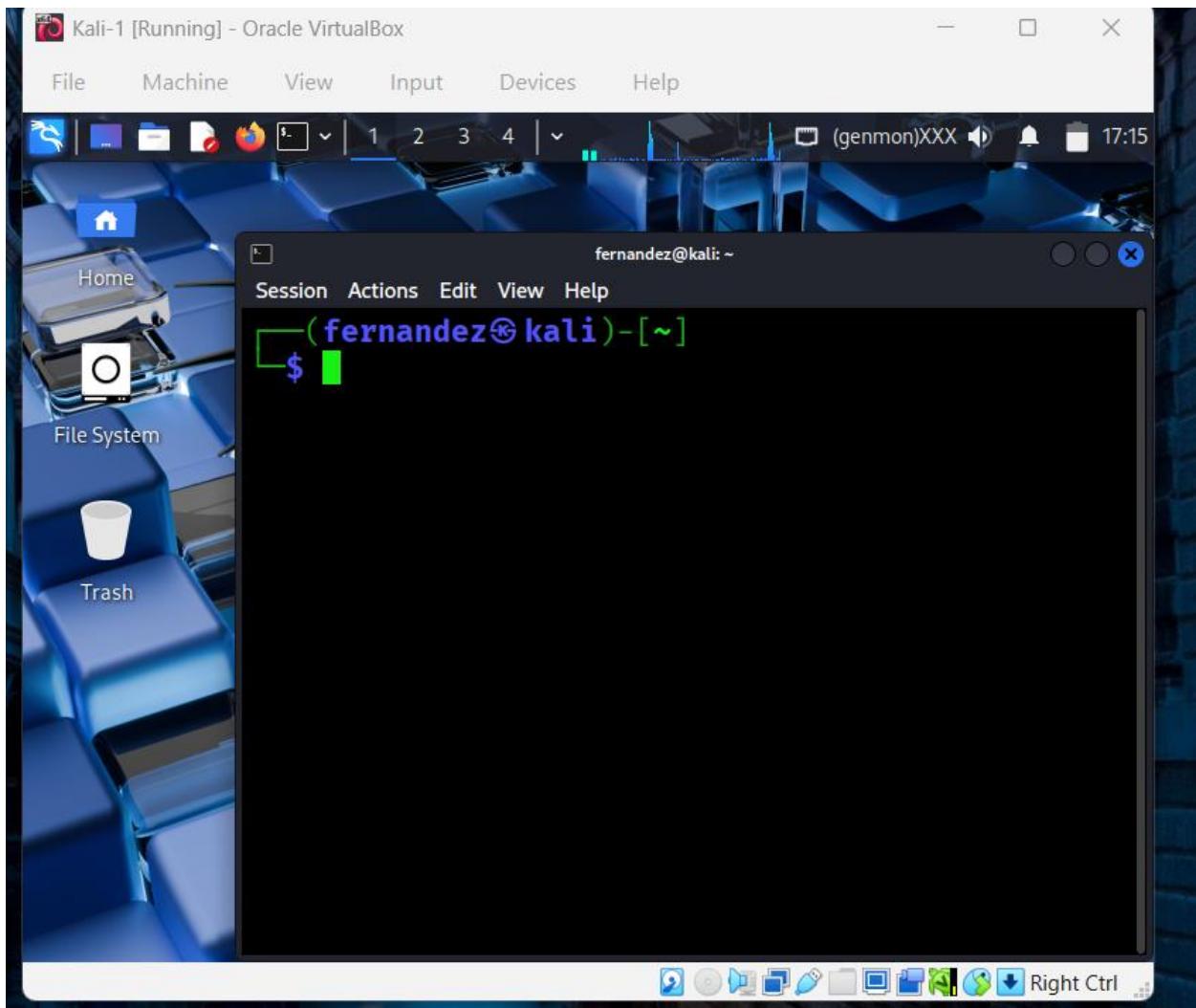


Figure 2: Kali Linux terminal 17:16 09/27/2025

## BREAKPOINT 2

In my Linux user folder there is the Desktop, Downloads, Pictures, Templates, Documents, Music, Public, and videos. The biggest difference in getting to where you can view these folders is that to view it through the terminal is that you need to use certain commands to tell computer what you need from it. In this instance I used the “ls” or list command to ask for all the folders and files in my current directory. When using the GUI I just clicked on the file system icon and clicked on my user and got the view of the same folders I listed above.

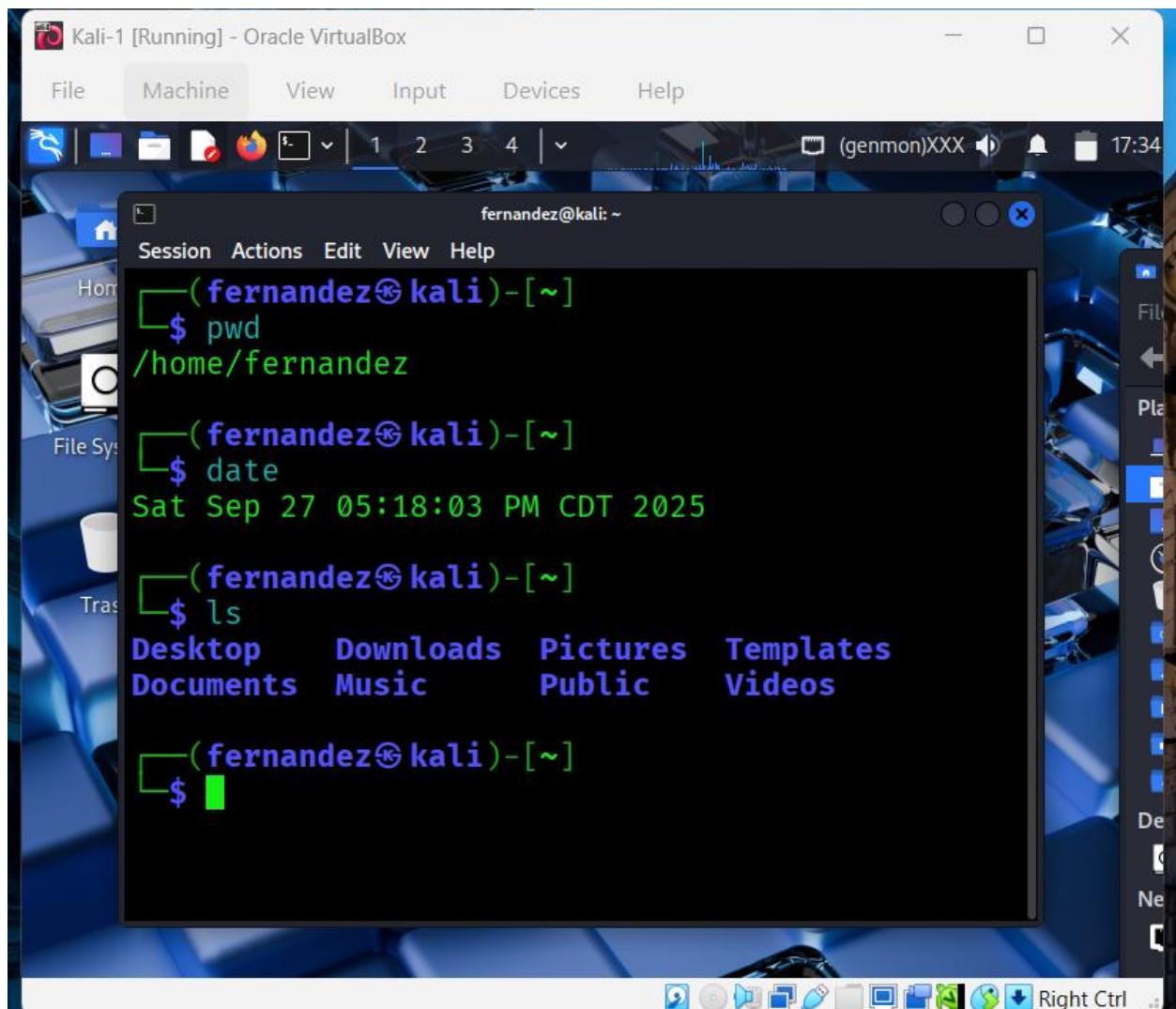


Figure 3:terminal view 17:35 09/27/2025

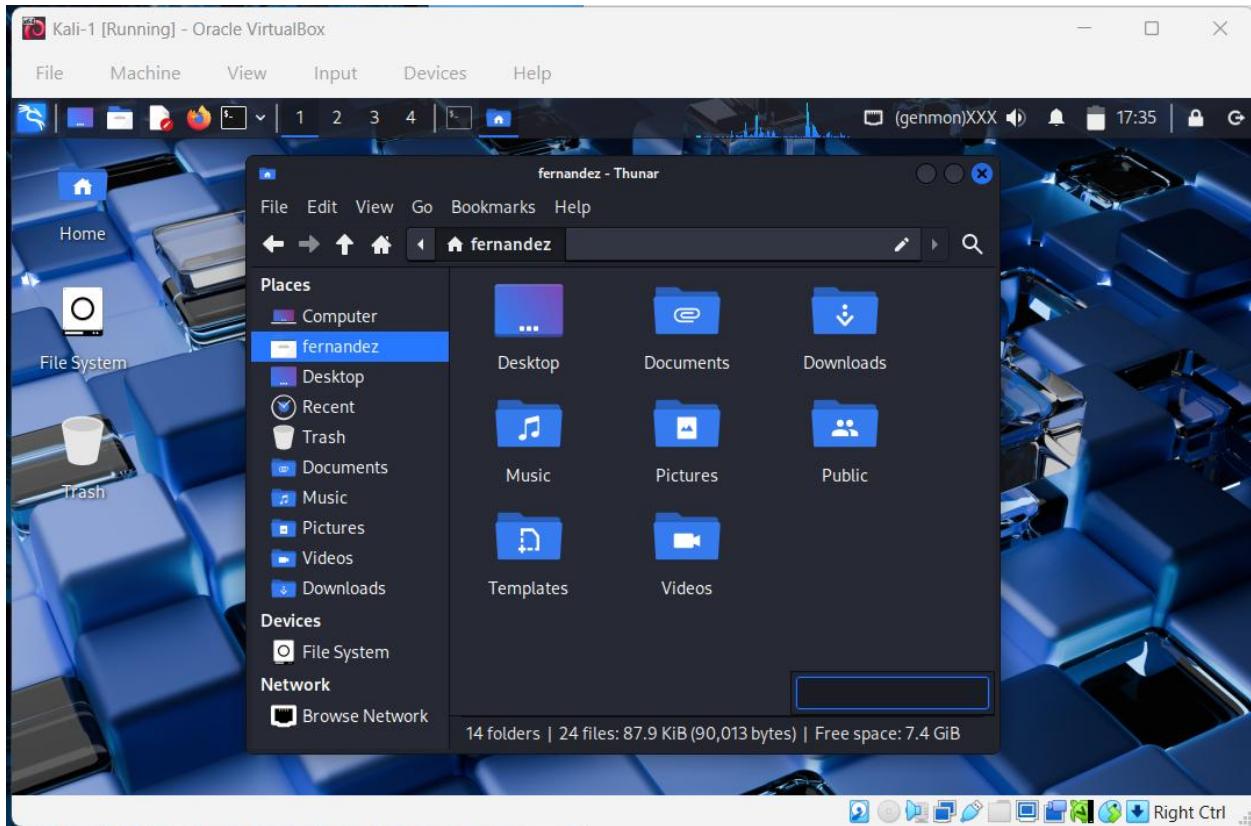


Figure 4: GUI view 17:36 09/27/2025

### BREAKPOINT 3

If I go to my user directory it will show the same folders and data in both the GUI and PowerShell. My user directory for my host machines contains the following data: .VirtualBox, contacts, desktop, documents, downloads, favorites, links, music, onedrive, pictures, saved games, searches, videos, VirtualBox VMs. This is the path to my course folder for this class: C:\Users\chris\Desktop\Unlocking Cyber.

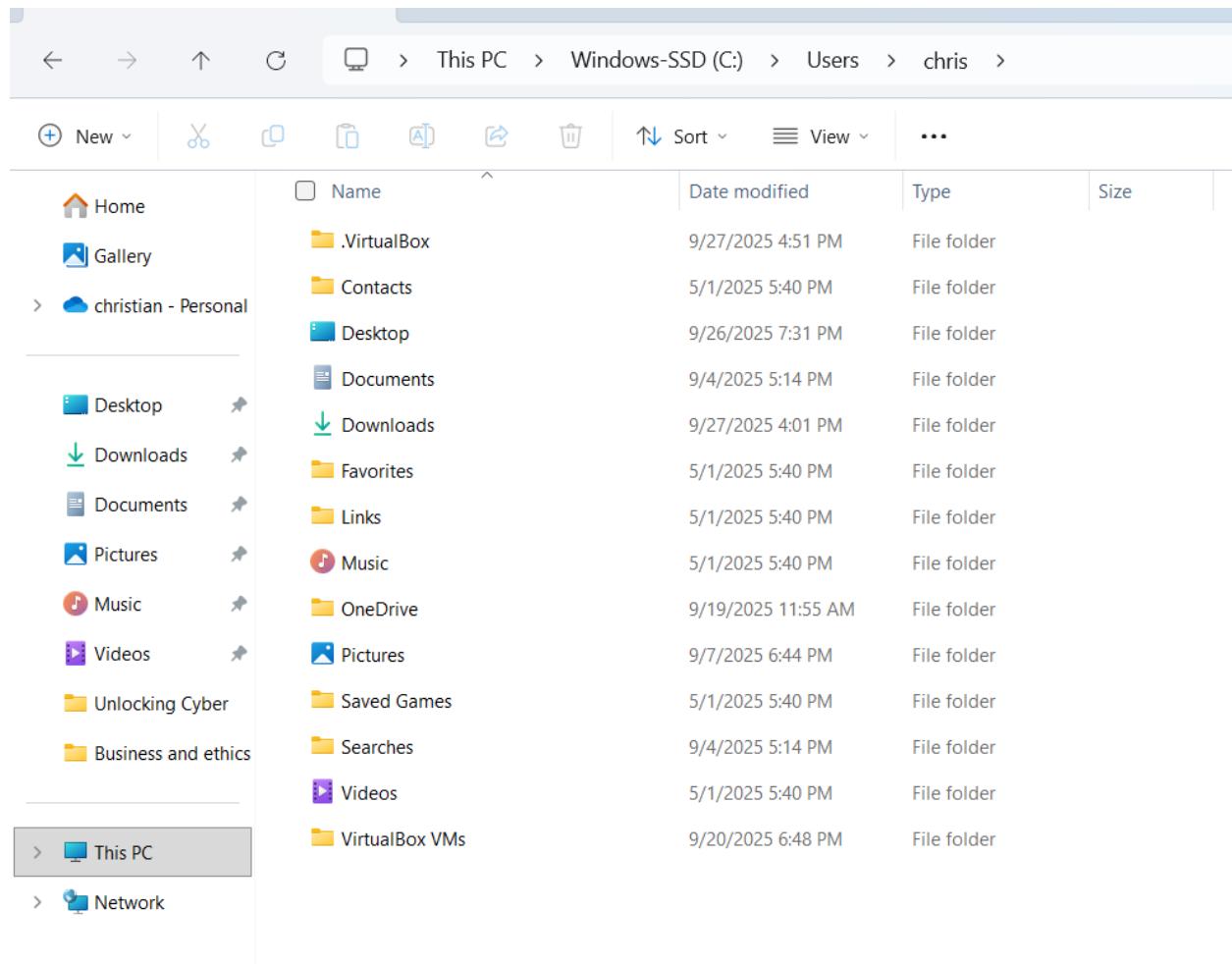


Figure 5: Windows GUI View 18:00 09/27/2025

```
PS C:\Users\chris> dir

Directory: C:\Users\chris

Mode                LastWriteTime         Length Name
----                -----        ----- 
d-----          9/27/2025      4:51 PM       .VirtualBox
d-r---          5/1/2025       5:40 PM       Contacts
d-r---          9/26/2025      7:31 PM       Desktop
d-r---          9/4/2025       5:14 PM       Documents
d-r---          9/27/2025      4:01 PM       Downloads
d-r---          5/1/2025       5:40 PM       Favorites
d-r---          5/1/2025       5:40 PM       Links
d-r---          5/1/2025       5:40 PM       Music
dar--l          9/19/2025     11:55 AM       OneDrive
d-r---          9/7/2025       6:44 PM       Pictures
d-r---          5/1/2025       5:40 PM       Saved Games
d-r---          9/4/2025       5:14 PM       Searches
d-r---          5/1/2025       5:40 PM       Videos
d-----          9/20/2025      6:48 PM       VirtualBox VMs
```

Figure 6:Windows PowerShell View 18:01 09/27/2025

#### BREAKPOINT 4

In this section I demonstrated the use of multiple commands, the first of which was the *ls -al* command which gave detailed information about the files of the directory I was in.

A screenshot of a Kali Linux desktop environment running in Oracle VirtualBox. The desktop has a blue metallic keyboard background. A terminal window titled "fernandez - Thunar" is open, showing the command "ls -al" and its output:

```
fernandez@kali: ~
$ ls -al
total 212
drwxr-xr-x  3 root      root      4096 Sep 20 19:18 ..
-rw-r--r--  1 fernandez fernandez  220 Sep 20 19:18 .bash_logout
-rw-r--r--  1 fernandez fernandez 5551 Sep 20 19:18 .bashrc
-rw-r--r--  1 fernandez fernandez 3526 Sep 20 19:18 .bashrc.original
drwxrwxr-x 10 fernandez fernandez 4096 Sep 20 20:46 .cache
drwxr-xr-x 12 fernandez fernandez 4096 Sep 27 17:27 .config
drwxr-xr-x  2 fernandez fernandez 4096 Sep 20
```

Figure 7:ls -al 19:15 09/27/2025

The following command was the *echo “Hello World!”* command. This will be used in the future when writing scripts, but in this case will just be used to return “Hello World!”.

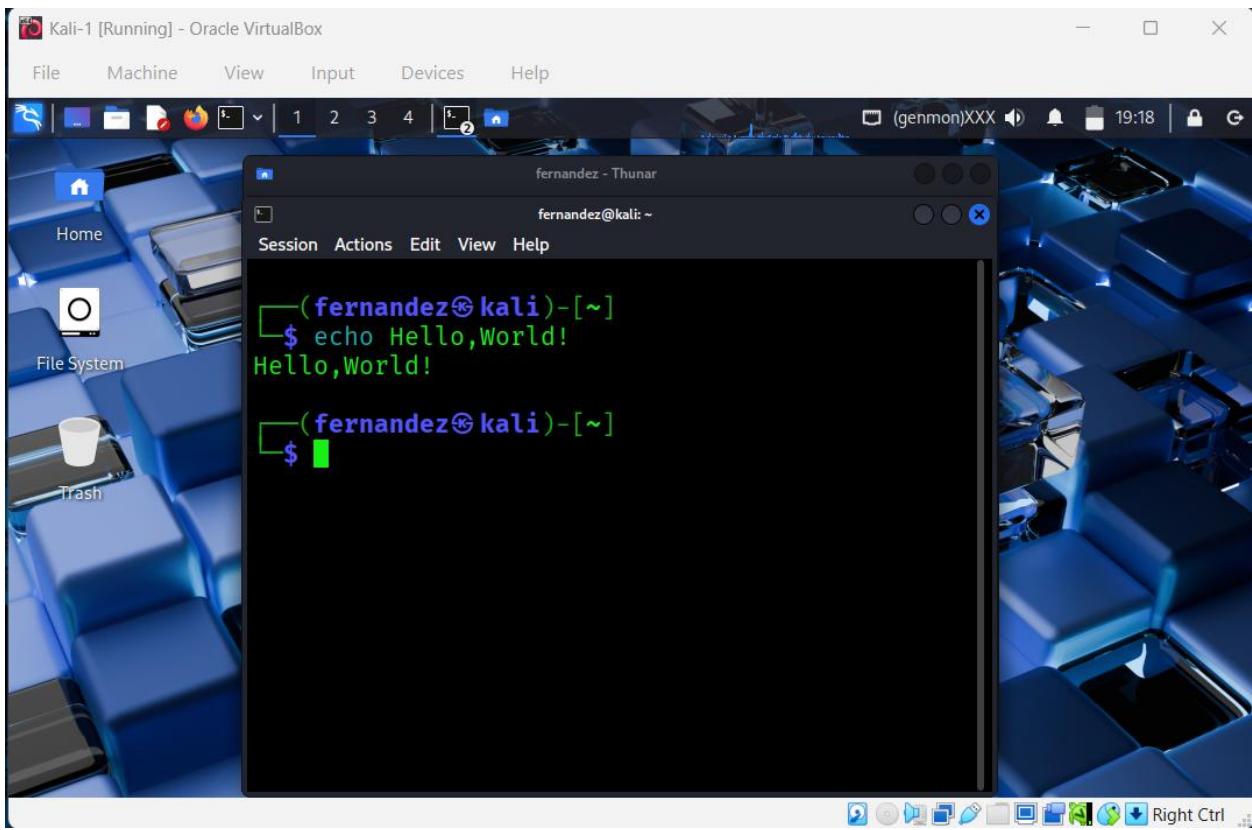


Figure 8:echo command 19:18 09/27/2025

In the next section I made a new directory using the `mkdir` command and used the name IS-1003 for the new directory.

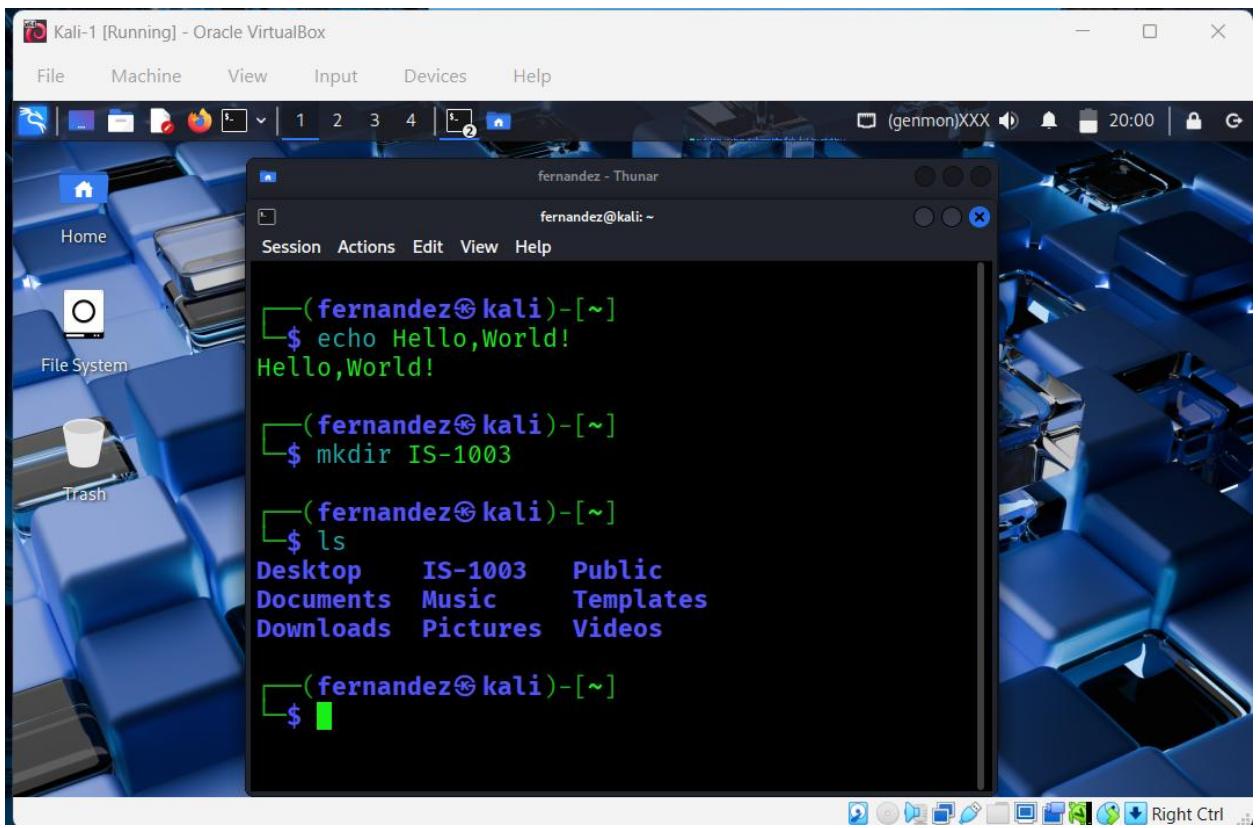
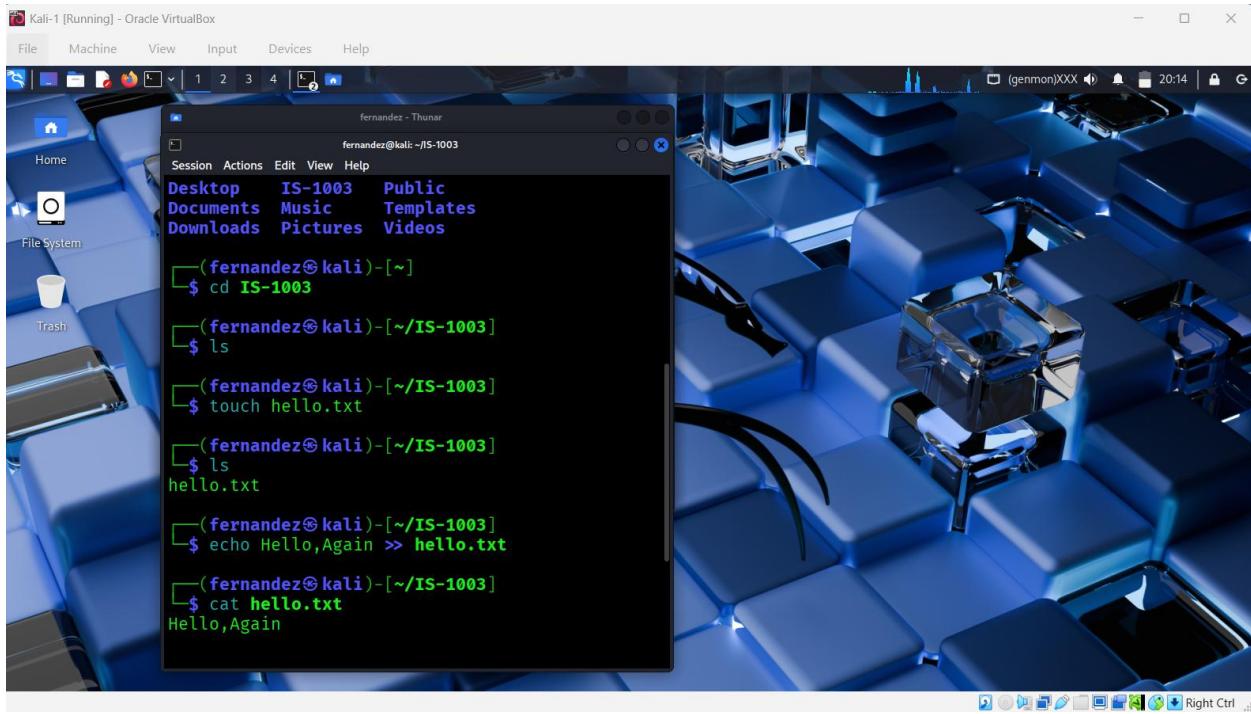


Figure 9:mkdir IS-1003 20:02 09/27/2025

Next I will use the `cd IS-1003` command to move into my new directory and then create an empty file using `touch hello.txt`. Then I will use the `echo Hello,Again >> hello.txt` which will put “Hello,Again” into the newly created text file. Finally I will verify that the text that I sent over to the new file was successfully inputted.



A screenshot of a Kali Linux desktop environment within Oracle VirtualBox. The terminal window, titled 'fernandez - Thunar', shows the following command history:

```
fernandez@kali: ~/IS-1003
Desktop IS-1003 Public
Documents Music Templates
Downloads Pictures Videos

(fernandez@kali)-[~]
$ cd IS-1003

(fernandez@kali)-[~/IS-1003]
$ ls

(fernandez@kali)-[~/IS-1003]
$ touch hello.txt

(fernandez@kali)-[~/IS-1003]
$ ls
hello.txt

(fernandez@kali)-[~/IS-1003]
$ echo Hello,Again >> hello.txt

(fernandez@kali)-[~/IS-1003]
$ cat hello.txt
Hello,Again
```

Figure 10:touch,echo,cat 20:20 09/27/2025

Finally, I will navigate back to my home directory and bring my newly created file with me and rename it to “h3llo.txt”. Then my newly named file is copied back into the IS-1003 directory. I then used the *rmdir IS-1003* command to attempt to delete the directory which failed due to there currently being files that exist in it. This file is deleted using the *rm IS-1003/\** command which deleted all of the files in the IS-1003 directory. Then I will retry the *rmdir* command to delete the directory now that it has been emptied of files.

```
fernandez@kali: ~
(ffernandez@kali)-[~/IS-1003]
$ cd
(ffernandez@kali)-[~]
$ mv IS-1003/hello.txt h3llo.txt
(ffernandez@kali)-[~]
$ ls
Desktop    h3llo.txt  Pictures   Videos
Documents  IS-1003    Public
Downloads  Music      Templates
(ffernandez@kali)-[~]
$ cp h3llo.txt IS-1003
(ffernandez@kali)-[~]
$ ls -al IS-1003
total 12
drwxrwxr-x  2 fernandez fernandez 4096 Sep 27 2
0:32 .
drwx----- 17 fernandez fernandez 4096 Sep 27 2
0:31 ..
-rw-rw-r--  1 fernandez fernandez   12 Sep 27 2
0:32 h3llo.txt
```

Figure 11:mv and cp 20:38 09/27/2025

The screenshot shows a terminal window titled "fernandez@kali: ~". The menu bar includes "Session", "Actions", "Edit", "View", and "Help". The terminal output is as follows:

```
(fernandez㉿kali)-[~]
$ ls -al IS-1003
total 12
drwxrwxr-x  2 fernandez fernandez 4096 Sep 27 2
0:32 .
drwx----- 17 fernandez fernandez 4096 Sep 27 2
0:31 ..
-rw-rw-r--  1 fernandez fernandez    12 Sep 27 2
0:32 h3llo.txt

(fernandez㉿kali)-[~]
$ rmdir IS-1003
rmdir: failed to remove 'IS-1003': Directory no
t empty

(fernandez㉿kali)-[~]
$ rm IS-1
rm: cannot remove 'IS-1': No such file or direc
tory

(fernandez㉿kali)-[~]
$ rm IS-1003/*
zsh: sure you want to delete all the files in /
home/fernandez/IS-1003 [yn]? y

(fernandez㉿kali)-[~]
```

Figure 12:rmdir and rm 20:38 09/27/2025

The screenshot shows a terminal window with a dark theme. The title bar reads "fernandez@kali: ~". The menu bar includes "Session", "Actions", "Edit", "View", and "Help". The terminal content displays a series of shell commands and their outputs:

```
fernandez@kali: ~
Session Actions Edit View Help
└──(fernandez㉿kali)-[~]
└─$ rm IS-1003/*
zsh: sure you want to delete all the files in /home/fernandez/IS-1003 [yn]? y

└──(fernandez㉿kali)-[~]
└─$ ls -al IS-1003
total 8
drwxrwxr-x  2 fernandez fernandez 4096 Sep 27 20:33 .
drwx----- 17 fernandez fernandez 4096 Sep 27 20:31 ..

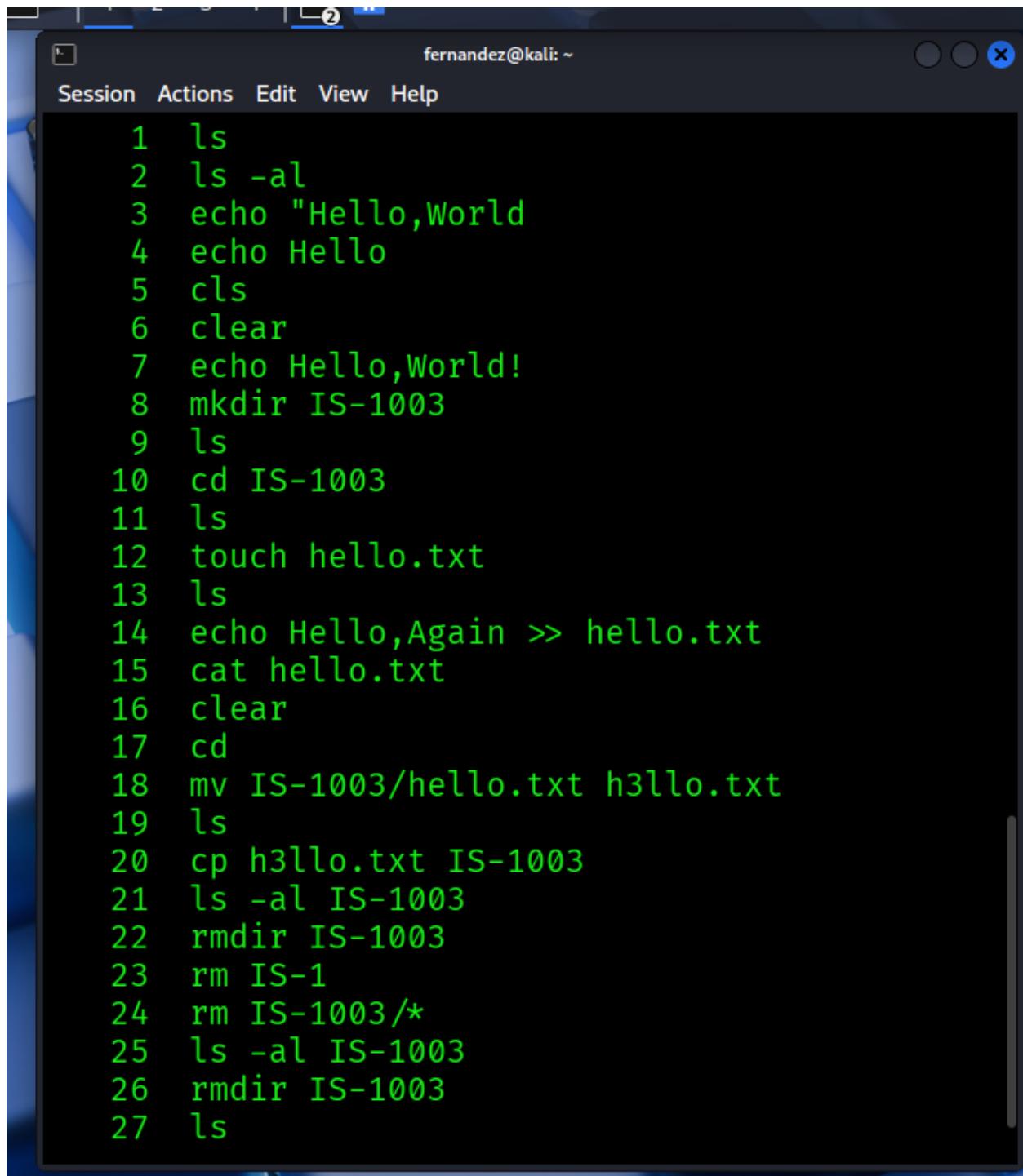
└──(fernandez㉿kali)-[~]
└─$ rmdir IS-1003

└──(fernandez㉿kali)-[~]
└─$ ls
Desktop      h3llo.txt  Public
Documents    Music       Templates
Downloads   Pictures    Videos

└──(fernandez㉿kali)-[~]
└─$ █
```

Figure 13:rmdir pt 2 20:39 09/27/2025

This is the history of my session using the *history* command



A screenshot of a terminal window titled "fernandez@kali: ~". The window shows a command history from line 1 to 27. The commands are as follows:

```
1 ls
2 ls -al
3 echo "Hello,World"
4 echo Hello
5 cls
6 clear
7 echo Hello,World!
8 mkdir IS-1003
9 ls
10 cd IS-1003
11 ls
12 touch hello.txt
13 ls
14 echo Hello,Again >> hello.txt
15 cat hello.txt
16 clear
17 cd
18 mv IS-1003/hello.txt h3llo.txt
19 ls
20 cp h3llo.txt IS-1003
21 ls -al IS-1003
22 rmdir IS-1003
23 rm IS-1
24 rm IS-1003/*
25 ls -al IS-1003
26 rmdir IS-1003
27 ls
```

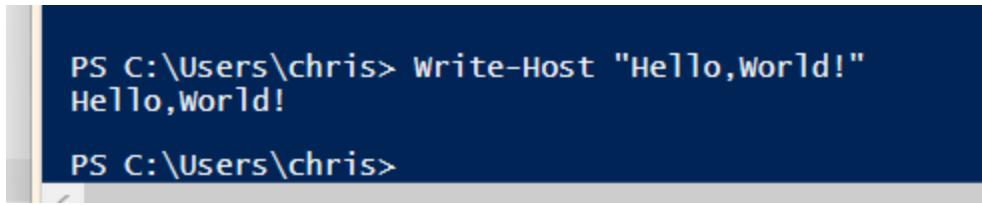
Figure 14:history of linux session 18:51 09/28/2025

## BREAKPOINT 5

This section involves the same as the previous, but using PowerShell starting with the `Get-ChildItem -Directory -Force` command. This with the added `-Directory` and `-Force` provides extra information on what is in the directory.

Figure 15: Get-ChildItem 20:54 09/27/2025

Next the `Write-Host` command is used to print text into PowerShell.



```
PS C:\Users\chris> Write-Host "Hello,World!"
Hello,World!
PS C:\Users\chris>
```

Figure 16:Hello,World! PowerShell 18:32 09/28/2025

In the next section, I used the following commands:

*New-Item -Name "IS-1003" -ItemType Directory*

*Set-Location IS-1003*

*New-Item hello.txt*

*Write-Output "Hello,Again!" >> hello.txt*

*Get-Content hello.txt*

This series of commands will create a new directory, create a new file called hello.txt, put “Hello,Again!” inside the file, and print the output.

```
Hello,World!  
PS C:\Users\chris> New-Item -Name "IS-1003" -ItemType Directory  
  
Directory: C:\Users\chris  
  
Mode          LastWriteTime         Length Name  
----          -----          -----  
d----9/28/2025    6:38 PM           0 IS-1003  
  
PS C:\Users\chris> Set-Location IS-1003  
PS C:\Users\chris\IS-1003> New-Item hello.txt  
  
Directory: C:\Users\chris\IS-1003  
  
Mode          LastWriteTime         Length Name  
----          -----          -----  
-a----9/28/2025    6:39 PM           0 hello.txt  
  
PS C:\Users\chris\IS-1003> Write-Output "Hello,Again!" >> hello.txt  
PS C:\Users\chris\IS-1003> Get-Content hello.txt  
Hello,Again!  
PS C:\Users\chris\IS-1003>
```

Figure 17:Creating a new directory and file 18:46 09/28/2025

With the next set of commands I am going to move the new file to the parent directory:

*Set-Location -Path..*

*Move-Item .\IS-1003\hello.txt.\h3llo.txt*

```

PS C:\Users\chris\IS-1003> Set-Location -Path ..

PS C:\Users\chris> Move-Item .\IS-1003\hello.txt.\h3llo.txt
Move-Item : Cannot find path 'C:\Users\chris\IS-1003\hello.txt.\h3llo.txt' because
it does not exist.
At line:1 char:1
+ Move-Item .\IS-1003\hello.txt.\h3llo.txt
+ ~~~~~
    + CategoryInfo          : ObjectNotFound: (C:\Users\chris\....txt.\h3llo.txt:String) [Move-Item], ItemNotFoundException
    + FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.MoveItemCommand

PS C:\Users\chris> Move-Item .\IS-1003\hello.txt h3llo.txt

PS C:\Users\chris> ls IS-1003

PS C:\Users\chris> ls

    Directory: C:\Users\chris

Mode                LastWriteTime         Length Name
----                -----        ----
d----          9/28/2025   6:29 PM           .VirtualBox
d-r---          5/1/2025    5:40 PM          Contacts
d-r---          9/26/2025   7:31 PM          Desktop
d-r---          9/4/2025    5:14 PM          Documents
d-r---          9/27/2025   8:42 PM          Downloads
d-r---          5/1/2025    5:40 PM          Favorites
d----          9/28/2025   6:56 PM          IS-1003
d-r---          5/1/2025    5:40 PM          Links
d-r---          5/1/2025    5:40 PM          Music
dar--l          9/19/2025  11:55 AM          OneDrive
d-r---          9/7/2025    6:44 PM          Pictures
d-r---          5/1/2025    5:40 PM          Saved Games
d-r---          9/4/2025    5:14 PM          Searches
d-r---          5/1/2025    5:40 PM          Videos
d----          9/20/2025   6:48 PM          VirtualBox VMs
-a---          9/28/2025   6:42 PM          30 h3llo.txt

```

Figure 18:move the file 18:57 09/28/2025

Copy the newly named file into the IS-1003 directory

*Copy-Item -Path h3llo.txt -Destination IS-1003*

```

PS C:\Users\chris> Copy-Item -Path h3llo.txt -Destination IS-1003

PS C:\Users\chris> ls IS-1003

    Directory: C:\Users\chris\IS-1003

Mode                LastWriteTime         Length Name
----                -----        ----
-a---          9/28/2025   6:42 PM          30 h3llo.txt

```

Figure 19: copy file 18:59 09/28/2025

Finally, the directory and file will be deleted. This difference between this version and Linux is that the directory does not have to be emptied prior to deletion.

The screenshot shows a Windows PowerShell window with the following command history:

```
PS C:\Users\chris> Move-Item .\IS-1003\hello.txt h3llo.txt
PS C:\Users\chris> ls IS-1003
PS C:\Users\chris> ls

Directory: C:\Users\chris

Mode LastWriteTime Length Name
d---- 9/28/2025   0  .VirtualBox

Confirm
The item at C:\Users\chris\IS-1003 has children and the Recurse parameter was not specified. If you continue, all children will be removed with the item. Are you sure you want to continue?

[Yes] [Yes to All] [No] [No to All] [Suspend]
```

The confirmation dialog box is centered over the PowerShell window. It contains the message: "The item at C:\Users\chris\IS-1003 has children and the Recurse parameter was not specified. If you continue, all children will be removed with the item. Are you sure you want to continue?". Below the message are five buttons: "Yes" (highlighted), "Yes to All", "No", "No to All", and "Suspend".

Below the confirmation dialog, the PowerShell session continues:

```
PS C:\Users\chris> Copy-Item -Path h3llo.txt -Destination IS-1003
PS C:\Users\chris> ls IS-1003

Directory: C:\Users\chris\IS-1003

Mode LastWriteTime Length Name
-a--- 9/28/2025   30  h3llo.txt

PS C:\Users\chris> Remove-Item IS-1003
```

Figure 20:remove file 19:00 09/28/2025

Here is the history for the PowerShell session

```
PS C:\Users\chris> Remove-Item IS-1003
PS C:\Users\chris> Get-History

Id CommandLine
-- -----
1 cd ~
2 pwd
3 date
4 dir
5 cd users
6 dir
7 cd Desktop
8 dir
9 cd unlocking cyber
10 cd Unlocking Cyber
11 cd ~
12 dir
13 Get-ChildItem -Directory -Force
14 Write-Host "Hello,World!"
15 New-Item -Name "IS-1003" -ItemType Directory
16 Set-Location IS-1003
17 New-Item hello.txt
18 Write-Output "Hello,Again!" >> hello.txt
19 Get-Content hello.txt
20 Set-Location -Path ..
21 Move-Item .\IS-1003\hello.txt.\h3llo.txt
22 Move-Item .\IS-1003\hello.txt h3llo.txt
23 ls IS-1003
24 ls
25 Copy-Item -Path h3llo.txt -Destination IS-1003
26 ls IS-1003
27 Remove-Item IS-1003
```

Figure 21:PowerShell History 19:01 09/28/2025

## CONCLUSION/LIMITATIONS

I thought that this lab was straightforward and did not encounter any issues aside from mistyping a command which can be seen in the Move-Item screenshot. I just double checked that I had the correct command and fixed the issue. The skills learned in this lab will help me to navigate my Linux and host machine more efficiently. I have not had much experience with PowerShell, so being able to use it and seen the similarities and differences between it and Linux was very interesting.

Replace the text in this section with a reflective summary of your process in this lab, including answers to the following, in complete sentences:

- What challenges did you encounter and/or what most interested you about this lab?
- How did you address your challenges and/or what additional research did you do?
- How might you use the skills and concepts of this lab going forward?

## REFERENCES

R. Mitra, “*Lab-03 Navigation*,” The University of Texas at San Antonio (2025). Last accessed: 09/28/2025.  
[

## **GENERATIVE AI SEARCHES**

I did not use generative AI to complete this lab report.

## **COLLABORATION**

I worked independently on this lab.