



***The House of Hackers***  
***Pakistan Cyber Security Learning***  
***LAB REPORT***

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***Linux Fundamentals for Cyber security***

***Lab 1***

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**Lab Title:** Linux Hand-on-Practice

**Course Title:** [60-Day Ultimate Hacking Course \[2025\]](#)

**Student Name:** NOOR UL NISA

**Learning Through:** [The House of Hackers](#) — YouTube

**Date of Submission:** 25 July 2025

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***Submitted To***

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**YouTube Channel:**  [The House of Hackers](#)

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## Linux Lab Manual: Basic File & Directory Commands

### Lab Objectives


- Understand and use essential Linux commands for file and directory management.
- Practice real-world scenarios using CLI.
- Learn command syntax, purpose, and output interpretation.
- Enhance confidence in navigating and manipulating Linux file systems.


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### Lab 1: Listing Files — ls

 **Purpose:** List contents of a directory

 **Syntax:** `ls [options] [directory]`

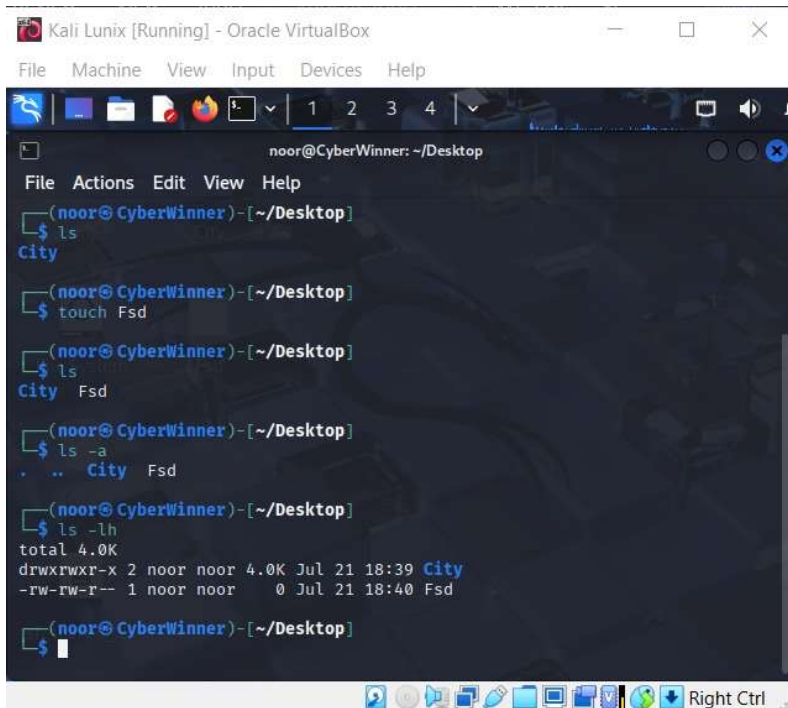
 **Example:** `ls -l /home`

 **Expected Output:** Lists all files in /home with details.

#### Try These Exercises:

1. List all files in your current directory.
2. Use `ls -a` to show hidden files.
3. Use `ls -lh /etc` to show human-readable file sizes.

 *Insert Screenshot Here*



```
Kali Linux [Running] - Oracle VirtualBox
File Machine View Input Devices Help

noor@CyberWinner: ~/Desktop
File Actions Edit View Help
(noor@CyberWinner)-[~/Desktop]
$ ls
city
(noor@CyberWinner)-[~/Desktop]
$ touch Fsd
(noor@CyberWinner)-[~/Desktop]
$ ls
city Fsd
(noor@CyberWinner)-[~/Desktop]
$ ls -a
. .. city Fsd
(noor@CyberWinner)-[~/Desktop]
$ ls -lh
total 4.0K
drwxrwxr-x 2 noor noor 4.0K Jul 21 18:39 city
-rw-rw-r-- 1 noor noor 0 Jul 21 18:40 Fsd
(noor@CyberWinner)-[~/Desktop]
$
```

## 📁 Lab 2: Changing Directories — cd

🔑 **Purpose:** Move between directories

📋 **Syntax:** cd [directory]

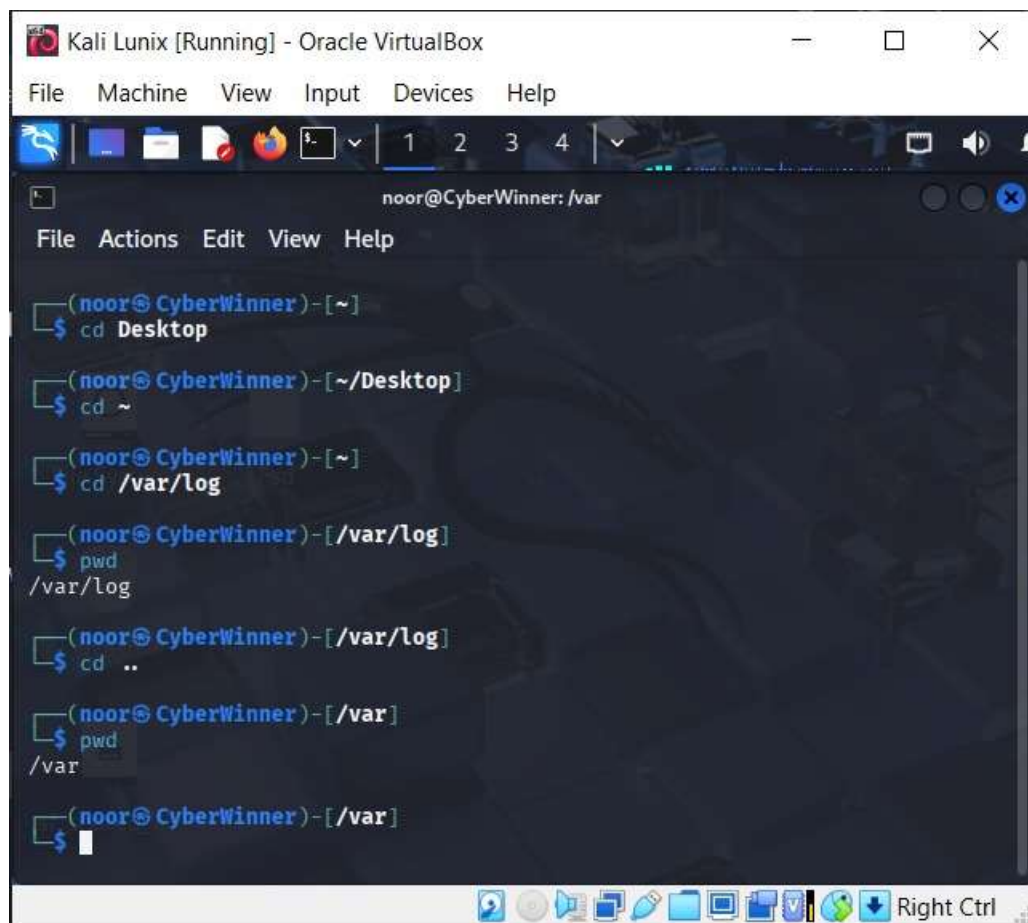
🔍 **Example:** cd /etc

👉 **Expected Output:** Terminal changes to /etc.

✅ **Try These Exercises:**

1. Move to your home directory using cd ~.
2. Navigate to /var/log.
3. Use cd .. to move one directory up.

📷 *Insert Screenshot Here*



The screenshot shows a Kali Linux terminal window titled "Kali Linux [Running] - Oracle VirtualBox". The terminal prompt is "noor@CyberWinner: /var". The user has entered the following commands and received the following output:

```
(noor@CyberWinner)~-[~]  
$ cd Desktop  
(noor@CyberWinner)~-[~/Desktop]  
$ cd ~  
(noor@CyberWinner)~-[~]  
$ cd /var/log  
(noor@CyberWinner)~-[/var/log]  
$ pwd  
/var/log  
(noor@CyberWinner)~-[/var/log]  
$ cd ..  
(noor@CyberWinner)~-[/var]  
$ pwd  
/var  
(noor@CyberWinner)~-[/var]  
$
```

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## 📁 Lab 3: Show Current Directory — pwd

🔑 **Purpose:** Display current working directory

📋 **Syntax:** pwd

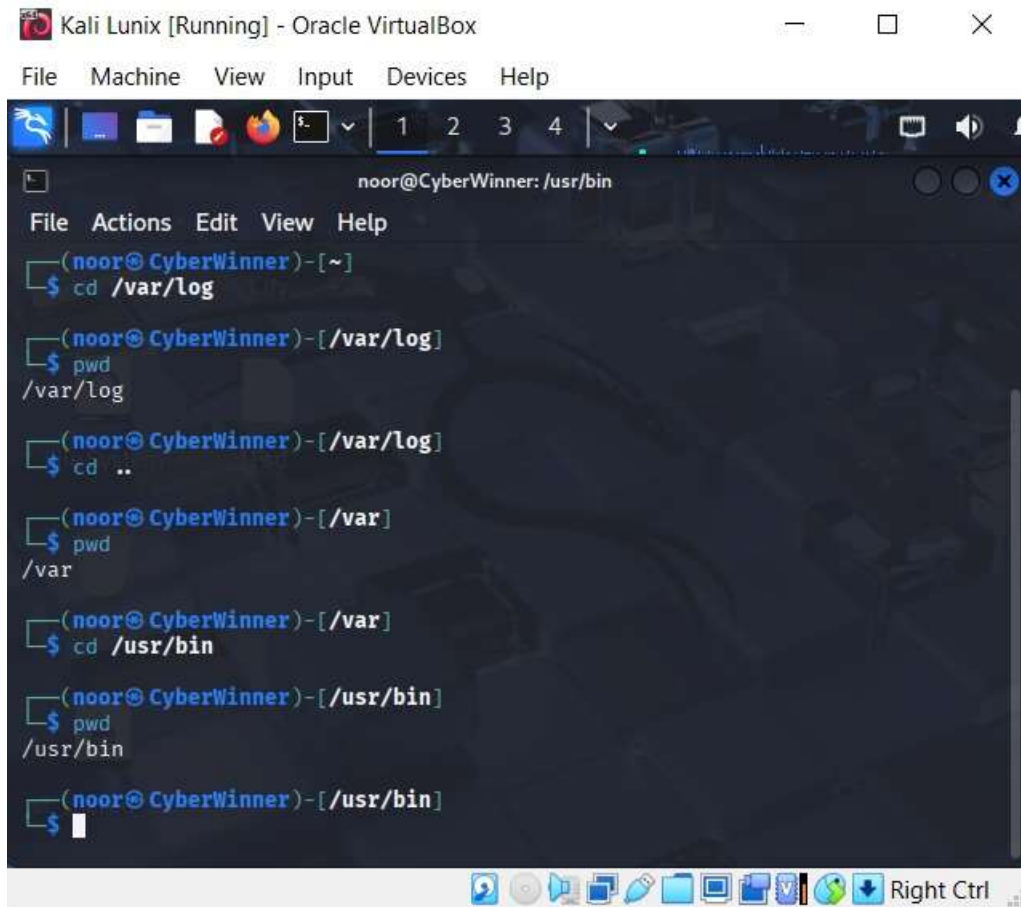
🔍 **Example:** pwd

👉 **Expected Output:** Absolute path of the current directory.

### ✓ Try These Exercises:

1. Run `pwd` after navigating to `/usr/bin`.
2. Compare the output with what's shown in the prompt.

📷 *Insert Screenshot Here*



The screenshot shows a Kali Linux terminal window titled "Kali Linux [Running] - Oracle VirtualBox". The terminal prompt is `noor@CyberWinner: /usr/bin`. The user has navigated through several directories: `cd /var/log`, `pwd` (output: `/var/log`), `cd ..`, `pwd` (output: `/var`), and `cd /usr/bin`. The final prompt is `noor@CyberWinner: /usr/bin` with a dollar sign and a cursor, ready for the next command.

## 📁 Lab 4: Create Directories — `mkdir`

📌 **Purpose:** Make new directory

📋 **Syntax:** `mkdir [dirname]`

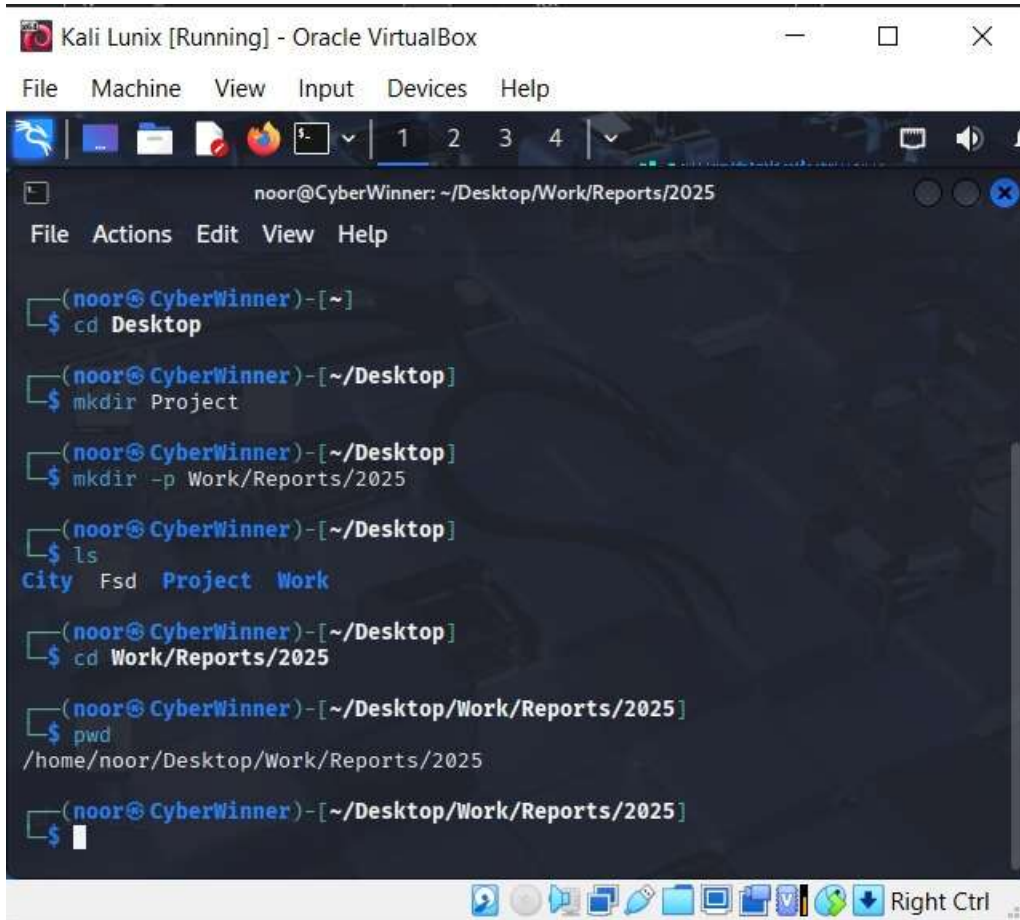
🔍 **Example:** `mkdir new_folder`

👤 **Expected Output:** A directory named `new_folder` is created.

### ✓ Try These Exercises:

1. Create a folder named `Projects`.
2. Create nested folders using `mkdir -p Work/Reports/2025`.

 Insert Screenshot Here



```
noor@CyberWinner: ~/Desktop/Work/Reports/2025
File Actions Edit View Help

(noor@CyberWinner)~-[~]
$ cd Desktop

(noor@CyberWinner)~/Desktop-
$ mkdir Project

(noor@CyberWinner)~/Desktop-
$ mkdir -p Work/Reports/2025


(noor@CyberWinner)~/Desktop-
$ ls
City  Fsd  Project  Work

(noor@CyberWinner)~/Desktop-
$ cd Work/Reports/2025


(noor@CyberWinner)~/Desktop/Work/Reports/2025-
$ pwd
/home/noor/Desktop/Work/Reports/2025

(noor@CyberWinner)~/Desktop/Work/Reports/2025-
$
```

## Lab 5: Remove Empty Directories — rmdir

 **Purpose:** Delete empty directories

 **Syntax:** **rmdir** **[dirname]**

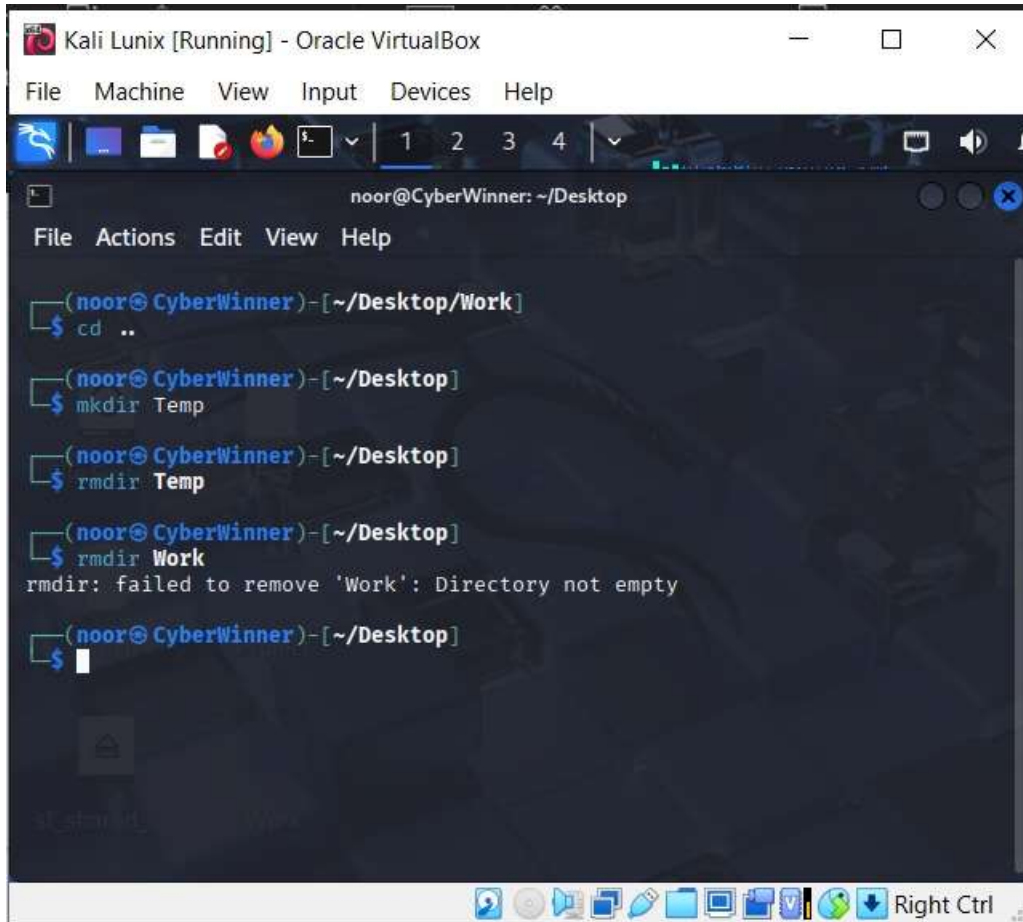
 **Example:** rmdir old\_folder

 **Expected Output:** Directory is deleted if it's empty.

 **Try These Exercises:**

1. Create a folder Temp and delete it using rmdir.
2. Try deleting a non-empty folder and observe the error.

 Insert Screenshot Here



```
Kali Linux [Running] - Oracle VirtualBox
File Machine View Input Devices Help

noor@CyberWinner: ~/Desktop
File Actions Edit View Help

(noor@CyberWinner) - [~/Desktop/Work]
$ cd ..

(noor@CyberWinner) - [~/Desktop]
$ mkdir Temp

(noor@CyberWinner) - [~/Desktop]
$ rmdir Temp

(noor@CyberWinner) - [~/Desktop]
$ rmdir Work
rmdir: failed to remove 'Work': Directory not empty

(noor@CyberWinner) - [~/Desktop]
$
```

## Lab 6: Create Files — touch

 **Purpose:** Make empty files


 **Syntax:** **touch [filename]**

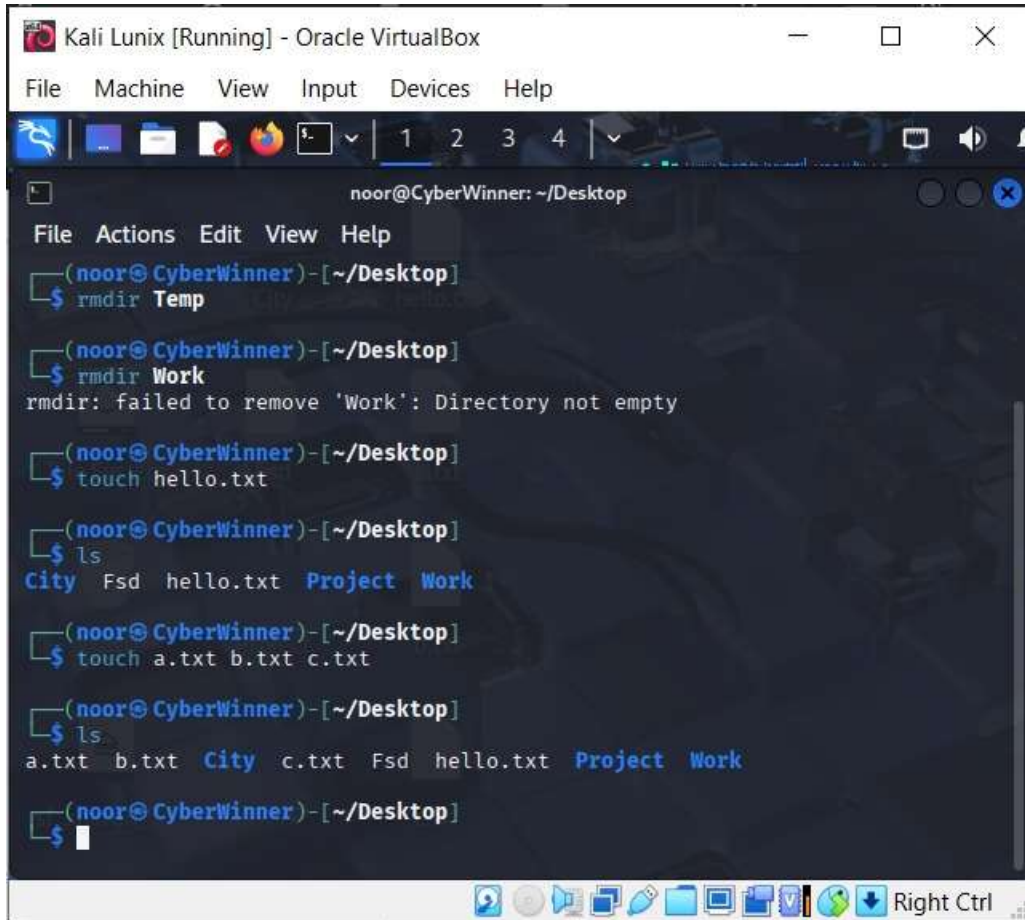
 **Example:** touch file.txt

 **Expected Output:** A new empty file is created.

### Try These Exercises:

1. Create a file named hello.txt.
2. Create multiple files at once: touch a.txt b.txt c.txt.

 Insert Screenshot Here



```
Kali Linux [Running] - Oracle VirtualBox
File Machine View Input Devices Help

noor@CyberWinner: ~/Desktop
File Actions Edit View Help
(noor@CyberWinner)-[~/Desktop]
$ rmdir Temp

(noor@CyberWinner)-[~/Desktop]
$ rmdir Work
rmdir: failed to remove 'Work': Directory not empty

(noor@CyberWinner)-[~/Desktop]
$ touch hello.txt

(noor@CyberWinner)-[~/Desktop]
$ ls
City Fsd hello.txt Project Work

(noor@CyberWinner)-[~/Desktop]
$ touch a.txt b.txt c.txt


(noor@CyberWinner)-[~/Desktop]
$ ls
a.txt b.txt City c.txt Fsd hello.txt Project Work


(noor@CyberWinner)-[~/Desktop]
$
```

## Lab 7: Remove Files/Dirs — rm

 **Purpose:** Delete files/directories


 **Syntax:** **rm [options] [target]**

 **Example:** **rm -rf folder**


 **Expected Output:** Folder and contents deleted.

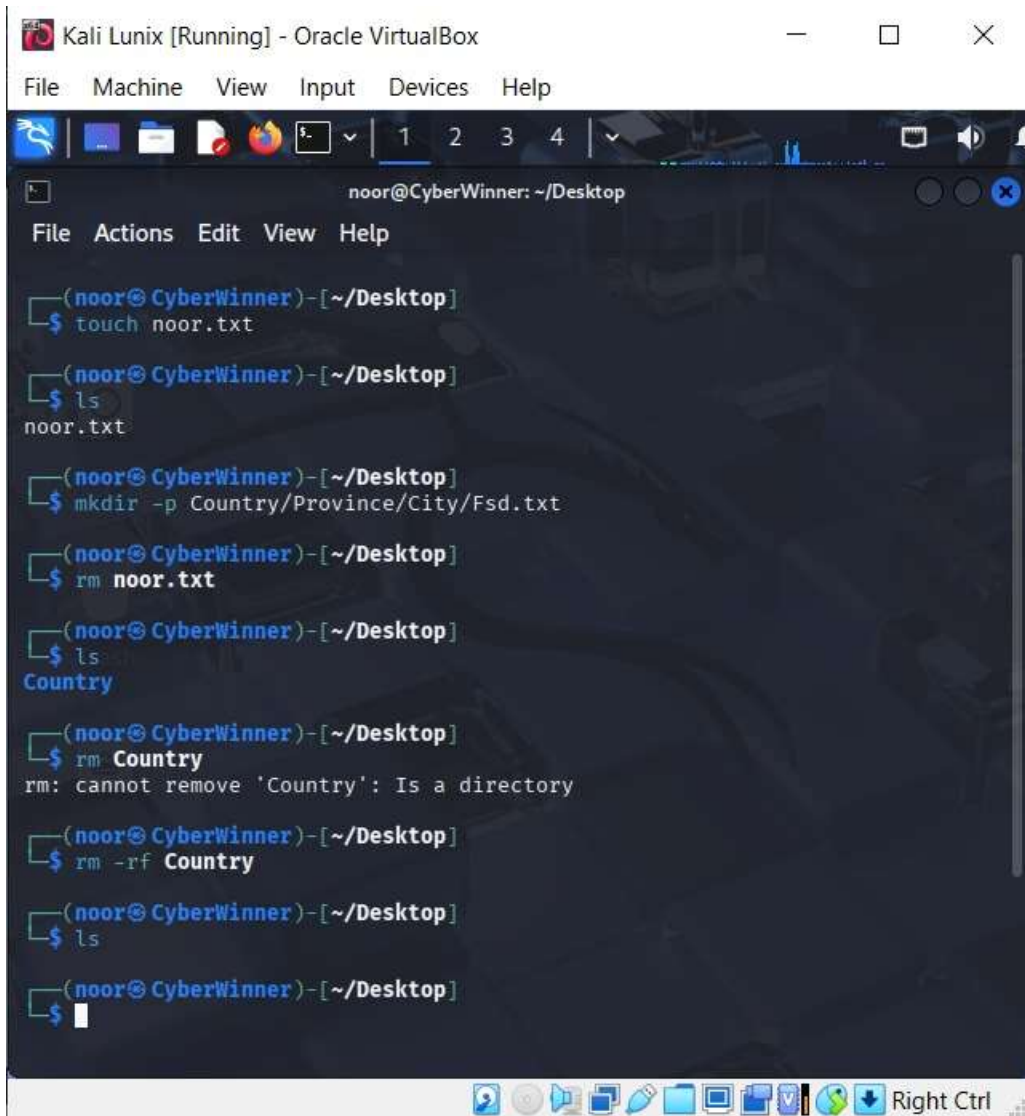
### Try These Exercises:

1. Create and delete a file.
2. Create a folder with files and delete it using rm -r.

 **Warning:** Use rm -rf carefully.



 Insert Screenshot Here



```
noor@CyberWinner: ~/Desktop
File Actions Edit View Help

(noor@CyberWinner)~[~/Desktop]
$ touch noor.txt

(noor@CyberWinner)~[~/Desktop]
$ ls
noor.txt

(noor@CyberWinner)~[~/Desktop]
$ mkdir -p Country/Province/City/Fsd.txt

(noor@CyberWinner)~[~/Desktop]
$ rm noor.txt

(noor@CyberWinner)~[~/Desktop]
$ ls
Country

(noor@CyberWinner)~[~/Desktop]
$ rm Country
rm: cannot remove 'Country': Is a directory


(noor@CyberWinner)~[~/Desktop]
$ rm -rf Country

(noor@CyberWinner)~[~/Desktop]
$ ls

(noor@CyberWinner)~[~/Desktop]
$
```

## Lab 8: Copy Files — cp

 **Purpose:** Copy files or folders

 **Syntax:** cp [source] [destination]

 **Example:** cp file.txt backup/

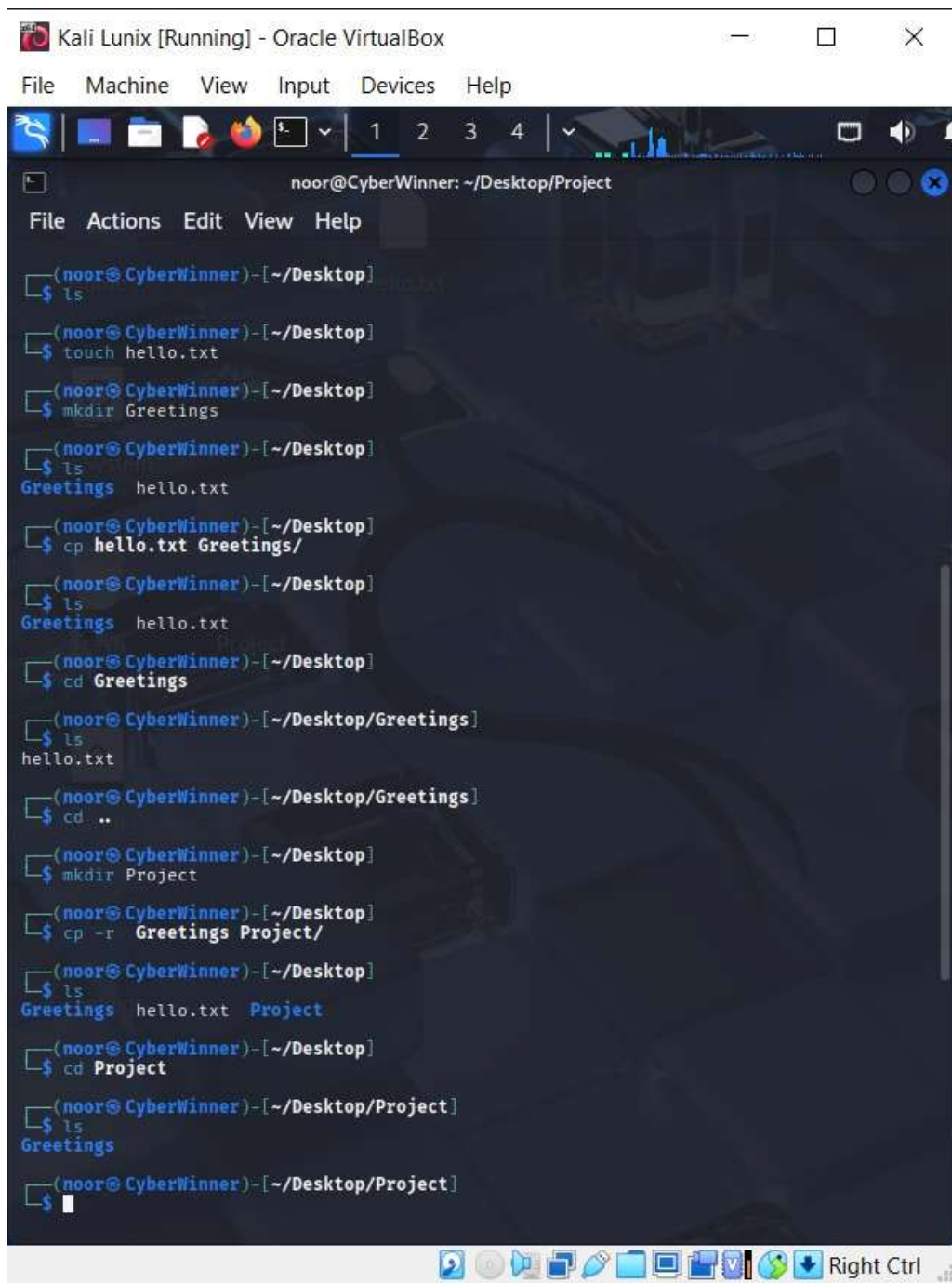
 **Expected Output:** File is copied.

### Try These Exercises:

1. Copy hello.txt to a new folder.
2. Use cp -r to copy a directory.

 Insert Screenshot Here





```
noor@CyberWinner: ~/Desktop/Project
File Actions Edit View Help

(noor@CyberWinner)-[~/Desktop]
$ ls

(noor@CyberWinner)-[~/Desktop]
$ touch hello.txt

(noor@CyberWinner)-[~/Desktop]
$ mkdir Greetings

(noor@CyberWinner)-[~/Desktop]
$ ls
Greetings hello.txt

(noor@CyberWinner)-[~/Desktop]
$ cp hello.txt Greetings/

(noor@CyberWinner)-[~/Desktop]
$ ls
Greetings hello.txt

(noor@CyberWinner)-[~/Desktop]
$ cd Greetings

(noor@CyberWinner)-[~/Desktop/Greetings]
$ ls
hello.txt

(noor@CyberWinner)-[~/Desktop/Greetings]
$ cd ..

(noor@CyberWinner)-[~/Desktop]
$ mkdir Project

(noor@CyberWinner)-[~/Desktop]
$ cp -r Greetings Project/

(noor@CyberWinner)-[~/Desktop]
$ ls
Greetings hello.txt Project


(noor@CyberWinner)-[~/Desktop]
$ cd Project

(noor@CyberWinner)-[~/Desktop/Project]
$ ls
Greetings

(noor@CyberWinner)-[~/Desktop/Project]
$
```

## Lab 9: Move or Rename — mv

 **Purpose:** Move or rename files

 **Syntax:** mv [source] [destination]

 **Example:** mv old.txt new.txt

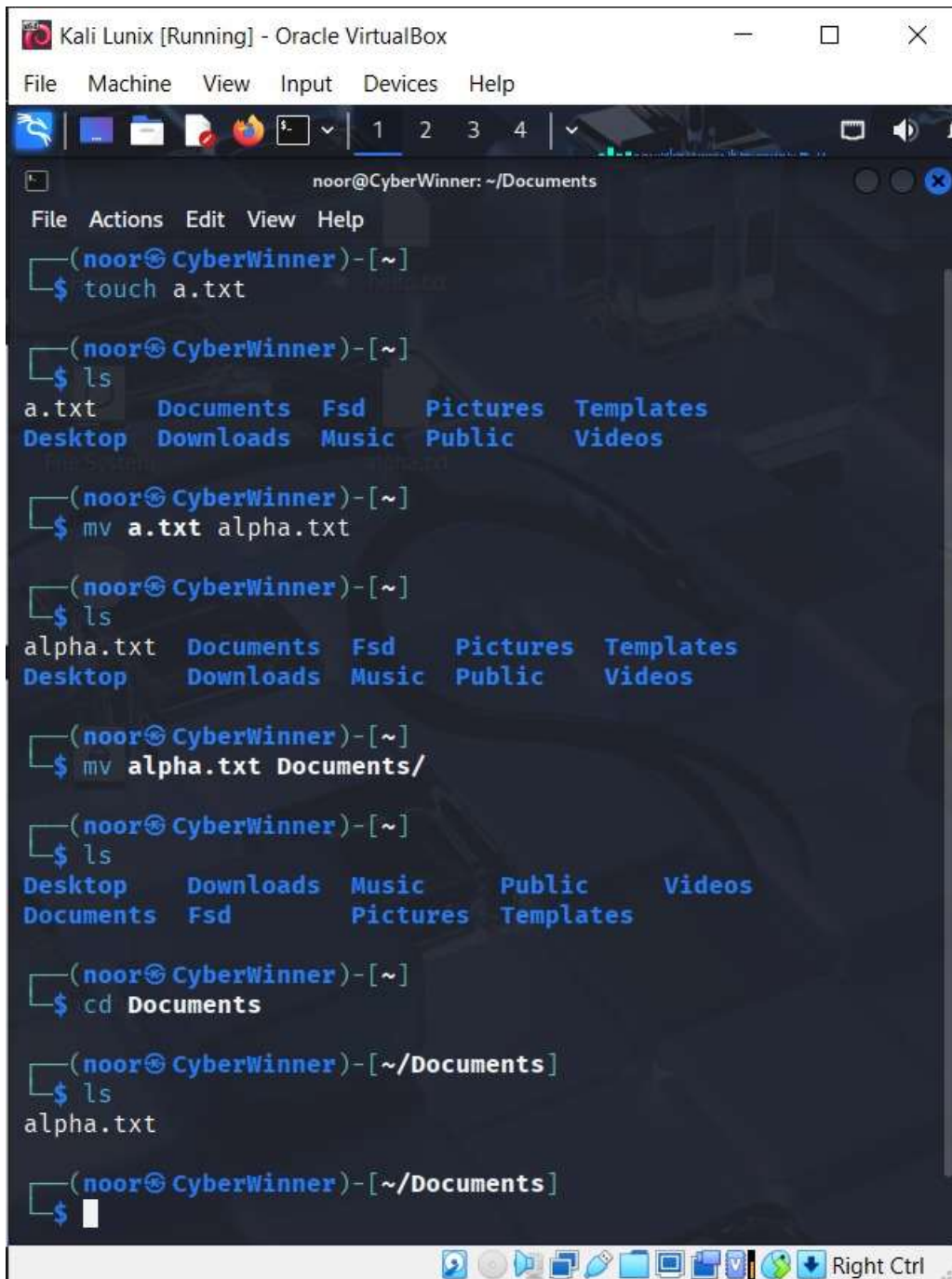
 **Expected Output:** File renamed or moved.

 **Try These Exercises:**

1. Rename a.txt to alpha.txt.

2. Move alpha.txt into Documents/.

 Insert Screenshot Here





```
Kali Linux [Running] - Oracle VirtualBox
File Machine View Input Devices Help


noor@CyberWinner: ~/Documents
File Actions Edit View Help
(noor@CyberWinner)-[~]
$ touch a.txt
(noor@CyberWinner)-[~]
$ ls
a.txt  Documents  Fsd  Pictures  Templates
Desktop Downloads Music  Public  Videos
(noor@CyberWinner)-[~]
$ mv a.txt alpha.txt
(noor@CyberWinner)-[~]
$ ls
alpha.txt  Documents  Fsd  Pictures  Templates
Desktop    Downloads  Music  Public  Videos
(noor@CyberWinner)-[~]
$ mv alpha.txt Documents/
(noor@CyberWinner)-[~]
$ ls
Desktop  Downloads  Music  Public  Videos
Documents Fsd       Pictures Templates
(noor@CyberWinner)-[~]
$ cd Documents
(noor@CyberWinner)-[~/Documents]
$ ls
alpha.txt
(noor@CyberWinner)-[~/Documents]
$
```

## Lab 10: File Information — stat

 **Purpose:** View metadata of file

 **Syntax:** stat [file]

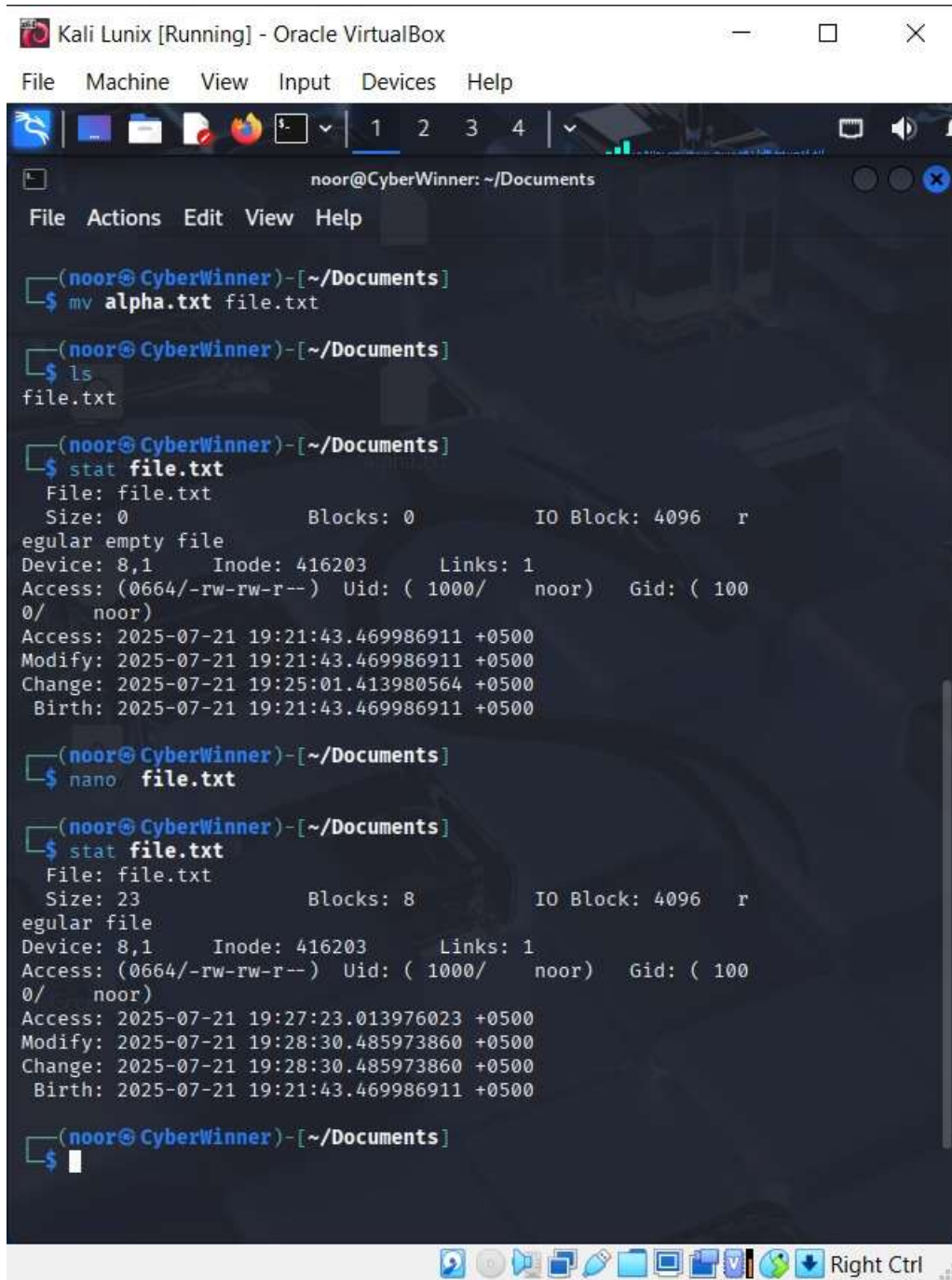
 **Example:** stat file.txt

 **Expected Output:** Shows size, permissions, modification time, etc.

## ✓ Try These Exercises:

1. Check the info of file.txt.
2. Observe size changes after editing the file.

📷 *Insert Screenshot Here*



```
(noor@CyberWinner)-[~/Documents]
$ mv alpha.txt file.txt

(noor@CyberWinner)-[~/Documents]
$ ls
file.txt

(noor@CyberWinner)-[~/Documents]
$ stat file.txt
File: file.txt
Size: 0          Blocks: 0          IO Block: 4096   r
egular empty file
Device: 8,1      Inode: 416203      Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1000/   noor)   Gid: ( 100
0/   noor)
Access: 2025-07-21 19:21:43.469986911 +0500
Modify: 2025-07-21 19:21:43.469986911 +0500
Change: 2025-07-21 19:25:01.413980564 +0500
Birth: 2025-07-21 19:21:43.469986911 +0500

(noor@CyberWinner)-[~/Documents]
$ nano file.txt

(noor@CyberWinner)-[~/Documents]
$ stat file.txt
File: file.txt
Size: 23         Blocks: 8          IO Block: 4096   r
egular file
Device: 8,1      Inode: 416203      Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1000/   noor)   Gid: ( 100
0/   noor)
Access: 2025-07-21 19:27:23.013976023 +0500
Modify: 2025-07-21 19:28:30.485973860 +0500
Change: 2025-07-21 19:28:30.485973860 +0500
Birth: 2025-07-21 19:21:43.469986911 +0500

(noor@CyberWinner)-[~/Documents]
$
```

## 📖 Lab 11: Identify File Type — file

🔑 **Purpose:** Determine file type

📝 **Syntax:** *file [filename]*

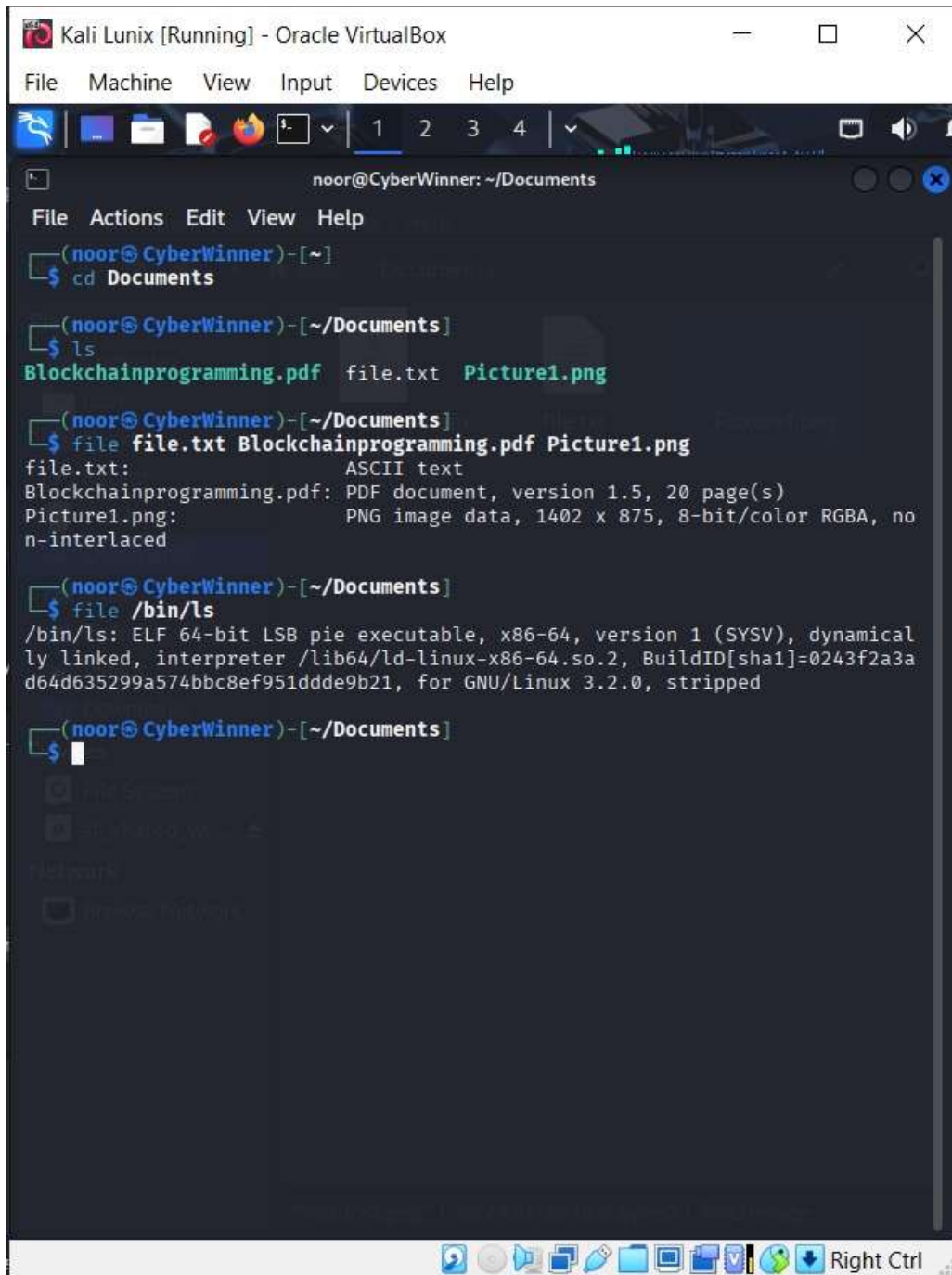
🔍 Example: **file script.sh**

📁 Expected Output: Shows if it's ASCII, script, image, etc.

✅ Try These Exercises:

1. Run file on text, PDF, and image files.
2. Use file on a binary executable.

🖼️ Insert Screenshot Here



```
Kali Linux [Running] - Oracle VirtualBox
File Machine View Input Devices Help

noor@CyberWinner: ~/Documents
File Actions Edit View Help
(noor@CyberWinner)~[~]
$ cd Documents

(noor@CyberWinner)~[/Documents]
$ ls
Blockchainprogramming.pdf  file.txt  Picture1.png

(noor@CyberWinner)~[/Documents]
$ file file.txt Blockchainprogramming.pdf Picture1.png
file.txt:          ASCII text
Blockchainprogramming.pdf: PDF document, version 1.5, 20 page(s)
Picture1.png:      PNG image data, 1402 x 875, 8-bit/color RGBA, no
n-interlaced

(noor@CyberWinner)~[/Documents]
$ file /bin/ls
/bin/ls: ELF 64-bit LSB pie executable, x86-64, version 1 (SYSV), dynamical
ly linked, interpreter /lib64/ld-linux-x86-64.so.2, BuildID[sha1]=0243f2a3a
d64d635299a574bbc8ef951ddde9b21, for GNU/Linux 3.2.0, stripped

(noor@CyberWinner)~[/Documents]
$
```

## 📁 Lab 12: Get Filename Only — basename

🔑 **Purpose:** Extract file name from path

📋 **Syntax:** basename **[path]**

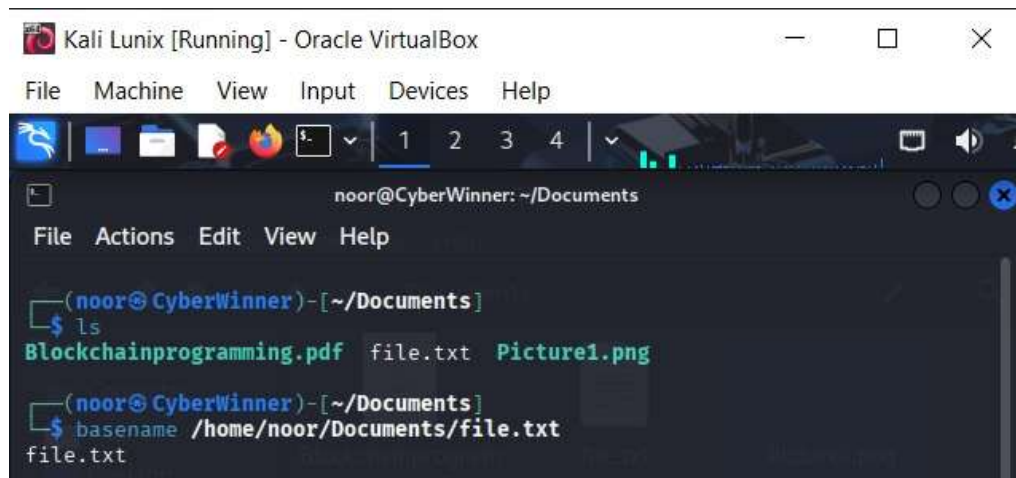
🔍 **Example:** basename /home/user/file.txt

📤 **Expected Output:** file.txt

### ✅ Try These Exercises:

1. Extract basename of various paths.

📷 *Insert Screenshot Here*



The screenshot shows a Kali Linux terminal window titled "Kali Linux [Running] - Oracle VirtualBox". The terminal is running a series of commands in the directory ~/Documents. First, the user runs 'ls', which lists the files: Blockchainprogramming.pdf, file.txt, and Picture1.png. Then, the user runs 'basename /home/noor/Documents/file.txt', which outputs 'file.txt'.

```
Kali Linux [Running] - Oracle VirtualBox
File Machine View Input Devices Help

noor@CyberWinner: ~/Documents
File Actions Edit View Help

(noor@CyberWinner)-[~/Documents]
$ ls
Blockchainprogramming.pdf  file.txt  Picture1.png

(noor@CyberWinner)-[~/Documents]
$ basename /home/noor/Documents/file.txt
file.txt
```

---

## 📁 Lab 13: Get Directory Name — dirname

🔑 **Purpose:** Extract directory path

📋 **Syntax:** dirname **[path]**

🔍 **Example:** dirname /home/user/file.txt

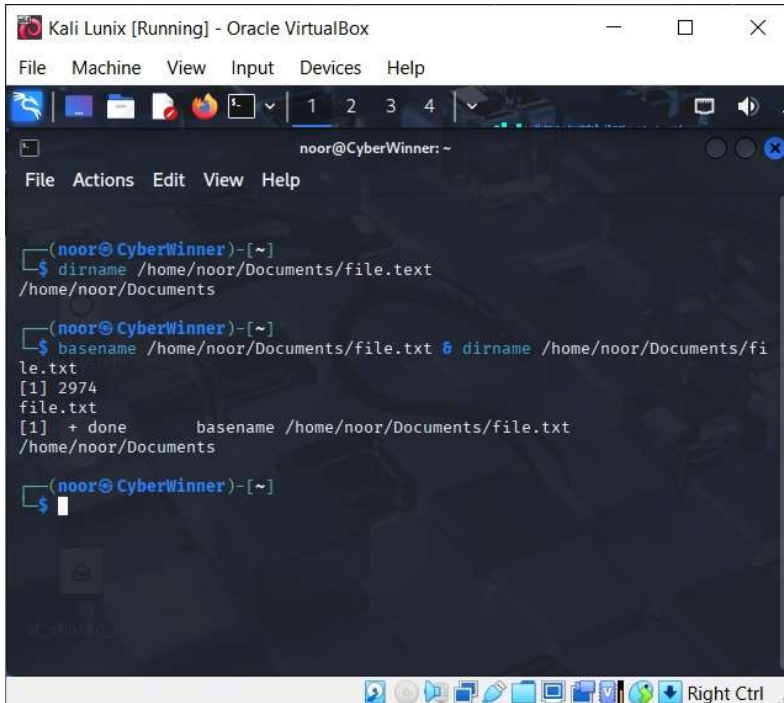
📤 **Expected Output:** /home/user

### ✅ Try These Exercises:

1. Use dirname on absolute paths.
2. Combine dirname and basename in one command.



 *Insert Screenshot Here*



```
noor@CyberWinner: ~  
File Actions Edit View Help  
  
(noor@CyberWinner)-[~]  
$ dirname /home/noor/Documents/file.txt  
/home/noor/Documents  
  
(noor@CyberWinner)-[~]  
$ basename /home/noor/Documents/file.txt & dirname /home/noor/Documents/file.txt  
[1] 2974  
file.txt  
[1] + done      basename /home/noor/Documents/file.txt  
/home/noor/Documents  
  
(noor@CyberWinner)-[~]  
$
```

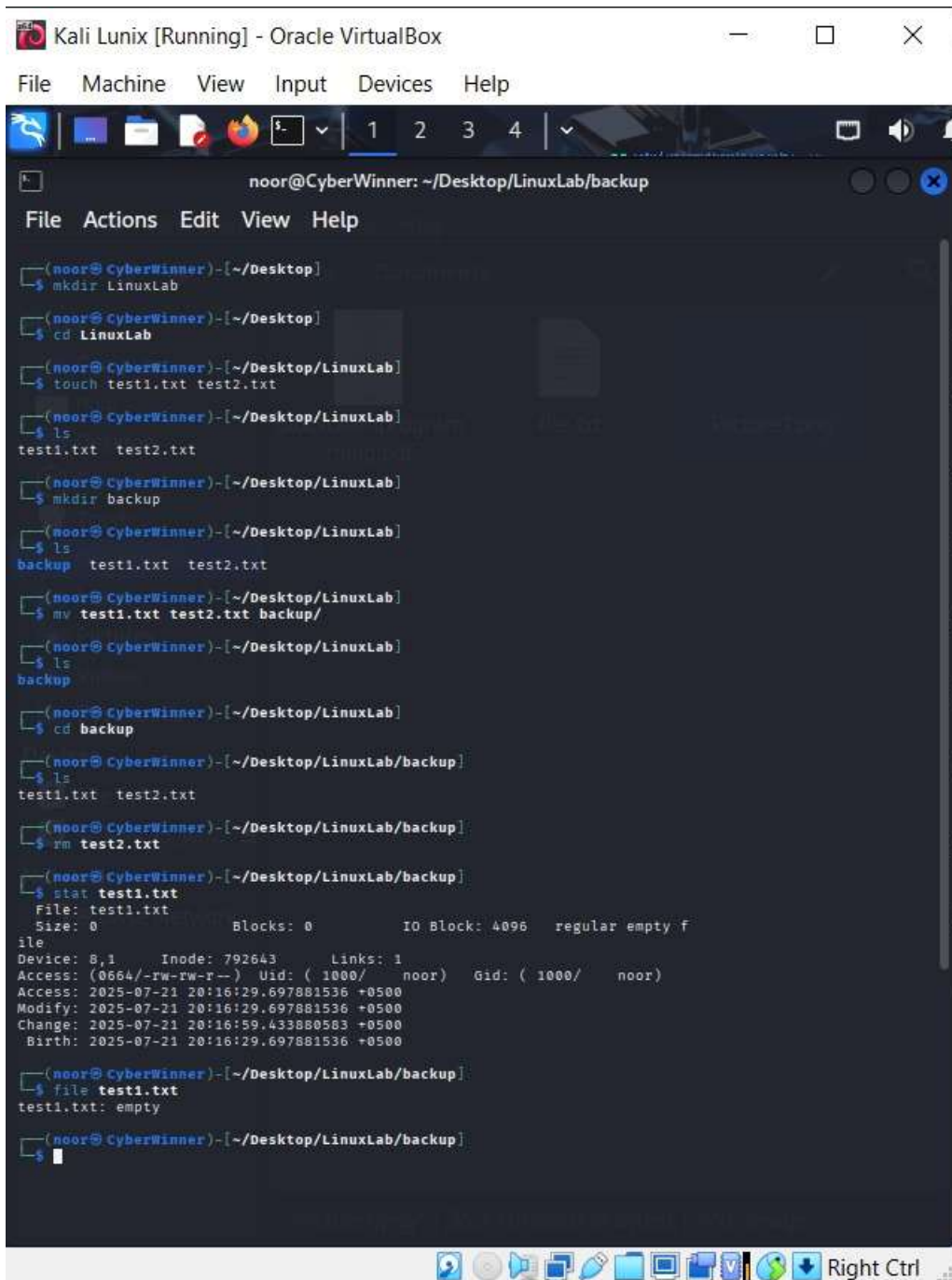
---

## Final Task: Real-World Scenario Practice

Perform these tasks as a complete practice:

1. Create a directory LinuxLab and enter it.
2. Create files test1.txt, test2.txt.
3. Copy them to backup/.
4. Rename test1.txt to report.txt.
5. Delete test2.txt.
6. View file details using stat and type using file.





```
noor@CyberWinner: ~/Desktop/LinuxLab/backup
File Actions Edit View Help

(noor@CyberWinner)~[~/Desktop]
$ mkdir LinuxLab

(noor@CyberWinner)~[~/Desktop]
$ cd LinuxLab

(noor@CyberWinner)~[~/Desktop/LinuxLab]
$ touch test1.txt test2.txt

(noor@CyberWinner)~[~/Desktop/LinuxLab]
$ ls
test1.txt test2.txt

(noor@CyberWinner)~[~/Desktop/LinuxLab]
$ mkdir backup

(noor@CyberWinner)~[~/Desktop/LinuxLab]
$ ls
backup test1.txt test2.txt

(noor@CyberWinner)~[~/Desktop/LinuxLab]
$ mv test1.txt test2.txt backup/

(noor@CyberWinner)~[~/Desktop/LinuxLab]
$ ls
backup

(noor@CyberWinner)~[~/Desktop/LinuxLab]
$ cd backup

(noor@CyberWinner)~[~/Desktop/LinuxLab/backup]
$ ls
test1.txt test2.txt

(noor@CyberWinner)~[~/Desktop/LinuxLab/backup]
$ rm test2.txt

(noor@CyberWinner)~[~/Desktop/LinuxLab/backup]
$ stat test1.txt
File: test1.txt
Size: 0          Blocks: 0          IO Block: 4096   regular empty f
ile
Device: 8,1    Inode: 792643    Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1000/   noor)   Gid: ( 1000/   noor)
Access: 2025-07-21 20:16:29.697881536 +0500
Modify: 2025-07-21 20:16:29.697881536 +0500
Change: 2025-07-21 20:16:59.433880583 +0500
 Birth: 2025-07-21 20:16:29.697881536 +0500

(noor@CyberWinner)~[~/Desktop/LinuxLab/backup]
$ file test1.txt
test1.txt: empty

(noor@CyberWinner)~[~/Desktop/LinuxLab/backup]
$
```

## Notes:

- Always double-check before using `rm -rf`.
- Practice using absolute (`/home/user`) and relative (`../folder`) paths.
- These basics are foundational for advanced Linux and scripting tasks.