ASSESSMENT-1

Title: Linux Command List Assessment

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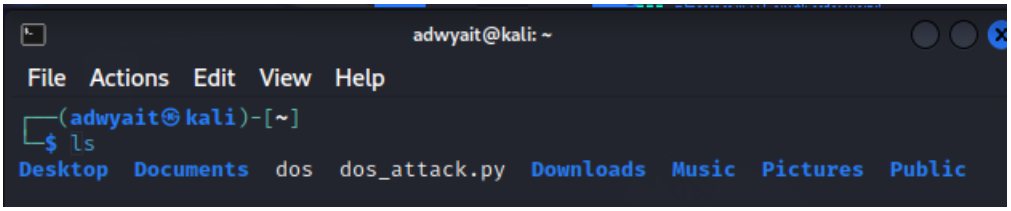
File and Directory Operations:

Task 1: To list files and directories

Command: **ls**



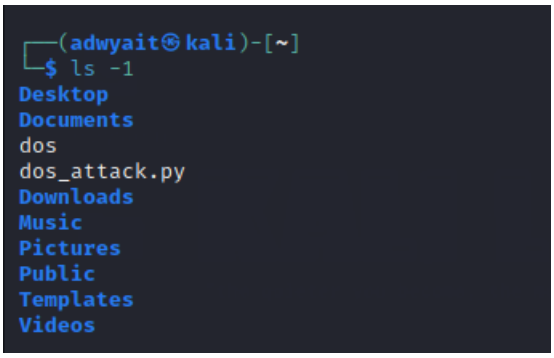
Here the files and directories present in the current directory are listed. For ex- dos_attack.py file is present.

Syntax: **ls [options] [path]**

Options:

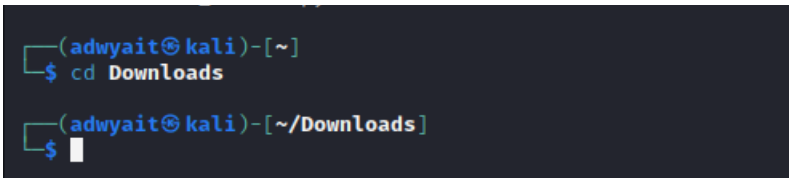
- **-l**: Long listing format, displaying additional information such as permissions, owner, size, and modification time.
- **-a**: Include hidden files and directories starting with a dot (.)
- **-R**: Recursively list files and directories in subdirectories.
- **-t**: Sort files by modification time, with the newest files first.
- **-r**: Reverse the order of the listing.
- **-h**: Print sizes in human-readable format.

Example: **ls –l**



Task 2: Change the current directory to a specified directory.

Command: **cd <directory_path>**



Using cd cmd we can change the directory like in the screenshot above it is clearly visible that the current directory is changed to Downloads.

Task 3: Print the absolute path of the current working directory.

Command: **pwd**

```
┌──(adwyait㉿kali)-[~]
└─$ pwd
/home/adwyait
```

The output is /home/adwyait as the current working directory is adwyait.

Task 4: Create a new directory with a specified name.

Command: **mkdir <directory_name>**

```
┌──(adwyait㉿kali)-[~]
└─$ mkdir cybersec

┌──(adwyait㉿kali)-[~]
└─$ ls -1
cybersec
Desktop
Documents
dos
dos_attack.py
Downloads
Music
Pictures
Public
Templates
titu
Videos
```

The new directory (named cybersec) is created using mkdir cmd.

Task 5: Create an empty file with a specified name.

Command: **touch <file_name>**

```
┌──(adwyait㉿kali)-[~]
└─$ touch sec

┌──(adwyait㉿kali)-[~]
└─$ ls
cybersec  Documents  dos_attack.py  Music     Public  Templates  Videos
Desktop   dos        Downloads      Pictures  sec     titu
```

An empty file named sec is created using touch cmd in the current directory.

Task 6: Copy a file from one location to another.

Command: **cp <source_file> <destination_directory>**

```
┌──(adwyait㉿kali)-[~]
└─$ cd cybersec

┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls
```

At the beginning file named dos was not present in the directory cybersec.

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ cd ~

┌──(adwyait㉿kali)-[~]
└─$ cp dos cybersec

┌──(adwyait㉿kali)-[~]
└─$ cd cybersec

┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls
dos
```

After using the cmd cp the dos file was copied from the 'adwyait' directory to 'cybersec' directory.

Task 7: Move or rename a file or directory.

Command: **mv <file_name>**

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls
dos

┌──(adwyait㉿kali)-[~/cybersec]
└─$ mv dos dos_new

┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls
dos_new
```

The dos file name is changed to dos_new.

Task 8: Remove a file or directory.

Command: **rm <file_name/directory _name>**

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls
dos_new

┌──(adwyait㉿kali)-[~/cybersec]
└─$ rm dos_new

┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls
```

The file dos_new was removed from the cybersec directory.

Task 9: Search for a file or a directory.

Syntax: **find [path] [expression]**

Example: **find /home/adwyait -name "dos"**

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ find /home/adwyait -name "dos"
/home/adwyait/dos
```

The output is the path of the dos file.

File Viewing and Editing:

Task 10: Concatenate and display the file content.

Command: **cat dos_attack.py**

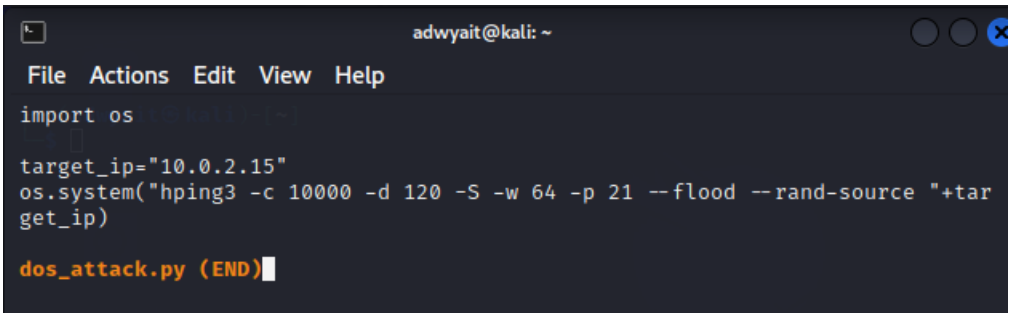
```
┌──(adwyait㉿kali)-[~]
└─$ cat dos_attack.py
import os

target_ip="10.0.2.15"
os.system("hping3 -c 10000 -d 120 -S -w 64 -p 21 --flood -
get_ip)
```

The content of the dos_attack.py file can be seen in the screenshot above.

Task 11: View the content of a file with pagination.

Command: **less dos_attack.py**



To view the content of file with pagination using less command.

Task 12: Display the beginning of the file.

Command: **head dos_attack.py**

```
┌──(adwyait㉿kali)-[~]
└─$ head dos_attack.py
import os

target_ip="10.0.2.15"
os.system("hping3 -c 10000 -d 120 -S -w 64 -p 21 --flood --rand-source "+tar
get_ip)
```

The **head** command is used to display the beginning lines of a doa_attack.py file.

Task 13: Display the end of the file.

Command: **tail dos_attack.py**

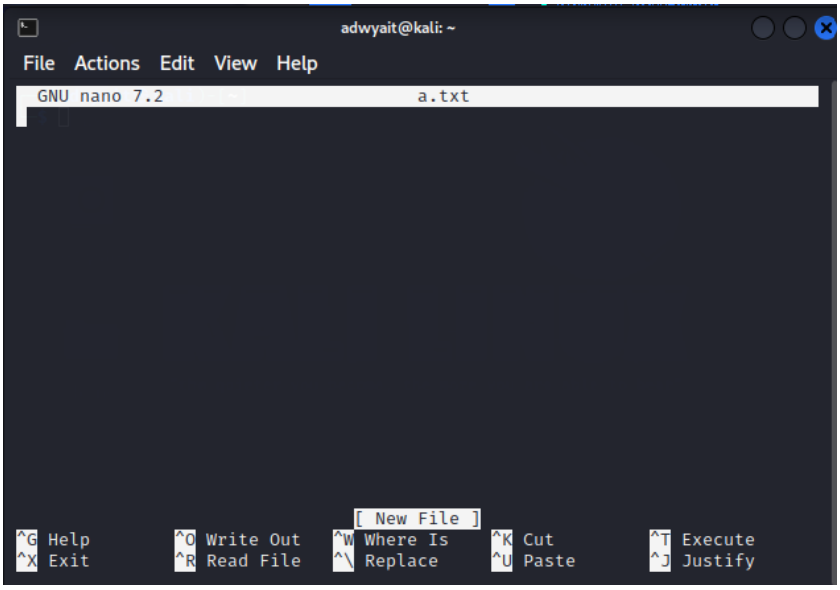
```
┌──(adwyait㉿kali)-[~]
└─$ tail  dos_attack.py
import os

target_ip="10.0.2.15"
os.system("hping3 -c 10000 -d 120 -S -w 64 -p 21 --flood --rand-source "+tar
get_ip)
```

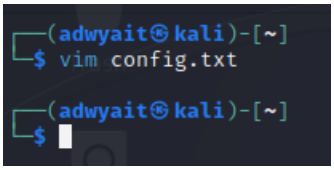
The **tail** command is used to display the end lines of a doa_attack.py file.

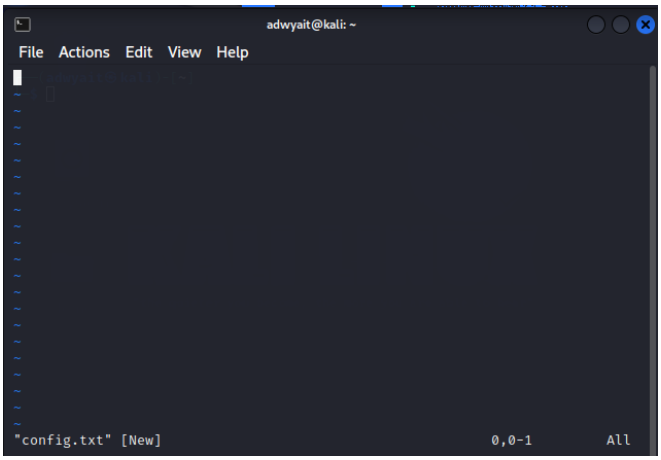
Task 14: Text editor for creating or editing files.
Command: nano a.txt

Interface to write the content in the file.



Task 15: Create or edit a file using the vi/vim text editor.
Command: vim/vi config.txt



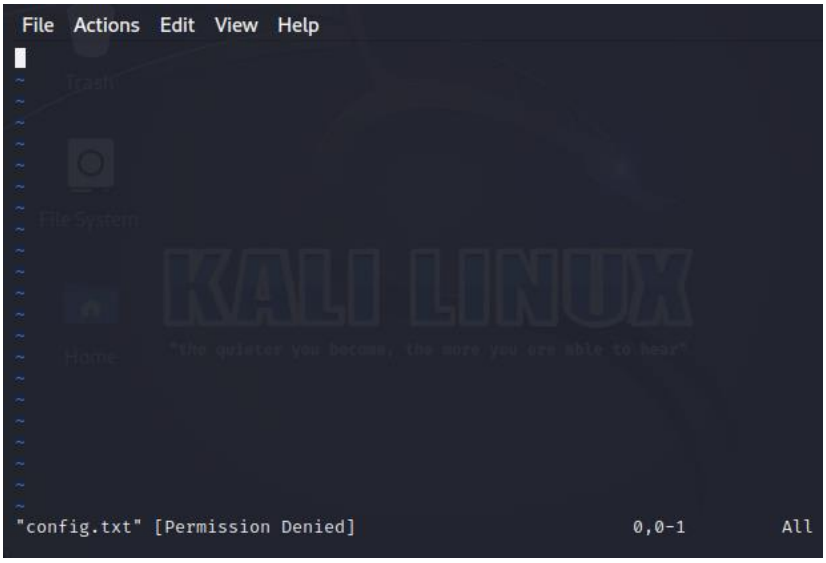


File Permissions:

Task 16: Change file permissions.

To change the permissions of a file named "config.txt" to read and execute for the owner.
Command: **chmod u+rx config.txt**

```
┌──(adwyait㉿kali)-[~]
└─$ chmod u-r config.txt
```



The command above was used to deny the read permission so the above screenshot shows permission denied.

Task 17: Change the owner of a file.

```
┌──(adwyait㉿kali)-[~]
└─$ ls -la
total 184
drwx------ 17 adwyait adwyait  4096 May 22 13:12 .
drwxr-xr-x  3 root    root     4096 May 22 11:49 ..
-rw-r--r--  1 adwyait adwyait   220 Apr  2 14:58 .bash_logout
-rw-r--r--  1 adwyait adwyait  5551 Apr  2 14:58 .bashrc
-rw-r--r--  1 adwyait adwyait  3526 Apr  2 14:58 .bashrc.original
drwxr-xr-x  6 adwyait adwyait  4096 May 22 11:37 .cache
```

Command: **chown root config.txt**

```
┌──(adwyait㉿kali)-[~]
└─$ sudo chown root config.txt
```

```
┌──(adwyait㉿kali)-[~]
└─$ ls -la
total 184
drwx------ 17 adwyait adwyait  4096 May 22 13:12 .
drwxr-xr-x  3 root    root     4096 May 22 11:49 ..
-rw-r--r--  1 adwyait adwyait   220 Apr  2 14:58 .bash_logout
-rw-r--r--  1 adwyait adwyait  5551 Apr  2 14:58 .bashrc
-rw-r--r--  1 adwyait adwyait  3526 Apr  2 14:58 .bashrc.original
drwxr-xr-x  6 adwyait adwyait  4096 May 22 11:37 .cache
drwxr-xr-x 12 adwyait adwyait  4096 Apr  2 20:43 .config
--wxr--r--  1 root    adwyait     0 May 22 13:08 config.txt
```

The owner of the file config.txt is changed to the root previously the owner was adwyait.

Task 18: Change the group of a file.

Command: c**hgrp root config.txt**

```
┌──(adwyait㉿kali)-[~]
└─$ sudo chgrp root config.txt
```

```
┌──(adwyait㉿kali)-[~]
└─$ ls -la
total 184
drwx------ 17 adwyait adwyait  4096 May 22 13:12 .
drwxr-xr-x  3 root    root     4096 May 22 11:49 ..
-rw-r--r--  1 adwyait adwyait   220 Apr  2 14:58 .bash_logout
-rw-r--r--  1 adwyait adwyait  5551 Apr  2 14:58 .bashrc
-rw-r--r--  1 adwyait adwyait  3526 Apr  2 14:58 .bashrc.original
drwxr-xr-x  6 adwyait adwyait  4096 May 22 11:37 .cache
drwxr-xr-x 12 adwyait adwyait  4096 Apr  2 20:43 .config
--wxr--r--  1 root    root        0 May 22 13:08 config.txt
```

The group of the file config.txt is changed to the root previously the owner was adwyait.

File Compression and Archiving:

Task 19: Archive a directory.

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls -la
total 12
drwxr-xr-x  3 adwyait adwyait 4096 May 22 13:26 .
drwx------ 17 adwyait adwyait 4096 May 22 13:12 ..
-rw-r--r--  1 adwyait adwyait    0 May 22 13:25 file.txt
drwxr-xr-x  2 adwyait adwyait 4096 May 22 13:26 ssecurity
```

To archive a directory named "security".

Command: **tar –cvf archive.tar file.txt security**

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ tar -cvf archive.tar file.txt ssecurity
file.txt
ssecurity/
```

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls -la
total 24
drwxr-xr-x  3 adwyait adwyait  4096 May 22 13:27 .
drwx------ 17 adwyait adwyait  4096 May 22 13:12 ..
-rw-r--r--  1 adwyait adwyait 10240 May 22 13:27 archive.tar
-rw-r--r--  1 adwyait adwyait     0 May 22 13:25 file.txt
drwxr-xr-x  2 adwyait adwyait  4096 May 22 13:26 ssecurity
```

Task 20: Compress a file named "file.txt" using gzip.

Command: **gzip file.txt**

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls -la
total 24
drwxr-xr-x  3 adwyait adwyait  4096 May 22 13:27 .
drwx------ 17 adwyait adwyait  4096 May 22 13:12 ..
-rw-r--r--  1 adwyait adwyait 10240 May 22 13:27 archive.tar
-rw-r--r--  1 adwyait adwyait     0 May 22 13:25 file.txt
drwxr-xr-x  2 adwyait adwyait  4096 May 22 13:26 ssecurity

┌──(adwyait㉿kali)-[~/cybersec]
└─$ gzip file.txt

┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls -la
total 28
drwxr-xr-x  3 adwyait adwyait  4096 May 22 13:29 .
drwx------ 17 adwyait adwyait  4096 May 22 13:12 ..
-rw-r--r--  1 adwyait adwyait 10240 May 22 13:27 archive.tar
-rw-r--r--  1 adwyait adwyait    29 May 22 13:25 file.txt.gz
drwxr-xr-x  2 adwyait adwyait  4096 May 22 13:26 ssecurity
```

Task 21: Extract files from a ZIP archive named "archive.zip".

Command: unzip newzip.zip

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls -la
total 32
drwxr-xr-x  3 adwyait adwyait  4096 May 22 13:41 .
drwx------ 18 adwyait adwyait  4096 May 22 13:40 ..
-rw-r--r--  1 adwyait adwyait 10240 May 22 13:27 archive.tar
-rw-r--r--  1 adwyait adwyait    29 May 22 13:25 file.txt.gz
-rw-r--r--  1 adwyait adwyait   564 May 22 13:41 newzip.zip
drwxr-xr-x  2 adwyait adwyait  4096 May 22 13:26 ssecurity

┌──(adwyait㉿kali)-[~/cybersec]
└─$ unzip newzip.zip
Archive:  newzip.zip
 extracting: dos
  inflating: dos_attack.py
 extracting: config.txt
```

Files where extracted from the compressed newzip file,

```
┌──(adwyait㉿kali)-[~/cybersec]
└─$ ls -la
total 36
drwxr-xr-x  3 adwyait adwyait  4096 May 22 13:42 .
drwx------ 18 adwyait adwyait  4096 May 22 13:40 ..
-rw-r--r--  1 adwyait adwyait 10240 May 22 13:27 archive.tar
--wxr--r--  1 adwyait adwyait     0 May 22 13:08 config.txt
-rw-r--r--  1 adwyait adwyait     0 Apr  2 20:48 dos
-rw-r--r--  1 adwyait adwyait   118 Apr  2 21:26 dos_attack.py
-rw-r--r--  1 adwyait adwyait    29 May 22 13:25 file.txt.gz
-rw-r--r--  1 adwyait adwyait   564 May 22 13:41 newzip.zip
drwxr-xr-x  2 adwyait adwyait  4096 May 22 13:26 ssecurity
```

Process Management:

Task 22: List all running processes.

Command: **ps**

```
┌──(adwyait㉿kali)-[~]
└─$ ps
    PID TTY          TIME CMD
  62497 pts/1    00:00:02 zsh
  66492 pts/1    00:00:00 ps
```

2 processes with ids 62497, 66492 were found to be running.

Task 23: To display real-time system information and processes.

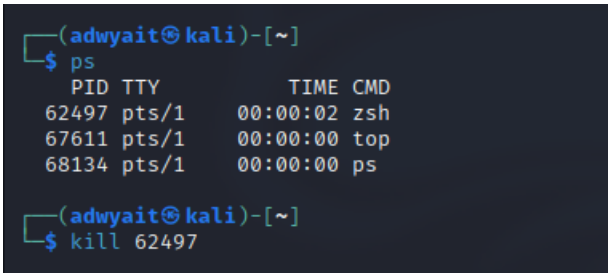
Command: **top**

```
└─$ top
top - 13:50:32 up  2:10,  1 user,  load average: 0.46, 0.18, 0.12
Tasks: 193 total,   1 running, 192 sleeping,   0 stopped,   0 zombie
%Cpu(s):  2.6 us,  1.9 sy,  0.0 ni, 91.3 id,  4.0 wa,  0.0 hi,  0.2 si,  0.0 st
MiB Mem :    965.5 total,     67.8 free,    919.7 used,    193.5 buff/cache
MiB Swap:    975.0 total,    433.5 free,    541.5 used.     45.8 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
   8144 root      20   0  589736 197988  92316 S   6.9  20.0   1:26.88 Xorg
  62486 adwyait   20   0  445600  21400  15328 S   3.3   2.2   0:01.60 qterminal
   8403 adwyait   20   0 1235788  13848   4964 S   1.3   1.4   0:49.11 xfwm4
   8341 adwyait   20   0  217956    252    252 S   1.0   0.0   1:13.96 VBoxClient
   8463 adwyait   20   0  210144  16820   4096 S   0.7   1.7   0:32.68 panel-13-cpugra
   8465 adwyait   20   0  350336  10064   4876 S   0.7   1.0   0:24.41 panel-15-genmon
  67611 adwyait   20   0   11624   3192   1056 R   0.7   0.3   0:00.10 top
     15 root      20   0       0      0      0 I   0.3   0.0   0:07.70 rcu_preempt
     43 root      20   0       0      0      0 S   0.3   0.0   0:01.28 kcompactd0
     53 root       0 -20       0      0      0 I   0.3   0.0   0:00.14 kworker/2:1H-kblockd
    497 message+  20   0   10556   2616   1340 S   0.3   0.3   0:02.78 dbus-daemon
    548 root      20   0  292888     76      0 S   0.3   0.0   0:04.06 VBoxService
   8353 adwyait   20   0    7908      8      0 S   0.3   0.0   0:00.17 ssh-agent
  57828 adwyait   20   0 3646316 347628 112396 S   0.3  35.2   0:40.66 firefox-esr
  59383 root      20   0       0      0      0 I   0.3   0.0   0:00.21 kworker/2:0-events
```

Task 24: Terminate a process using kill cmd.

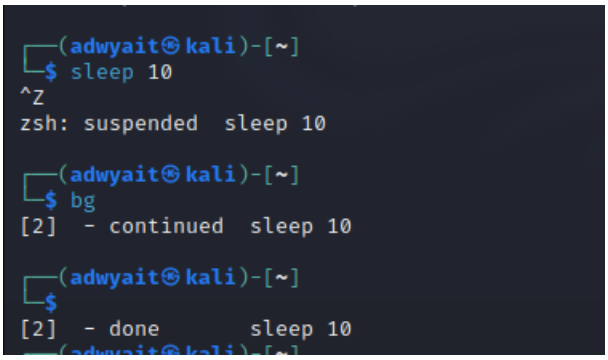
Command: **kill <pid>**



The process with id 62497 was killed.

Task 25: Run a process in the background.

Command: **bg**



At first started a process sleep 10 in the foreground. Pressed Ctrl + Z to suspend the process. Used the bg command to run the suspended process in the background.

Task 26: Bring a background process to the foreground.

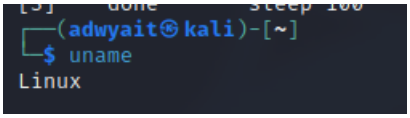
Command: **fg**

At first started a process sleep 100 in the bg. Then used fg to bring the process in foreground.

System Information:

Task 27: Print system information.

Command: **uname**



Task 28: Display disk space usage.

Command: **df**

```
┌──(adwyait㉿kali)-[~]
└─$ df
Filesystem     1K-blocks     Used Available Use% Mounted on
udev              453764        0    453764   0% /dev
tmpfs              98868     1044     97824   2% /run
/dev/sda1       24640544 12823080  10540436  55% /
tmpfs             494320        0    494320   0% /dev/shm
tmpfs               5120        0      5120   0% /run/lock
tmpfs              98864       72     98792   1% /run/user/0
tmpfs              98864       76     98788   1% /run/user/1000
```

Task 29: Display memory usage.

Command: **free**

```
┌──(adwyait㉿kali)-[~]
└─$ free
               total        used        free      shared  buff/cache   available
Mem:          988644      918484       72836       96848      233624       70160
Swap:         998396      584888      413508
```

Task 30: Show system uptime.

Command: **uptime**

```
┌──(adwyait㉿kali)-[~]
└─$ uptime
 14:03:37 up  2:23,  1 user,  load average: 0.36, 0.23, 0.14
```

Task 31: Display logged-in users.

Command: **who**

```
┌──(adwyait㉿kali)-[~]
└─$ who
adwyait  tty7         2023-05-22 11:51 (:0)
```

Task 32: Display logged-in users and their activities.

Command: **w**

```
┌──(adwyait㉿kali)-[~]
└─$ w
 14:03:45 up  2:23,  1 user,  load average: 0.31, 0.22, 0.14
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
adwyait  tty7     :0               11:51    2:23m  1:42   1.92s xfce4-session
```

Networking:

Task 33: Configure network interfaces.

Command: **ifconfig**

```
┌──(adwyait㉿kali)-[~]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.4  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fe80::a00:27ff:fe55:24f  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:55:02:4f  txqueuelen 1000  (Ethernet)
        RX packets 63  bytes 20210 (19.7 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 81  bytes 13220 (12.9 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 856  bytes 71136 (69.4 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 856  bytes 71136 (69.4 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Here the ipv4 address is 127.0.0.1.

Task 34: Send ICMP echo requests to a network host.

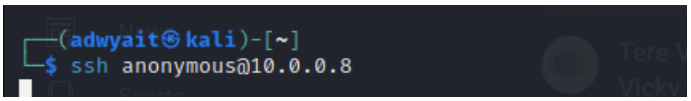
Command: **ping www.google.com**

```
┌──(adwyait㉿kali)-[~]
└─$ ping google.com
PING google.com (142.251.42.110) 56(84) bytes of data.
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=1 ttl=110 time=45.6 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=2 ttl=110 time=44.5 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=3 ttl=110 time=43.3 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=4 ttl=110 time=43.3 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=5 ttl=110 time=44.6 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=6 ttl=110 time=43.9 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=7 ttl=110 time=63.4 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=8 ttl=110 time=42.2 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=9 ttl=110 time=43.8 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=10 ttl=110 time=43.8 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=11 ttl=110 time=42.7 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=12 ttl=110 time=42.6 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=13 ttl=110 time=45.3 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=14 ttl=110 time=43.0 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=15 ttl=110 time=44.8 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=16 ttl=110 time=98.0 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=17 ttl=110 time=81.3 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=18 ttl=110 time=44.9 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=19 ttl=110 time=42.7 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=20 ttl=110 time=42.2 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=21 ttl=110 time=44.1 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=22 ttl=110 time=44.3 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=23 ttl=110 time=44.4 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=24 ttl=110 time=45.0 ms
64 bytes from bom07s45-in-f14.1e100.net (142.251.42.110): icmp_seq=25 ttl=110 time=42.5 ms
```

Ping to google.com was successful.

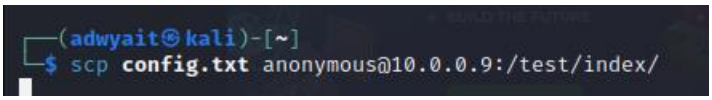
Task 35: Securely connect to a remote system with SSH.

Command: **ssh <username@remote_ip>**



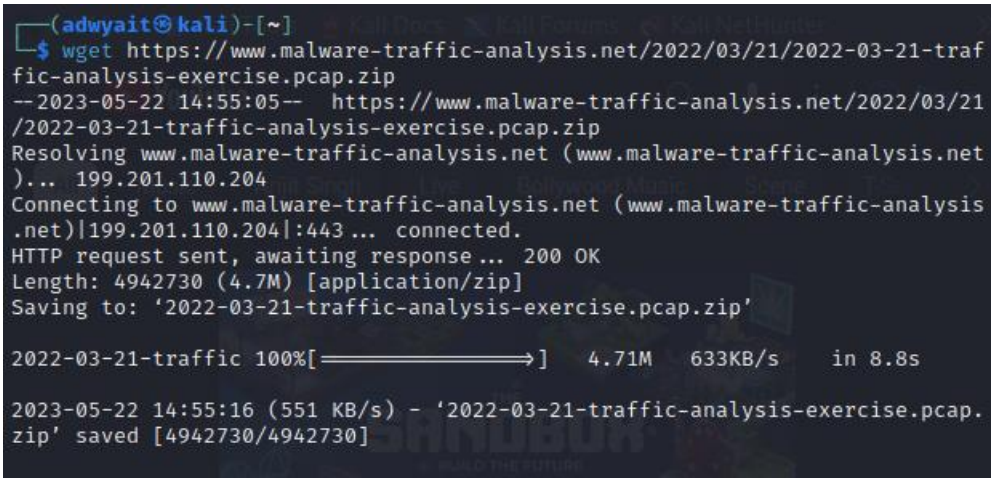
Task 36: Securely copy a file from the local system to a remote system using SCP.

Command: **scp file.txt username@remote_ip:/path/to/destination/**



Task 37: Download a file from the web using **wget**.

Command: **wget [options] [URL]**



Using wget we can download any file from the web. The downloaded file is saved.

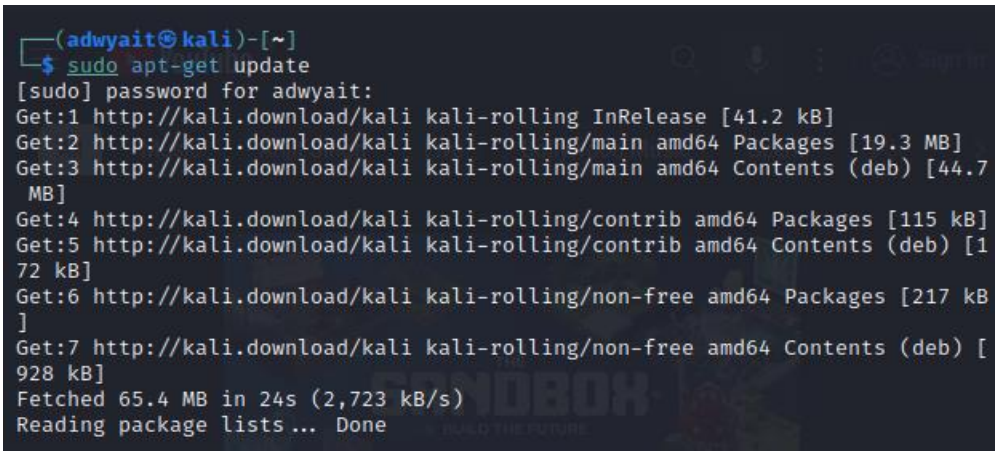
System Administration:

Task 38: Execute a command with superuser privileges.

Command: **sudo [command]**

Example: **sudo apt-get update**

This command will execute the apt-get update command with superuser privileges, allowing system-wide updates to be performed.

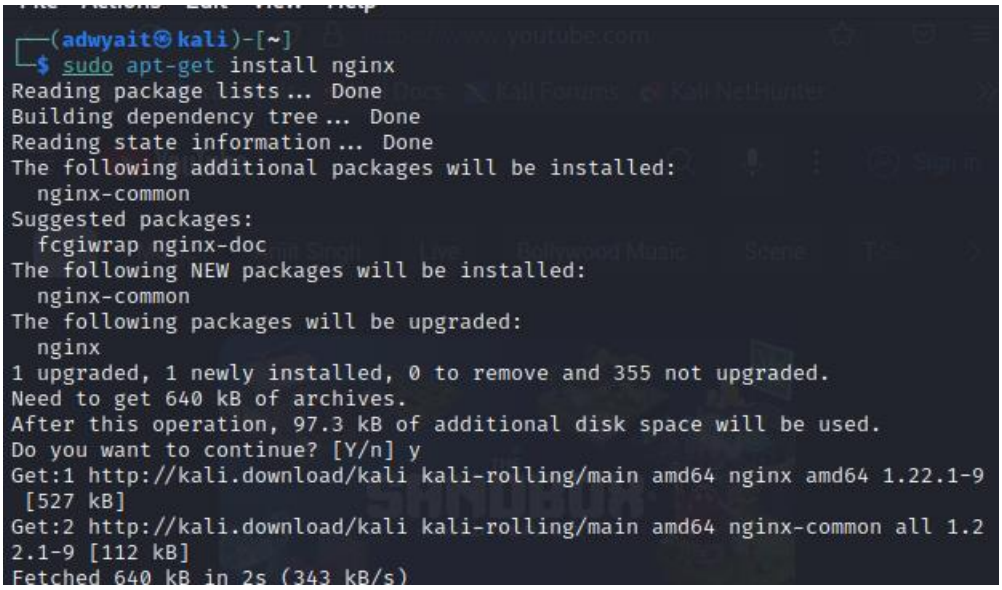


Task 39: Package management for Debian-based distributions.

Command: apt-get [options] [command]

Example: **apt-get install nginx**

This command will install the Nginx web server package using **apt-get** on Debian-based distributions.

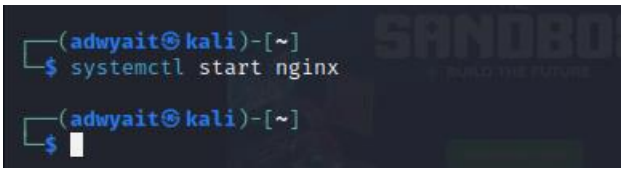


Task 40: Package management for Red Hat-based distributions.

Command: **yum [options] [command]**
In kali yum not used.

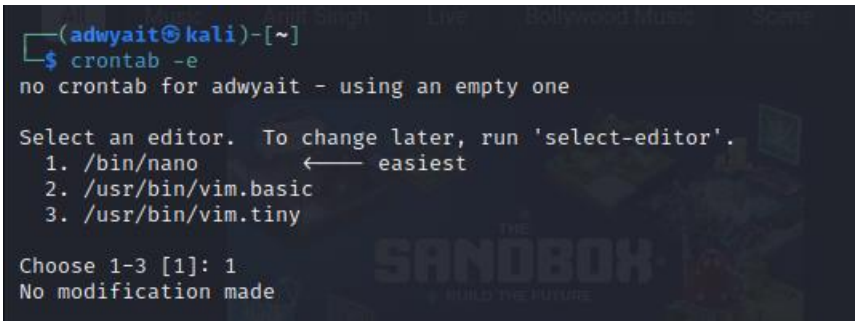
Task 41: Manage system services.

Command**: systemctl [options] [service command]**
Example: **systemctl start nginx**



Task 42: Schedule recurring tasks.

Command: **crontab [options]**
Example: **crontab -e**
This command will open the crontab file for editing, allowing you to schedule recurring tasks using cron syntax.

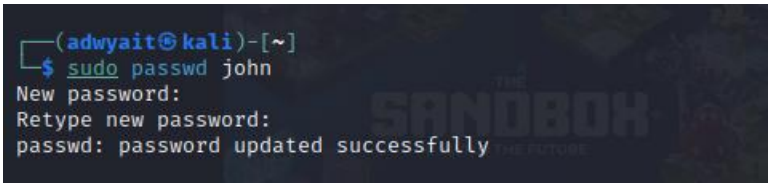


Task 43: Add a new user.

Command: **useradd [options] username**
Example: **useradd -m -s /bin/bash john**
This command will create a new user named "john" with a home directory and the Bash shell.

Task 44: Change user password.

Command: **passwd [username]**
Example: **passwd john**
This command will prompt you to enter and confirm a new password for the user "john".


┌──(adwyait㉿kali)-[~]
└─$ sudo passwd john
New password:
Retype new password:
passwd: password updated successfully