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## EXERCISE 1

### BASIC LINUX AND WINDOWS COMMAND

#### AIM:

To introduce and practice essential networking commands in Linux and Windows operating systems for configuring, monitoring, and troubleshooting network connections. This exercise aims to build fundamental skills required for diagnosing and managing network environments using command-line tools.

#### LINUX COMMAND:

1. ls – list directory

Synopsis: ls [option]... [File]...

Description: Display files and directories in the current working directory. By default, entries are sorted alphabetically.

2. touch – change file / create empty file

Synopsis: touch [option]... [File]...

Description: Shows detailed information for each file, including permissions, owner, size, and time.

3. cat – concatenate and display file contents

Synopsis: cat [option]... [file]

Description: Prints the contents of one or more files to standard output. Useful for viewing or combining files.

4. ls -l – long listing format

Synopsis: ls -l

Description: Shows detailed information for each file, including permissions, owner, and size.

5. chmod – change file permissions

Synopsis: chmod [option]... mode file

Description: Changes the permission bits of files. You can use numeric or symbolic notation.

6. mkdir – make directories

Synopsis: mkdir [option]... Directory

Description: Creates a new directory. Use -p to create parent directories as needed.

7. ls -a – list all files including hidden

Synopsis: ls -a

Description: Lists all files, including hidden ones, inside the open directory.

8. nano – text editor

Synopsis: nano [file]

Description: Launches a user-friendly text editor in the terminal to edit files.

9. **rm** – remove files  
Synopsis: rm [option]... File...  
Description: Deletes files or directories. Use -r for recursive removal, -f to force without prompt.
10. **rmdir** – remove empty directories  
Synopsis: rmdir (directory)  
Description: Deletes a directory only if it is empty.
11. **ps -e** – list all running processes  
Synopsis: ps -e  
Description: Shows currently running processes in the system.
12. **grep** – search for text patterns inside files or output  
Synopsis: grep "word" file.txt  
Description: Filters process list to show only those matching the given name or keyword.
13. **echo** – display text, variables or messages  
Synopsis: echo [string]  
Description: Prints the given text to the terminal. Often used in scripting.
14. **top** – real-time process viewer  
Synopsis: top  
Description: Displays a dynamic list of running processes along with CPU and memory usage.
15. **free** – display memory message  
Synopsis: free [option]  
Description: Shows the amount of free and used memory in the system. Use -h for human-readable output.
16. **vmstat** – report system performance  
Synopsis: vmstat [delay] [count]  
Description: Displays memory, CPU, I/O, system performance statistics.
17. **traceroute** – tracks the path  
Synopsis: traceroute [IP address/hostname]  
Description: Identifies the path taken by packets to reach a network host.
18. **ping** – test network connectivity  
Synopsis: ping [destination]  
Description: Sends ICMP echo requests to a network host to check if it's reachable.
19. **ifconfig** – view network interfaces  
Synopsis: ifconfig  
Description: Displays or configures network interface parameters (now largely replaced by ip addr).
20. **vi** – text editor  
Synopsis: vi [file]  
Description: Opens the vi editor to create or modify files; offers powerful editing features.

**21. cd – change directory**

Synopsis: cd [directory]

Description: Changes the current working directory.

**22. pwd – print working directory**

Synopsis: pwd

Description: Shows current location.

**OUTPUT:**

```
* Documentation: https://help.ubuntu.com
tryhackme@linux1:~$ ls
access.log folder1 folder2 folder3 folder4 nano.save
tryhackme@linux1:~$ cd folder1
tryhackme@linux1:~/folder1$ ls -l
total 0
tryhackme@linux1:~/folder1$ pwd
/home/tryhackme/folder1
tryhackme@linux1:~/folder1$ ps -e
 PID TTY      TIME CMD
 1 ?    00:00:03 systemd
 2 ?    00:00:00 kthreadd
 3 ?    00:00:00 rcu_gp
 4 ?    00:00:00 rcu_par_gp
 5 ?    00:00:00 slob_flushwq
 6 ?    00:00:00 netns
 8 ?    00:00:00 kworker/0:0H-events_highpri
 9 ?    00:00:00 kworker/u4:0-events_unbound
10 ?   00:00:00 mm_percpu_wq
11 ?   00:00:00 rcu_tasks_rude_
12 ?   00:00:00 rcu_tasks_trace_
13 ?   00:00:00 ksoftirqd/0
14 ?   00:00:00 rcu_sched
15 ?   00:00:00 migration/0
16 ?   00:00:00 idle_inject/0
18 ?   00:00:00 cpuhp/0
19 ?   00:00:00 cpuhp/1
20 ?   00:00:00 idle_inject/1
21 ?   00:00:00 migration/1
22 ?   00:00:00 ksoftirqd/1
```

**WINDOWS COMMAND:**

**1. dir - Equivalent of ls**

Synopsis: dir [path] [[options]]

Description: List all files and directories.

**2. cd - Change directory**

Synopsis: cd [path]

Description: Changes the current working directory.

**3. cls - Clear screen**

Synopsis: cls

Description: Removes all text.

**4. echo - Prints**

Synopsis: echo [message]

Description: Displays messages, useful in batch scripts.

**5. dir -a (like ls -a)**

Synopsis: dir -a [path]

Description: Lists files and directories.

**6. mkdir - make directory**

Synopsis: mkdir [drive:] [path] foldername

Description: Create a new directory in a specified path.

7. del - delete file (rmdir)
 

Synopsis: del file.txt  
   Description: Delete files or directories from the file system.
8. tasklist - display all currently running process
 

Synopsis: tasklist [options]  
   Description: Lists process name, PID (Process ID), session name/ID, and memory usage.
9. find - search for a specific string of text within files
 

Synopsis: find "string" [filename]  
   Description: Looks for the given "string" inside the specified file.
10. systeminfo - detailed system configuration information
 

Synopsis: systeminfo  
   Description: Often used for system audits and troubleshooting.
11. typeperf - display or log performance counter data
 

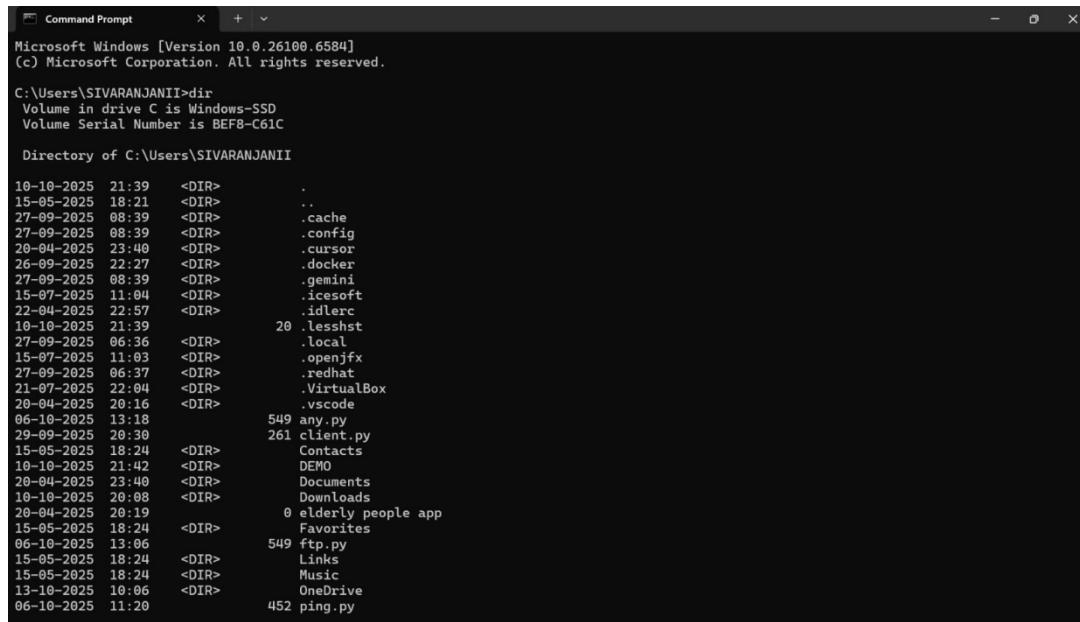
Synopsis: typeperf [counter...] [options]  
   Description: Can display output in the console or save it to a log file (CSV, TSV, binary).
12. tracert - Trace the path packets take to reach
 

Synopsis: tracert [options] <hostname or IP>  
   Description: Displays each router packets travel through until reaching the destination.
13. ping - network connectivity
 

Synopsis: ping [option] <hostname or IP>  
   Description: Displays packet loss, response time, and TTL (Time to Live).
14. ipconfig - displays and manages IP address
 

Synopsis: ipconfig [options]  
   Description: Shows current network adapter configuration.

## OUTPUT:



```
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

C:\Users\SIVARANJANII>dir
Volume in drive C is Windows-SSD
Volume Serial Number is BEF8-C61C

Directory of C:\Users\SIVARANJANII

10-10-2025 21:39    <DIR>          .
15-05-2025 18:21    <DIR>          ..
27-09-2025 08:39    <DIR>          .cache
27-09-2025 08:39    <DIR>          .config
20-04-2025 23:40    <DIR>          .cursor
26-09-2025 22:27    <DIR>          .docker
27-09-2025 08:39    <DIR>          .gemini
15-07-2025 11:04    <DIR>          .icesoft
22-04-2025 22:57    <DIR>          .idlerc
10-10-2025 21:39    20   .lessht
27-09-2025 06:36    <DIR>          .local
15-07-2025 11:03    <DIR>          .openjfx
27-09-2025 06:37    <DIR>          .redhat
21-07-2025 22:04    <DIR>          .VirtualBox
20-04-2025 20:16    <DIR>          .vscode
06-10-2025 13:18    549  any.py
29-09-2025 20:30    261  client.py
15-05-2025 18:24    <DIR>          Contacts
10-10-2025 21:42    <DIR>          DEMO
20-04-2025 23:40    <DIR>          Documents
16-10-2025 20:08    <DIR>          Downloads
20-04-2025 20:19    0   elderly people app
15-05-2025 18:24    <DIR>          Favorites
06-10-2025 13:06    549  ftp.py
15-05-2025 18:24    <DIR>          Links
15-05-2025 18:24    <DIR>          Music
13-10-2025 10:06    <DIR>          OneDrive
06-10-2025 11:20    452  ping.py
```

```
C:\Users\SIVARANJANII>echo hello
hello

C:\Users\SIVARANJANII>tasklist

Image Name      PID Session Name      Session#    Mem Usage
=====
System Idle Process      0 Services          0          8 K
System                  4 Services          0        6,412 K
Secure System            260 Services        0       63,240 K
Registry                 304 Services        0       35,536 K
smss.exe                864 Services        0        648 K
csrss.exe               1060 Services       0       3,472 K
wininit.exe              1164 Services       0       4,212 K
services.exe             1280 Services       0       9,532 K
Lsass.exe                1324 Services       0       1,932 K
lsass.exe                1332 Services       0      27,232 K
svchost.exe              1468 Services       0      44,080 K
fontdrvhost.exe          1496 Services       0        908 K
WUDFHost.exe             1556 Services       0       4,272 K
svchost.exe              1628 Services       0      19,872 K
svchost.exe              1696 Services       0       8,112 K
WUDFHost.exe             1732 Services       0       2,428 K
WUDFHost.exe             1792 Services       0      11,588 K
WUDFHost.exe             1924 Services       0      15,228 K
svchost.exe              1984 Services       0       1,560 K
svchost.exe              2000 Services       0      10,152 K
svchost.exe              1484 Services       0       5,264 K
svchost.exe              1004 Services       0       7,528 K
svchost.exe              1360 Services       0       6,300 K
svchost.exe              2060 Services       0       2,592 K
svchost.exe              2128 Services       0       7,448 K
svchost.exe              2252 Services       0       4,868 K
svchost.exe              2292 Services       0       5,876 K
```

```
C:\Users\SIVARANJANII>tracert google.com

Tracing route to google.com [2404:6800:4007:815::200e]
over a maximum of 30 hops:

 1   3 ms     3 ms     2 ms  2401:4900:9251:d446:21cf:67d8:a:2e16
 2   56 ms    18 ms    38 ms  2401:4900:1:a809::3
 3   76 ms    30 ms    58 ms  2401:4900:1:a882::3
 4   78 ms    34 ms    31 ms  2401:4900:1:a883::1
 5  ^C

C:\Users\SIVARANJANII>tracert google.com

Tracing route to google.com [2404:6800:4007:815::200e]
over a maximum of 30 hops:

 1   9 ms     3 ms     2 ms  2401:4900:9251:d446:21cf:67d8:a:2e16
 2   34 ms    43 ms    20 ms  2401:4900:1:a809::3
 3   29 ms    22 ms    19 ms  2401:4900:1:a882::3
 4   51 ms    40 ms    24 ms  2401:4900:1:a883::1
 5   *        *        * Request timed out.
 6   79 ms    22 ms    41 ms  2404:a800:3a00:205::9
 7   52 ms    61 ms    51 ms  2404:a800::92
 8   208 ms   22 ms    32 ms  2404:6800:8201:2c0::1
 9   138 ms   716 ms   *     2404:6800:8201:2c0::1
10   227 ms   43 ms    24 ms  2001:4860:0:1::55b4
11   187 ms   43 ms    22 ms  2001:4860:0:1::55cd
12   441 ms   20 ms    87 ms  maa05s14-in-x0e.le100.net [2404:6800:4007:815::200e]

Trace complete.
```

## RESULT:

All listed basic Linux and Windows networking commands were executed and tested successfully in their respective terminal environments. The commands produced the expected outputs, allowing for efficient directory navigation, file management, system monitoring, and network troubleshooting. This experiment verified the practical functioning and usefulness of each command for real-world administrative and technical tasks.