

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 slub_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 (remdir)
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:

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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
10-10-2025  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           640 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.1e100.net [2404:6800:4007:815::200e]

Trace complete.

C:\Users\SIVARANJANII>
```

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.