

Project - 4

Command Line Mastery: A Comprehensive Internship Program on Windows Command Prompt



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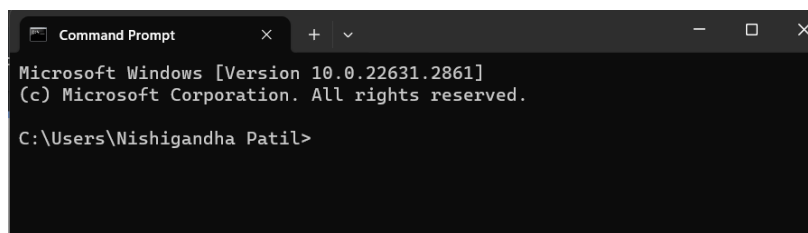
Introduction to Command Prompt

The Command Prompt in Windows is a powerful tool that allows you to interact with your computer using text-based commands.

Accessing the Command Prompt:

1. **Start Menu:** Search for "Command Prompt" or "cmd" and open it.
2. **Run Dialog Box:** Press Win + R, type "cmd," and hit Enter.
3. **File Explorer:** Navigate to a folder, hold Shift, right-click, and select "Open command window here" or "Open PowerShell window here" based on your Windows version.

➤ Command Prompt Window:

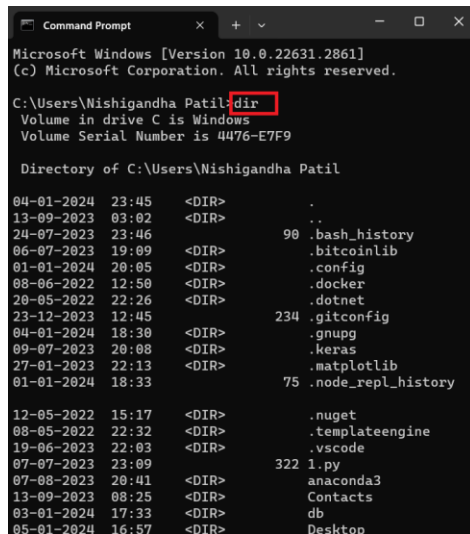


```
Command Prompt
Microsoft Windows [Version 10.0.22631.2861]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Nishigandha Patil>
```

Basic Navigation Commands:

1. **dir:** Lists files and folders in the current directory.



```
Command Prompt
Microsoft Windows [Version 10.0.22631.2861]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Nishigandha Patil>dir
Volume in drive C is Windows
Volume Serial Number is 4476-E7F9

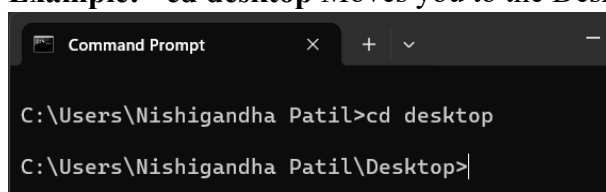
Directory of C:\Users\Nishigandha Patil

04-01-2024  23:45    <DIR>          .
13-09-2023  03:02    <DIR>          ..
24-07-2023  23:46                90 .bash_history
06-07-2023  19:09                .bitcoinlib
01-01-2024  20:05                .config
08-06-2022  12:50                .docker
20-05-2022  22:26                .dotnet
23-12-2023  12:45               234 .gitconfig
04-01-2024  18:30                .gnupg
09-07-2023  20:08                .keras
27-01-2023  22:13                .matplotlib
01-01-2024  18:33                75 .node_repl_history
12-05-2022  15:17                .nuget
08-05-2022  22:32                .templateengine
10-06-2023  22:03                .vscode
07-07-2023  23:09               322 1.py
07-08-2023  20:41               anaconda3
13-09-2023  08:25               Contacts
03-01-2024  17:33                db
05-01-2024  16:57                Desktop
```

- **dir /p:** Pauses after each screenful of information.
- **dir /s:** Shows files in the current directory and all subdirectories.
- **dir /w:** Displays the directory contents in wide format.

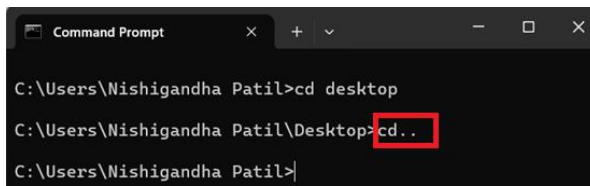
2. **cd (Change Directory):** Moves between directories.

Example: `>cd desktop` Moves you to the Desktop directory

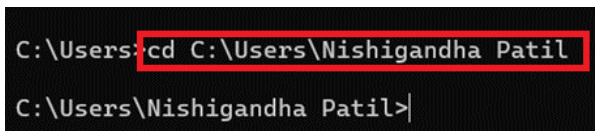


```
Command Prompt
C:\Users\Nishigandha Patil>cd desktop
C:\Users\Nishigandha Patil\Desktop>
```

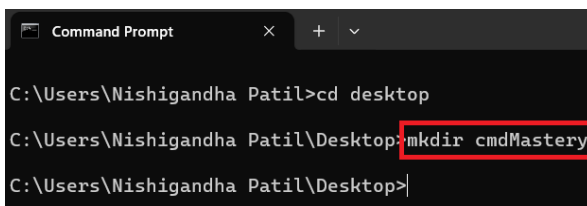
cd..: Moves up one level in the directory tree.

A screenshot of a Windows Command Prompt window. The title bar says 'Command Prompt'. The command history shows: 'C:\Users\Nishigandha Patil>cd desktop', 'C:\Users\Nishigandha Patil\Desktop>cd..' (the 'cd..' command is highlighted with a red box), and 'C:\Users\Nishigandha Patil>|'.

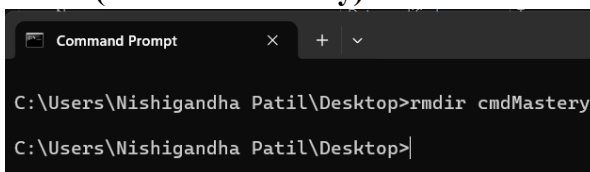
cd C:\Users\YourUsername: Navigates to a specific directory path.

A screenshot of a Windows Command Prompt window. The command history shows: 'C:\Users>cd C:\Users\Nishigandha Patil' (the entire command is highlighted with a red box), and 'C:\Users\Nishigandha Patil>|'.

3. **mkdir/md (Make Directory):** Creates a new directory. Syntax: mkdir folder_name.

A screenshot of a Windows Command Prompt window. The command history shows: 'C:\Users\Nishigandha Patil>cd desktop', 'C:\Users\Nishigandha Patil\Desktop>mkdir cmdMastery' (the 'mkdir cmdMastery' command is highlighted with a red box), and 'C:\Users\Nishigandha Patil\Desktop>|'.

4. **rmdir (Remove Directory):** Removes directories (folders)

A screenshot of a Windows Command Prompt window. The command history shows: 'C:\Users\Nishigandha Patil\Desktop>rmdir cmdMastery', and 'C:\Users\Nishigandha Patil\Desktop>|'.

'rmdir /s /q' (Force Delete): Deletes a directory and its contents without confirmation.

➤ Path Navigation:

Use backslashes '\' to separate folders in a path (C:\Users\YourUsername\Documents).
Typing just 'cd' will take you back to your user directory.

➤ Understanding Paths:

- '.' represents the current directory.
- '..' represents the parent directory.

➤ Shortcuts and Tips:

1. **Tab Completion:** Press Tab to auto-complete commands, file names, or directories.
2. **Arrow Keys:** Navigate through previously entered commands using the up and down arrow keys.
3. **Ctrl + C and Ctrl + V** Doesn't work for copying and pasting within the Command Prompt. Use right-click instead.
4. Type **'cls'** to clear the Command Prompt screen.
5. **'Help'** or **'/?'**: Displays information about commands and their usage. Example, 'dir /?' will show options for the dir command.

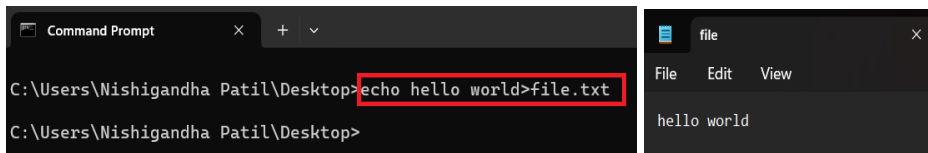
File and Directory Management

Managing files and directories via the command line involves a set of commands that allow you to create, modify, move, copy, and delete files and folders.

➤ Working with Files:

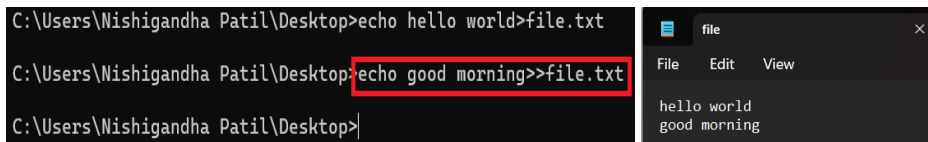
1. **echo:** Creates a new text file or overwrites existing content. (E.g. Creating a file: **file.txt**)

Use echo with '>' to create new file or overwrite.



The screenshot shows a Command Prompt window with the command `echo hello world>file.txt` entered. The output shows the command prompt returning to `C:\Users\Nishigandha Patil\Desktop>`. To the right, a text editor window titled 'file' shows the content 'hello world'.

use echo with '>>' to append text to an existing file.

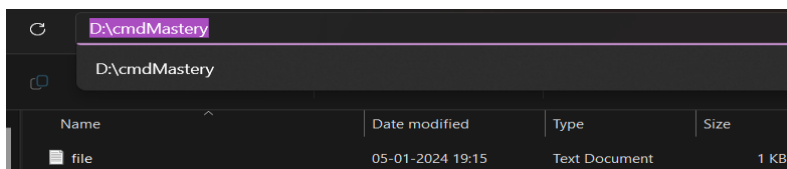


The screenshot shows a Command Prompt window with the command `echo good morning>>file.txt` entered. The output shows the command prompt returning to `C:\Users\Nishigandha Patil\Desktop>`. To the right, a text editor window titled 'file' shows the content 'hello world' followed by 'good morning' on a new line.

2. **copy:** Copies files from one location to another.

Syntax: copy sourceFile destination

```
C:\Users\Nishigandha Patil\Desktop>copy file.txt D:\cmdMastery
1 file(s) copied.
```



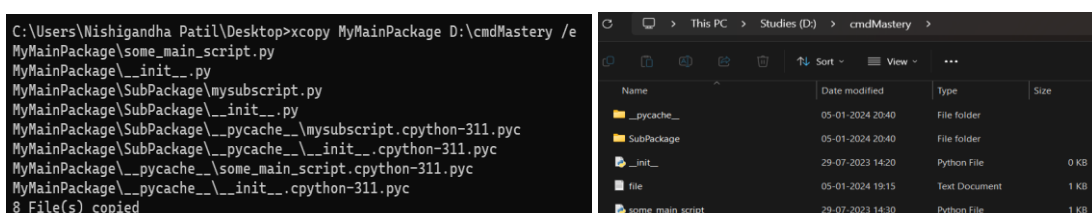
Rename file using copy: You can also use copy to rename a file by specifying the same file as both the source and destination but with different names.(it will generate 2 files with same content but different names).

Syntax: copy oldfile.txt newfile.txt

```
C:\Users\Nishigandha Patil\Desktop>copy file.txt nishu.txt
1 file(s) copied.
```

3. **xcopy:** Copies directories and their contents.

Syntax: xcopy source destination /e



4. **move** (Move or Rename Files): Moves files from one location to another or renames files.

Syntax: move sourceFile destination

```
C:\Users\Nishigandha Patil\Desktop>move nishu.txt D:\cmdMastery
1 file(s) moved.
```

__pycache__	06-01-2024 11:44	File folder	
SubPackage	06-01-2024 11:44	File folder	
__init__	29-07-2023 14:20	Python File	0 KB
file	05-01-2024 19:15	Text Document	1 KB
nishu	05-01-2024 19:15	Text Document	1 KB
some_main_script	29-07-2023 14:30	Python File	1 KB

Rename file using move:

Syntax: move oldFileName newFileName (file.txt renamed to hello.txt on desktop)

```
C:\Users\Nishigandha Patil\Desktop>move file.txt hello.txt
1 file(s) moved.
```

5. **ren**: used to rename files or directories

Syntax: ren currentFileName newFileName (hello.txt renamed to world.txt on desktop)

```
C:\Users\Nishigandha Patil\Desktop>ren hello.txt world.txt
```

6. **type**: used to display the contents of a text file.

Syntax: type filename.txt

```
C:\Users\Nishigandha Patil\Desktop>type world.txt
hello world
good morning
```

7. **del** (Delete): Deletes a file.

Syntax: del filename.txt

```
C:\Users\Nishigandha Patil\Desktop>del world.txt
```

Advanced File Operations

Batch file: A batch file is a script file containing a sequence of commands that are executed by the command-line interpreter in a computer's operating system. These files typically have the **.bat** extension on Windows

Open Notepad → Write batch script → Save as .bat extension → Save as type “All Files” → Double clicks it to execute commands written in it.

- **@echo off:** This command turns off the display of each command in the batch file as it runs. It's optional but commonly used to make the output cleaner.
- **echo:** Prints text to the console.

➤ Example: Batch Script to Open a URL in Chrome:

Step 1: Create a Batch Script:

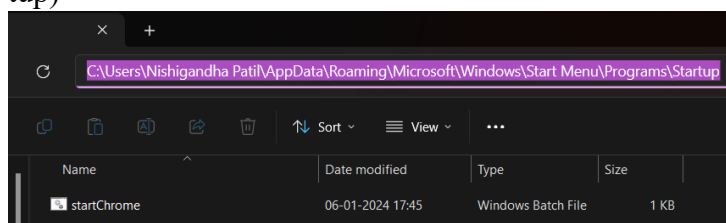
1. **Write the batch file:** Open Notepad or any text editor → write the batch script.

Use ‘**start**’ command to open the chrome browser with the Google website.

2. **Save the File:** Go to File → Save As → Choose location → Choose file name, for example, startChrome.bat → Set the file type to All Files.

Step 2: Add Script to Startup

Place the batch file in the windows startup folder to execute tasks on system startup:
(C:\Users\<Username>\AppData\Roaming\Microsoft\Windows\StartMenu\Programs\Startup)

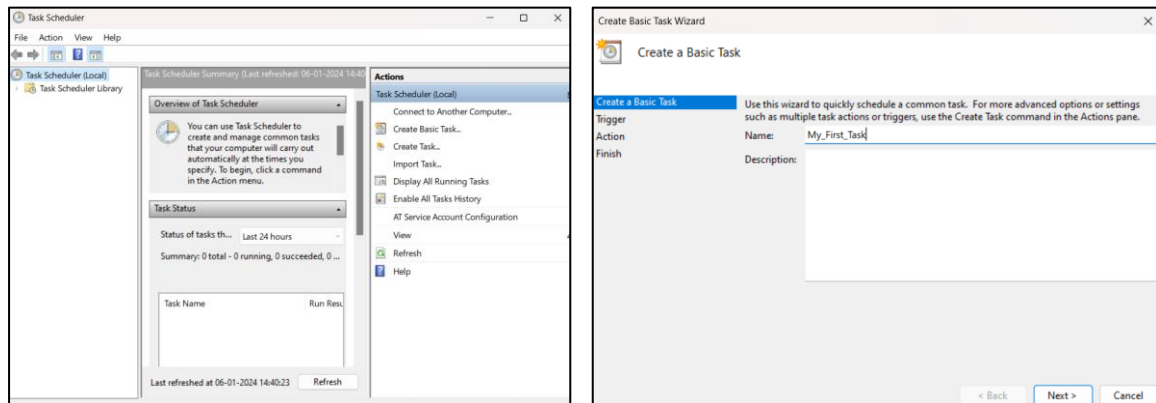


This will make the script run every time your computer starts.

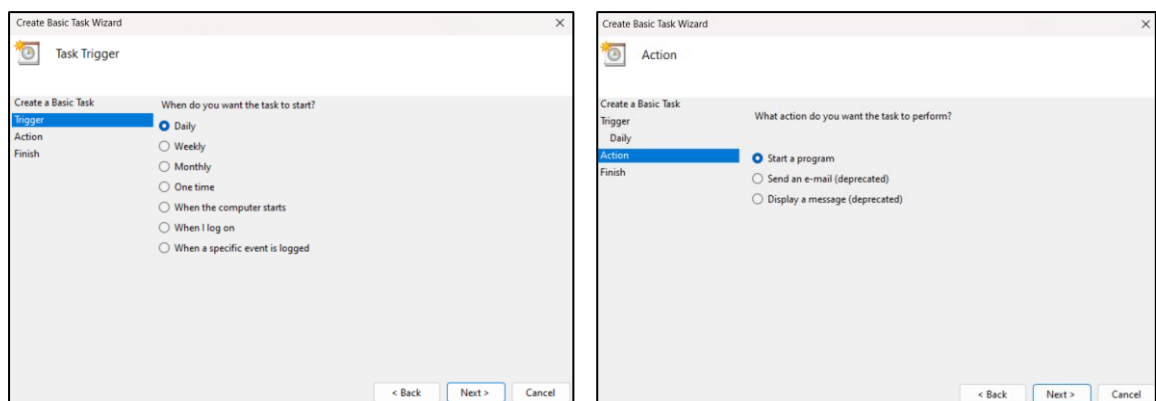
➤ Automating tasks using batch scripts:

Create a batch file → Save it with .bat extension in Startup folder (C:).

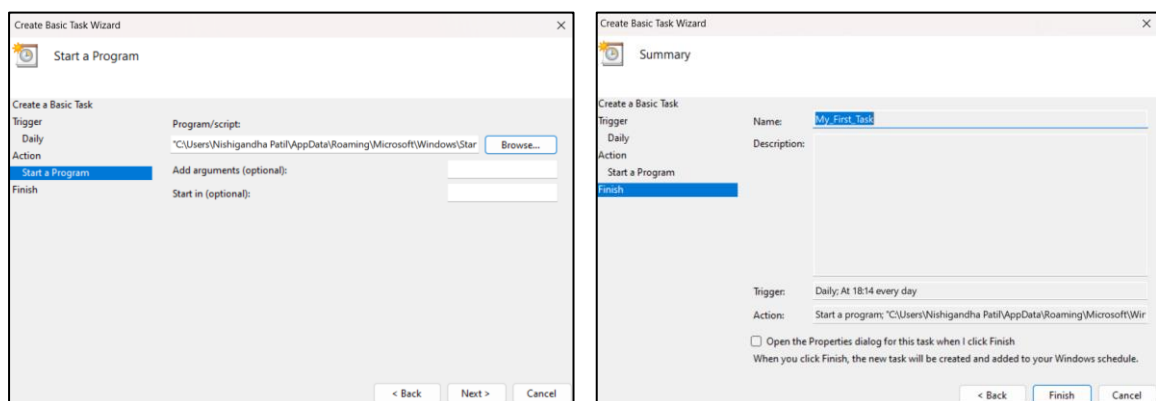
Open Task Scheduler (taskschd.msc) → Click Create Basic Task → Provide a name and description → Next.



Select triggers (e.g., daily, weekly, etc.) → Choose the action Start a Program → Next.



Specify the batch file path → Set the schedule and additional settings → Finish.

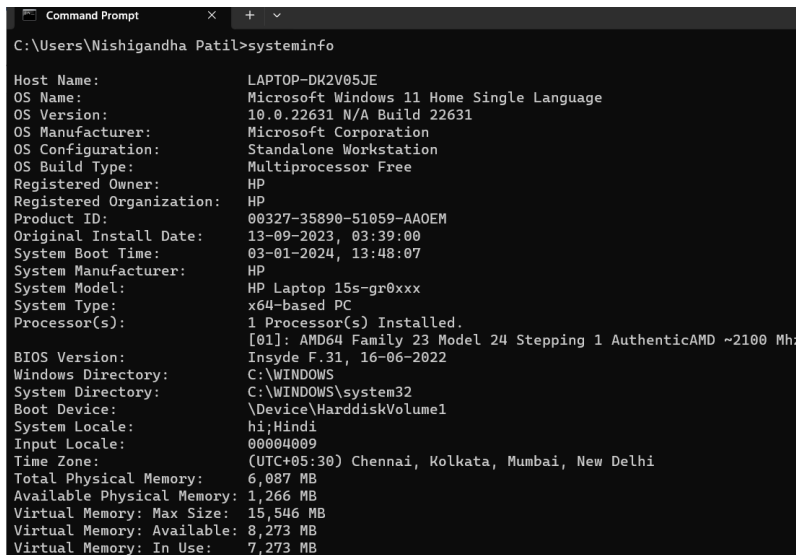


System Diagnostics and Management

System diagnostics and management involve monitoring, analyzing, and optimizing various aspects of a computer system to ensure its health, performance, and security.

➤ System Information Command:

1. **systeminfo**: Displays detailed system information, including OS version, installation date, hardware details, and more.



```
Command Prompt
C:\Users\Nishigandha Patil>systeminfo

Host Name:                LAPTOP-DK2V05JE
OS Name:                  Microsoft Windows 11 Home Single Language
OS Version:               10.0.22631 N/A Build 22631
OS Manufacturer:         Microsoft Corporation
OS Configuration:        Standalone Workstation
OS Build Type:             Multiprocessor Free
Registered Owner:         HP
Registered Organization:  HP
Product ID:               00327-35890-51059-AAOEM
Original Install Date:    13-09-2023, 03:39:00
System Boot Time:         03-01-2024, 13:48:07
System Manufacturer:      HP
System Model:              HP Laptop 15s-gr0xxx
System Type:               x64-based PC
Processor(s):              1 Processor(s) Installed.
                          [01]: AMD64 Family 23 Model 24 Stepping 1 AuthenticAMD ~2100 Mhz
BIOS Version:              Insyde F.31, 16-06-2022
Windows Directory:        C:\WINDOWS
System Directory:          C:\WINDOWS\system32
Boot Device:               \Device\HarddiskVolume1
System Locale:              hi;Hindi
Input Locale:              00004009
Time Zone:                 (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Total Physical Memory:     6,087 MB
Available Physical Memory: 1,266 MB
Virtual Memory: Max Size:  15,546 MB
Virtual Memory: Available: 8,273 MB
Virtual Memory: In Use:    7,273 MB
```

➤ Disk Management:

1. **chkdsk**: Checks the file system and fixes errors on a disk.

Cautions to consider before running chkdsk:

- **Back up important data:** before running 'chkdsk' backup your data as it involves making modifications to the disk structure, and in rare cases, data loss can occur.
- **Plan Sufficient Time:** chkdsk can take a considerable amount of time, especially on larger drives or if it's fixing severe errors.
- **Avoid interruptions:** Once chkdsk begins its operation, do not interrupt the process. Interrupting chkdsk can lead to incomplete repairs and potential data loss. Ensure your system won't shut down unexpectedly during the process.
- **Be Cautious with Parameters:** Use chkdsk parameters (/f, /r, etc.) cautiously. For example, /f fixes errors but can lead to data loss in severe cases. /r locates bad sectors and can take a longer time to complete.

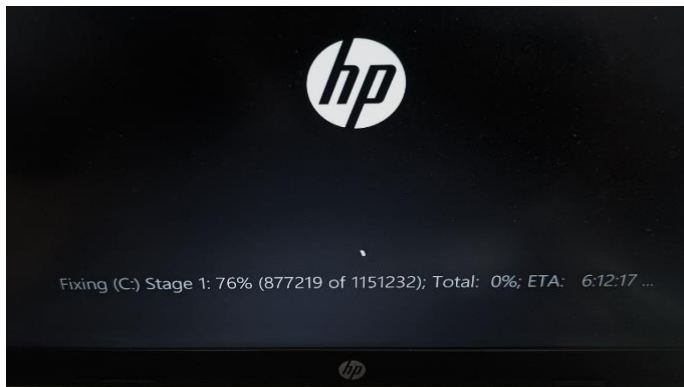
```
C:\Users\Nishigandha Patil>chkdsk /f /r|
```

/f: Fixes errors found on the disk.

/r: Locates bad sectors on the disk and recovers readable information.

If you are running chkdsk on the system drive (C:) and it's in use, you will see a message asking if you want to schedule the disk check for the next system restart (yes/no).

Type “Y” and press Enter. Then restart your computer to let chkdsk run during the boot process.



Wait for chkdsk to Complete:

chkdsk might take a while depending on the size of the drive and the issues found. Let it complete without interruptions.

2. **diskpart**: Command-line disk partitioning tool for managing disks, volumes, and partitions.

Type ‘diskpart’ command → diskpart command-line tool will open → list disk.

```
C:\WINDOWS\system32\diskpart.exe

Microsoft DiskPart version 10.0.22621.1

Copyright (C) Microsoft Corporation.
On computer: LAPTOP-DK2V05JE

DISKPART> list disk

   Disk ###  Status         Size       Free       Dyn  Gpt
   -----  -
   Disk 0    Online          931 GB        9 MB          *

DISKPART>
```

Creating disk partition:

Use “create partition primary size=X” to create a primary partition with a specific size (replace X with the size in MB).

Example: >create partition primary size=10240 (creates a primary partition of 10GB).

Type **exit** to exit the diskpart utility.

➤ System Monitoring:

1. **tasklist**: Lists all running processes.

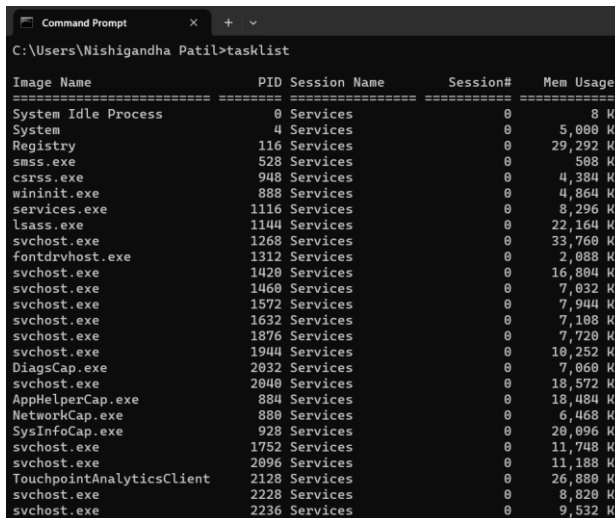
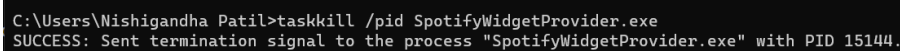


Image Name	PID	Session Name	Session#	Mem Usage
System Idle Process	0	Services	0	8 K
System	4	Services	0	5,000 K
Registry	116	Services	0	29,292 K
smss.exe	528	Services	0	508 K
csrss.exe	948	Services	0	4,384 K
wininit.exe	888	Services	0	4,864 K
services.exe	1116	Services	0	8,296 K
lsass.exe	1144	Services	0	22,164 K
svchost.exe	1268	Services	0	33,760 K
fontdrvhost.exe	1312	Services	0	2,088 K
svchost.exe	1420	Services	0	16,804 K
svchost.exe	1460	Services	0	7,032 K
svchost.exe	1572	Services	0	7,944 K
svchost.exe	1632	Services	0	7,108 K
svchost.exe	1876	Services	0	7,720 K
svchost.exe	1944	Services	0	10,252 K
DiagsCap.exe	2032	Services	0	7,060 K
svchost.exe	2040	Services	0	18,572 K
AppHelperCap.exe	884	Services	0	18,484 K
NetworkCap.exe	880	Services	0	6,468 K
SysInfoCap.exe	928	Services	0	20,096 K
svchost.exe	1752	Services	0	11,748 K
svchost.exe	2096	Services	0	11,108 K
TouchpointAnalyticsClient	2128	Services	0	26,880 K
svchost.exe	2228	Services	0	8,020 K
svchost.exe	2236	Services	0	9,532 K

2. **taskkill**: Terminates a running process based on its process ID (PID).

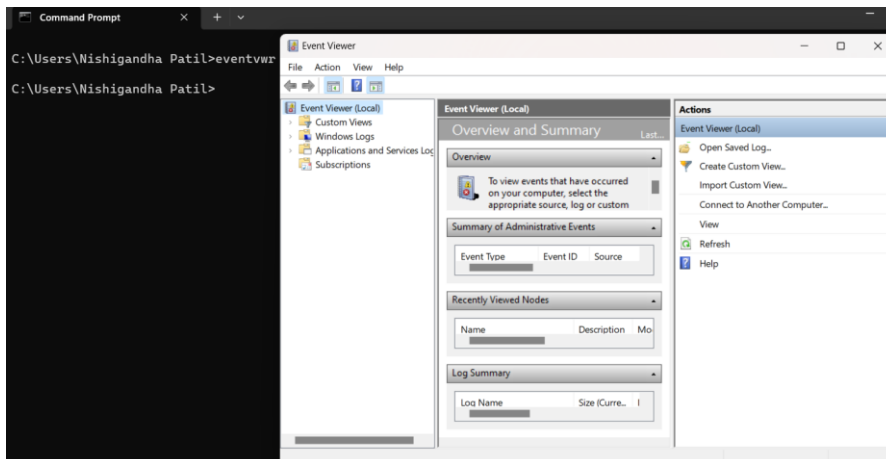
Syntax: taskkill /pid <PID>



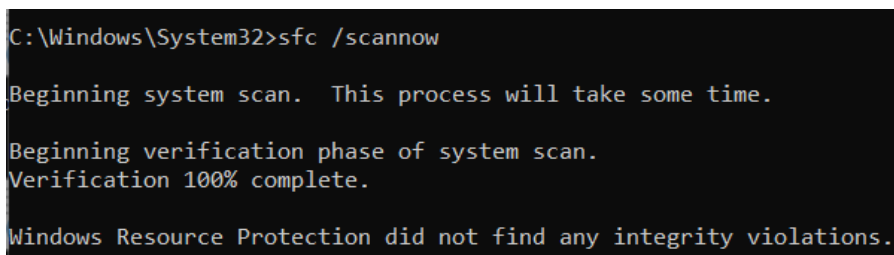
```
C:\Users\Nishigandha Patil>taskkill /pid SpotifyWidgetProvider.exe
SUCCESS: Sent termination signal to the process "SpotifyWidgetProvider.exe" with PID 15144.
```

➤ Event Logs and System Health:

1. **eventvwr**: Opens the Event Viewer to view system logs and events.



2. **sfc /scannow**: System File Checker checks and repairs system files. (Run as Administrator)



```
C:\Windows\System32>sfc /scannow

Beginning system scan. This process will take some time.

Beginning verification phase of system scan.
Verification 100% complete.

Windows Resource Protection did not find any integrity violations.
```

Networking and Internet Utilities

➤ Network Configuration and Information:

1. **ipconfig:** Displays network configuration information, including IP address, subnet mask, and default gateway.

```
C:\Users\Nishigandha Patil>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    IPv6 Address. . . . . : 2409:40c2:116a:ef5c:d88c:d134:2a6c:a91
    Temporary IPv6 Address. . . . . : 2409:40c2:116a:ef5c:6de0:31ea:809b:ac73
    Link-Local IPv6 Address . . . . . : fe80::32e:1f18:aa65:fb74%18
    IPv4 Address. . . . . : 192.168.247.126
```

2. **ping:** Tests network connectivity by sending ICMP echo request packets to a destination.

```
C:\Users\Nishigandha Patil>ping google.com

Pinging google.com [2404:6800:4009:82a::200e] with 32 bytes of data:
Reply from 2404:6800:4009:82a::200e: time=258ms
Reply from 2404:6800:4009:82a::200e: time=976ms
Reply from 2404:6800:4009:82a::200e: time=367ms
Reply from 2404:6800:4009:82a::200e: time=663ms

Ping statistics for 2404:6800:4009:82a::200e:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 258ms, Maximum = 976ms, Average = 566ms
```

3. **tracert:** Traces the path and measures transit delays of packets across a network.

```
C:\Users\Nishigandha Patil>tracert google.com

Tracing route to google.com [2404:6800:4009:826::200e]
over a maximum of 30 hops:

  0  5 ms  2 ms  2 ms  2409:40c2:116a:ef5c::88
  1  934 ms  919 ms  817 ms  2405:200:5205:20:3924:110:3:204
  2  324 ms  305 ms  504 ms  2405:200:5205:20:3925::ff0e
  3  739 ms  182 ms  609 ms  2405:200:801:1d00::2f8
  4  * * * Request timed out.
  5  507 ms  577 ms  514 ms  2405:200:802:760::8
  6  811 ms  1022 ms  154 ms  2405:200:802:760::8
  7  * * * Request timed out.
  8  664 ms  556 ms  246 ms  2001:4860:1:1::a14
  9  507 ms  57 ms  351 ms  2404:6800:8281:40::1
 10  189 ms  306 ms  301 ms  2001:4860:0:1::7b7c
 11  543 ms  751 ms  226 ms  2001:4860:0:1::547f
 12  342 ms  1129 ms  723 ms  bom07s33-in-x0e.1e100.net [2404:6800:4009:826::200e]
 13

Trace complete.
```

4. **nslookup:** Performs DNS (Domain Name System) lookup to resolve domain names into IP addresses.

```
C:\Users\Nishigandha Patil>nslookup google.com
Server:  UnKnown
Address:  192.168.247.88

Non-authoritative answer:
Name:     google.com
Addresses: 2404:6800:4009:828::200e
          142.250.192.110
```

➤ Connectivity and Internet Information:

1. **netstat**: Displays active network connections, ports, and routing tables.

```
C:\Users\Nishigandha Patil>netstat -a

Active Connections

Proto Local Address           Foreign Address         State
TCP   0.0.0.0:135             LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:445             LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:3306            LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:5040            LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:33060           LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:49664           LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:49665           LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:49666           LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:49667           LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:49668           LAPTOP-DK2V05JE:0      LISTENING
TCP   0.0.0.0:49677           LAPTOP-DK2V05JE:0      LISTENING
TCP   127.0.0.1:27017         LAPTOP-DK2V05JE:0      LISTENING
TCP   127.0.0.1:49678         LAPTOP-DK2V05JE:49679  ESTABLISHED
TCP   127.0.0.1:49679         LAPTOP-DK2V05JE:49678  ESTABLISHED
TCP   127.0.0.1:49680         LAPTOP-DK2V05JE:49681  ESTABLISHED
TCP   127.0.0.1:49681         LAPTOP-DK2V05JE:49680  ESTABLISHED
TCP   192.168.247.126:139     LAPTOP-DK2V05JE:0      LISTENING
TCP   192.168.247.126:53908  20.44.248.159:https     ESTABLISHED
TCP   [::]:135               LAPTOP-DK2V05JE:0      LISTENING
TCP   [::]:445               LAPTOP-DK2V05JE:0      LISTENING
TCP   [::]:3306              LAPTOP-DK2V05JE:0      LISTENING
TCP   [::]:33060             LAPTOP-DK2V05JE:0      LISTENING
TCP   [::]:49664             LAPTOP-DK2V05JE:0      LISTENING
TCP   [::]:49665             LAPTOP-DK2V05JE:0      LISTENING
```

2. **arp**: Displays and modifies the ARP (Address Resolution Protocol) cache.
arp -a: Displays the ARP table (ARP cache) with IP and MAC addresses.

```
C:\Users\Nishigandha Patil>arp -a

Interface: 192.168.247.126 --- 0x12
Internet Address      Physical Address      Type
192.168.247.88        22-72-ad-df-ac-54     dynamic
192.168.247.255        ff-ff-ff-ff-ff-ff     static
224.0.0.22            01-00-5e-00-00-16     static
224.0.0.251           01-00-5e-00-00-fb     static
224.0.0.252           01-00-5e-00-00-fc     static
239.255.255.250        01-00-5e-7f-ff-fa     static
255.255.255.255        ff-ff-ff-ff-ff-ff     static
```

arp -d <IP_address>: Deletes an entry specified by the IP address.

Example:

```
C:\Users\Nishigandha Patil>arp -d 192.168.1.100
```

arp -s <IP_address> <MAC_address>: Adds a static ARP entry where IP is the IP address and MAC is the physical address.

Example:

```
C:\Users\Nishigandha Patil>arp -s 192.168.1.100 00-11-22-33-44-55
```

arp -? Displays help information about the arp command.

3. **telnet**: Establishes a connection to a remote computer or device over a network.

Syntax: telnet [hostname or IP] [port]

Note: Telnet is less secure due to its lack of encryption. SSH is often preferred for secure remote connections.

Some modern systems may not have Telnet enabled or installed by default due to security concerns.

To enable telnet on windows:

Go to control panel → uninstall program → "Turn Windows features on or off" → Find "Telnet Client" and tick it → Ok.

```
C:\Users\Nishigandha Patil>telnet 192.168.1.100 80
Connecting To 192.168.1.100...|
```

4. **pathping:** Provides information about network latency and packet loss at intermediate hops between a source and destination.

```
PS C:\Users\Nishigandha Patil> pathping google.com

Tracing route to google.com [2404:6800:4009:81f::200e]
over a maximum of 30 hops:
 0  LAPTOP-DK2V05JE [2409:40c2:116a:ef5c:6de0:31ea:809b:ac73]
 1  2409:40c2:116a:ef5c::88
 2  2405:200:5205:20:3924:110:3:204
 3  2405:200:5205:20:3925::ff0a
 4  2405:200:801:1d00::2f8
 5  * * * * *
Computing statistics for 100 seconds...
Hop  RTT      Source to Here   This Node/Link   Address
     Lost/Sent = Pct  Lost/Sent = Pct
 0      0/ 100 = 0%      0/ 100 = 0%      LAPTOP-DK2V05JE [2409:40c2:116a:ef5c:6de0:31ea:809b:ac73]
 1    5ms      0/ 100 = 0%      0/ 100 = 0%      2409:40c2:116a:ef5c::88
 2   157ms     0/ 100 = 0%      0/ 100 = 0%      2405:200:5205:20:3924:110:3:204
 3    ---     100/ 100 =100%    0/ 100 = 0%      2405:200:5205:20:3925::ff0a
 4    ---     100/ 100 =100%    0/ 100 = 0%      2405:200:801:1d00::2f8
Trace complete.
```

➤ Wireless Network Information (Wi-Fi):

1. **netsh wlan show profiles:** Lists all wireless network profiles stored on the system.

```
C:\Users\Nishigandha Patil>netsh wlan show profiles

Profiles on interface Wi-Fi:

Group policy profiles (read only)
-----
<None>

User profiles
-----
All User Profile      : BIBS 2.0
All User Profile      : ⚡
All User Profile      : seminarroom
All User Profile      : OnePlus Nord CE 2
All User Profile      : Lab2
All User Profile      : One Plus Nord2 5G
All User Profile      : TP-Link_C8FC_EXT
All User Profile      : TP-Link_C8FC
All User Profile      : VIRUS 2.0
All User Profile      : No Internet
All User Profile      : Tenda_0AE478
All User Profile      : Moto G Play 3038
All User Profile      : OnePlus Nord2 5G
All User Profile      : Galaxy M312A26
```

2. **netsh wlan show networks:** Displays available wireless networks.

```
C:\Users\Nishigandha Patil>netsh wlan show networks

Interface name : Wi-Fi
There are 1 networks currently visible.

SSID 1 : One Plus Nord2 5G
Network type      : Infrastructure
Authentication    : WPA2-Personal
Encryption        : CCMP
```

Conclusion

Command Prompt (CMD) is a powerful command-line interface in Windows that allows users to interact with the operating system using text-based commands.

Key Points:

- 1. Functionality:** CMD provides access to various system tools, utilities, and commands for system management, network configuration, file operations, and more.
- 2. Text-Based Interface:** It operates through text commands, allowing users to perform tasks by typing commands rather than using a graphical interface.
- 3. Administrative Control:** CMD can be run as an administrator, providing elevated privileges for performing system-level tasks and configurations.
- 4. File System Operations:** It allows file and directory management using commands like 'dir', 'mkdir', 'rmdir', 'copy', 'move', etc.
- 5. Batch Scripting:** Users can create batch scripts (.bat files) to automate sequences of commands for repetitive tasks or system configurations.
- 6. System Diagnostics:** CMD provides tools like 'chkdsk', 'diskpart', 'systeminfo', and 'taskkill' for system diagnostics, disk management, and process control.
- 7. Networking Utilities:** CMD includes tools like 'ipconfig', 'ping', 'netstat', 'nslookup', and 'telnet' for network diagnostics and management.

Considerations:

Caution: Some commands can affect system settings and data. Use commands carefully and avoid operations if you're unsure about their consequences.

Learning Curve: Learning CMD commands can take time. Regular use and practice can improve familiarity and proficiency.

Advanced Usage: Advanced users can leverage CMD's scripting capabilities for automation and system customization.

CMD remains a valuable tool for system administration, troubleshooting, and performing various tasks efficiently in Windows environments. While it's powerful, using it requires care and understanding of commands to avoid unintended consequences. As computing environments evolve, graphical user interfaces are more common, but the command line remains essential for certain tasks and specific configurations.