



**S.B. JAIN INSTITUTE OF TECHNOLOGY  
MANAGEMENT & RESEARCH, NAGPUR**

**Practical 02**

**Aim:** To understand and demonstrate the use of basic commands in different operating systems (Windows, Linux, and UNIX) for managing files, directories, permissions, and user interactions through a terminal or command-line interface.

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**Semester / Year:** 4<sup>TH</sup>/2ND

**Academic Session:**2025-26

**Date of Performance:**

**Date of Submission:**

- 9 Aim: To understand and demonstrate the use of basic commands in different operating systems (Windows, Linux, and UNIX) for managing files, directories, permissions, and user Interactions through a terminal or command-line interface.

### ❖ Objectives:

- 1 To learn and practice fundamental command-line operations for file and directory management.
2. To explore and utilize user and permission management commands effectively.
3. To enhance system administration skills by working with commands across different operating systems.

### •9 Requirements:

#### Hardware Requirements:

- Processor: Multi-core CPU, Intel Core i3 (3.0 GHz) or higher
- RAM Minimum 4 GB (8 GB recommended for optimal performance)
- Storage: 100 GB HDD or SSD (Solid State Drive) for faster access
- Network Interface: Ethernet or Wi-Fi adapter for connectivity



#### Software Requirements:

- Operating System: Windows 10/11, Linux (Ubuntu 20.04/CentOS 8), UNIX-based os
- Command-line Interface: PowerShell or Command Prompt (Windows), Terminal (Linux/UNIX)
- Text Editor: Nano, Vim, or Visual Studio Code for file editing
- Administrative Privileges: Superuser (Linux/UNIX) or Administrator (Windows) access

### ❖ Theory:

In system administration, command-line interfaces (CLI) are essential tools for managing and interacting with operating systems like Windows, Linux, and UNIX. Commands allow users to perform various tasks such as navigating directories, managing files, controlling permissions, and monitoring system performance. Each operating system provides a set of built-in commands, such as 'man', 'ls', 'cd', 'mkdir', and 'chmod', to facilitate efficient system management. Understanding these commands and their syntax is

crucial for automating tasks, enhancing security, and ensuring optimal system functionality. This practical aims to develop foundational skills in executing and applying basic commands across different platforms.

•9 Commands:

1 . Display User Manual of a Command

- Functionality: Shows the manual page with details about a command's usage, options, and arguments.
- Syntax: `man <command>`
- Example: `man ls`

2. Change Current Working Directory.

- Functionality: Changes the terminal's current working directory.
- Syntax: `cd <directory-path>`
- Example: `cd /home/user/Documents.`

3. List Contents of the Current Directory.

- Functionality: Lists all files and directories in the current location.
- Syntax: `ls`
- Example: `ls`

4. Read/Modify/Concatenate Text Files.

- Functionality: Displays or manipulates file content.
- Syntax:
  - Read: `cat <filename>`
  - Modify: `'nano <filename>`
  - Concatenate: `cat <file1> <file2> > <outputfile>`
- 

5. Create a New Directory.

- Functionality: Creates a new directory at the specified path.
- Syntax: `mkdir <directory-name>`
- Example: `mkdir newdir`

6. Display Current Working Directory.

- Functionality: Prints the current directory path.
- Syntax: `pwd`
- Example: `pwd`

7. Write Arguments to Standard Output.

- Functionality: Prints the provided string or variables.
- Syntax: `echo <arguments>` - Example:  
`echo Hello World`

8. Remove a File.

- Functionality: Deletes a specified file.
- Syntax: `rm <filename>`
- Example: `rm file.txt`

9. Delete a Directory.

- Functionality: Removes an empty directory.
- Syntax: `rmdir <directory-name>`
- Example: `rmdir olddir`

10. Copy a File or Directory.

- Functionality: Copies a file or directory to a destination.
- Syntax: `cp <source> <destination>` - Example: `cp file.txt backup/`

11. Switch to Root User.

- Functionality: Gains root privileges temporarily.
- Syntax: `sudo su`
- Example: `sudo s`

12. Move Files or Directories.

- Functionality: Moves or renames files and directories.
- Syntax: `mv <source> <destination>`
- Example: `mv file.txt newdir/`

13. Search for a String in a File.

- Functionality: Searches for a specific word or pattern in a file.
- Syntax: `grep "<string>" <file>` - Example: `grep "error" log.txt`

14. Print Top N Lines of a File.

- Functionality: Displays the first N lines of a file.
- Syntax: `head -n <N> <file>` - Example: `'head -n 10 file.txt'`

15. Print Last N Lines of a File.

- Functionality: Displays the last N lines of a file.
- Syntax: `tail -n <N> <file>`

Example: `'tail -n 10 file.txt`

16.Remove Read Permission from Owner.

- Functionality: Revokes the owner's read permission for a file.
- Syntax: `chmod u-r <filename>`
- Example: `chmod u-r file.txt`

17.Change Specific Permissions.

- Functionality: Sets or removes specific file permissions.
- Syntax: `chmod u+r,w-x,g+w <filename>`
- Example: `chmod u+r,w-x,g+w file.txt`

18.Add Write Permission to Owner, None to Others.

- Functionality: Allows write access for the owner only.
- Syntax: `chmod u+w,o-rwx <filename>`
- Example: `chmod u+w,o-rwx file.txt`

19.Assign Permissions to Users.

- Functionality: Modifies file access for users, groups, and others.
- Syntax: `chmod u+rwx,g+rx,o+r <filename>`
- Example: `'chmod u+rwx,g+rx,o+r file.txt`

20.Assign R/W/X to Others.

- Functionality: Gives read, write, and execute permissions to others.
- Syntax: `chmod o+rwx <filename>`
- Example: `chmod o+rwx file.txt`

21.Remove All Permissions from All Users.

- Functionality: Clears all permissions on a file.
- Syntax: `'chmod a-rwx <filename>`
- Example: `'chmod a-rwx file.txt`

22.Remove Read Permission Using Absolute Mode.

- Functionality: Uses numeric mode to restrict read access.
- Syntax: `chmod 700 <filename>`
- Example: `chmod 700 file.txt`

### 23.Set R/W for Owner, None for Group/Other.

- Functionality: Assigns permissions in numeric mode.
- Syntax: `chmod 600 <filename>`
- Example: `chmod 600 file.txt'`

### 24.Add Execute for Owner, Read for Group/Others.

- Functionality: Adds execution and read access.
- Syntax: `chmod u+x,g+r,o+r <filename>`
- Example: `chmod u+x,g+r,o+r file.txt`

### 25.Add Execute Permission to All Users.

- Functionality: Enables execution by everyone.
- Syntax: `chmod a+x <filename>`
- Example: `chmod a+x script. sh`

❖ Conclusion: In conclusion, understanding and using essential operating system commands like 'ls', 'cd', 'cp', 'mv', and 'chmod' enables efficient file management, navigation, and permission control. Tools like 'grep', 'head', and 'tail' enhance data processing. Mastery of these commands improves system administration, task automation, and overall system security and performance.

### •9 Discussion Questions:

1. What is the significance of the pwd command in a Linux environment?

Answer: The pwd (print working directory) command displays the absolute path of the current working directory. It helps verify the user's present location in the file system. Syntax: `pwd`.

2. Explain the function of the cp command and its common options.

Answer: The cp command copies files or directories. Syntax: `cp <source> <destination>`. Options like -r copy directories recursively, and -i prompts before overwriting.

3.How does chmod 700 affect file permissions, and what does each digit represent?

Answer: chmod 700 grants full permissions (read, write, execute) to the owner and no permissions to others. The digits represent permissions for the owner, group, and others, respectively.

4.Describe the difference between head and tail commands in Linux.

Answer: The head command displays the first N lines of a file, while tail shows the last N lines. Both accept the -n option to specify the number of lines.

5.What is the purpose of the grep command, and how is it used with regular expressions?

Answer: The grep command searches for patterns within files using regular expressions. Syntax: grep <pattern> <file>. It supports options like -i for case-insensitive search and -v to invert the match.

- References.

<https://ubuntu.com/tutorials/command-line-for-beginners#l-overview>  
<https://www.geeksforgeeks.org/25-basic-ubuntu-commands>

Date :        /        / 2026

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Signature  
Course Coordinator  
BTech CSE(DS)  
SEM : 4/2025-26



## OUTPUT:

## 1. Display User Manual of a Command

```

Command Prompt
Microsoft Windows [Version 10.0.26100.7623]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user>help
For more information on a specific command, type HELP command-name
ASSOC      Displays or modifies file extension associations.
ATTRIB     Displays or changes file attributes.
BREAK      Sets or clears extended CTRL+C checking.
BCDEDIT    Sets properties in boot database to control boot loading.
CACLS      Displays or modifies access control lists (ACLs) of files.
CALL       Calls one batch program from another.
CD          Displays the name of or changes the current directory.
CHCP       Displays or sets the active code page number.
CHDIR      Displays the name of or changes the current directory.
CHKDSK     Checks a disk and displays a status report.
CHKNTFS    Displays or modifies the checking of disk at boot time.
CLS        Clears the screen.
CMD        Starts a new instance of the Windows command interpreter.
COLOR      Sets the default console foreground and background colors.
COMP       Compares the contents of two files or sets of files.
COMPACT    Displays or alters the compression of files on NTFS partitions.
CONVERT    Converts FAT volumes to NTFS. You cannot convert the
           current drive.
COPY       Copies one or more files to another location.
DATE       Displays or sets the date.
DEL        Deletes one or more files.
DIR        Displays a list of files and subdirectories in a directory.
DISKPART   Displays or configures Disk Partition properties.
DOSKEY     Edits command lines, recalls Windows commands, and
           creates macros.
DRIVERQUERY Displays current device driver status and properties.
ECHO       Displays messages, or turns command echoing on or off.
ENDLOCAL   Ends localization of environment changes in a batch file.
ERASE      Deletes one or more files.
EXIT       Quits the CMD.EXE program (command interpreter).
FC         Compares two files or sets of files, and displays the
           differences between them.
FIND       Searches for a text string in a file or files.
FINDSTR    Searches for strings in files.
FOR        Runs a specified command for each file in a set of files.
FORMAT     Formats a disk for use with Windows.

```

```

Command Prompt
FTYPE      Displays or modifies file types used in file extension
           associations.
GOTO       Directs the Windows command interpreter to a labeled line in
           a batch program.
GPRESULT   Displays Group Policy information for machine or user.
HELP       Provides Help information for Windows commands.
ICACLS     Display, modify, backup, or restore ACLs for files and
           directories.
IF         Performs conditional processing in batch programs.
LABEL      Creates, changes, or deletes the volume label of a disk.
MD         Creates a directory.
MKDIR      Creates a directory.
MKLINK     Creates Symbolic Links and Hard Links
MODE       Configures a system device.
MORE       Displays output one screen at a time.
MOVE       Moves one or more files from one directory to another
           directory.
OPENFILES  Displays files opened by remote users for a file share.
PATH       Displays or sets a search path for executable files.
PAUSE      Suspends processing of a batch file and displays a message.
POPD       Restores the previous value of the current directory saved by
           PUSH.
PRINT      Prints a text file.
PROMPT     Changes the Windows command prompt.
PUSHD      Saves the current directory then changes it.
RD         Removes a directory.
RECOVER    Recovers readable information from a bad or defective disk.
REM        Records comments (remarks) in batch files or CONFIG.SYS.
REN        Renames a file or files.
RENAME     Renames a file or files.
REPLACE    Replaces files.
RMDIR     Removes a directory.
ROBOCOPY   Advanced utility to copy files and directory trees
SET        Displays, sets, or removes Windows environment variables.
SETLOCAL   Begins localization of environment changes in a batch file.
SC         Displays or configures services (background processes).
SCHEDULES  Schedules commands and programs to run on a computer.
SHIFT      Shifts the position of replaceable parameters in batch files.
SHUTDOWN   Allows proper local or remote shutdown of machine.
SORT       Sorts input.
START      Starts a separate window to run a specified program or command.

```

```

SETLOCAL    Begins localization of environment changes in a batch file.
SC          Displays or configures services (background processes).
SCHTASKS    Schedules commands and programs to run on a computer.
SHIFT       Shifts the position of replaceable parameters in batch files.
SHUTDOWN    Allows proper local or remote shutdown of machine.
SORT        Sorts input.
START       Starts a separate window to run a specified program or command.
SUBST       Associates a path with a drive letter.
SYSTEMINFO  Displays machine specific properties and configuration.
TASKLIST    Displays all currently running tasks including services.
TASKKILL    Kill or stop a running process or application.
TIME        Displays or sets the system time.
TITLE       Sets the window title for a CMD.EXE session.
TREE        Graphically displays the directory structure of a drive or
            path.
TYPE        Displays the contents of a text file.
VER         Displays the Windows version.
VERIFY      Tells Windows whether to verify that your files are written
            correctly to a disk.
VOL         Displays a disk volume label and serial number.
XCOPY       Copies files and directory trees.
WMIC        Displays WMI information inside interactive command shell.

For more information on tools see the command-line reference in the online help.

C:\Users\user>

```

## 2.Change Current Working Directory.

```

Microsoft Windows [Version 10.0.26100.7623]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user>cd downloads
C:\Users\user\Downloads>

```

## 3. List Contents of the Current Directory.

```

Microsoft Windows [Version 10.0.26100.7623]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user>cd downloads
C:\Users\user\Downloads>dir
Volume in drive C is Windows
Volume Serial Number is CA9B-F22D

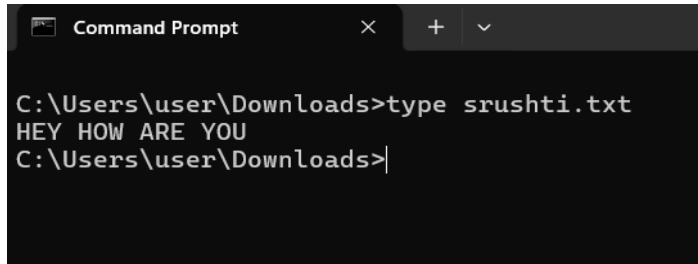
Directory of C:\Users\user\Downloads

19-01-2026  15:16    <DIR>          .
19-01-2026  13:14    <DIR>          ..
25-01-2025  01:34             21,678 1.jpg
28-07-2025  10:17       1,352,297 7z2500.exe
02-08-2025  07:46       2,879,488 AppSuite-PDF.msi
10-12-2024  19:13       48,968 Apurva kurve Resume.docx
10-12-2024  18:35       78,329 Apurva kurve Resume.pdf
10-09-2025  23:11     183,062,320 Canva Setup 1.115.0.exe
03-11-2024  01:53     10,219,392 ChromeSetup.exe
21-07-2025  07:37     78,900,800 CodeTantra.SEA-ia32-3.4.0.exe
05-09-2025  09:44     87,255,912 CodeTantra.SEA-ia32-4.0.0.exe
04-11-2025  07:28     87,464,720 CodeTantra.SEA-ia32-4.2.0 (1).exe
04-11-2025  07:26     87,464,720 CodeTantra.SEA-ia32-4.2.0.exe
12-01-2026  21:48     87,680,072 CodeTantra.SEA-ia32-4.3.0.exe
17-02-2025  09:35       2,586,681 CSS (OneShot)-20250217T040541Z-001.zip
24-12-2025  09:48       2,586,591 CSS (OneShot)-20251224T041826Z-3-001.zip
30-12-2024  10:35       90,456 Declaration.jpg
07-10-2025  18:42       50,534 Fee Receipt (1).pdf
07-10-2025  18:41       50,534 Fee Receipt.pdf
27-09-2025  07:06     126,745,168 FigmaSetup.exe
07-10-2025  11:13     16,229,689 FILE COPYING srushti.mp4
16-01-2026  13:40     66,292,520 Git-2.52.0-64-bit.exe
17-02-2025  09:35     93,345 Github Cheat Sheet-20250217T040538Z-001.zip
17-02-2025  09:35     587,166 HTML (OneShot)-20250217T040523Z-001.zip
19-01-2026  15:16     132,907 kitten.png
28-07-2025  11:43     86,528 mingw-get-setup.exe
05-01-2026  22:28    <DIR>          New folder
03-11-2024  00:49     425,304 Ninite Chrome Firefox VLC Zoom Installer.exe
15-11-2024  18:09     257,137 Operators-Expressions.pdf
13-09-2025  07:00     32,555 prelab.docx

```

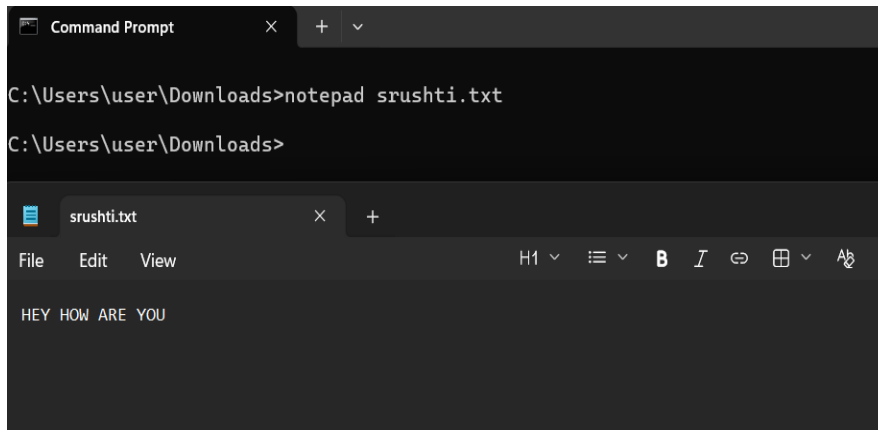
## 4.Read/Modify/Concatenate Text Files.

### 1. READ



```
Command Prompt
C:\Users\user\Downloads>type srushti.txt
HEY HOW ARE YOU
C:\Users\user\Downloads>
```

### 2.Modify

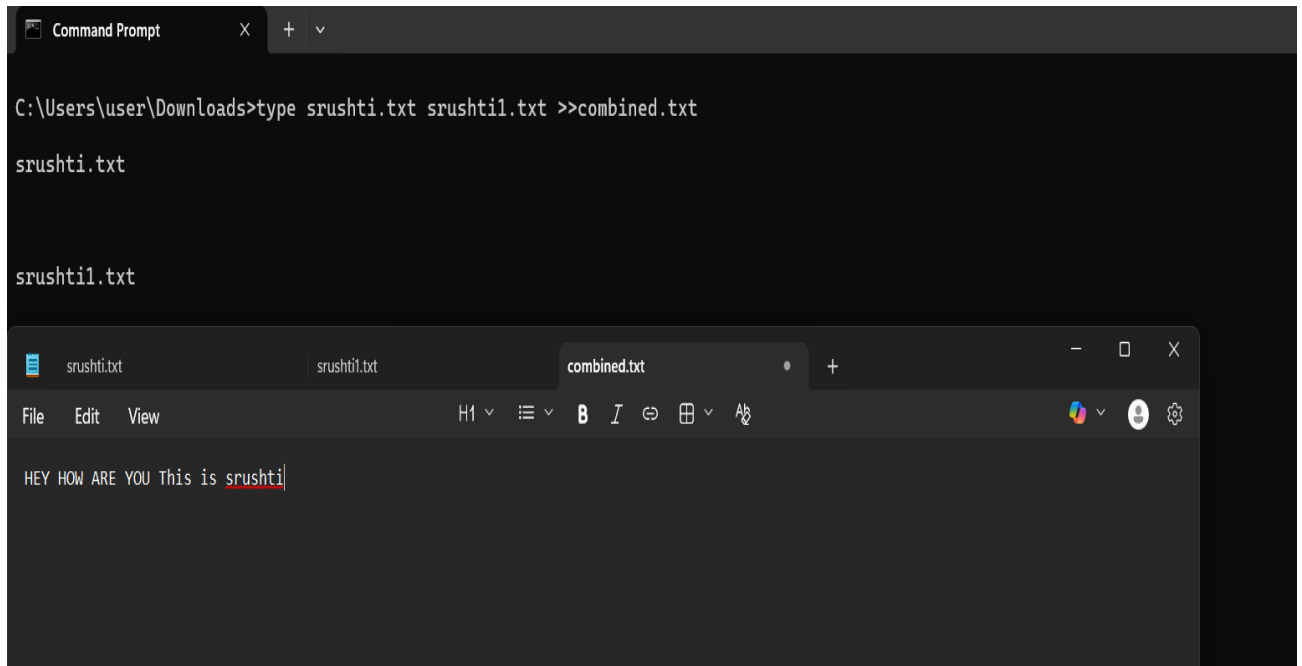


```
Command Prompt
C:\Users\user\Downloads>notepad srushti.txt
C:\Users\user\Downloads>
```

srushti.txt

HEY HOW ARE YOU

### 3.Concatenate



```
Command Prompt
C:\Users\user\Downloads>type srushti.txt srushti1.txt >>combined.txt
srushti.txt
srushti1.txt
```

combined.txt

HEY HOW ARE YOU This is srushti

## 5. Create a New Directory.

```

Command Prompt

C:\Users\user>mkdir TestFolder

C:\Users\user>
C:\Users\user>dir
Volume in drive C is Windows
Volume Serial Number is CA9B-F22D

Directory of C:\Users\user

19-01-2026  20:08    <DIR>          .
21-06-2025  20:08    <DIR>          ..
19-01-2026  14:44             464 .bash_history
14-02-2025  22:14             189 .gitconfig
19-01-2026  11:52             20 .lessht
07-10-2025  09:16    <DIR>          .vscode
21-06-2025  20:11    <DIR>          Contacts
09-07-2025  17:46    <DIR>          Documents
19-01-2026  20:04    <DIR>          Downloads
21-06-2025  20:11    <DIR>          Favorites
17-02-2025  09:10              0 HTML 1
17-02-2025  09:16          215 HTML.html
21-06-2025  20:11    <DIR>          Links
21-06-2025  20:11    <DIR>          Music
19-01-2026  20:00    <DIR>          OneDrive
21-06-2025  20:11    <DIR>          Saved Games
21-06-2025  20:11    <DIR>          Searches
18-09-2025  11:09    <DIR>          srushti photo
19-01-2026  20:08    <DIR>          TestFolder
28-07-2025  09:47    <DIR>          Videos
               5 File(s)              888 bytes
              15 Dir(s)  171,129,499,648 bytes free

```

## 6. Display Current Working Directory.

```

Command Prompt

C:\Users\user\Downloads>cd
C:\Users\user\Downloads

C:\Users\user\Downloads>|

```

## 7. Write Arguments to Standard Output

```

C:\Users\user\Downloads>echo hey
hey

C:\Users\user\Downloads>|

```

## 8. . Remove a File.

```

Command Prompt

              7 Dir(s)  171,115,483,136 bytes free

C:\Users\user\Downloads>del rough
C:\Users\user\Downloads\rough\*, Are you sure (Y/N)? y

```

## 9.Delete a Directory

```
C:\Users\user\Downloads>rmdir new

C:\Users\user\Downloads>dir
Volume in drive C is Windows
Volume Serial Number is CA9B-F22D

Directory of C:\Users\user\Downloads

19-01-2026  16:33      <DIR>          .
19-01-2026  13:14      <DIR>          ..
25-01-2025  01:34             21,678  1.jpg
19-01-2026  16:25             17,658  2 os.png
19-01-2026  16:23            175,568  3 os.png
19-01-2026  16:27            12,496  6 os.png
19-01-2026  16:28             7,429  7 os.png
28-07-2025  10:17          1,352,297 7z2500.exe
19-01-2026  16:26      <DIR>          alphamode
02-08-2025  07:46          2,879,488 AppSuite-PDF.msi
10-12-2024  19:13            48,968 Apurva kurve Resume.docx
10-12-2024  18:35            78,329 Apurva kurve Resume.pdf
10-09-2025  23:11          183,062,320 Canva Setup 1.115.0.exe
03-11-2024  01:53          10,219,392 ChromeSetup.exe
21-07-2025  07:37          78,900,800 CodeTantra.SEA-ia32-3.4.0.exe
05-09-2025  09:44          87,255,912 CodeTantra.SEA-ia32-4.0.0.exe
04-11-2025  07:28          87,464,720 CodeTantra.SEA-ia32-4.2.0 (1).exe
04-11-2025  07:26          87,464,720 CodeTantra.SEA-ia32-4.2.0.exe
12-01-2026  21:48          87,680,072 CodeTantra.SEA-ia32-4.3.0.exe
17-02-2025  09:35          2,586,681 CSS (OneShot)-20250217T040541Z-001.zip
24-12-2025  09:48          2,586,591 CSS (OneShot)-20251224T041826Z-3-001.zip
30-12-2024  10:35             90,456 Declaration.jpg
07-10-2025  18:42            50,534 Fee Receipt (1).pdf
07-10-2025  18:41            50,534 Fee Receipt.pdf
27-09-2025  07:06          126,745,168 FigmaSetup.exe
07-10-2025  11:13           16,229,689 FILE COPYING srushti.mp4
16-01-2026  13:40           66,292,520 Git-2.52.0-64-bit.exe
17-02-2025  09:35           93,345 Github Cheat Sheet-20250217T040538Z-001.zip
17-02-2025  09:35          587,166 HTML (OneShot)-20250217T040523Z-001.zip
19-01-2026  15:16           132,907 kitten.png
28-07-2025  11:43            86,528 mingw-get-setup.exe
05-01-2026  22:28      <DIR>          New folder
03-11-2024  00:49          425,304 Ninite Chrome Firefox VLC Zoom Installer.exe
```

## 10. Copy a File or Directory

```
C:\Users\user>echo This is a test file > file1.txt

C:\Users\user>copy file1.txt copyfile1.txt
1 file(s) copied.
```

## 11. Switch to Root User.

```
Command Prompt

C:\Users\user\Downloads>runas /user:administrator cmd
Enter the password for administrator:
Attempting to start cmd as user "KURVE\administrator" ...
RUNAS ERROR: Unable to run - cmd
1326: The user name or password is incorrect.

C:\Users\user\Downloads>|
```

## 12. Move Files or Directories.

```
C:\Users\user\Downloads>move srushti.txt "D:\ドキュメント "
1 file(s) moved.

C:\Users\user\Downloads>|
```

## 13. Search for a String in a File.

```
Command Prompt
C:\Users\user\Downloads>find "srushti" srushti1.txt
----- SRUSHTI1.TXT
This is srushti
C:\Users\user\Downloads>
```

## 14. Print Top N Lines of a File.

```
7 DIR(S) 170,833,948,288 bytes free
C:\Users\user\Downloads>more +1 new.txt.txt
heloooooooo
heyyyyyyyyyyyyy
how
are
you
i am
good
my name is srushti
C:\Users\user\Downloads>
```

## 15. Print Last N Lines of File

```
Command Prompt
C:\Users\user\Downloads>type new.txt.txt
hiiiiiiiiii
heloooooooo
heyyyyyyyyyyyyy
how
are
you
i am
good
my name is srushti
C:\Users\user\Downloads>
```

## 16. Remove Read Permission from Owner.

```
Command Prompt
C:\Users\user\Downloads>attrib -r srushti1.txt
C:\Users\user\Downloads>
```

## 17. Change Specific Permissions

```
Command Prompt
C:\Users\user\Downloads>icacls rough /grant:r user:R /deny user:W /grant Users:W
processed file: rough
Successfully processed 1 files; Failed processing 0 files
C:\Users\user\Downloads>
```

## 18. Add Write Permission to Owner, None to Others.

```
Command Prompt
C:\Users\user\Downloads>icacls rough /grant user:W /inheritance:r /remove Users Everyone
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

## 19. Assign Permissions to Users.

```
C:\Users\user\Downloads>icacls rough /grant Users:F
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

## 20. Assign R/W/X to Others.

```
C:\Users\user\Downloads>icacls rough /grant Everyone:(R,W,X)
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

## 21. Remove All Permissions from All Users.

```
Command Prompt
C:\Users\user\Downloads>icacls rough /inheritance:r /remove Users Everyone
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

## 22. Remove Read Permission Using Absolute Mode

```
C:\Users\user\Downloads>icacls rough /deny user:R
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

## 23. Set R/W for Owner, None for Group/Other.

```
C:\Users\user\Downloads>icacls rough /inheritance:r /grant user:RW /remove Users Everyone
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

## 24. Add Execute for Owner, Read for Group/Others.

```
C:\Users\user\Downloads>icacls rough /grant user:RX /grant Users:R /grant Everyone:R
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

## 25. Add Execute Permission to All Users.

```
C:\Users\user\Downloads>icacls rough /grant Users:RX
processed file: rough
Successfully processed 1 files; Failed processing 0 files
```

