Basic Shell Commands in Linux

What are Shell Commands in Linux?

A shell **in Linux** is a program that serves as an interface between the **user and the operating system.** It accepts commands from the user, interprets them, and passes them to the operating system for execution. The commands can be used for a wide range of tasks, from **file manipulation** to **system management**.

Some of the essential **basic shell commands** in **Linux** for different operations are:

- **File Management ->** cp, mv, rm, mkdir
- **Navigation ->** cd, pwd, ls
- **Text Processing ->** cat, grep, sort, head
- **System Monitoring ->** top, ps, df
- **Permissions and Ownership ->** chmod, chown, chgrp
- **Networking – >** ping, wget, curl, ssh, scp, ftp
- **Compression and Archiving – >** tar, gzip, gunzip, zip, unzip
- **Package Management – >** dnf, yum, apt-get
- **Process Management ->** kill, killall, bg, killall, kill

Basic Shell Commands for File and Directory Management

Command	Description	Example

ls	Lists files and directories	ls
cd	Changes the current directory	cd /home/user/Documents
pwd	Displays the current directory path	pwd
mkdir	Creates a new directory	mkdir new_directory
rm	Removes files or directories	rm file.txt
cp	Copies files or directories	cp file1.txt file2.txt
mv	Moves or renames files and directories	mv old_name new_name
touch	Creates an empty file or updates file timestamps	touch newfile.txt

Examples:

1. List files in a directory:

```
ls
```

2. Change directory:

```
cd/home/user
```

3. Create a new directory:

```
mkdir new_directory
```

4. Copy a file from one location to another:

```
cp source.txt destination.txt
```

5. Remove a file:

```
rm file.txt
```

Text Processing Commands in Linux

Command	Description	Example
`cat`	Displays the contents of a file	`cat file.txt`
`grep`	Searches for a pattern in a file	`grep "error" log.txt`
`sort`	Sorts the contents of a file	`sort file.txt`
`head`	Displays the first few lines of a file	`head file.txt`
`tail`	Displays the last few lines of a file	`tail file.txt`
`wc`	Counts the lines, words, and characters in a file	`wc file.txt`

Examples:

1. Display the contents of a file:

```
cat file.txt
```

2. Search for a pattern in a file:

```
grep "error" file.txt
```

3. Sort the contents of a file:

```
sort file.txt
```

4. Display the first 10 lines of a file:

```
head file.txt
```

5. Display the last 10 lines of a file:

```
tail file.txt
```

File Permissions and Ownership Commands

Command	Description	Example
chmod	Changes file permissions	`chmod 755 file.txt`
chown	Changes file owner and group	`chown user:group file.txt`
chgrp	Changes file group ownership	`chgrp group file.txt`

Examples:

1. Change permissions of a file:

```
chmod 755 file.txt
```

2. Change the owner of a file:

```
chown user:group file.txt
```

System Monitoring and Process Management Commands

Command	Description	Example
top	Displays real-time system information (CPU, memory)	`top`
ps	Displays the list of running processes	`ps aux`
kill	Terminates a process by its ID	`kill 1234`
df	Displays disk space usage	`df -h`

Examples:

1. View running processes:

```
ps aux
```

2. Display real-time system statistics:

```
top
```

3. Kill a process by its ID:

```
kill 1234
```

4. Check disk space usage:

```
df -h
```

Networking Shell Commands

Command	Description	Example
`ping`	Checks the network	`ping example.com`

	connection to a server	
`wget`	Retrieves files from the web	`wget http://example.com/file.zip`
`curl`	Transfers data from or to a server	`curl http://example.com`
`ssh`	Opens SSH client (remote login program)	`ssh user@example.com`
`scp`	Securely copies files between hosts	`scp file.txt user@example.com:/path/`
`ftp`	Transfers files using the File Transfer Protocol	`ftp ftp.example.com`

Examples

1. Check the network connection to a server:

- **Command:** ping
- **Example:** ping example.com

2. Retrieve files from the web:

- **Command:** wget
- **Example:** wget http://example.com/file.zip

3. Transfer data from or to a server:

- **Command:** curl
- **Example:** curl http://example.com

4. **Open SSH client (remote login program):**

- **Command:** ssh
- **Example**: ssh user@example.com

5. Securely copy files between hosts:

- **Command:** scp
- **Example:** scp file.txt user@example.com:/path/

6. Transfer files using the File Transfer Protocol:

- **Command:** ftp
- **Example:** ftp ftp.example.com

Advanced Shell Commands

Command	Description	Example
`find`	Searches for files and directories	`find /home/user -name "*.txt"`

tar	Archives files into a tarball (.tar) or extracts them	`tar -cvf archive.tar file1.txt file2.txt`
ssh	Connects to a remote machine via SSH	`ssh user@remote_host`

Examples:

1. Find files in a directory:

```
find /home/user -name "*.txt"
```

2. Create a tarball archive:

```
tar -cvf archive.tar file1.txt file2.txt
```

3. Connect to a remote machine using SSH:

```
ssh user@remote_host
```

Using Shell Command Piping

You can combine **multiple commands** by piping their output. In short, it allows the **output of one command** to be used as the **input for another command**.

Examples:

1. View the top 10 processes:

```
ps aux | head -n 10
```

2. Search and sort a log file:

```
grep "error" log.txt | sort
```

Conclusion

Mastering the **basic shell commands in Linux**is among the essential things to know so that you can perform a seamless **system navigation,** learn how to **manage files** efficiently, and **perform other operations.** By learning these commands, you can easily enhance your **Linux skills** and get a better insight over the system.

Basic Shell Commands in Linux – FAQ's

What is the `ls` command in Linux?

*It is used to **list all files and directories** in the current directory.*

How do I copy files using the `cp` command?

*Use the following syntax to copy using **cp command:***

```
cp source_file destination_file
```

How can I check disk space usage using `df`?

*You can use the **df command** to check the disk space, here's the syntax below:*

```
df -h
```

How do I move files with the `mv` command?

To move or rename files, use the ***`mv` command****:*

```
mv old_name new_name
```


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Anyone using Linux should become an expert in the essential shell commands, as they form the backbone of working with the Linux terminal. These commands enable you to navigate the system,

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