🎯 What is Shell?

In **simple words**, a **Shell is a program that acts as a bridge between the user and the Linux Kernel.**

When you type any command in the terminal like:

```
ls
```

- The **Shell interprets this command**.
- It **communicates with the Kernel**.
- The **Kernel performs the operation** and **returns the output back to the Shell**.

In Simple Terms:

Component	Role
Kernel	The heart of Linux (manages hardware and system resources)
Shell	The interface between the user and Kernel
Terminal	The interface where you type commands

Types of Shells in Linux:

Shell Type	Description
Bash (Default)	Most widely used (Bourne Again Shell)
ZSH	Advanced and hacker-friendly
Korn Shell (KSH)	High-performance
Fish Shell	User-friendly and colorfu

☑ What is Shell Scripting?

Shell scripting is simply **writing multiple Linux commands in a file** and **running them like a program**.

Why Use Shell Scripting?

- Automate boring tasks
- Perform network attacks
- Create hacking tools
- Automate system tasks like backups, updates, etc.
- Perform hacking & penetration testing

Simple Shell Script Example:

Open a new file:

```
nano myscript.sh
```

Add this code:

```
#!/bin/bash

echo "Hello, Hacker! "
date
echo "Current Directory: $(pwd)"
```

Save and Exit:

- `CTRL + X`
- Press `Y`
- Hit `Enter`

Run Your Shell Script:

```
bash myscript.sh
```

Output:

```
Hello, Hacker!
Thu Mar 13 15:20:12 PKT 2025
Current Directory: /home/kali/Desktop
```

What Just Happened?

- `#!/bin/bash`: Tells the system to use **Bash Shell** to run the script.
- `echo`: Prints text on the screen.
- `date`: Shows the current date and time.
- `$(pwd)`: Shows the current directory.

Where Are Shell Scripts Used?

Purpose	Usage
Ethical Hacking	Automate attacks, Bruteforce tools
Networking	Automate port scanning
System Admin	Automate backups, updates
Web Scraping	Extract data from websites
Cybersecurity	Malware analysis and reverse engineering