What is User Space in Linux?

In Linux, there are two major spaces:

Space	Controlled By	Purpose
Kernel Space	The Linux Kernel	Controls hardware and system resources
User Space	Users & Applications	Where all user programs and apps run

User Space = Playground for Users and Applications

When you open your terminal, run commands, or open any app (like Firefox or VS Code), you're interacting in **User Space**.

User Space vs Kernel Space

Kernel Space	User Space
Core part of Linux (The Brain)	Where users run commands
Handles drivers, memory, CPU, hardware	Runs apps like Metasploit, Nmap, Burpsuite
Full control over system resources	Limited control
Needs root access to modify	Normal users can access

How User Space Works:

- Whenever you **run any command like `ls` or `pwd`**, it runs in **User Space.**
- The **Shell sends requests to the Kernel.**
- **Kernel performs the action** and sends the result back to the **User Space.**

Example of Commands Running in User Space:

Command	Purpose
`ls`	List files
`ping`	Check network connection
`nmap`	Network scanning
`gcc`	Compiling code
`python`	Running Python code

Where Exactly is User Space Located?

- All **files, apps, and commands are stored in `/usr` (User Directory)**.

User Space Directory Structure:

Directory	Purpose
`/usr/bin/`	All Linux commands
`/usr/lib/`	Libraries for apps
`/usr/share/`	Shared files
`/home/`	User's personal files

In Simple Words:

Component	Real-Life Example
Kernel Space	Root/Admin (Has Full Control)
User Space	Normal User (Limited Control)

In Hacking Terms:

Space	What Hackers Do
Kernel Space	Kernel Exploitation
User Space	Writing Exploits & Malware