HYSEC

Linux

Introduction to Linux

Linux is an open-source operating system kernel initially developed by Linus Torvalds in 1991. It forms the core of numerous Linux distributions, offering users a stable, secure, and highly customizable platform.

Known for its versatility, Linux is widely used in various domains, including servers, desktops, embedded devices, and supercomputers. Its collaborative development model and adherence to open source principles have contributed to its widespread adoption and continual evolution.

HYSEC

Linux distributions

Operating system that bundle the Linux kernel with additional software components to form a complete operating system package.

Each distribution typically includes system utilities, libraries, and application software tailored to specific needs and preferences. Distributions vary in their design philosophies, release cycles, package management systems, and default desktop environments.

Popular examples include Ubuntu, Debian, Fedora, CentOS, Arch Linux, and Linux Mint.

Distributions serve diverse purposes, ranging from general-purpose desktop computing to specialized applications such as server hosting, embedded systems, and security-focused environments.

Users can choose distributions based on factors like stability, ease of use, performance, community support, and software availability.

The open-source nature of Linux distributions allows for extensive customization and adaptation to suit individual or organizational requirements.

HYSEC

Linux Kernel | Shell

Kernel

The Linux kernel is the core component of the operating system that interacts with the computer hardware

Shell

The shell is the user interface for Linux, which allows users to interact with the operating system through a command-line interface (CLI) or graphical user interface (GUI)

HYSEC

Package Management and User and Group Management

|Package Manager

|Package Repository | Dependencies

|Update and Upgrade | Package Locking

|User and Group Management | User Account | Group

|User Management |Group Management

|User Privileges | Sudo

HYSEC

Networking Basics

|IP Address | Network Interface | ifconfig | IP
|Ping | netstat | ss | traceroute
|nmap | DNS | iptables | SSH

HYSEC

System Administration and Security and Permissions

|User Management | Package Management | Service Management

|Backup and Recovery | Monitoring and Logging

|Security Updates | Firewall Configuration | Security and Permissions

|File Permissions | chmod | chown | Root User | sudo

|SSH Key Authentication | Encryption | Security Auditing

HYSEC

Linux Firewall Configuration

- Iptables
- nftables
- Default Policy
- Rules (ACCEPT, DROP, REJECT).
- Service-Specific Rules
- SSH (port 22) or HTTP (port 80)

HYSEC

Security and Permissions

- File Permissions
- chmod
- chown
- Root User
- sudo
- Encryption

HYSEC

What is Linux, and how does it differ from other operating systems?

Linux is an open-source operating system kernel that serves as the core of many different Linux distributions (or distros). It differs from other operating systems like Windows and macOS in that it is open-source, highly customizable, and often used in servers and embedded systems.

HYSEC

What is a Linux distribution (Linux distro), and give an example?

A Linux distribution (or distro) is a complete operating system package built around the Linux kernel.

Examples of Linux distributions include Ubuntu, CentOS, Debian, Fedora, and Arch Linux.

HYSEC

How can you open a terminal window in Linux?

You can open a terminal window in Linux by pressing Ctrl + Alt + T or by searching for "Terminal" in the application menu.

HYSEC

What is the purpose of the "sudo" command in Linux?

The "sudo" command in Linux is used to execute commands with superuser (root) privileges.

It allows authorized users to perform administrative tasks and system modifications.

HYSEC

What is the Linux file system hierarchy, and what are some key directories?

The Linux file system hierarchy defines the organization of files and directories in Linux.

Key directories include:

/: The root directory.

/home: User home directories.

/etc: Configuration files.

/var: Variable data (e.g., logs, databases).

/bin and /usr/bin: System binaries and user binaries, respectively.

HYSEC

How can you install software in Linux using package managers?

You can install software in Linux using package managers like "apt" (used in Debian/Ubuntu), "yum"

(used in CentOS/Fedora), or "pacman" (used in Arch Linux). For example, to install a package using "apt,"

you can run sudo apt-get install package-name.

HYSEC

What is the difference between a process and a thread in Linux?

In Linux, a process is an independent program with its own memory and resources, while a thread is a lightweight execution unit within a process. Multiple threads within a single process can share resources and memory.

HYSEC

What does the "chmod" command do in Linux?

The "chmod" command in Linux is used to change file permissions.

It allows you to control who can read, write, or execute a file or directory.

HYSEC

How can you find files and directories in Linux using the "find" command?

You can use the "find" command in Linux to search for files and directories based on various criteria,

such as name, type, or size. For example, to find all "txt" files in the current directory, you can run find .

-type f -name "*.txt".

HYSEC

What is the purpose of the "grep" command in Linux?

The "grep" command is used in Linux to search for text patterns within files.

It's a powerful tool for text processing and can be used to find, filter, and extract information from text files.

HYSEC

HYSEC

THANK YOU