RHCE Course Established by Red Hat Authority

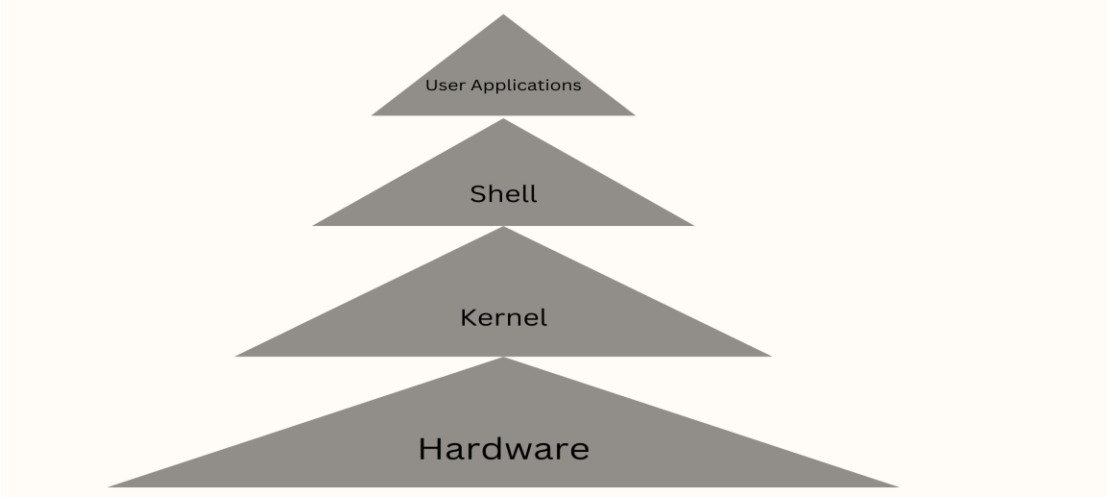
- **RHCE course is heavily focused on Linux—specifically on Red Hat Enterprise Linux (RHEL).**

It is an advanced-level certification for Linux system administrators who want to enhance their skills in managing Linux systems, particularly through automation and advanced administrative tasks.

- Windows - **Operating system (os)** -is a program that combines a set of instructions.
- The **operating system (OS)** Is the mediator between hardware and user applications.
- It provides an interface that enables communication between the hardware resources of a computer and the software applications used by the user.
- The **kernel** is the core component of an OS that directly interacts with hardware and manages system res
- Examples of Operating system - windows , Mac Os.

Is Linux an Operating System?

ARCHITECTURE OF LINUX



- **User applications:** The programs you use, like text editors, browsers, and media players.
  you use it to perform specific tasks.

- **Shell:** Acts as the middleman between the user and the kernel.
  The shell is like a translator—helping you communicate with the system.
  Translates user commands into actions the kernel can understand.
  eg: Bash, Fish,Zsh

- **Kernel:** The **kernel** is the brain.
  Core part of the operating system.
  Bridge between hardware and software.
  The kernel processes the request and communicates with the hardware.

- **Hardware:** This is the physical layer of the computer, including CPU, memory, storage devices.Hardware provides raw resources like processing power, storage, and input/output capabilities.It executes tasks as instructed by the kernel.

Examples of Kernel

- WINDOWS NT Kernel - Windows os
- LINUX Kernel - ubuntu
- XNU Kernel - Mac OS

LINUX:

- It is an **kernel**
- **Linux Kernel Based Os - GNU/LINUX**
  Full form of GNU - Gnu is not unix
  GNU - Developed - Stallman

- 1991 - Linus Torvalds developed Linux kernel as a Free and Open source.

What is Free and Open Source ?

Linux is free and open-source because it gives you four freedoms:

- **Freedom to Use**: Use Linux for any purpose.
- **Freedom to Study**: Learn how it works by accessing the source code.
- **Freedom to Modify**: Change the code to fit your needs.
- **Freedom to Share**: Share the original or modified version with others.

Why are other operating systems not free and open-source?

Other kernel-based operating systems, like **Windows** and **macOS**, are not free and open-source.

Business Model: Companies make money by selling their operating systems. If they were free and open-source, they couldn't charge for them.

Control: By keeping the source code closed, companies can control how the software works.

Security: Closed-source software is harder for hackers to modify or misuse.

Consistency: Companies can ensure all users have the same experience by controlling the software's updates and distribution.

- **Different companies that provide Linux in market are Red Hat, SuSe, CentOS etc.**

LINUX DISTRIBUTIONS :

A **Linux distribution** (or **distro**) is a version of the Linux operating system that includes the **Linux kernel** a Each distribution may have different features, package management systems, and user interfaces, but they all share the core Linux kernel.

- **ubuntu**
- **centos**
- **fedora**
- **centOS**
- **Debian**
- **Arch Linux**
- **Linux Mint**
- **Red Hat Enterprise Linux (RHEL)**

A system typically has two main types of interfaces:

- **Graphical User Interface (GUI):** A visual interface that allows users to interact with the system using graphical elements like windows, icons, menus, and buttons.
  Example: Desktop environments like GNOME, KDE, and XFCE on Linux; Windows desktop; macOS Finder.

- **Command-Line Interface (CLI):** A text-based interface where users interact with the system by typing commands.Terminal in Linux (Bash, Zsh), Command Prompt or PowerShell in Windows, macOS Terminal.

Advantages of Linux:

- **Open Source:** Linux is free to use, and anyone can view, modify, and share its source code.

- **Multi-user:** Many users can work on the same system at the same time.

- **Security**: Linux is highly secure, with strong user permissions and firewalls.

- **Portability:** Linux works on many types of devices, from PCs to servers to mobile phones.

- **Stability:** Linux is very reliable and rarely crashes.

- **Customizable:** Users can modify and configure Linux to fit their needs.

- **Command-line Interface (CLI)**: Linux allows users to control the system using text-based commands.

- **Performance:**Linux is efficient and can run smoothly on older or low-performance hardware.

disadvantages of Linux:

- **Learning Curve**: Linux can be hard for beginners, especially for those used to Windows or macOS.

- **Limited Software**: Some popular programs and games don't work on Linux.

- **Command-line Dependency**: Many tasks need command-line usage, which is tough for new users.
- **Less User-Friendly**: Some versions of Linux are not as easy to use as Windows or macOS.
- **Support**: Paid support is limited, and free community support may not be enough for everyone.

Red Hat offers several certifications for IT professionals.

- **RHCSA (Red Hat Certified System Administrator)**:
- **RHCE (Red Hat Certified Engineer)**:
- **RHCVA (Red Hat Certified Virtualization Administrator)**:
- **RHCDS (Red Hat Certified Deployment Specialist)**:
- **RHCSS (Red Hat Certified Security Specialist)**:
- **Red Hat Certified Architect (RHCA)**:

RHCE:

- **RHCSA(Red Hat Certified System Administator)**
- **RHCE (Red Hat Certified Engineer)**

Red Hat certifications like RHCSA (Red Hat Certified System Administrator) and RHCE (Red Hat Certified Engineer), the operating system used is Red Hat Enterprise Linux (RHEL).

Why RHEL is Used:?

Enterprise Standard:RHEL is known for being stable, secure, and supported for a long time. It's widely used by businesses to manage critical systems, making it ideal for certification exams.

Support and Maintenance:RHEL offers up to 10 years of support with regular updates and security fixes, ensuring businesses always have a reliable and secure system.

CertificationValidity: Red Hat certifications like RHCSA and RHCE are based on RHEL. The exams test real-world skills using RHEL, making certified professionals ready for enterprise environments.

SecurityFeatures:
RHEL has strong security features, like SELinux, to help protect systems and meet industry security standards