**Linux began in 1991** as a personal project by [Linus Torvalds](https://en.wikipedia.org/wiki/Linus_Torvalds" \o "Linus Torvalds)

Operating System

to create a new free operating system kernel.

***Linux is not an operating system it is a kernel.***

Kernel

|  |  |
| --- | --- |
| [Written in](https://en.wikipedia.org/wiki/Programming_language" \o "Programming language) | [C](https://en.wikipedia.org/wiki/C_(programming_language)" \o "C (programming language)), [assembly languages](https://en.wikipedia.org/wiki/Assembly_language" \o "Assembly language) |

# Architecture



1. **Kernel: -**

[Kernel](https://www.geeksforgeeks.org/kernel-i-o-subsystem-in-operating-system/) is **core component(heart)** of an operating system.

It manages operations of computer and hardware; it basically **manages operations of memory and CPU time**.

Kernel acts as a **bridge** between applications and data processing performed at hardware level using inter-process communication and system calls.

**Kernel loads first into memory when an operating system is loaded and remains into memory until operating system is shut down again**.

It is **responsible** for various tasks such as **disk management, task management, and memory management.**

It decides which process should be allocated to processor to execute and which process should be kept in main memory to execute.

The major aim of kernel is to manage communication between software i.e., user-level applications and hardware i.e., CPU and disk memory.

There are some of the important kernel types which are mentioned below:

* Monolithic Kernel | Micro kernels | Exo kernels |Hybrid kernels

**2. System Libraries: -** These libraries can be specified as some special functions. These are applied for implementing the operating system's functionality and don't need code access rights of the modules of kernel.

**3. System Utility Programs: -** It is responsible for doing specialized level and individual activities. Utility software is a software program to help to analyse, configure, optimize or maintain a computer

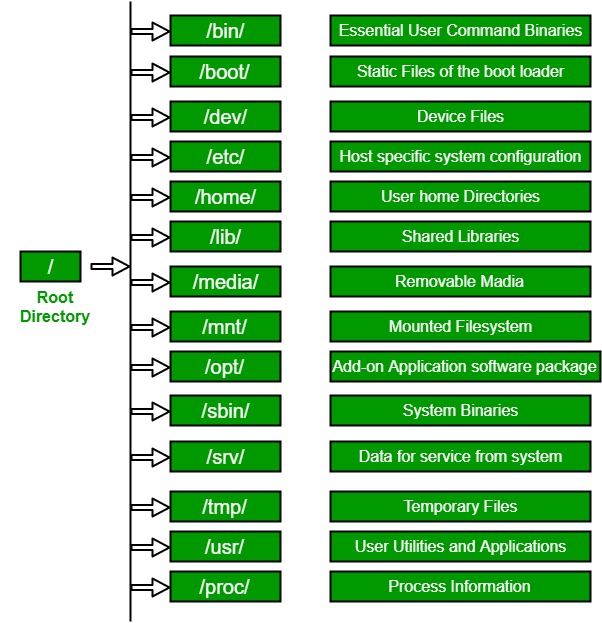
Types- System Utilities | storage device management system | file management utilities | Miscellaneous utilities.

**4. Hardware layer: -** Linux operating system contains a hardware layer that consists of several peripheral devices like CPU | HDD | [RAM](https://www.javatpoint.com/ram)

**5. Shell: -** It is an interface among the kernel and user. It can afford the services of kernel. It can take commands through the user and runs the functions of the kernel. The shell is available in distinct types of OS. These operating systems are categorized into two different types, which are the **graphical shells** and **command-line shells**.

There are a few types of these shells which are categorized as follows:

* Korn shell | Bourne shell | C shell | POSIX shell



Linux File Hierarchy Structure