**FILE SYSTEM:**

A **file system** defines how files are **named**, **stored**, and **retrieved** from a storage device.

**Distributed Filesystem:**

A **Distributed File System (DFS)**as the name suggests, is a file system that is distributed on multiple file servers or multiple locations. It allows programs to access or store isolated files as they do with the local ones, allowing programmers to access files from any network or computer.

The main purpose of the Distributed File System (DFS) is to allows users of physically distributed systems to share their data and resources by using a Common File System. A collection of workstations and mainframes connected by a Local Area Network (LAN) is a configuration on Distributed File System. A DFS is executed as a part of the operating system.

[**https://www.geeksforgeeks.org/what-is-dfsdistributed-file-system/**](https://www.geeksforgeeks.org/what-is-dfsdistributed-file-system/)

**Workstation:**

workstation, **a high-performance computer system that is basically designed for a single user and has advanced graphics capabilities, large storage capacity, and a powerful central processing unit**.

Mainframe:

At their core, [mainframes](https://www.ibm.com/it-infrastructure/mainframes) are high-performance computers with large amounts of memory and processors that process billions of simple calculations and transactions in real time. The mainframe is critical to commercial databases, transaction servers, and applications that require high [resiliency](https://www.ibm.com/it-infrastructure/z/capabilities/resiliency), [security](https://www.ibm.com/it-infrastructure/z/capabilities/enterprise-security) and agility.

Mainframes are data servers designed to process up to 1 trillion web transactions daily with the highest levels of security and reliability.

Resilience -> the capacity to recover quickly from difficulties

Agility -> ability to move quickly and easily

**Difference between Workstation and Mainframe:**

A workstation is a high-end personal computer. They are used primarily by a single person for computationally difficult work, such as engineering or video editing. A mainframe is a large server that multiple users log into to work on data and run programs. It is more useful in large corporate environments like in accounting or banking.

**Soft and Hard links in Unix/Linux:s**

A link in UNIX is a pointer to a file. Like pointers in any programming languages, links in UNIX are pointers pointing to a file or a directory. Creating links is a kind of shortcuts to access a file. Links allow more than one file name to refer to the same file, elsewhere.

There are two types of links :

1. Soft Link or Symbolic links
2. Hard Links

These links behave differently when the source of the link (what is being linked to) is moved or removed. Symbolic links are not updated (they merely contain a string which is the path name of its target); hard links always refer to the source, even if moved or removed.

For example, if we have a file a.txt. If we create a hard link to the file and then delete the file, we can still access the file using hard link. But if we create a soft link of the file and then delete the file, we can’t access the file through soft link and soft link becomes dangling. Basically hard link increases reference count of a location while soft links work as a shortcut (like in Windows)

**Computer Cluster:**

At a high level, a computer cluster is **a group of two or more computers, or nodes, that run in parallel to achieve a common goal**. This allows workloads consisting of a high number of individuals, parallelizable tasks to be distributed among the nodes in the cluster.

**Parallel Computing:**

Parallel computing is a type of computing architecture in which **several processors simultaneously execute multiple, smaller calculations broken down from an overall larger, complex problem**.