LO#02: Explain Different Types of File Systems

Understanding File Systems

C|EH

1. The file system is a **set of data types** that is employed for storage, hierarchical categorization, management, navigation, access, and recovering data

2. It provides a mechanism for users to store data logically in a **hierarchy of files and directories**

3. It also includes a **format** for specifying the path to a file through the structure of directories

4. File systems are organized in the form of **tree-structured directories**, which require access authorization

5. Major file systems include FAT, NTFS, HFS, HFS+, APFS, Ext2, Ext3, Ext4, among others

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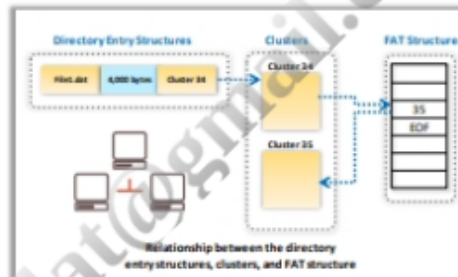_____
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Types of File Systems

Shared Disk File Systems	In this file system, a number of systems (servers) can access same external disk subsystem
Disk File Systems	This file system is designed for storing and recovering the file on a storage device, usually a hard disk
Network File Systems	This file system is created to access the files on other computers that are connected by a network
Database File Systems	File management, wherein, instead of or in addition to hierarchically structured management, the files are identified by their characteristics, such as the type of file, topic, author, or similar metadata
Flash File Systems	This file system is designed for storing and recovering files on flash memory devices
Tape File Systems	This file system is designed for storing and recovering the file on the tape in a self-describing form
Special Purpose File Systems	In this file system, files are arranged dynamically by software, intended for such purposes as communication between computer processes or temporary file space

Windows File Systems: File Allocation Table (FAT)

- The FAT file system is used with DOS; it was the first file system used with the Windows OS

- It is named for its method of organization, the file allocation table, which is placed at the beginning of the volume

- FAT contains three different versions (FAT12, FAT16, and FAT32) that differ owing to the size of the entries in the FAT structure

Relationship between the directory entry structures, clusters, and FAT structure

System	Bytes Per Cluster within File Allocation Table	Cluster Limit
FAT12	1.5	Fewer than 4087 clusters
FAT16	2	Between 4,087 and 65,526 clusters, inclusive
FAT32	4	Between 65,526 and 268,435,456 clusters, inclusive

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