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Review on role of File Management in Operating system

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Abstract:

The file management system provides the structure of file and directory to organization into the computer system. The easy way to store data include programs and user information. The system help to improve and work properly in file version histories reducing redundancy and approach and handling into the digital files. Therefore we are managing the fundamental concepts of file management features. The file management system are very important in the daily life. They give the digital information use to organize, store and maintaining the system. Therefore this operations system has different file to storing, editing, copying and renaming.

Keywords — Solid State Drive, File Allocation Table, New Technology File System, Compact Disc, Internet of Things.

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I. INTRODUCTION

In today's time digital data is growing very fast, from this reason file management becomes very important aspect for personal and professional use. File management system (FMS) is basically a software which organize and controls files systematically to store it, to easily accessible and protected from data losses. File management system provides a structured method in that hierarchical organization, metadata handling and version control features are present.

File management is not only for storage purpose, it also uses many features like data integrity confirm, reduces redundancy and improves workflow efficiency. Windows, Linux and MacOS contains basic file managers in it, but with the rise of large-scale data, specialized systems are develop which handles modern requirements. This review paper discusses the principles, features, and applications of the file management system and focusses on evolution and future directions.

II. Definition

A file management system is a easy and simple way to holding big data or program. Each file contains the name, size, type, location and admin information.

The file management is mainly used for creating, reading, writing, deleting, renaming and moving the data within the file.

Basic operation

1. Create - We can create new files or folders to store data.

2. Read/View - Files are used to view retrive old saved data.
3. Update - Files provide update or format saved data.
4. Delete - If files are not usable we can delete it.
5. Copy and move - We can copy files from one destination to another destination, and also move the files.
6. Rename - Files name are changeable after created.

III. Features

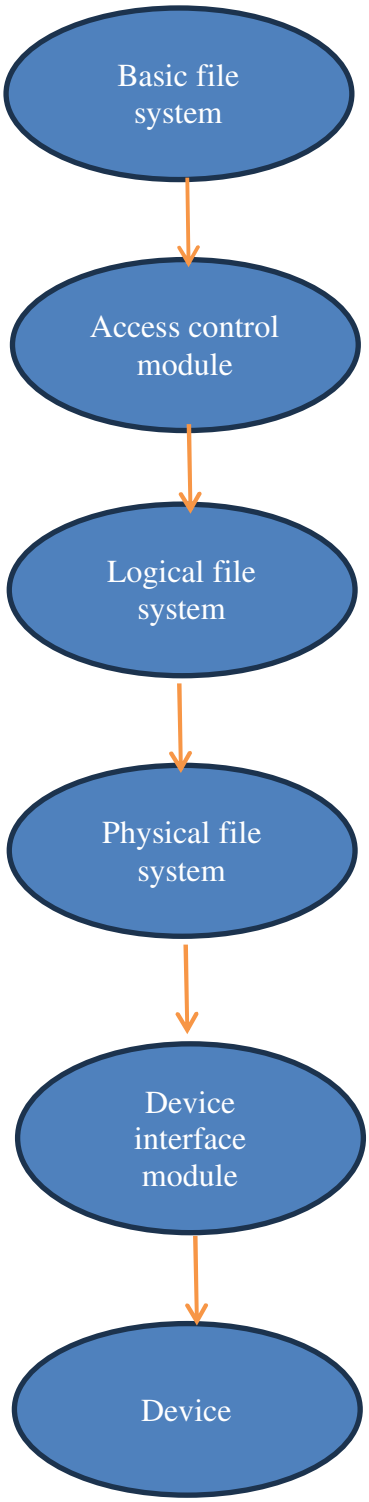
1. Search and Indexing - we can easily search the files through its name or location.
2. Version control – File can save in storage for retriving and restoring data.
3. File compression - File size can minimize or low size for sharing.
4. Access control – File can be accessible for authorized person.
5. Backup and recovery – Automatic backup of data in clouds and restore as you want.

IV. Importance

Good file management is important for organizing files to access quickly and find files with theirs names, sequence or folders in different drives so we can access file easily. File management is time saving and easy to handle for user.

In files we can edit, share or view document efficiently it also protects for getting lose files by mistakenly if user deleted. If you are working with the groups the file management makes it easy to the lots of works and manages the files it makes to easy work with files in different employees without creating any confusion, it provide security to your file, safe the data and it keeps sensitive information safe.

V. Levels in file management system



VI. Diagram Concepts

A. **Basic File System:** Basic file system is the last stage where it deals with the storage device. It deals with block allocation, free space management and mapping of logical blocks to physical blocks. Its main function is reading and writing of blocks on disk.
Example: deciding which disk block should store the required data.

B. **Access Control Module**: This layer is for security and permission, it checks that if user have rights for read, write and execute. In this layer authentication and authorization is done.
Example: Stopping an unauthorized user from deleting important system files.

C. **Logical File System:** Logical File System gives a logical view of files to user and applications. It manages metadata like file name, directory structure, file attributes (size, type, owner). It also maintains file organization structures such as File Allocation Table (FAT), New Technology File System (NTFS) or inode table.
Example: When user opens "document.txt", Logical File System finds the meta data of that file.

D. **Physical File System:** This type of file system executes the logical request in the users physical device. It manages and handles allocation of policies scheduling od disk and block address.
Example: Converting a logical block number into the sector of disk its track and its cylinder.

E. **Device Interface Module:** This type of layer acts as a intermediate between file system and different hardware devices it works as conversion of high level write or read request into conversion of low level input or output methods or commands which will be easily understandable for hardware.
It also helps in providing independence of device that is user does not need to think about its data whether the data is stored on USB or SSD.

F. Device(Storage Device):It is the main physical hardware for storage such as CD or flash memory disk. It helps in storing of raw information or data which will be in the form of small bits and it will provide multiple input output operations.

VII. Recent trends in file management systems

A. **Hybrid or Multi-cloud Storage:** In this rather than depending on a single provider of storage different organizations and industries prefer to use different cloud platforms like for storage of data. This helps in reducing work load on public cloud and data loss and helps in improving efficiency and locality of data. Hence it helps in reducing different challenges like complexity and data transfer cost between different clouds.

B. **Edge and Decentralized Storage**: As the real time devices IOT based applications rising day by day the data or information is process and stored tremendously closed to devices. This helps in reducing the time delay and safe throughput.

C. **Cloud-Native File Systems**: Traditional file system are modified and redesign for different cloud platforms this helps in elasticity, scaling and separate computation from the storage its main example is CubeFS that is use in AI and bid data field which helps reducing their work loads. It also include consistency of data and its reliability in huge distributed system.

D. **Support for AI, Big Data, and ML Workloads:** In this different file systems are used for handling of complex reads and writes which is essential for training of AI/ML models and big data analytics system this systems helps in providing high bandwidth and reduces training of models multiple times.

CONCLUSIONS

File management system plays a crucial role in this computing world because it helps in efficient use of data storage of data management. The layered architecture gives a abstraction to user and storage Device. Access control, allocation methos and metadata management makes the system reliable and secure.

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Overall now file management system is not only limited for storage purpose, it have intelligent, distributed and secure platforms are built. In future this contains scalable, performance optimization and cyber security from this it will be more powerful and adaptable.

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