Sharon Hutapea

Professor Renee Dodge

CIS 111

23 September 2024

Linux and Linux File Systems

A major difference between Linux and Windows is the way they are set up. Linux uses a Unix-based and open-source operating system. When put into simpler terms, the user has more control over the operating system and can tailor any details within the system to fit their needs. Linux is more customizable when it comes to coding based on its ability for users to freely view, modify, and distribute the source code in comparison to Windows where users are not able to change the code due to it being a close-sourced operating system.

A file system is a structure that operating systems use to manage data files on a storage device like a hard drive, SSD, or USB drive. (“Understanding File Systems - Kingston Technology”). It helps with organizing data, storing, and receiving information. It controls how data is stored, retrieved, and organized, allowing users to create, delete, read, and write files. The way file systems work can be broken down into three main points.

First, when saving a file, the system will store the file data within blocks on the storage device. Next, file paths are created to help find where the files were saved to. This is like an address for the file (i.e., C:/Documents/Resume.docx), and with this specific example, it tells the computer where to find the ‘resume.docx’ file. Finally, when users need to access a file, the metadata is used to locate the file on the storage system where it will then retrieve its data and open it for the user to access.

NTFS (windows), FAT32, APFS (apple), and ext4 (Linux) are just a few examples of file systems that are used across different operating systems today. Although Linux is compatible with many different file systems, the most common one used across all Linux distributions is the ext4 file system. Linux uses ext4 as its default file system based on its performance, increased reliability, and support for larger file sizes and volumes. Some unique features to point out are; the ability to support larger files, having a journaling feature which helps to prevent any data corruption by keeping track of its changes, and its compatibility with older versions of Ext making it easier to migrate older files from the ext2 and ext3 file system.

Work Cited:

“Understanding File Systems.” Kingston Technology Company, Aug. 2023, [www.kingston.com/en/blog/personal-storage/understanding-file-systems](http://www.kingston.com/en/blog/personal-storage/understanding-file-systems).

geeksforgeeks. “File Systems in Operating System - GeeksforGeeks.” GeeksforGeeks, 10 Feb. 2017, [www.geeksforgeeks.org/file-systems-in-operating-system/](http://www.geeksforgeeks.org/file-systems-in-operating-system/).

‌

‌