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Module 4 Linux Project

For this project I am going to look at Windows OS comparing to Linux, as I have been using windows primarily for everything. The only time I do not use it is when I cannot, for example, my iPhone. Although Linux and Windows are both immensely popular OS choices, they are a little hard to compare due to the fact they do not have many overlapping qualities, however, there are enough to compare the two.

I am going to start off with the financial aspects of the two, Linux is free and does not require any license to use due to it being open source, while Windows is a product of Microsoft and requires you to purchase a license to use the operating system. The core differences lie within the performance. Linux is highly customizable and modular; you can remove and add specific components. This makes it one of the best operating systems to use in low end computers, where having a highly optimized operating system leaves as much of the already limited computer resources available, making it ideal for developers and other tech savvy users. Windows on the other hand is certainly more resource heavy, but for the increased demand of computer resources it makes up for its widened compatibility and ease of use. The resource intensive aspect of windows is due mostly to the GUI and background services it runs to heighten its compatibility with a wide array of different devices. This increased compatibility with numerous devices, the huge boost to its intuitiveness that comes with using a GUI, and its optimization for high performance use makes it the most popular choice for domestic uses, like home computers, gaming setups, and businesses. With windows being as popular as it is, it also receives some of the most in-depth support for consumer software and peripherals. Both Windows and Linux boast extensive security features, Linux being open source means it is frequently updated for the newest threats and weaknesses by its countless users in its community. Windows is routinely updated with professional support and upgrades, furthermore Windows boasts an automatic update system that ensures the majority of machines get updated almost immediately as soon as the updates become available.

A file system is defined simply as a system that helps the user organize, access and manage files on the computer’s connected storage. An easy way to think of a file system is to think of it similarly as a filing cabinet. The computer's drive is similar to a filing cabinet, where to access a file, you first need to take it out, like how a CPU takes the information from a drive to do anything with it. Most of the time a drive is split into partitions, like the drawers of a filing cabinet, where the drawers of a cabinet may separate data based on its appropriate group, a partition is similar. A typical home computer may only have 2 partitions, one partition for the operating system data, and another for the user to store whatever they wish. This analogy is intentional as most digital file systems are modeled after the real-world filing systems using paper, this also serves to make it easier to understand for people unfamiliar with computers, giving a real-world equivalent to base their understanding on.

Linux’s modular nature means that it can use a wide variety of file systems but some of the most popular file systems for Linux include: ext (Extended file system), and Btrfs (B-Tree file system). Extended file system was designed specifically to work with Linux, so it's no surprise it works so seamlessly with Linux. It is one of the most popular default file systems to be used in distributions, due to its great performance and reliability. B-Tree is similar in one of its main points being its reliability but differs in the fact that it is a file system and file manager all in one, B-Tree is used for its reliability, efficiency, and easy administration uses.

Hill, Paul. “Linux vs. Windows.” *Server Academy*, 27 Apr. 2024, www.serveracademy.com/blog/linux-vs-windows/.

Sullivan, Erin, and Ellen O’Brien. “What Is a File System?: Definition from TechTarget.” *TechTarget*, 26 Feb. 2024, www.techtarget.com/searchstorage/definition/file-system.