

COMPARING AND CONTRASTING CARDINAL FEATURES OF WINDOWS AND LINUX OPERATING SYSTEMS

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Abstract : Microsoft windows and Linux computers are two such operating systems, the comparison of which is much talked about issue in the personal computer industry. Both these operating systems have their own functionalities and advantages. The differences of these will be discussed in detail in this paper. The primary difference between Linux and Windows operating systems is that Linux kernel and other components are free and open-source software. Linux is by far the most widely used one. Whereas Microsoft windows cater to personal desktop use retaining an extremely large retail sales majority among operating systems. Both these operating systems differ in cost, stability and versatility each working to improve thus providing better services.

I. INTRODUCTION

An Operating system is software that communicates with the hardware and allows other programs to run. It is comprised of system software or the fundamental files your computer needs to boot up and function.

Common desktop OS include Windows and Linux. While each OS is different, most provide a graphical user interface that includes a desktop and the ability to manage files and folders. Windows and Linux can be installed on standard PC hardware. The hardware you choose affects what OS you can run.

Windows OS, formally called Microsoft Windows is a group of several graphical OS families, developed, marketed and sold by Microsoft. Windows dominates PC's and comes 90% of them, rest are taken over by Linux and Mac OS. Windows offers graphical user interface with virtual memory management and offers OS for servers and personal mobile devices in addition to PC's.

Linux, came into vague in mid 90's. Since then Linux runs most of the internet, especially the scientific breakthrough supercomputers and world stock exchanges. Linux is one of the most reliable & secure OS available running the desktops and servers across the globe.

II. DIFFERENCES

The prior difference between Linux and Windows Operating System is that Linux is totally free of cost whereas window's is marketable OS and is costly. Linux is an open source OS, where users can access the source code and can improve the code using the system. On the other hand, in Windows users can not access source code, and it is a licensed OS.

The essential differences between Linux and Windows

1. Drivers come with mount points and not letters

Linux doesn't use assigned letters, instead it uses a single root file system with "/". The Disk Analyzer shows your file system usage and layout. Linux scales new drives in folders inside the root file system.

2. Software from the repositories

While performing a task in windows OS, Google is used to find a program, of course with hazards and viruses. Linux is more secure as it follows 'software repositories' while installing any program.

3. Login issue

Users login as system admin in windows, thus encountering viruses and malware. In Linux root administrator is used warning you of all the viruses, thus logging in as a regular user.

4. Have no Registry

Single database configuration is used by windows with its registry. And Linux uses no registry, offering system wide configuration files in the /etc directory. It's easy to back up in Linux than in Windows.

5. Free Help Available

While switching to Linux can be troublesome, but help is offered by people already using it to make it more user friendly.

The differences between Windows and Linux operating system are as follows:

Parameters	Windows	Linux
File Systems	In windows FS are FAT, FAT32, NTFS, exFAT	In Linux it is EXT2, EXT3, EXT4, JFS, XFS, Btrfs, FAT, FAT32, NTFS
Security	Till date approx 70,000 viruses are comprehended. Costing 20\$ to 400\$ for	80 to 100 viruses ascertained till date none working activity.

	anti-viruses	
Cost	Expensive. The price varies from 50 dollars to 450 dollars.	Free of cost. It is free of cost OS and can be distributed & downloaded for free.
Users account	It offers 4 types of user accounts. Administrator Standard Child Guest	It offers 3 types of user accounts. Regular Service Administrative
Directories	To store files & folders drives like C: D: E: is used.	Hierarchical file system like a tree is used.
Manufactures	Microsoft	Linux Kernel
Easiness	User Friendly	Little Complicated
Installation of Applications	Internet is required to install an application	No internet required
Interface	GUI is irreplaceable and integral part of Windows OS	Linux uses KDE and GNOME
Source code Access	A normal user can not access the source code	Belongs of GNU and Public License ensures easy access by all users
License	Microsoft License offers any modification and is bound by the no. of license purchases	In Linux, the GPL allows you to modify the software and even to republish or sell it
Flexibility	Rigid system	Flexible
Default file system	NTFS, the default file system in windows fragments the files while degrading the system performance	It uses EXT4 unsupported by windows avoids fragmenting and can even run NTFS file system
Platform	The comprehensive approach to Security Development Lifecycle makes it more secure	The code review by many proper and detection of bugs makes it secure
Centralized Installation of Application	Running executable files help detecting the software and its installation	Centralized location helps searching, adding or removing the software
Usage	Can be installed on Personal computers and even on mobile	Can be installed on various computer hardwares, mobiles, tablets, video games consoles etc
File Name Conventions	Cannot use 2 files with same name in same folders	Can have 2 files with same name in the same directory provided cases are different
Privileges	Administrator user uses all administrative privileges	Root user is the super user and has all administration privileges
Text mode interface	Command shells used, with single command interpreter	Default shell in Linux is BASH, supporting multiple command interpreters
Update Method	Windows update	Various
Programmed in	Assembly C, C++	C

Conclusion

Both Windows & Linux are operating systems with their own differences and functionalities. Both lead to be user friendly and try to make easy access. However, to ascertain the best amongst the two is difficult. Since both uses advanced features, suiting to then OS, thus both are useful and advanced in their own right.

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