

Difference between Linux and Windows Operating System

The differences between Linux and Windows by considering several parameters such as **performance, usability, security, ease of use, and more to clear a picture of using both operating systems.**

Windows Operating System

- Windows is a graphical operating system developed and marketed by **Microsoft**.
- It is also referred to as Microsoft Windows.
- Several versions of Windows have been introduced in the market; the current version is **Windows 10**.
- The first version of Windows was introduced on **November 20, 1985**, as a graphical operating system for MS-DOS.
- Microsoft Windows is a family of various operating systems.
- It comes with two versions, i.e., 64 bit and 32 bit.
- It facilitates both client and server versions.
- The latest client version is Windows 10, and the server version is Windows server 2019.
- Windows is a straight forward and simple to use. Generally, it is designed for *users having no programming knowledge*. So, ***mostly it is used for business and alternative industrial purposes.***

Linux Operating System

- Linux is an **open-source** operating system.
- As it is open-source, it is special and different from other operating systems, which means that you can customize it by editing source code.
- It provides programming as well as a graphical user interface.*
- Linux is a collection of operating systems that are based on Linux **kernel**.
- The first version of Linux was released in the **year 1991**.
- The Linux system is most commonly used for servers; however, it is available in desktop versions as well.

- **Ubuntu, Devian, and Fedora** are some popular Linux distributions.

Also, we have **SUSE Linux Enterprise Server (SLES)** and **RedHat Enterprise** Linux for the commercial distribution of Linux.

- As it is open-source, we can modify the source code and make variations in the operating system.

Parameter	Linux	Windows
Access	Users can access the source code of kernel in Linux and can alter the kernel according to need.	Usually, users cannot access the source code. However, members of some groups can have access to it.
Variety	Linux has several distributions that are highly customizable.	Windows have fewer options to customize.
Command-line	The command line usually referred to as Terminal , which is the most useful tool of the Linux system	Windows also have a command line but it is not such effective as a comparison to the Linux terminal. Most users prefer the GUI options for daily tasks.
Installation	The Linux installation process is a bit complicated to set up as it requires many user inputs. It takes less time than Windows to install.	Windows OS is easy to install and set up on a machine. However, it takes more time to install compared to Linux.
Ease of use	Users may take more time to be a handy user of Linux. The troubleshooting process is also complicated as compared to Windows.	Windows comes with simple and rich GUI options, so it is easy to use it. It can be simply used by technical as well as non-technical users. The troubleshooting process is also much easier than Linux.

Written in	Linux is written in assembly language and C .	Windows is written in C++ and assembly language .
Reliability	Linux is highly reliable and secure. It has well-established system security, process management, and uptime.	Windows is not as much reliable as Linux. However, now Windows has improved reliability but still has some security weaknesses and system instabilities.
Support	Linux has a good support as it has a huge community of user forums and online search.	Windows also provides good support to its user. It provides free as well as paid support. It has an easily accessible online forum.
Update	Linux provides full control to its users on updates. A user can install the update whenever needed. Also, it takes less time to install an update.	Windows updates are annoying. The updates will come at any time and take too much time to install. Sometimes, you power on your machine, and updates are automatically getting started. Unfortunately, the user does not have much control over updates.
Security	Linux OS is more secure than Windows. It is hard for the hackers and attackers to find a loophole in it. So, Linux is hard to breakthrough.	Windows is less secure than Linux. Attackers primarily target the Windows for malware and virus. Windows is most vulnerable without anti-virus.
License	Linux is distributed under the GPL(GNU General Public License) license.	Windows is distributed under a Proprietary commercial software license .

Working environments

K Desktop Environment (KDE)

- K desktop environment (KDE) is a desktop working platform.
- It is graphical user interface (GUI) released in the form of an open-source package.
- When KDE was first released, it acquired the name **Kool desktop environment**, which was then abbreviated as K desktop environment.
- it including a file manager, window manager, help tool and system configuration tool.
- The KDE project was first launched by Matthias Ettrich in 1996.
- Ettrich choose to use a GUI, which is more understandable and simple for Windows OS users.
- KDE is currently used with Linux, Solaris, FreeBSD, OpenBSD and LinuxPPC.
- KOffice is considered a very popular suite among KDE applications.
- It includes a word processor and spreadsheet, image editing, vector drawing, and presentation applications.
- KOffice was first released in October 2000 as part of the KDE version 2.0 package.

GNOME (GNU Network Object Model Environment)

- GNOME ([GNU](#) Network Object Model Environment, pronounced gah-NOHM) is a graphical user interface ([GUI](#)) and set of computer [desktop applications](#) for users of the [Linux o s](#).
- It's make a Linux operating system easy to use.
- With GNOME, the user interface can, be made to look like [Windows](#) or like Mac OS.
- GNOME includes a set of the same type of applications found in Microsoft Office: Like
 - ☐ [word processor](#),
 - ☐ spreadsheet program,
 - ☐ [database](#) manager,
 - ☐ presentation developer,
 - ☐ Web [browser](#)
 - ☐ email program.
- GNU is the Free Software Foundations own operating system and set of applications
- GNOME also comes as a user interface and set of applications for mobile devices.
- GNOME is developed by The GNOME Project, which is composed of both volunteers and paid contributors, the largest corporate contributor being Red Hat.

Xfce (pronounced as four individual letters)

- Xfce (pronounced as four individual letters) is a free software desktop environment for Unix and Unix-like platforms, such as Linux, Solaris, and BSD.
- It aims to make linux o.s. fast and lightweight,
- it is easy to use.
- It consists of separately packaged components that together provide the full functionality of the desktop environment.

Linux Shell-

- The shell can be defined as a command interpreter within an operating system like Linux or Unix.
- It is a program that runs other programs.
- the user can execute different tools/utilities or commands with a few input data.
- The shell sends the result to the user over the screen when it has completed running a program
- shell is a programming language with **functions, variables, loops, conditional execution** etc.

Bourne shell (sh):-

- The Bourne shell, called "sh," is one of the original shells, developed for UNIX computers by Stephen Bourne at AT&T's Bell Labs in 1977.
- It offers features such as input and output redirection, shell scripting with string and integer variables, and condition testing and looping.
- This shell does not have the interactive facilities.
- The Bourne shell does provide an easy to use language with which you can write shell scripts.

Bash (Bourne Again Shell)

- The Linux Bash is also known as '**Bourne-again Shell.**'
- It is a **command language interpreter** for the Linux based system.
- It is a replacement of Bourne shell (sh).
- The Bash is a **command language interpreter** as well as a **programming language**.
- It supports **variables, functions, and flow control**, like other programming languages.
- It can also read and execute the commands from a file, which is called a **shell script**.
- It was developed under the GNU Project and written by **Brian Fox**.
- Nowadays, Bash is the default user shell of most of the Linux distributions.
- The Linux/Unix shell allows us to interact with the Linux system through the commands.
- it also allows us to interact with the Linux file system.
- It is designed in such a way that we can perform all the Linux operations through Bash.
- Although many sh scripts can be run by Bash without any change.

•C shell (csh):-

- Developers have written large parts of the Linux operating system in the C and C++ languages.
- Using C syntax as a model, Bill Joy at Berkeley University developed the “C-shell,” csh, in 1978.

TC shell (tcsh):-

- Ken Greer, working at Carnegie-Mellon University, took csh concepts a step forward with a new shell, **tcsh**.
- tcsh fixed problems in csh and added command completion
- Tcsh does not run bash scripts.

Korn shell (ksh):-

- David Korn developed the Korn shell, or ksh .
- Ksh is compatible with sh and bash.
- Ksh improves on the Bourne shell by adding floating-point arithmetic, job control, and command aliasing and command completion.
- AT&T held proprietary rights to ksh until 2000, when it became open source.
- It provides all the features of the C and TC shells .
- It is the most efficient shell.
- Consider using this as your standard interactive shell.

<https://www.youtube.com/watch?v=9e1j28lC12U>

THANK YOU