

# COMPARISON BETWEEN THE MOST POPULAR DESKTOPS AND LAPTOPS OPERATING SYSTEMS

## (Linux vs Windows vs MAC)

### *Some Used Scientific Terminologies:*

#### *System Patch:*

A **patch** is a piece of software designed to update a computer program or its supporting data, to fix or improve it. This includes fixing security vulnerabilities and other bugs, and improving the usability or performance.

#### *Operating System Security*

It is protecting your OS from malware attacks , spyware and other threats to computer users that attempt to steal information, damage information.

#### *Reliability:*

The probability that a system satisfactorily performs the task for which it was designed or intended, for a specified time and in a specified environment.

#### *Open Source System*

Open Source Operating System is any operating system that is free to use and which provides the original code (source code) where the source code is available (under a copyright license) to the public, which enables them to use, modify / enhance the operating system, and redistribute the modified form of the operating system.

## Comparison Between The Most Popular Desktops And Laptops Operating Systems

Criteria	Linux	Windows	Mac Os X
History	<ul style="list-style-type: none"> <li>▪ Linux is based on the Multiuser OS UNIX, and it can be distributed freely.</li> <li>▪ It is the brainchild of Mr, <a href="#">Linus Torvalds</a>. Typically all underlying source code can be freely modified and used.</li> <li>▪ Linux Kernel was first released for public use in 1991.</li> <li>▪ <span style="color: green;">The biggest achievement for Linux is that it is a multiuser OS and the <u>Security and stability</u> is better than Windows.</span></li> </ul>	<ul style="list-style-type: none"> <li>▪ Windows first released as a part of Disk operating System(DOS) in the year of 1985. At that time Apple's Macintosh was a very popular OS, as it introduced GUI to the world.</li> <li>▪ So to increase the popularity of DOS, Microsoft bundled Windows 1 with the DOS at that time. But until Windows 3 which was released in 1990, achieve the success in the GUI based OS market.</li> <li>▪ With the release of Windows 95, in 1995, Microsoft became a household name in the OS market. From that time on, each Personal Computer comes with Windows OS as the preinstalled OS.</li> <li>▪ <span style="color: green;">The biggest achievement for Windows OS is that it is <u>very user friendly</u>, easy to understand, and it has the versatility to run with <u>almost every different kind of Personal Computers</u>.</span></li> </ul>	<ul style="list-style-type: none"> <li>▪ Mac OS is a series of graphical user interface-based operating systems developed by Apple Inc. <i>for their Macintosh line of computer systems.</i></li> <li>▪ Apple's Macintosh OS is even older than Windows.</li> <li>▪ <span style="color: green;"><u>It is the first ever successful graphical-based operating system</u>, being released one year before it's Microsoft counterpart.</span></li> </ul>
Cost	The majority of Linux variants are available for <b>free</b> or at a <span style="color: red;"><i>much lower price than Microsoft Windows.</i></span>	Microsoft Windows can run between \$50- \$150 per each license copy..(i.e not free)	<ul style="list-style-type: none"> <li>▪ Expensive: Mac OS costs even more than Windows.</li> </ul>
market share	Approximately = 1.53%	Approximately =91.57% (Most popular)	Approximately =6.9%

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">OS's Mode Source</p>	<p>The most Open source OS</p>	<p>Close source</p>	<ul style="list-style-type: none"> <li>▪ Major components of Mac OS X, including the UNIX kernel, are made available (i.e. open source)</li> <li>▪ The user interface and other system programs added by Apple Inc is a closed source.</li> <li>▪ Due to the closed source parts, the system is not free</li> <li>▪ So , we can say that MAC OS is <i>both open &amp; close</i> source</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Ease of use</p>	<p>Although the majority Linux variants have improved dramatically in ease of use, <i>Windows is still much easier to use for most computer users</i> because of the familiarity of Windows and because it's more likely they are using a Windows computer at home, in school, or at the office.</p>	<p>Microsoft has made several advancements and changes that have made it a <b>much easier to use operating system</b> It is still Easier than Linux.</p>	<p>Mac is <b>easy to use</b> OS but Most of the time, Mac just looks better than Windows.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Reliability</p>	<ul style="list-style-type: none"> <li>▪ The majority of Linux variants and versions are <i>reliable</i> and can often run for months and years <b>without needing to be rebooted</b>.</li> <li>▪ Linux is based on the UNIX architecture which is a multi user OS, so it is <b>much more stable than single user OS Windows</b>.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Although Microsoft Windows has made great improvements in reliability over the last few versions of Windows, <b>it still cannot match the reliability of Linux</b>.</li> <li>▪ Many times users of Windows have to manually restart the PC . This is very frustrating for the user since they may lose valuable data.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Macs <u>only run on Apple computers</u>, and are thus less prone to hardware and software crashing.</li> <li>▪ Mac OS <b>requires Less Maintenance</b> than Windows</li> </ul>

- Linux is and has always been a **very secure operating system**. Although it still can be attacked when compared to Windows, it much more secure.

### >>Why Linux is high secured system??

- Linux is based on the UNIX architecture which is a **multi user OS**, so it is much more stable than single user OS Windows.
- As Linux is community driven, developed through people collaboration and monitored constantly by the developers from every corner of the earth, any **new problem raised can be solved within few hours** and the necessary patch can be ready at the same time.

- Although Microsoft has made great improvements over the years with security on their operating system, their operating system continues to be the **most vulnerable to viruses and other attacks**.
- Windows users **must** install & update anti-virus program

### >>Why Windows has a continuous problem in security?

- Windows were originally designed for ease-of-use on a **single-user PC without a network connection and did not have security features built in**.
- Microsoft **releases security patches** through its “Windows Update “service approximately **once a month**

- Apple Macs has **little number of viruses**.
- Mac users often **don't** install anti-virus program

Software	<ul style="list-style-type: none"> <li>Linux has a <i>large variety of available software programs</i>, utilities, and games. However, <b>Windows has a much larger selection of available software</b>.</li> <li>Some games can be run on Linux. In general, <i>games have some difficulties to set up in Linux environment</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Because of the large amount of Microsoft Windows users, <i>there is a much larger selection of available software programs, utilities, and <b>games</b></i> for Windows.</li> <li>A majority of games support Windows and are released first for the Windows platform.</li> <li>Recent versions of windows improved in supporting designers</li> </ul>	<ul style="list-style-type: none"> <li>Mac OS has a <i>less selection of available software than windows</i></li> <li>Only a few games will run on Mac OS</li> <li>Apple drops compatibility with old applications</li> <li>The best for designer (video/graphics and audio editing) <ul style="list-style-type: none"> <li>✓ Software companies often target Macs for design-related tools.</li> <li>✓ It offers excellent font management and other built-in tools like Preview for quick conversion and other tasks.</li> </ul> </li> </ul>
Software Cost	Many of the available software programs, utilities, and games available on Linux are <i>freeware or open source</i> . Even such complex programs.	Although Windows does have software programs, utilities, and games for free, <i>the majority of the programs are NOT free</i> .	In general, applications' cost on MAC OS <i>is higher</i> than windows
Hardware	Although hardware manufacturers have made great advancements in supporting Linux it still will not support most <b>hardware devices</b> . However, for the hardware devices that have driver support they usually work in all versions of Linux.	Because of the amount of Microsoft Windows users and the broader driver support, <b>Windows has a much larger support for hardware devices and almost all hardware manufacturers will support their products in Microsoft Windows</b> . Windows users also have the benefit of everything being made specifically for them	<ul style="list-style-type: none"> <li><b>Only available on Apple computers</b>: If you already have a computer, you cannot install MAC on it unless it's an Apple. Otherwise, you must buy a new computer.</li> <li>Other Apple devices (e.g. iphone, ipad,...etc) work best with Apple computers</li> </ul>

Applications' Source code	Many Linux programs are <u>open source</u> and enable users to customize or modify the code however they want to.	The majority of Windows programs are <u>not open source</u> .	<ul style="list-style-type: none"> <li>Apple inc support some open source projects but most of MAC OS applications are closed source.</li> </ul>
Support	Although it may be more difficult to find users familiar with all Linux variants, there are vast amounts of available online documentation and help, available books, and support available for Linux.	Microsoft Windows includes its own help section, has vast amount of available online documentation and help, as well as books on each of the versions of Windows.	<ul style="list-style-type: none"> <li>Mac OS has its support site</li> <li>In general, it has <b>less amount of help documentation</b> than windows</li> </ul>

**Conclusion:**

No operating system is really best in all criteria; the choice is up to you. If you're a gamer, then you have no choice, go for Windows. Programmers might prefer Linux and video/graphics producers will probably tend towards Mac.

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