**Experiment No: 1**

**Title:** **Compare various operating systems according to different criteria.**

**Theory:**

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| Operating System | Creator/ Produced by | Initial Public release | Target system type | Computer Architecture supported | File system supported | Kernel type | GUI default | Package management | Update management |
| MS-DOS | TIm Paterson | August 1981 | Intel 8086 processor | x86 System | File Allocation Table | Monolithic | No | None | None |
| Windows 7 | Microsoft | 22 july 2009 | Workstation, personal computer, [media center](https://en.wikipedia.org/wiki/Home_theater_PC), [Tablet PC](https://en.wikipedia.org/wiki/Microsoft_Tablet_PC), embedded | 32-bit 64-bit. Processor: 1 GHz IA-32 processor, GHz x86-64 processor. Memory (RAM):1 GB, 2 GB. Graphics card: DirectX 9 graphics processor with WDDM driver model 1.0 | NTFS | Hybrid | Windows Aero | Winget Command line tool | Windows update |
| Windows 10 | Terry Myerson | 29 july 2015 | Workstation, personal computer, [media center](https://en.wikipedia.org/wiki/Home_theater_PC), [Tablet PC](https://en.wikipedia.org/wiki/Microsoft_Tablet_PC), embedded | 32 bit and 64 bit | FAT, FAT32, NTFS, and exFAT | Hybrid | Windows shell | command-line utility and a set of services for installing applications | Update Assistant |
| Mac OS | Apple Inc. | 24 march 2021 | Workstation, personal computer, embedded | subset of the standard PC architecture | HFS+, FAT32, and exFAT, with read-only support for NTFS | Hybrid (XNU) | Aqua  (Graphical) | Homebrew | Mac patch management |
| Linux | Notable contributors include: [Richard Stallman](https://en.wikipedia.org/wiki/Richard_Stallman) for [GNU Project](https://en.wikipedia.org/wiki/GNU_Project) and [Linus Torvalds](https://en.wikipedia.org/wiki/Linus_Torvalds) for [Linux](https://en.wikipedia.org/wiki/Linux) and the Unixes they emulated; [Red Hat](https://en.wikipedia.org/wiki/Red_Hat), [Debian Project](https://en.wikipedia.org/wiki/Debian_Project) See: [Comparison of Linux distributions](https://en.wikipedia.org/wiki/Comparison_of_Linux_distributions) and [Linux Kernel#Development](https://en.wikipedia.org/wiki/Linux_Kernel#Development) | 17 sept 1991 | [Cloud computing](https://en.wikipedia.org/wiki/Cloud_computing), [embedded devices](https://en.wikipedia.org/wiki/Embedded_device), [mainframe computers](https://en.wikipedia.org/wiki/Mainframe_computer), [mobile devices](https://en.wikipedia.org/wiki/Mobile_device), [personal computers](https://en.wikipedia.org/wiki/Personal_computer), [servers](https://en.wikipedia.org/wiki/Server_(computing)), [supercomputers](https://en.wikipedia.org/wiki/Supercomputer) | Kernel, Hardware layer, System library, Shell, and System utility | ext\* family (ext2, ext3 and ext4), XFS, JFS, and btrfs | Monolithic | Unix shell | 1) DPKG – Debian Package Management System · 2. RPM (Red Hat Package Manager) · 3. Pacman Package Manager – Arch Linux4. Zypper Package Manager – openSUSE 5. Portage Package Manager – Gentoo | Update-manager is a frontend for the apt package management system |
| Android | [Android, Inc.](https://en.wikipedia.org/wiki/Android,_Inc.), [Google](https://en.wikipedia.org/wiki/Google) | 2008 | [Smartphone](https://en.wikipedia.org/wiki/Smartphone), [tablet computer](https://en.wikipedia.org/wiki/Tablet_computer), [education](https://en.wikipedia.org/wiki/Educational_software) | open-source Linux Kernel having collection of number of C/C++ libraries which are exposed through an application framework services. | FAT32/Ext3/Ext4,exFAT | Linux | Graphical(multi-touch) | APK based | [Over-the-ai](https://en.wikipedia.org/wiki/Over-the-air_update)r, software update |
| iOS | Apple Inc. | 29 june 2007 | Smartphone, music player, tablet computer | [ARMv8-A](https://en.wikipedia.org/wiki/ARMv8-A) (iOS 7–present), [ARMv7-A](https://en.wikipedia.org/wiki/ARMv7-A) (iPhone OS 3–iOS 10), [ARMv6](https://en.wikipedia.org/wiki/ARMv6) (iPhone OS 1–iOS 4.2.1) | [HFS+](https://en.wikipedia.org/wiki/HFS_Plus) (prior to version 10.3), [APFS](https://en.wikipedia.org/wiki/Apple_File_System) (since version 10.3) | Hybrid | [Cocoa Touch](https://en.wikipedia.org/wiki/Cocoa_Touch) ([multi-touch](https://en.wikipedia.org/wiki/Multi-touch), [GUI](https://en.wikipedia.org/wiki/Graphical_user_interface)) | Swift Package manager | Software Update |

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| Ubuntu | Canonical Ltd. | 20 october 2004 | [Cloud computing](https://en.wikipedia.org/wiki/Cloud_computing), [personal computers](https://en.wikipedia.org/wiki/Personal_computer), [servers](https://en.wikipedia.org/wiki/Server_(computing)), [supercomputers](https://en.wikipedia.org/wiki/Supercomputer), [IoT](https://en.wikipedia.org/wiki/Internet_of_things) | x86 (aka i386), AMD64 (aka x86\_64) and PowerPC | FAT32,NTFS,ext2,ext3 | Linux Kernel | GNOME | GNOME  Software  ,APT,dpkg,Snappy,flatpak | Software Update |

**Observations/ Results:**

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| **Operating System** | **Pros** | **Cons** |
| **Ms-dos** | 1)We have direct access to the BIOS and its underlying hardware.  2)Its size will “boot” much faster than any windows version; thus, it will run in a smaller system. | 1)No multitasking supported by the OS.  2)Difficulty in memory access when addressing more than 640 MB of RAM. |
| **Windows 7** | 1)Windows 7 is faster than its predecessors, both in terms of installation and boot up time.  2)Calculator has been enhanced with some new features like unit conversion, calculations like fuel economy and auto lease payment**.** | 1) It is expensive than the previous Microsoft operating systems.  2) Some of the users have problems such as; their system hangs after installing Windows 7 |
| **Windows 10** | 1)The loading time of Windows 10 is much less than that of Windows 7.  2)Stability and performance has been greatly improved in Windows 10. | 1)Your personal information will be shared with Microsoft for better service and improvement.  2)Upgrading to Windows 10 sometimes may lead to system crash. If it happens, you need to spend hours to solve this problem |
| **Mac -OS** | 1)Comes With Useful Free Productivity Apps  2)Simple and Cleaner User Interface than Windows | 1)Limited and Restricted Availability of Apps  2)Inflexibility for Hardware Upgrades and Customization |
| **Linux** | 1)Stability and efficiency  2)Low configuration requirements | 1)There is no specific support vendor  2)The graphical interface is not good enough |
| **Android** | 1)Millions of apps and Third-party apps also supported  2)Expandable memory | 1)Low specification mobiles run slow  2)The new app idea is difficult |
| **Ios** | 1)Apple iPhone generates less heat while you are using the phone. The apps in iPhone use the battery more efficiently and thus generates less heat  2)Apple users say that they have good experience using Google maps and android lacks some features of Google maps. | 1)iOS devices are very simple in look and you cannot use as your computer. But if you compare this with android devices then you can perform your computer work in devices also  2)iPhone and iPad do not provide SD card. If you want to increase your storage then you have to buy a new device that has more storage. |

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| **Ubuntu** | 1)Free Operating System for Personal and Enterprise Computing  2) Works in a Range of Devices or Computing Platforms | 1)Limited Functionality Due to Limited Applications  2) Problems About Software and Hardware Compatibility |

**Conclusion:**

After comparing different operating systems ,I think Windows OS is the best operating system as compared to other Operating Systems.