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FARMAGUDI, PONDA GOA

WINDOWS OS CASE STUDY

EXPT NO: 1

DATE:

AIM: To study different versions of Windows Operating Systems.

THEORY

Windows Operating System

Windows Operating System Windows Operating System was introduced into the market in the year 1985, and as a robust and comprehensive kind of software, has almost 90% market share over and above other operating system.

The Microsoft Operating System as a family of Microsoft windows was created as a graphical layer over that of old MS dos with its root from MS DOS Command line and this it retains till date with DOS Box command prompt that is cmd.exe. Original Windows NT core happens to be the first to take shape in OS/2 operating system upon which modern versions are dependent. 32 and 64-bit AMD and Intel systems accommodate Windows OS, DEC Alpha, PowerPC architectures Windows OS, and MIPS is also comfortable with recent versions, likewise low and mid-range servers.

Merits of Windows OS

- i. Technical/Maintenance support: Support is made available either online or offline because of its general acceptability by so many users.
- ii. Compatibility: Windows accommodates almost every application, game works and different types of drivers
- iii. Enormous quantity of functions: Getting use to Windows, one would realize that there are many functions one can do almost anything quite easily with when call up.

Demerits of Windows OS

- i. Viruses: Need to purchase an antivirus program that needs to be activated frequently, and this can be done on Auto or Manual mode, although free antivirus exist but with limitations.
- ii. Slow: Windows operating system, particularly Vista and Windows 7 needs a lot of system resources like registers, cache, main memory, processor, disk space, and this makes the system runs slower.
- iii. Price: The cost of purchasing Windows operating system is high and very few users can afford it and this necessitate cracking and makes pirated software version available.

1. **Windows 1.0x**

The first version of Windows, released in 1985, was simply a GUI offered as an extension of Microsoft's existing disk operating system, or MS-DOS. Based in part on licensed concepts that Apple Inc. had used for its Macintosh System Software, Windows for the first time allowed DOS users to visually navigate a virtual

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desktop, opening graphical “windows” displaying the contents of electronic folders and files with the click of a mouse button, rather than typing commands and directory paths at a text prompt.

Features:

- a. The system needed the following requirements to install Windows 1.0:
 - Video: CGA/HGC/EGA
 - DOS: MS-DOS 2.0
 - RAM: 256 KB or more,
 - Disk Drive(s): 2 double-sided disk drives or hard drive.
- b. Windows 1.0 included the following programs, Microsoft DOS Executive, Calendar, Calculator, Clipboard, Windows Paint, Windows Write, Reversi, Clock, Control Panel, Notepad, Print Spooler, Cardfile and Terminal.
- c. Established multitasking of existing MS-DOS programs and gave rise to interaction paradigm, execution model and stable API and future native programs.
- d. Included original device drivers for mouse, keyboards, printers, video cards and serial communications.
- e. It was designed in such a way so that it's extension into a full-fledged operating system can be done.
- f. Ran a shell program called MS-DOS Executive, little more than mouse-able output of DIR command not supporting icons and not Y2K – compliant.

Advantages:

- a. It is of a very low price of \$99 with the PC required to run it at a price of \$600, while other operating systems were of thousands of dollars back in the 80s.
- b. Enabled the users to see user friendly icons on the screen.
- c. Introduced the Microsoft Windows Line.

Disadvantages:

- a. It over-emphasized a mouse input at a time when the mouse was not yet widespread.
- b. New users were not provided with enough resources.
- c. It had lower computer hardware specifications on systems for performance issues.

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2. **Windows 2.0x**

Windows 2.0 is a 16-bit operating environment from Microsoft released on December 9, 1987, Windows 2.00, Windows 2.01 and Windows 2.03 were shells for the DOS system, providing a graphical user interface for improved interaction than the commandline interface of DOS.

Features:

- a. The system requirements were as follows:
 - OS – Windows XP, SP 2 or Mac OS X 10.38.
 - Processor Speed – Pentium 4, 3.2 GHz or Power PC G5, 2.0 GHz.
 - RAM – 513 MB.
 - Graphics Card – ATI Radeon 9800 w / 256 MB video memory.
 - Hard Disk Space – 80 GB available.
- b. It had the following applications - CALC.EXE, CALENDAR.EXE, CARDFILE.EXE, CLIPBRD.EXE, CLOCK.EXE, CONTROL.EXE, CVTPAINT.EXE, MSDOS.EXE, NOTEPAD.EXE, PAINT.EXE, PIFEDIT.EXE, REVERSI.EXE, SPOOLER.EXE, TERMINAL.EXE, WRITE.EXE
- c. For MS-DOS, Microsoft Windows launched Windows 2.0 as the second release.
- d. The reference to Presentation Manager and the future of OS/2 in the literature was included in this version.
- e. Consistency of the appearance of GUI between OS/2 1.1 and 1.2 and Windows 2.0 was maintained.
- f. It came in 3 'waves' –
- g. 2.0x wave in 1987.
- h. 2.1 wave in 1988.
- i. 2.11 wave in 1989.
- j. The different versions of Windows 2.0 are – Windows/286 and Windows/386.
- k. EMS memory was introduced.

Advantages:

- a. Sophisticated keyboard shortcuts were introduced.
- b. The second version had terminologies of 'Minimize' and 'Maximize' as opposed to 'Iconize' and 'Zoom' in the first version.
- c. Windows 2.0 became the first ever version that could integrate the control panel.

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Disadvantages:

- a. Since the applications of Windows 2.0 were not designed for protected mode, they cannot be run on Windows 3.0 or up without modifying.
- b. Though VGA graphics were included in Windows 2.0, but they were available in 16 colours only.
- c. This version was not at all a commercial success due to limitations in hardware and software.

3. **Windows 3.0x**

Windows 3.0 was originated and made on May 22, 1988 when a group of Microsoft programmers independently decided to develop a protected mode Windows as an experiment. They cobbled together a rough prototype and presented it to company executives, who were impressed enough to approve it as an official project.

Features:

- a. The official system requirements for Windows 3.0x:
 - 8086/8088 processor or better
 - 384K of free conventional memory (real mode, protected modes require more)
 - Hard disk with 6-7MB of free space
 - CGA/EGA/VGA/Hercules/8514/A graphics and an appropriate and compatible monitor
 - Microsoft DOS version 3.1 or higher
- b. Improved user interface
- c. Better memory management with Intel's 80286 and 80386 processors.
- d. Multiple DOS program multitasking support.
- e. Revamped Control Panel
- f. Solitaire card game program added.
- g. Improved Paintbrush program.
- h. Improved Windows icons in EGA\VGA mode, support for 256 colour VGA. (80286 processor or better required)
- i. (Multimedia Extensions 1.x release): included a CD-ROM drive and sound card support, such as the Creative Labs Sound Blaster Pro.
- j. Windows 3.0x was the only version of Windows that could be run in three different memory modes:
 - Real mode: Limit of 4MB of EMS memory.
 - Standard mode: For computers with a 80286 processor, and corresponding to its protected mode.
 - 386 Enhanced mode: Has 32-bit addressing and paging for faster memory access, and virtual 8086 mode for safer execution of MS-DOS programs, uses virtual 8086 mode to allow multiple DOS programs to run along with being windowed and allowing multitasking to continue. Virtual memory

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support allows the user to employ the hard disk as a temporary storage space if applications use more memory than exists in the system.

Advantages:

- a. Improved windows frame and the colour display ability to be ready for photo editing work.
- b. The ability to address memory beyond 640k.
- c. Unlike windows 1.0 and 2.0 that starts with a MS-DOS executive, Windows 3.0 has a program manager shell can manage windows compatible programs and also MS-DOS programs. It could somewhat multitask
- d. It had graphical versions of Word and Excel.
- e.

Disadvantages:

- a. The lack of multimedia and network feature which made the company replaces windows 3.0 by windows 3.1.
- b. It crashed a lot and was less stable than version 3.1.
- c. Multitasking was only cooperative. Applications controlled multitasking. The apps would signal to Windows that they were done and another app could take over.
- d. The hardware still has faults as it ran on a DOS.

4. Windows 95

Windows 95 was a consumer-oriented graphical user interface-based operating system built on top of MS-DOS. It was released on August 24, 1995 by Microsoft as part of its Windows 9x family of operating systems, and was a significant progression from the company's previous Windows products. During development, it was referred to as Windows 4.0 (Windows 4.00) or by the internal codenames Cougar and Chicago.

Windows 95 integrated Microsoft's formerly separate MS-DOS and Windows products. It moved from 16-bit architecture to a pre-emptively multitasked 32-bit architecture.

In the marketplace, Windows 95 was a major success, and within a year or two of its release had become the most successful operating system ever produced.

Features:

1. A complete operating system rather than a graphical user interface running on top of MS-DOS. After boot up, the system completely ran without MS-DOS environment.
2. Windows 95 has a new system control that located on the upper left corner of each window as an icon. In the upper right of each window, it has a new designed system box. Usually, it displays "Minimize", "Maximize/Restore" and new added "Close" buttons.
3. New introduced Desktop Windows 95 can store files, shortcuts and system icons such as "My Computer" and "Recycle Bin".

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4. Right click an object in system usually can bring a pop-up menu with some items like "edit", "copy", "paste", "properties" and "help".
5. The help window can resize and jump to anywhere in the screen. It splits to two areas in which left side is the index or keyword window and the right side is the content window.
6. 95 began to have a task bar to store the links that can active or inactive an running program and display some system information in the tray area. A start menu was included in the task bar can let user access the shortcuts to all programs in a tree structure menu system.
7. Folder view of all kinds of files and resources. In Windows 95, files, drives, shortcuts and network resources can all be displayed in a folder view in the new Windows Explorer which replaced Program Manager in previous version of Windows.
8. Support of 32-bit application, pre-emptive multitasking and thread. These functions made Windows 95 to have the ability to run more complex tasks and programs.

Advantages:

- a. Better system responsiveness and smoother background processing. It allows preemptive multitasking and multithreading support for Win32 applications.
- b. Provide a newly redesigned graphical interface that is not only easier to learn and use, but more efficient and more customizable.
- c. Improve user friendliness as it allows longer filename support (up to 255 characters). MS-DOS 8.3 filenames are still maintained and tracked by Windows 95 for compatibility with existing Win16 and MS-DOS based applications.
- d. Provide more efficient file and print support with faster disk/file access and printing.
- e. Simplify the switching among multiple programs by means of the task bar and lets the user launch applications and open documents more easily.
- f. Enhance multimedia support with built-in support for sound, midi, fast CDROMs and digital video playback.
- g. Support better network connectivity with simpler and enhanced network support for NetWare, Windows NT Server, Internet and most major network standards.
- h. Plug and Play-compatible devices can be detected and configured automatically. Users are free from the trouble of manual hardware setup and there is no need to worry about IRQs, DMAs and I/O port addresses when a new component is added to the system.

Disadvantages:

- a. Items dragging and dropping works on most folders except the Control Panel, Printers, or Dial-Up Networking folders. This inconsistency in the interface may confuse some users.
- b. Cannot pre-emptively multitask Win16 applications because it uses the same System Virtual Machine (VM) model as in Windows 3.1 to run Win16 applications. Thus,

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Windows 95 will revert to a cooperative multitasking environment when running Win16 applications and give them exclusive control of the CPU for as long as the applications are executing. As a result, true pre-emptive operation is impossible when multitasking a mixture of Win16 and Win32 applications.

- c. System protection against buggy applications is weak as compared to other 32-bit OS such as Windows NT and OS/2 Warp.
- d. There is a security hole with File and Printer sharing for NetWare networks which may affect data security for corporate users
- e. Windows 95 uses an easily cracked 32-bit key to store the passwords in the PWL file.

5. **Windows 98**

Windows 98 (codenamed Memphis and Windows 97) is the second major release in the Windows 9x line of operating systems. It was released on June 25, 1998 as the first entry in 6th generation of operating systems.

Features:

- a. Improved appearance of window. The title bar of windows in Windows 98 has gradient colors. When moving mouse over an icon in tool bar, the system pops up a small "Help Tip" window showing brief instruction. When moving mouse over a menu item, the system shows a 3-D effect border around that menu item.
- b. Integrated Microsoft Internet Explorer in Windows Explorer and Help System. Microsoft began to integrate Microsoft Internet Explorer to their Windows system to not only display web pages, but also manage windows and help system.
- c. Quick Launch tool bar. A tool bar, which can integrate with start menu and contains shortcuts. This tool bar can be always on top of other windows.
- d. "Show Desktop" button on quick launch tool bar. This button can minimize all open windows then show the desktop.
- e. An ActiveX desktop. The ActiveX allow user to display an active web page instead of the idea of background of a picture introduced in Windows 3.0.

Advantages:

- a. Windows 98 is DOS friendly.
- b. It allows the users to find the browse and the information on the computer or on the internet simpler and faster, It has faster speed and greater stability,
- c. Windows 98 is more coordinating with the present soft and hardware, Windows98 provides internal support for more than 1900 present hardware devices, and it has passed the test of compatibility with more than 3500 popular softwares.
- d. If you put a CD that supports automatically playing, Windows98 will play the CD automatically instead of a tedious operation procedure to choose play tool, Microsoft Windows98 operating system provides built-in support for external devices, making the use of these widely used devices easier.
- e. Windows98 provides an HTML online help system, Windows98 included all the parts of making the desktop a dial-up server, Windows98 supports builtin Advanced Configuration and Power Interface port, that allows you to turn on or off your PC as TV.

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- f. When the operating system is turned off improperly or heavy mistake of hardware, Windows98 can run the Scan Disk automatically, Windows Maintenance Wizard is designed to enhance the self-maintainability of PC.

Disadvantages:

- a. Windows 98 can not detect large memory (1GB is still stable, forced 2GB yield blue screen), The utility is very limited especially the network tool, It is easy to the viruses, and it is easy to hack.
- b. Windows 98 is too risky to conduct banking transactions from the browser Windows 98 because of its minimal network, The display is too simple, and it does not support the latest applications.
- c. Windows 98 has limited memory protection and no resource tracking, making it prone to the crashes.
- d. Windows 98 cannot boot on a computer with more than 512 MB of RAM without unofficial patches, and it does not support more than one processor core, The ability to multi-tasking very bad, the ability to multi-thread a very bad, Handling a bad device, DMA is often conflict and CPU resource management turmoil.

6. **Windows Me**

Windows Millennium Edition, or Windows Me (pronounced as an abbreviation, "ME"), is a graphical operating system released on September 14, 2000 by Microsoft, and was the last operating system released in the Windows 9x series.

Features:

- a. System Restore Tool - System Restore feature allows user to restore system files, drivers, and the registry to their previous state. System Restore feature helps Windows ME to recover from system failure. With this feature, users can undo the recent changes that are causing problems.
- b. Automatic Windows Update - Windows Millennium Edition included new feature named Windows Update utility that automatically download and install updates from Windows Update Web site.
- c. Windows Image Acquisition (WIA) - Image Acquisition feature of Windows ME allows Windows Application to communicate with devices like digital cameras, scanners, & webcams etc.
- d. System File Protection - Microsoft introduced Windows file protection feature first in Windows 2000. In Windows ME, System File Protection feature silently and automatically restore the original copy of system file if system files have been deleted, corrupted, or modified.
- e. Generic Drivers for USB storage devices - Microsoft included best feature in Windows ME that makes it first OS in Windows 9x series to provide generic drivers for USB mass storage devices. With this feature, there is no longer need of third-party driver for USB devices.
- f. Windows Movie Maker - Windows Millennium Edition came with new feature Window Movie Maker that enables user to capture, edit media content. Using this feature, users can capture video and perform editing on them then reencode it into Windows Media format which is the compressed form.

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Advantages:

- a. Windows Me has gotten rid of "Real Mode DOS," a legacy environment that older MS-DOS programs ran in. Instead, Windows Me supports only the more elegant "Protect Mode" of the Intel processors it runs on, which provides the OS with full access to the power of the underlying hardware and is more reliable.
- b. To make it easier to work with photographs and other pictures, Microsoft has added a new version of Windows Image Acquisition (WIA) to Windows Me. It has integrated digital media and gaming features
- c. Windows Me introduces a number of consumer-oriented networking features that offer significant advantages over Windows 98. Chief among these is an improved Home Networking Wizard (HNW), which simplifies the setup of a home network.
- d. It incorporates the Desktop Update UI from Windows 98, most of the tweaks and enhancements from Windows 2000, and adds its own little updates that make this the most elegant version of Explorer yet.

Disadvantages:

- a. Due to its many bugs and glitches, Windows Me is considered one of the worst operating systems of all time.
- b. Windows Media Player 7 and Windows Movie Maker, cannot be uninstalled by a PC maker or end user.

7. **Windows XP**

Windows XP (codenamed Whistler 2000-2001) is a personal computer operating system produced by Microsoft as part of the Windows NT family of operating systems. The operating system was officially released to manufacturing on August 24, 2001, and generally released for retail sale on October 25, 2001. The name "XP" is short for "eXPerience", highlighting the enhanced user experience.

Features:

- a. Windows Media Player for Windows XP - Primary software for searching, playing back, managing and storing digital media
Network Setup Wizard - Facilitating the sharing of a computer and devices by combining them at home
Windows Messenger - Communication/collaboration tool with Instant Messaging, Audio/Video Meeting and application sharing function
Support for enhanced mobile functions accessible from outside
- b. Remote desktop - User can access the data and applications in a computer remotely from another computer.
- c. Off-line files and off-line folders - Even when the connection is discontinued from the server, you can access files and folders shared on the network.

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- d. Expandable processor support - Supporting up to 2 multi-processors
- e. Retention of data security and protection of user privacy
- f. Firewall for the Internet connection - Protecting your computer automatically from unauthorized access during the Internet connection
- g. Multi-lingual user interface (MUI) - Can change the user interface language, in compliance with the languages in dialog boxes, menus, help files, dictionary and proof tools. To use this function, user must purchase the multi-language version (MUI) provided under the volume license program.
- h. IIS (Internet Information Service) - Information can be sent to the Internet and intranet by Web.

Advantages:

- a. The existing applications on Windows XP can run with other computers via the Internet.
- b. Windows XP has a stable system.
- c. Windows XP can be used for various applications in real time to the entire world.
- d. Many applications or software that supports or is compatible with Windows XP.
- e. many applications run well on this operating system.
- f. Mutual support between software and hardware so as to produce the best look.

Disadvantages:

- a. License price is very expensive.
- b. System security of the windows are very weak and thus susceptible to viruses and worms
- c. The absence of a Java Virtual Machine as the windows previously.
- d. There is no community support for this operating system is not opensource.

8. **Windows Vista**

Windows Vista (codenamed Longhorn) was released more than five years after the introduction of its predecessor, Windows XP, the longest time span between successive releases of Microsoft Windows desktop operating systems at the time.

Windows Vista contains many changes and new features, including an updated graphical user interface and visual style dubbed Aero, a redesigned search function, multimedia tools including Windows DVD Maker, and redesigned networking, audio, print, and display sub-systems. Vista aims to increase the level of communication between machines on a home network, using peer-to-peer technology to simplify sharing files and media between computers and devices.

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Features:

- a. The interface is a state of art and has been called Aero, authentic, energetic, reflective, and open. User friendly, the interface is cleaner, streamlined, and aesthetic.
- b. Desk top gadgets positioned on the right-hand side of the screen enables users to view sports scores, weather, and other interesting things while continuing to work on the main screen.
- c. The Media Player has features like graphic interface, photo display, systematic organization, and compatibility with Xbox360 and other media players.
- d. Backup and restore functions enable users to schedule backups of files.
- e. Outlook express has a new avatar, Windows Mail and it can filter junk mail.
- f. In Windows Vista parents can have greater say in what the children can use and access. This system is designed to protect kids from exposure to violence and porn.
- g. Gaming with Vista has raised expectations of avid gamers. New graphics, better display features, and ease of use means faster gaming and more thrills.

Advantages:

- a. Higher degree of security-safer surfing of web
- b. Parents can block certain websites for their kid's web safety
- c. Improved Windows Explorer search-more filtering in your search
- d. Manage photos using built-in photo gallery
- e. Latest multimedia enhances video and audio of one's favourite videos or music

Disadvantages:

- a. Compatibility issues when upgrade to vista from older operating system
- b. Requires a lot of resources in order to function-need a powerful machine to run
- c. very expensive.
- d. Prone to security issues
- e. In some cases the new appearance is harder for some to use such as smaller buttons

9. **Windows 7**

Windows 7 (codenamed Windows 7) is a version of Microsoft Windows, a series of operating systems produced by Microsoft for use on personal computers, tablets, etc.

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Unlike Windows Vista, which introduced a large number of new features, Windows 7 was intended to be a more focused, incremental upgrade to the Windows line, with the goal of being compatible with applications and hardware with which Windows Vista was already compatible.

Features:

- a. New Taskbar and System Tray
- b. Quick Desktop View button
- c. Improved Start Up, Sleep, and Resume performance
- d. Improved power management saves memory and battery life
- e. Libraries to improve file access and organization
- f. Action Center for system maintenance, backups, and troubleshooting
- g. User Account customization of notifications
- h. Improved back up
- i. New wallpapers and themes
- j. Improved gadgets
- k. New premium games, including Chess Titans, Mahjong Titans, and Inkball
- l. Advanced Calculator functions, including saving history
- m. Improved networking via HomeGroups
- n. Passkey protection with networks
- o. Device Stage for recognizing USB devices faster
- p. Windows Mail replaced by Windows Live

Advantages:

- a. Windows 7 is faster than its predecessors, both in terms of installation and boot up time.
- b. Calculator has been enhanced with some new features like unit conversion, calculations like fuel economy and auto lease payment.
- c. WordPad in Windows 7 has improved much better and look similar to the Microsoft Office Word. It can be used to open, edit file names with docx extension which was earlier introduced with MS-Office 2007. Word prediction is the new feature in Word Pad. Realistic brush has been added in Paint.
- d. It also supports advanced touch and handwriting recognition.
- e. Windows 7 supports Virtual Hard Disks with the support of enhanced performances of multi core processors.
- f. Windows Media Player 12 has got much enhanced features in the Windows 7 and drag and drop option has been added which were not there in the previous versions.
- g. Windows 7 allows the user to make the best use of graphic cards from the different vendors.
- h. Bitlocker is a feature which provides encryption for the internal drives in vista, but it is extended to the external drives in windows 7. This makes backup and restore much easier.

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- i. Default settings of User Account have been eliminated, to protect from the unauthorized software to be installed.
- j. Windows 7 has included a new concept, jumplists which organize the recently used files as well as web pages.
- k. More than that, it also allows the user to overcome the clutter in the desktop by introducing three new features Aero Peek, Aero shake and snap.
- l. Home networking has been made much easier than its previous operating systems and is probably safe from hackers.

Disadvantages:

- a. Some of the users are not satisfied with the new features, because, they need to buy out additional resources such as RAM, etc to make use of them.
- b. It is expensive than the previous Microsoft operating systems.
- c. Some of the users have problems such as; their system hangs after installing Windows 7
- d. If the user has got an HP multifunction printer, and its driver being upgraded to the Windows 7, then the printer doesn't response to the print commands. So, the user needs to go to the new HP solution Center to resolve this problem.
- e. Windows have specific themes for United Kingdom, Germany, Canada, Japan, South Africa and Australia, if the user is not from the above country and he wish to have a specific theme of his country, he will not get that, hence the user will not be satisfied with that feature.
- f. Some of the features like Start Menu user interface, Windows Ultimate Extras, InkBall, Windows Photo Gallery, Windows Movie Maker, Windows Calendar Windows Mail called Windows Live Essentials were included in Vista are removed in Windows 7.

9. **Windows 8**

Windows 8 is an operating system produced by Microsoft for use on personal computers, including home and business desktops, laptops, and tablets. It is part of the Windows NT family of operating systems, succeeds Windows 7 and precedes Windows 8.1 and Windows 10. Windows 8 is built based on Metro design language and introduces a new form of "Windows 8-style software". Windows 8 also features a new start screen, Internet Explorer 10, native support for USB 3.0, a new Windows Defender that combats malware (instead of only spyware), Windows To Go, and support for UEFI SecureBoot.

Features:

- a. Windows 8 is the first edition to operate on both ARM-based devices and traditional x86 PC based systems.

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- b. All Windows 8 systems boot into the Start screen, which is a collection of tiles that link to apps, programs or settings among other things. Apps can be designed to display live information like the current weather report, your monitored eBay items or new photos that you have uploaded from your mobile phone right on the Start screen.
- c. Windows Store. From here, using a Microsoft Account, users can purchase, download and install apps.
- d. Windows 8 users can connect their USB 3.0 supporting devices directly to the PC to benefit from all related features without having to do that. Microsoft has improved search significantly in Windows 8. When you search now, you are taken to the modern UI interface where you search in a full screen environment. Results are displayed once you enter the first search term based on previous use and a number of additional factors. Filters on the right let you switch between apps, settings, or file related search results.
- e. Windows 8 is also faster when it comes to multimedia performance.
- f. Refresh and reset are two new features of the operating system that may help when things are not running as smooth as before.

Advantages:

- a. It is optimized for the touch devices. Windows 8 uses the 'Metro' interface which is improved for touch screen devices featuring a new 'Start screen'.
- b. It supports the low-power ARM architecture. It has advanced security features such as antivirus capabilities and supports secure boot.
- c. It has short boot time. Windows 8 boot time takes less than 8 seconds which is much shorter than its earlier version.
- d. There is no need for the PC upgrade to run Windows 8. Any PC which is able to run Windows 7 on it can run Windows 8 and there is no need to upgrade PC.
- e. One of the main features of Window 8 is the app platform. Windows Store has a number of apps that are built for Windows 8.
- f. Windows 8 also supports Near Field Communications (NFC) printing. A technology which can aid in financial transactions digitally.

Disadvantages:

- a. The main disadvantage of Windows 8 is overlapping of Metro and Aero User Interface. Switching between Metro applications and desktop applications is not user-friendly and creates confusion for the users and the developers.
- b. There is no way to turn the home screen tiles into icons. When a number of apps are installed, then the Start screen looks garbled.

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- c. It is very difficult to swap between different screens. The absence of Alt-Tab function makes it difficult when working with many applications as there is no easy way to switch between programs.
- d. Another disadvantage of Windows 8 is the Metro multitasking. In Windows 8, in the Metro interface for tablets, the screen display two applications are lined.
- e. Metro interface works well on tablets but the User Interface is not very compatible on the desktop. There is a need of some kill-switch which can turn the Metro UI off.
- f. Windows 8 doesn't support any flash content on Tablet PC. Apparently, it has been done in order to save battery of the Tablet. It also protects our privacy and enhance the security of the Tablet.

10. **Windows 10**

Windows 10 (codenamed Threshold) is a personal computer operating system developed by

Microsoft as part of the Windows NT family of operating systems. Officially unveiled in September 2014 following a brief demo at Build 2014, the operating system reached general availability beginning on July 29, 2015. It is a successor to Windows 8.1. Instead of releasing an entirely new and different version of its desktop OS every few years, Microsoft took an Apple-like approach to subsequent Windows releases, standardizing on Windows 10 as its

Cupertino-based rival has done with macOS. Microsoft announced its successor, Windows 11, on June 24, 2021. Features:

- a. Windows 10 has reintroduced a more traditional Start menu. It's also been expanded to make it easier to find important apps.
- b. Microsoft Edge is meant to replace Internet Explorer as your default web browser, but you'll still be able to use another browser if you prefer.
- c. Similar to Siri and Google Now, you can talk to the virtual assistant with your computer's microphone. Cortana can answer questions like What's the weather like today?, perform simple tasks like remind you to take out the trash, and much more.
- d. Instead of keeping everything open on the same desktop, you can move some of your windows to a virtual desktop to get them out of the way. And the new Task view feature makes it easy to manage all of your open windows.
- e. The new Action Center is pretty different from previous versions of Windows. It's also where you'll see important notifications, so if your computer receives an update you'll get a notification about it here.

If your computer also has a touchscreen, you can go into tablet mode at any time. Tablet users can also switch back to desktop mode if they prefer.

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Advantages:

- a. The loading time of Windows 10 is much less than that of Windows 7.
- b. Stability and performance has been greatly improved in Windows 10.
- c. Redesigned UI mixes the advantages of Windows 7 & Windows 8 which helps users of Windows 7 or earlier get comfortable to use it.
- d. It is safer to use the latest Windows operating system. Although Windows 7 is safe at present. But it is unknown when Microsoft will stop the support for Windows 7 just like Windows XP.
- e. For gaming perspective, it gets DirectX 12, which promises high frame rates with future games.
- f. Better integration with Windows phone.
- g. Update Windows 10 with the button "Update" will not damage or delete your files.

Disadvantages:

- a. Your personal information will be shared with Microsoft for better service and improvement.
- b. Upgrading to Windows 10 sometimes may lead to system crash. If it happens, you need to spend hours to solve this problem.
- c. It is not so good for old computer. Upgrading sometime could slow down the computer because the out-of-date hardware is not enough to run the new system smoothly.

11. **Windows 11 Pro**

Windows 11 Pro has all of the features of Windows 10, with added and enhanced features perfect for professionals and designed for hybrid working.

Features:

- a. Hardware-based security
- b. Simplified Interface
- c. Work naturally with Touch, Pen and Voice
- d. Organized desktop, multi window
- e. Smart recommendation for tasks and content. Option to switch and delete apps from taskbar.
- f. Keyboard and mouse optimization
- g. Remove screen lock.

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Advantages:

- a. UI more adapted to touch use
- b. Individual theme feature for file explorer, File explorer Tab support
- c. Multitasking view (Swipe down to Close apps)
- d. Blur Effect
- e. Notification Bar
- f. Transparent taskbar (Customize opacity level)
- g. Light animation at mouseover above the tiles

CONCLUSION

Windows tend to be the most widely used especially the newest versions. It is because they are affordable, secured, reliable, compatible and friendly. It could be concluded that every operating system, with a particular direction, was developed by considering targeted customers and their interest. Every Operating System, mobile OS inclusive, provides competitive and distinct features and services for their customers. However, all open-sourced Operating Systems enjoys addition of new ideas, in applications and updates every day by various community developers, this also enhanced their security features and performance, while the enterprised OS lacks flexibility of design. This will not underscore the fact that every OS is good, but users' choice depends on the services required of it.

REFERENCE

International Journal of Computer Applications (0975 – 8887) Volume 176 – No. 39, July 2020
A Comparative Study of Operating Systems: Case of Windows, UNIX, Linux, Mac, Android and iOS

https://en.wikipedia.org/wiki/Comparison_of_Microsoft_Windows_versions