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Conceptual Studies of Various Operating Systems and it's Performance

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Abstract*— This paper is used to provide the information of various operating systems and circumstance of the user in the system. It is useful to provide the interest area and friendly nature of the system with user. A modern OS can service several user programs simultaneously. The operating system achieves it by interacting with the computer and user programs to perform several control functions, it provides the service and features present in abstract views of all its users through the computer system. An operating system controls use of a computer system's resources such as CPUs, memory, and I/O devices to meet computational requirements of its users. An operating system can also be commonly defined as a program running at all times on the computer (usually called the kernel), with all other being application programs

***Keywords*— Definition, types of operating system, performance analysis**

I. INTRODUCTION

An operating system (OS) is software that manages computer hardware and software resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function. Time-sharing operating systems schedule tasks for efficient use of the system and may also include accounting software for cost allocation of processor time, mass storage, printing, and other resources.

It is uses for hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between programs and the computer hardware, although the application code is usually executed directly by the hardware and frequently makes a system call to an OS function or be interrupted by it. Operating systems can be found on many devices that contain a computer from cellular phones and video game consoles to supercomputers and web servers.

II. RELATED WORK

The operating system is a bridge among system and user. It is used to provide interface environment of software and hardware of the system. We are collecting secondary data for the Science college Raipur student in the lab work with computer environment. Test the proficiency of work speed in various operating system environments in the computer lab of the govt. science college Raipur Chhattisgarh. It is helpful to find which operating system is user friendly for the student of Science College Raipur.

III. DIFFERENT TYPES OF OPERATING SYSTEM

Solaris Operating System

Solaris is a UNIX operating system originally developed by Sun Microsystems. It superseded their earlier Sun OS in 1993. **Oracle Solaris**, as it is now known, has been owned by Oracle Corporation since Oracle's acquisition of Sun in January 2010.Solaris is known for its scalability, especially on SPARC systems, and for originating many innovative features such as DTrace, ZFS and Time Slider. Solaris supports SPARC-based and x86-based workstations and servers from Oracle and other vendors, with efforts underway to port to additional platforms. Solaris is registered as compliant with the Single UNIX Specification. Solaris was developed as proprietary software. In June 2005, Sun Microsystems released most of the codebase under the CDDL license, and founded the Open Solaris open source project. With Open Solaris, Sun wanted to build a developer and user community around the software. After the acquisition of Sun Microsystems in January 2010, creating a fork of the Solaris kernel and launching what has since become a thriving alternative to Oracle Solaris. It has historically been tightly integrated with Sun's SPARC hardware (including support for 64-bit SPARC applications since Solaris 7), with which it is marketed as a combined package. This has led to more reliable systems, but at a cost premium compared to commodity PC hardware. However, it has supported x86 systems since Solaris 2.1 and 64-bit x86 applications since Solaris 10, allowing Sun to capitalize on the availability of commodity 64-bit CPUs based on the x86-64 architecture.

Dos

Disk Operating System (specifically) and disk operating system (generically), most often reveal themselves in abbreviated form as DOS, refer to an operating system software used in most computers that provides the abstraction and management of secondary storage devices and the information on them (e.g., file systems for organizing files of all sorts). Such software is referred to as a *disk* operating system when the storage devices it manages are made of rotating platters, such as floppy disks or hard disks. In the early days of microcomputers, computer memory space was often limited, so the disk operating system was an extension of the operating system. This component was only loaded if needed. Otherwise, disk access would be limited to low-level operations such as reading and writing disks at the sector-level. The disk operating system component (or even the operating system) was known as *DOS*. A disk operating system can refer to the entire operating system if it is loaded off a disk and supports the abstraction and management of disk devices. Examples include DOS/360. On the PC compatible platform, an entire family of operating systems was called *DOS*. Some disk operating systems were the operating system for the entire computer system.

- The DOS/360 initial/simple operating system for the IBM System/360 family of mainframe computers (it later became DOS/VSE, and was eventually just called VSE).
- The DOS operating system for DEC PDP-11 minicomputers. This OS and the computers it ran on were nearly obsolete by the time PCs became common, with various descendants and other replacements.
- DOS for the IBM PC compatible platform

Linux/Unix

Linux is a Unix-like and mostly POSIX-compliant computer operating system assembled under the model of free and open-source software development and distribution. The defining component of Linux is the Linux kernel, an operating system kernel first released on 5 October 1991 by Linus Torvalds. The Free Software Foundation uses the name *GNU/Linux* to describe the operating system, which has led to some controversy. Linux was originally developed as a free operating system for Intel x86–based personal computers, but has since been ported to more computer hardware platforms than any other operating system. It is the leading operating system on servers and other big iron systems such as mainframe computers and supercomputers, but is used on only around 1% of desktop computers. Linux also runs on embedded systems, which are devices whose operating system is typically built into the firmware and is highly tailored to the system; this includes mobile phones, tablet computers, network routers, facility automation controls, televisions and video game consoles. Android, the most widely used operating system for tablets and Smartphone, is built on top of the Linux kernel.

The development of Linux is one of the most prominent examples of free and open-source software collaboration. The underlying source code may be used, modified, and distributed commercially or non-commercially—by anyone under licenses such as the GNU General Public License. Typically, Linux is packaged in a form known as a *Linux distribution*, for both desktop and server use. Some popular mainstream Linux distributions include Debian, Ubuntu, Linux Mint, Fedora, opens USE, Arch Linux, and the commercial Red Hat Enterprise Linux and SUSE Linux Enterprise Server. Linux distributions include the Linux kernel, supporting utilities and libraries and usually a large amount of application software to fulfill the distribution's intended use

Windows

Microsoft Windows (or simply Windows) is a metafamily of graphical operating systems developed, marketed, and sold by Microsoft. It consists of several families of operating systems, each of which cater to a certain sector of the computing industry. Active Windows families include Windows NT, Windows Embedded and Windows Phone; these may encompass subfamilies, e.g. Windows Embedded Compact (Windows CE) or Windows Server. Defunct Windows families include Windows 9x and Windows Mobile. Microsoft introduced an operating environment named Windows on November 20, 1985 as a graphical operating system shell for MS-DOS in response to the growing interest in graphical user interfaces (GUIs). Microsoft Windows came to dominate the world's personal computer market with over 90% market share, overtaking Mac OS, which had been introduced in 1984. However, since 2012, it sells less than Android, that became the most popular operating system in 2014, when counting on all of the computing platforms Windows runs on (same as Android), not just desktop; in 2014, selling less than a quarter of Android.

As of April 2014, the most recent versions of Windows for personal computers, Smartphone, server computers and embedded devices are respectively Windows 8.1, Windows Phone 8.1, Windows Server 2012 R2 and Windows Embedded 8. A specialized version of Windows runs on the Xbox One game console. The next version of Windows is Windows 10 and is currently available as a technical preview; it is set for release for phones, tablets, laptops, and PCs in late 2015.

Types of Windows o/s

1) Windows NT

Microsoft's OS/2 operating system known as "NT OS/2". NT OS/2 was intended to be a secure, multi-user operating system with POSIX compatibility and a modular, portable kernel with preemptive multitasking and support for multiple processor architectures. However, following the successful release of Windows 3.0, the NT development team decided to rework the project to use an extended 32-bit port of the Windows API known as Win32 instead of those of OS/2. Win32

maintained a similar structure to the Windows APIs (allowing existing Windows applications to easily be ported to the platform), but also supported the capabilities of the existing NT kernel. Following its approval by Microsoft's staff, development continued on what was now Windows NT, the first 32-bit version of Windows. However, IBM objected to the changes, and ultimately continued OS/2 development on its own. The first release of the resulting operating system, Windows NT 3.1 (named to associate it with Windows 3.1) was released in July 1993 with versions for desktop workstations and servers. Windows NT 3.5 was released in September 1994, focusing on performance improvements and support for Novell's NetWare, and was followed up by Windows NT 3.51 in May 1995

2) Windows XP

The next major version of Windows, Windows XP, was released on October 25, 2001. The introduction of Windows XP aimed to unify the consumer-oriented Windows 9x series with the architecture introduced by Windows NT, a change which Microsoft promised would provide better performance over its DOS-based predecessors. Windows XP would also introduce a redesigned user interface (including an updated Start menu and a "task-oriented" Windows Explorer), streamlined multimedia and networking features, Internet Explorer 6, integration with Microsoft's .NET Passport services, modes to help provide compatibility with software designed for previous versions of Windows, and Remote Assistance functionality.

At retail, Windows XP was now marketed in two main editions: the "Home" edition was targeted towards consumers, while the "Professional" edition was targeted towards business environments and power users, and included additional security and networking features. Home and Professional were later accompanied by the "Media Center" edition (designed for home theater PCs, with an emphasis on support for DVD playback, TV tuner cards, DVR functionality, and remote controls), and the "Tablet PC" edition (designed for mobile devices meeting its specifications for a tablet computer, with support for stylus pen input and additional pen-enabled applications). Mainstream support for Windows XP ended on April 14, 2009. Extended support ended on April 8, 2014

3) Windows vista or later

After lengthy development process, Windows Vista was released on November 30, 2006 for volume licensing and January 30, 2007 for consumers. It contained a number of new features, from a redesigned shell and user interface to significant technical changes, with a particular focus on security features. It was available in a number of different editions, and has been subject to some criticism. Vista's server counterpart, Windows Server 2008 was released in early 2008. On July 22, 2009, Windows 7 and Windows Server 2008 R2 were released as RTM (release to manufacturing) while the former was released to the public 3 months later on October 22, 2009. Unlike its predecessor, 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. Windows 7 has multi-touch support, a redesigned Windows shell with an updated taskbar, a home networking system called Home Group, and performance improvements.

Windows 8, the successor to Windows 7, was released generally on October 26, 2012. A number of significant changes were made on Windows 8, including the introduction of a user interface based around Microsoft's Metro design language with optimizations for touch-based devices such as tablets and all-in-one PCs. These changes include the Start screen, which uses large tiles that are more convenient for touch interactions and allow for the display of continually updated information, and a new class of apps which are designed primarily for use on touch-based devices. Other changes include increased integration with cloud services and other online platforms (such as social networks and Microsoft's own Sky Drive and Xbox Live services), the Windows Store service for software distribution, and a new variant known as Windows RT for use on devices that utilize the ARM architecture. An update to Windows 8, called Windows 8.1, was released on October 17, 2013, and includes features such as new live tile sizes, deeper Sky Drive integration, and many other revisions. On September 30, 2014, Microsoft announced Windows 10 as the successor to Windows 8.1. It will be released in late 2015 and addresses shortcomings in the user interface first introduced with Windows 8. Changes include the return of the Start Menu, a virtual desktop system, and the ability to run Windows Store apps within windows on the desktop rather than in full-screen mode.

IV. EXPERIMENT AND RESULT

There are various operating system are installed in the computer lab of the college. The group of 60 students are in computer lab for use the computer system in a group or single according to requirement of the college system. We check the interest ratio and user friendly work of the students in the college computer lab the average ratio of working efficiency of the student are given below.

Classes	BCA I	BCA II	Pgdca	Dca
Window	33	38	48	55
Linux	18	19	17	15
Dos	17	15	12	13
Solaris	5.2	4	4.2	4

According to give details of operating system user the graphical presentation of the result are following

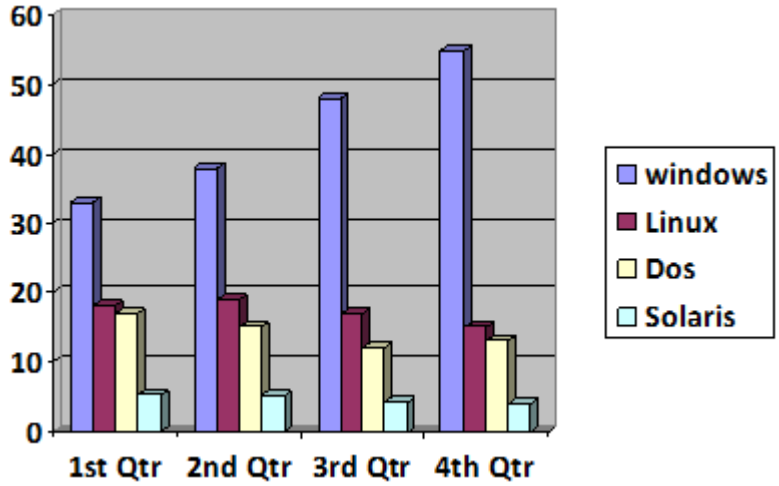

Fig-1 performance ratio of O/s User

V. CONCLUSIONS

An operating system is software that manages computer hardware and software resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function. A computer being secure depends on a number of technologies working properly. A modern operating system provides access to a number of resources, which are available to software running on the system, and to external devices like networks via the window operating system. Multitasking refers to the running of multiple independent computer programs on the same computer; giving the appearance that it is performing the tasks at the same time. Since most computers can do at most one or two things at one time, this is generally done via time-sharing, which means that each program uses a share of the computer's time to execute it is user friendly and easy to use according to the users percentage ratio.

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