Department of Computer Science & InformationTechnology

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Lab Record

Submission of

Linux Lab

Subject Code – CSIT-505

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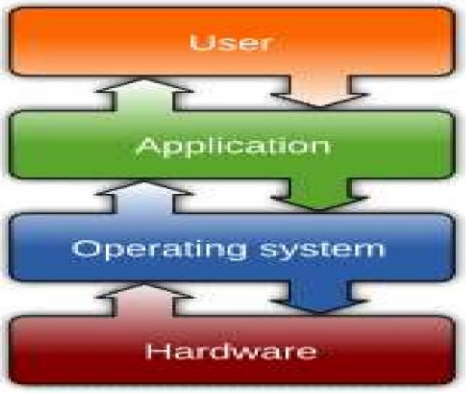
Experiment No. 1

Introduction to OS

Introduction to Operating System

Operating System lies in the category of system software. It basically manages all the resources of the computer. An operating system acts as an interface between the software and different parts of the computer or the computer hardware. The operatingsystem is designed in such a way that it can manage the overall resources and operations of the computer. create, modify, and delete files, and by organizing these files into directories or folders. It also manages file permissions, which control access rights and ensure that only authorized users can perform certain actions on files.
Additionally, the OS employs a file system, such as NTFS, FAT32, or ext4, to systematically organize and store files on storage devices.



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Function of Operating system

Here are the key functions of an operating system relevant to a file experiment:

- File Creation and Deletion: Allows you to create new files and remove existing ones.
- File Organization: Structures files in directories or folders for easy access andmanagement.
- File Permissions: Controls access rights, specifying who can read, write, or execute files.
- File System Management: Uses a file system (like NTFS, FAT32, or ext4) to organizeand store files on storage devices.
- File Access and Retrieval: Manages how files are accessed and retrieved fromstorage efficiently.

Services provided by Operating System

- Program execution
- Input Output Operations
- Communication between Process
- File Management
- Memory Management
- Process Management
- Security and Privacy
- Resource Management
- User Interface
- Networking
- Error handling

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Need of Operating System

OS as a platform for Application programs: The operating system provides a platform,on top of which, other programs, called application programs can run .

Managing Input-Output unit: The operating system also allows the computer to manage its own resources such as memory, monitor, keyboard, printer, etc. Management of these resources is required for effective utilization.

Multitasking: The operating system manages memory and allows multiple programs to run in their own space and even communicate with each other through shared memory.

Controls memory: It helps in controlling the computer's main memory. Additionally, it allows and deallocates memory to all tasks and applications.

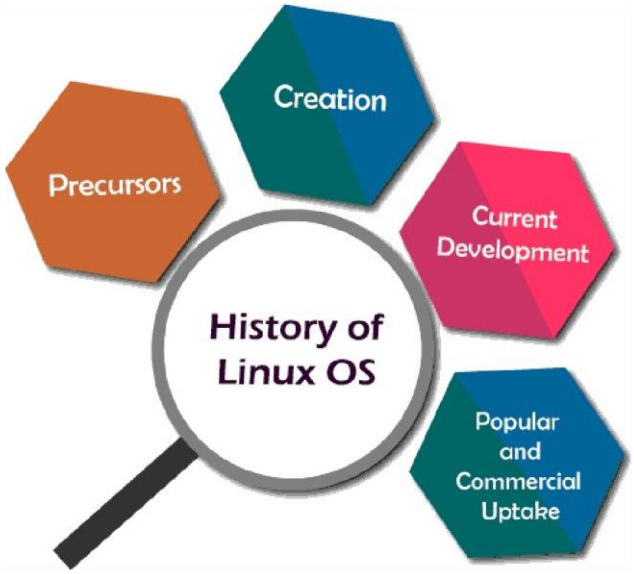
Provides Security: It helps to maintain the system and applications safe through the authorization process. Thus, the OS provides security to the system.

Introduction : Linux

Linux is a free and open-source family of operating systems that is resilient and flexible. In 1991, an individual by the name as Linus Torvalds constructed it. The system's source code is accessible to everyone for anyone to look at and change, making it cool that anyone can see how the system works
The Linux Operating System is a type of operating system that is similar to Unix, and it is built upon the Linux Kernel. The Linux Kernel is like the brain of the operating system because it manages how the computer interacts with its hardware and resources.

History of Linux

A popular open-source operating system is Linux. It was initially created by Linus Torvalds in 1991. At the time, Torvalds was a computer science student at the University of Helsinki, Finland and began working on the Linux project as a personal endeavour. The name Linux is a combination of his first name, Linus, and Unix, the operating system that inspired his projects. At the time, most operating systems were proprietary and expensive. Torvalds wanted to create an operating system that was freely available to anyone who wanted to use the operating system, He originally released Linux as free software under the GNU General Public License. This meant that anyone could use, modify, and redistribute his source code.



Need of Linux

Linux operating system is widely used for several compelling reasons:

• **Open Source:** Linux is open source, meaning its source code is freely available foranyone to view, modify, and distribute. This fosters innovation and customization.

• **Stability and Reliability:** Known for its stability and reliability, Linux is often used inenvironments where uptime is critical, such as servers and embedded systems.

• **Security:** Linux is designed with robust security features and has a strong community ofdevelopers who quickly address vulnerabilities and provide patches.

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• **Cost-Effective:** Linux is free to use, reducing costs associated with licensing feescompared to proprietary operating systems.

• **Flexibility and Customization:** Linux can be tailored to suit specific needs, from lightweight distributions for older hardware to powerful configurations for advanced usersand servers.

• **Performance:** Linux typically has a smaller footprint and can be optimized forperformance, making it suitable for a wide range of hardware.

• **Community Support:** A vibrant community of users and developers provides extensive support and resources, including forums, documentation, and user guides.

• **Compatibility:** Linux supports a wide range of hardware architectures and offerscompatibility with various software applications, including many open-source

Distributions of Linux

Linux distribution HYPERLINK "https://www.geeksforgeeks.org/what-are-linux-distributions/" is an operating system that is made up of a collection of software based on Linux kernel or you can say distribution contains the Linux kernel and supporting libraries and software. And you can get Linux-based operating system bydownloading one of the Linux distributions and these distributions are available for different types of devices like embedded devices, personal computers, etc. Around 600 + Linux Distributions are available and some of the popular Linux distributions are:

- MX Linux
- Manjaro
- Linux Mint
- elementary
- Ubuntu
- Debian
- Solus
- Fedora

- openSUSE

Services and Applications of Linux

Here are some key services and applications of the Linux operating system:

Security
File management
Monitoring
Networking
Backup management
Community support
Linux change-over
Linux engineers
Performance
Scalability