S.B. JAIN INSTITUTE OF TECHNOLOGY MANAGEMENT & RESEARCH, NAGPUR

Practical 1
Prelab

Aim: Installation of Linux Operating System.

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❖ **Aim:** Installation of Linux Operating System.

❖ Objectives:

- To understand the process of installing a Linux operating system on a computer.
- To gain practical knowledge of disk partitioning and file system configuration.
- To learn how to configure system settings such as users, passwords, and time zones during installation

❖ Requirements:

1. A bootable USB drive or DVD with the desired Linux distribution (e.g., Ubuntu, Fedora, Debian).
2. A computer system with minimum hardware requirements: 2 GB RAM, 20 GB free disk space, and a compatible processor.
3. Internet connection (optional, for updates during installation).
4. Software for creating a bootable USB, like Rufus or Etcher (if needed).
5. Basic knowledge of BIOS/UEFI settings for boot sequence configuration.

*****IN THIS PRACTICAL WE'LL BE INSTALLING UBUNTU*****

❖ Prerequisite:

- ❖ A computer or laptop that meets the minimum hardware requirements.
- ❖ Ubuntu ISO file downloaded from the official Ubuntu website.
- ❖ Bootable USB drive or DVD with Ubuntu installer.
- ❖ Backup of important data before installation.
- ❖ BIOS/UEFI access enabled and boot priority set to USB/DVD.
- ❖ Stable power supply during installation.
- ❖ Internet connection (optional, for updates and additional software).
- ❖ Basic knowledge of computer operation.

Steps to Make a Pendrive Bootable Using Rufus:

1. **Download and Open Rufus**: Download Rufus from its official website, install it, and launch the application.
2. **Insert Pendrive and Select ISO**: Connect the USB pendrive to your system. In Rufus, select your pendrive under "Device" and click "SELECT" to choose the Linux ISO file.
3. **Set Partition Scheme and File System**: Choose "GPT" for UEFI or "MBR" for BIOS under "Partition scheme," and ensure the file system is set to "FAT32."

4. **Start the Process**: Click "START," confirm the warning about data deletion, and wait for Rufus to create the bootable USB. Once done, eject the pendrive safely.

❖ Theory:

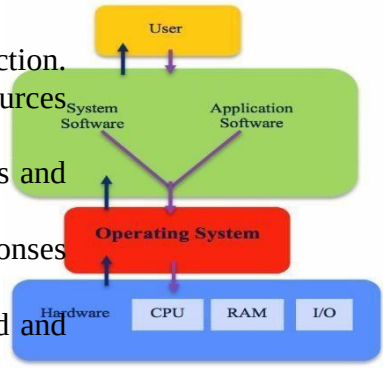
An operating system (OS) is system software that acts as an interface between computer hardware and the user. It manages hardware resources and provides essential services for executing application software. The OS is a vital component of a computer system, enabling users to interact with the system in a structured and efficient manner.

Functions of an Operating System:

1. **Process Management**: Handles the execution of multiple processes, ensuring smooth multitasking and optimal CPU usage.
2. **Memory Management**: Allocates and manages system memory, ensuring that each program gets the required memory without interfering with others.
3. **File System Management**: Organizes and manages data storage, allowing users to store, retrieve, and manipulate files.
4. **Device Management**: Coordinates and controls input/output devices such as keyboards, printers, and disk drives.
5. **Security and Access Control**: Protects data and system integrity by implementing user authentication and access restrictions.

Types of Operating Systems:

1. **Batch OS**: Executes tasks in batches without direct user interaction.
2. **Time-Sharing OS**: Allows multiple users to share system resources simultaneously.
3. **Distributed OS**: Manages a group of independent computers and makes them appear as a single system.
4. **Real-Time OS**: Designed for time-critical tasks where responses are needed within strict deadlines.
5. **Mobile OS**: Specialized for mobile devices, such as Android and iOS.



Ubuntu is a popular open-source Linux operating system based on Debian and developed by Canonical Ltd. It is widely used for desktops, servers, and cloud computing due to its stability, security, and user-friendly interface. Installing Ubuntu involves preparing the system, configuring hardware and software settings, and setting up the operating system for use.

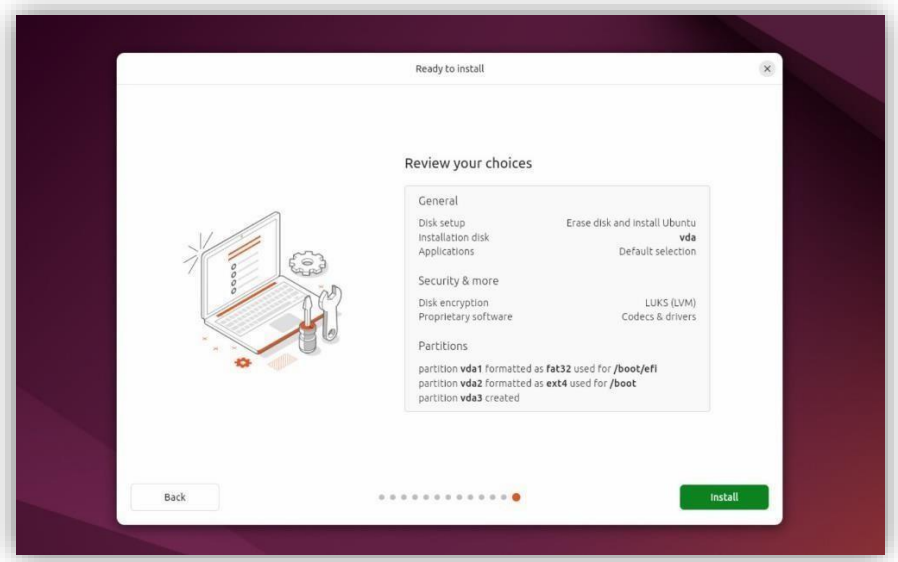
In summary, an operating system is the backbone of computer functionality, ensuring efficient resource management, user interaction, and system reliability. It continues to evolve, adapting to technological advancements and diverse user requirements.

❖ Steps to Install Linux Operating System:

1. **Prepare Bootable Media**: Use a tool like Rufus to create a bootable USB drive or DVD with the Linux distribution ISO.

2. **Configure BIOS/UEFI Settings**: Restart your computer and access the BIOS/UEFI settings (usually by pressing a key like F2, F10, or DEL during boot). Set the boot priority to USB or DVD.

3. **Boot from Media**: Insert the bootable USB or DVD and restart the computer. The system will boot into the Linux installer.
4. **Choose Installation Option**: Select "Install Linux" or a similar option from the menu. Some distributions may allow you to try the OS before installation.
5. **Partition the Disk**:
   - Select the partition scheme (automatic or manual).
   - Create required partitions (e.g., root `/`, swap, and optionally `/home`).
6. **Set Up User Details**: Enter your username, password, and system name.
7. **Select Time Zone**: Choose your location to configure the correct time and date settings.
8. **Begin Installation**: Review the settings and click "Install." The process will take a few minutes to complete.



9. **Remove Bootable Media**: Once installation is finished, remove the USB or DVD when prompted and restart the system.

10. **Post-Installation Configuration**: Log in to your new Linux system, update packages, and install additional software if needed.

    Commands to update:

Command	Use
sudo apt update	Fetches the latest information about available packages and versions.
sudo apt upgrade	Installs the latest versions of all currently installed packages.
sudo apt full-upgrade	Upgrades packages, adding or removing dependencies as required.
sudo apt autoremove	Removes unnecessary packages no longer needed as dependencies.
sudo reboot	Restarts the system to apply critical updates if required.

Conclusion: The installation of the Ubuntu operating system was successfully completed. Through this process, we learned how to create bootable installation media, configure BIOS/UEFI settings, perform disk partitioning, and set up user accounts. Ubuntu was installed with all essential components and verified for proper functionality. This installation provides a stable, secure, and user friendly operating system, enhancing our understanding of Linux and open-source software.

❖ References:

https://ubuntu.com/tutorials/install-ubuntu-desktop#1-overview
*https://youtu.be/wjbbl0TTMeo?si=32l6h8VbcmU-euD_*
https://answers.microsoft.com/
https://rufus.ie/en/

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Signature
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