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Project Title: Introduction to Virtualization with VirtualBox

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Aim: Install and configure VirtualBox on a Linux machine to create and manage virtual machines. Practice installing different operating systems in virtual machines and experimenting with virtual networking configurations

Overview:

- Introduction of Linux.
- Architecture of Linux operating system.
- Installation of virtual box in virtualization mode to access linux.
- download Fedora-Workstation-Live-x86_64-40-1.14 (ISO file or DVD).

Introduction Of Linux:

Linux is an open-source, Unix-like operating system kernel developed by Linus Torvalds in 1991. It serves as the core component of various Linux distributions (distros) such as Ubuntu, Fedora . These distributions include the Linux kernel along with a collection of software packages, libraries, and a user interface.

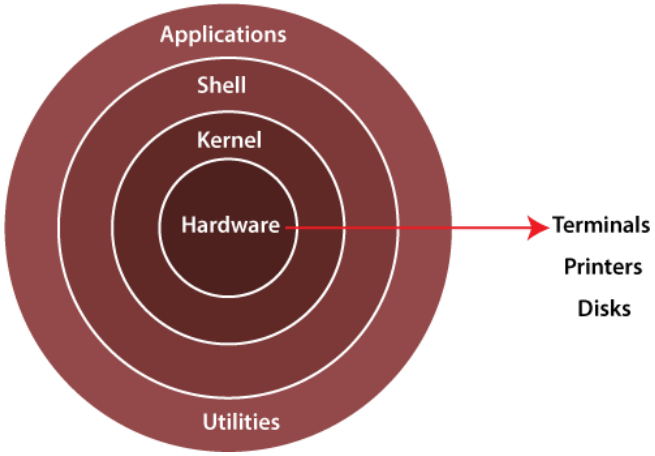
Key features of Linux include:

- **Open Source:** Linux is freely available and its source code can be modified and redistributed.
- **Multiuser and Multitasking:** Linux supports multiple users and tasks running concurrently.
- **Security and Stability:** Linux is known for its robustness, security features, and reliability.
- **Customizability:** Users can customize nearly every aspect of the system.

Architecture of Linux:

The architecture of Linux can be broadly divided into several layers:

1. **Kernel:** The core of the Linux operating system. It manages hardware resources, system calls,and communication between hardware and software.
    - **Process Management:** Handles the creation, scheduling, and termination of processes.
    - **Memory Management**: Manages the system's memory, including virtual memory**.**
    - **File System Management:** Manages files, directories, and file system operations**.**
    - **Device Drivers:** Interfaces with hardware components like disks, network cards, etc.
    - **Network Stack**: Manages networking protocols and data transmission.
2. **System Libraries:** Provide a set of functions that applications can use to interact with the kernel. These are often implemented as shared libraries, such as the GNU C Library (glibc).
3. **System Utilities**: These are essential programs and tools that perform basic system operations (e.g., ls, cp, rm, grep). They provide functionality for managing files, processes, and system resources.
4. **Shell:** The command-line interface that allows users to interact with the system. Examples include Bash (Bourne Again Shell) and Zsh (Z Shell).
5. **User Space Applications:** These are the various software applications and services that users run, such as web browsers, text editors, and graphical interfaces.



Steps to install Virtual Box

Step 1: Visit the Virtual Box Website

- Open your web browser.
- Go to the https://www.virtualbox.org/wiki/Downloads
- Click on "Downloads."

Step 2: Choose Windows Hosts

- On the Downloads page, click on "Windows hosts" to download the installer.

Step 3: Download the Installer

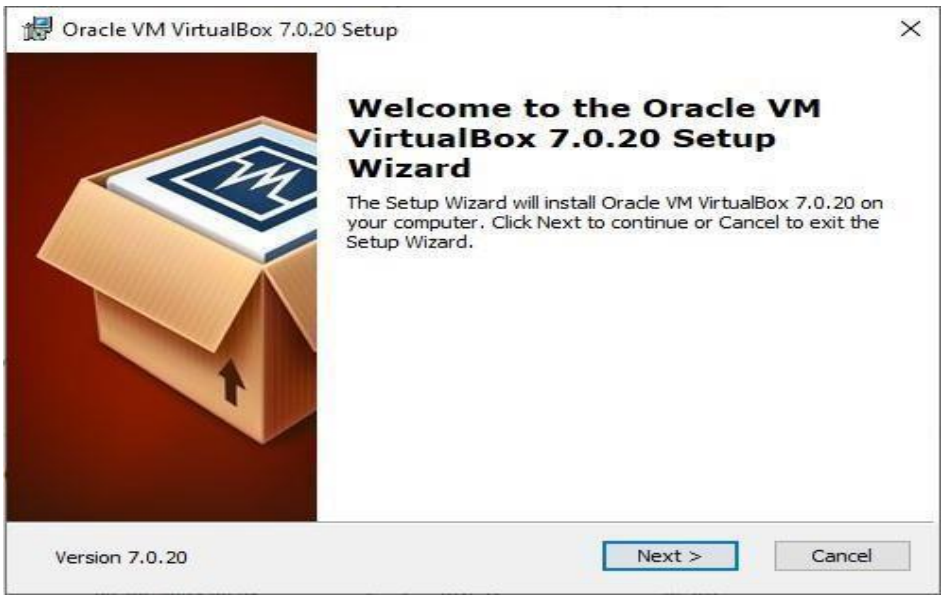
- The installer file will download as a .exefile.
- Save it to your preferred location.

Step 4: Run the Installer

- Navigate to the location where you saved the .exefile.
- Double-click on the file to start the installation process.

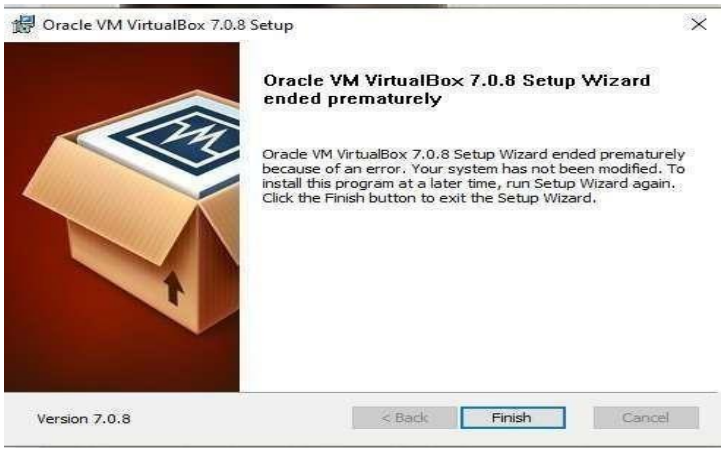
Step 5: Follow the Installation Wizard

- A setup wizard will open.
- Click "Next" to proceed through the steps.
- Select installation options as desired, then click "Install."

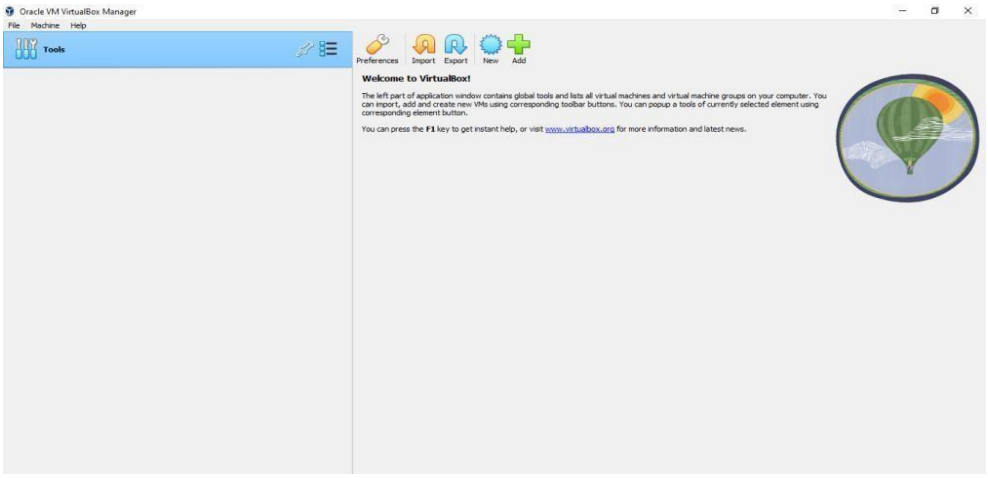


Step 6: Complete the Installation

- Once the installation is complete, click "Finish."
- You can choose to launch Virtual Box immediately.



- **Interface of Virtual Box will look like this:**



Step 7: Now Download Fedora Workstation Live

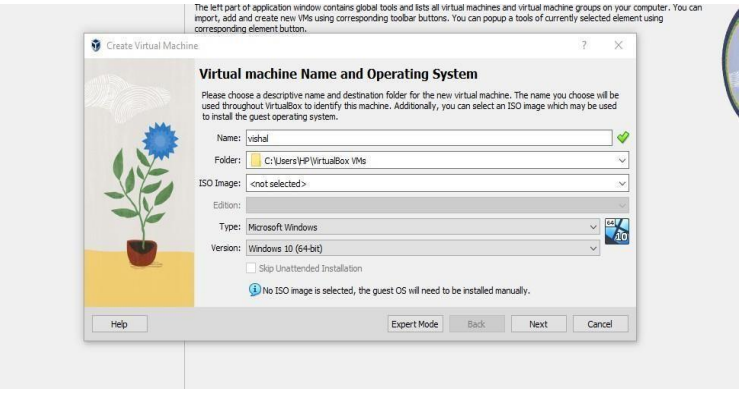
- Open your web browser.
- Go to the https://fedoraproject.org/workstation/download
- Choose file according to your system.

Step 8: Verify the Download

- After downloading, verify the checksum of the ISO file to ensure it was downloadedcorrectly.
- Use tools like sha256sumon Linux or a checksum utility on Windows.

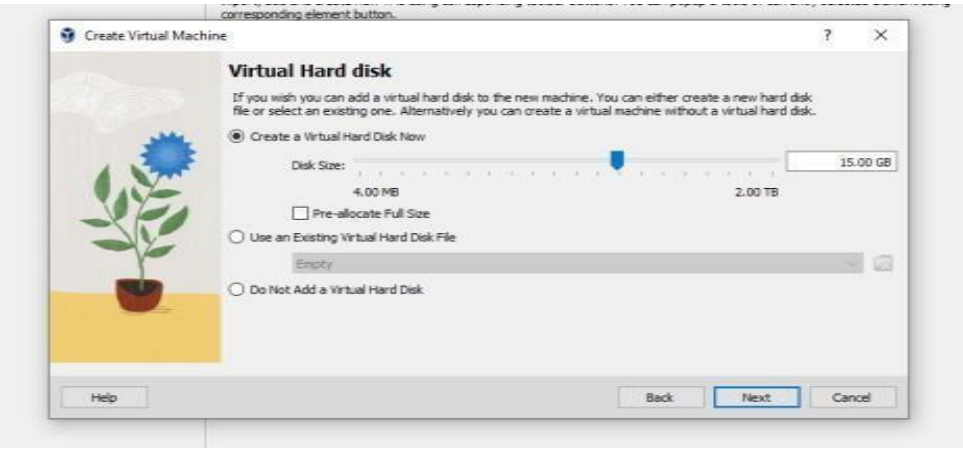
Step 9: Start the Fedora Installation

- Open the virtual box, click on new.
- Select "Start Fedora Workstation Live" to boot into the live environment.



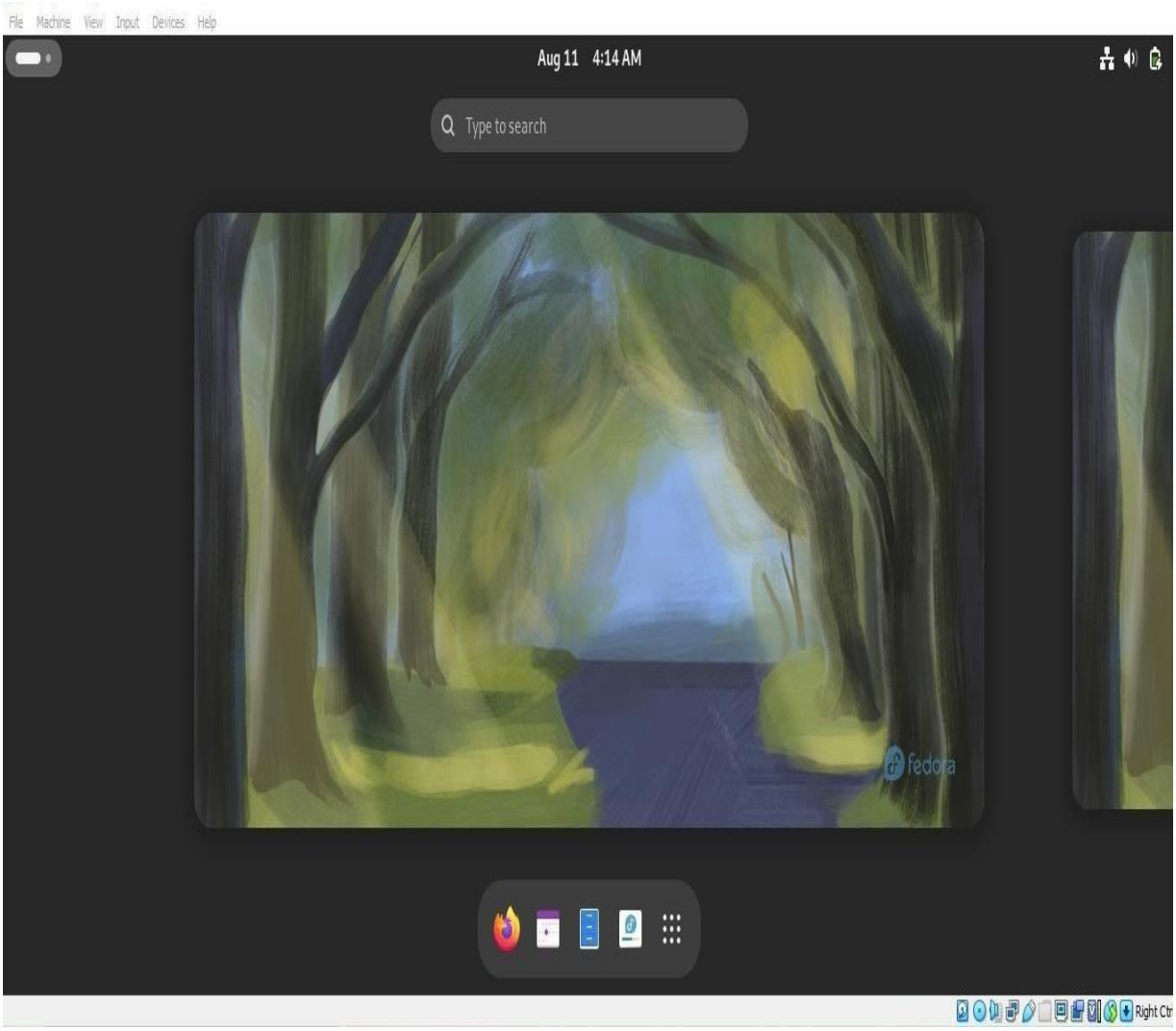
Step 10: Allocate Base Memory Hard disk

- Choose the amount of RAM and Virtual CPU count.
- Choose Virtual Hard disk size.



Step 11: Start the Fedora workstation.

- Click on start, select the Fedora-workstation-live 40.
- It will take few minutes to start, after that you will be at the welcome page.



Learning outcomes (What I have learnt):

- Learned about introduction of the Linux, architecture of the Linux.
- Learned about how to install virtual box and Fedora-workstation in system.