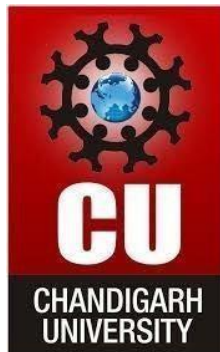


DEPARTMENT OF UNIVESITY OF COMPUTING

CHANIDGARH UNIVERSITY



**PROJECT FILE ON
INSTALLATION OF UBUNTU LINUX**

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Introduction

Installing Ubuntu Linux is a valuable skill for anyone looking to explore the Linux ecosystem, gain more control over their computer, or switch to a free and open-source operating system like Ubuntu, instead of using Windows or macOS. Developed by Canonical, Ubuntu is one of the most popular Linux distributions, known for its user-friendliness, large community support, and extensive range of software. It's an excellent choice for beginners, but also powerful enough for developers, system administrators, and advanced users.

The installation process is straightforward and usually takes less than an hour. Whether you're installing it on a personal computer, a server, or a virtual machine, Ubuntu is highly versatile and works well with different hardware configurations. It provides an efficient and customizable environment for tasks like software development, web browsing, media creation, and system administration. Additionally, Linux systems, including Ubuntu, are renowned for their strong security features, making it an ideal option for users who prioritize privacy.

Before starting the installation, there are a few important steps to prepare: back up your data, download the latest version of Ubuntu, and create a bootable USB or DVD. These steps will ensure a smooth installation and help avoid potential issues. Once you're ready, we'll guide you through the entire process, from partitioning your hard drive to setting up dual-boot configurations (if needed) and personalizing the system to fit your requirements.

Whether you're planning to switch to Linux entirely or just exploring its potential, installing Ubuntu opens up many possibilities. You'll have access to a vast array of free software, a vibrant developer community, and the ability to customize the system to your exact needs. Let's get started and set up your Ubuntu Linux environment!

1.1 Overview of Ubuntu Linux

Ubuntu is a widely-used, open-source Linux distribution tailored for various use cases, including desktop computing, servers, and cloud environments. Renowned for its user-friendly interface, stability, and strong community support, Ubuntu is an ideal choice for both beginners and advanced users seeking a reliable, secure, and customizable operating system.

The installation process is designed to be simple and efficient, whether you're replacing your current OS, setting up a dual-boot system, or installing it on a virtual machine. It involves downloading the official ISO image from the Ubuntu website, creating a bootable USB or DVD, and following a step-by-step installation guide to configure the system according to your needs. Ubuntu offers different editions, such as Ubuntu Desktop for everyday computing and Ubuntu Server for managing servers.

Overall, Ubuntu Linux offers a flexible and modern operating system that combines ease of use with powerful features, making it a great option for users with varying levels of expertise and different computing requirements.

1.2. Scope of Ubuntu

1. **Personal Computing:** Ubuntu provides a user-friendly desktop environment for everyday tasks like web browsing, media consumption, and document editing.
2. **Enterprise Use:** Ubuntu Server offers a stable, secure platform for hosting websites, databases, and enterprise-level applications.
3. **Cloud Computing:** Ubuntu is extensively used in cloud platforms like AWS, Google Cloud, and Azure for scalable infrastructure management.
4. **Internet of Things (IoT):** Ubuntu Core is designed for IoT devices, offering a lightweight, secure operating system for smart devices and industrial systems.
5. **High-Performance Computing (HPC):** Ubuntu supports scientific research and supercomputing, powering big data analysis and complex simulations.
6. **Security and Privacy:** With built-in tools like AppArmor and frequent updates, Ubuntu provides robust security features to ensure a safe computing environment.
7. **Open-Source Contribution:** Ubuntu encourages open-source innovation, with a strong community that fosters contributions to software development and advancements.
8. **Creative Work:** Ubuntu supports multimedia creation, offering tools for graphic design, video editing, and music production.
9. **Gaming:** Ubuntu supports Linux-native games and compatibility layers like Steam and Proton for running Windows games.
10. **Custom Distributions:** Ubuntu serves as the foundation for many custom Linux distributions, such as Linux Mint and Pop!_OS.

Requirement Analysis

Requirement analysis is a crucial phase in project development, focused on understanding, gathering, and documenting both functional and non-functional requirements for a system or project. The primary goal is to ensure that all stakeholders have a unified understanding of what the system should accomplish, how it needs to perform, and any constraints it must adhere to. This phase lays the groundwork for the entire development lifecycle by establishing clear goals, expectations, and guidelines. Effective requirement analysis helps prevent misunderstandings and ensures the project meets its intended objectives.

2.1. Hardware Requirements for Ubuntu Desktop:

- **Processor (CPU):**
 - Minimum: 2 GHz dual-core processor or better
 - Recommended: Quad-core processor for smoother multitasking
- **Memory (RAM):**
 - Minimum: 4 GB
 - Recommended: 8 GB or more for optimal performance, especially when running multiple applications
- **Storage (Hard Drive Space):**
 - Minimum: 25 GB of free space
 - Recommended: 50 GB or more for additional applications and data storage
- **Graphics:**
 - Minimum: VGA capable of 1024x768 screen resolution
 - Recommended: Dedicated graphics card for better performance in 3D applications, video editing, and gaming
- **Peripherals:**
 - USB port for installation (using a bootable USB) or DVD drive (for installation via DVD)
 - Internet connection (for updates and package installations)

For Ubuntu Server:

- **Processor (CPU):**
 - Minimum: 1 GHz processor or better
 - Recommended: Multi-core processor for handling concurrent server tasks
- **Memory (RAM):**
 - Minimum: 512 MB

- Recommended: 2 GB or more, depending on server load and services being run
- **Storage (Hard Drive Space):**
 - Minimum: 2.5 GB (for a basic server installation)
 - Recommended: 10 GB or more, depending on server roles (e.g., web hosting, databases)
- **Networking:**
 - Ethernet interface or wireless connection for remote access and services

For Ubuntu Core (IoT):

- **Processor (CPU):**
 - ARM or x86-based processors for embedded systems or small devices
- **Memory (RAM):**
 - Minimum: 512 MB (for low-power devices)
- **Storage (Hard Drive Space):**
 - Minimum: 4 GB (for the OS and basic applications)
- **Network Interface:**
 - Wi-Fi or Ethernet for connecting IoT devices

2.1. Software Requirements

For Ubuntu Desktop:

- **Supported Architectures:**
 - 64-bit (the most common architecture for modern systems)
- **ISO File:**
 - The official Ubuntu Desktop ISO image can be downloaded from the Ubuntu website
- **Bootable Media Creation Tool:**
 - Use software like Rufus (for Windows) or Etcher (cross-platform) to create a bootable USB drive from the ISO image

For Ubuntu Server:

- **Supported Architectures:**
 - 64-bit (suitable for most servers)
- **ISO File:**
 - The Ubuntu Server ISO image is available for download on the Ubuntu website
- **Server Software:**
 - Additional packages for specific server roles, such as the LAMP stack (Linux, Apache, MySQL, PHP) or SSH, can be installed during or after the base installation

For Ubuntu Core (IoT):

- **Snap Packages:**
 - Ubuntu Core uses snap packages for all software, so it requires system compatibility with snapd (Snap daemon)
- **ISO File:**
 - Download Ubuntu Core from the official Ubuntu website, or configure it specifically for your IoT device

Installation Processes

3.1. About VirtualBox

VirtualBox is a powerful, free, and open-source virtualization software developed by Oracle, allowing users to create and run virtual machines (VMs) on their computers. It enables the installation and simultaneous use of multiple operating systems (OS) without needing to reboot, making it ideal for testing, development, and learning about different environments.

With VirtualBox, you can run various guest operating systems such as Linux, Windows, macOS, and more within a host OS, creating isolated environments known as virtual machines. This is particularly useful for running incompatible software, simulating network configurations, or developing software in different environments without impacting your main system

Download VirtualBox

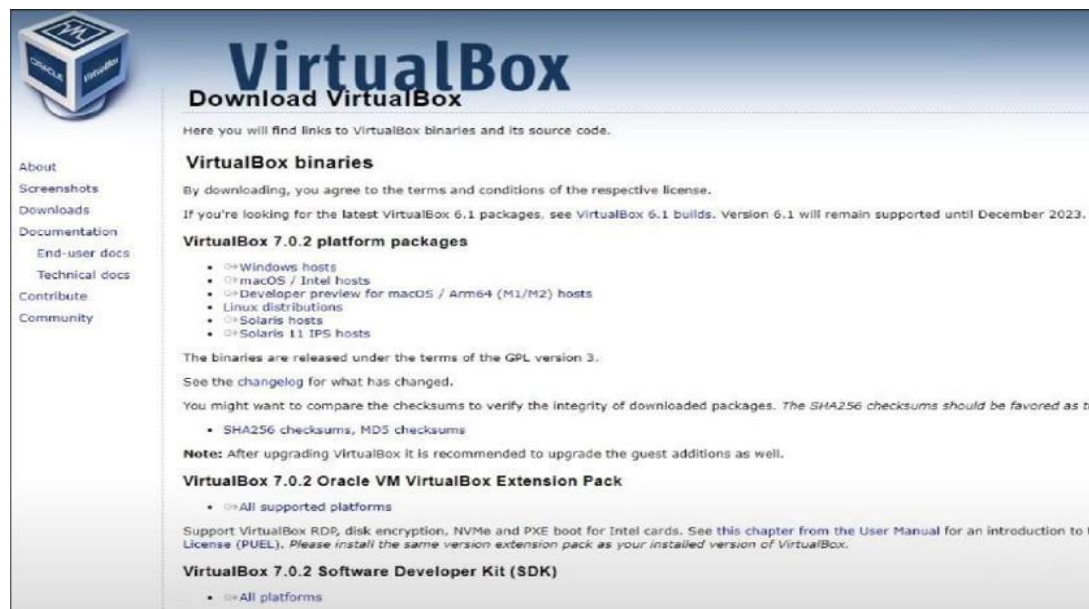
1. Visit the Official Website:

- Go to the Oracle VirtualBox download page.

2. Select Your Operating System:

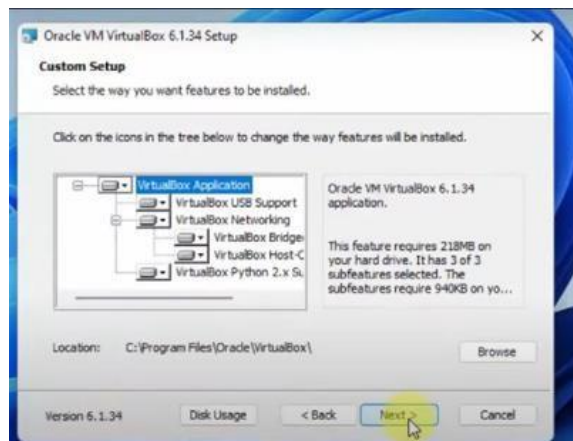
- Choose the version that matches your operating system (Windows, macOS, or Linux).

Click on the download link for your OS to begin downloading the installation file.



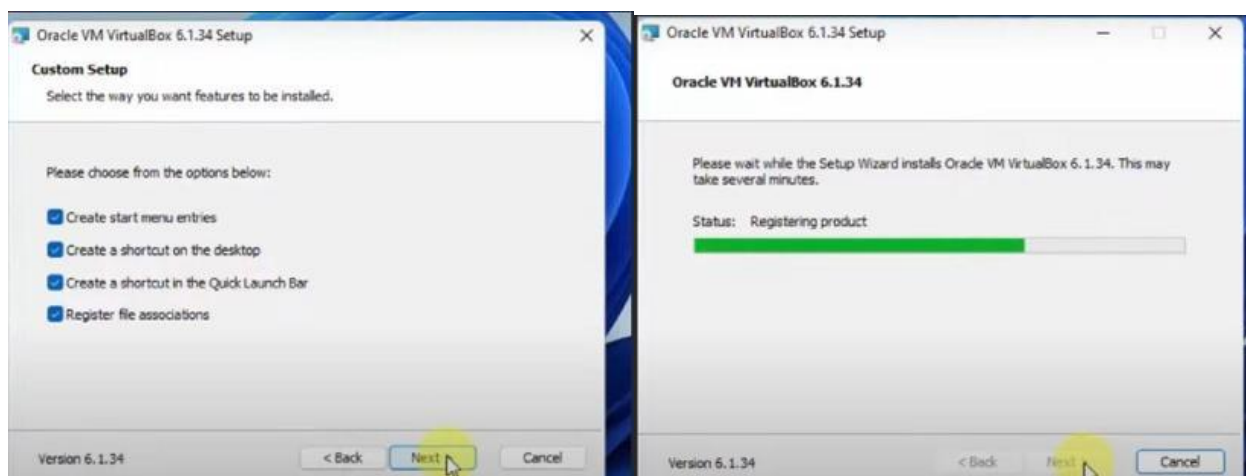
1. Run the Installer:

- Double-click the downloaded .exe file to launch the installer.



2 Installation Wizard:

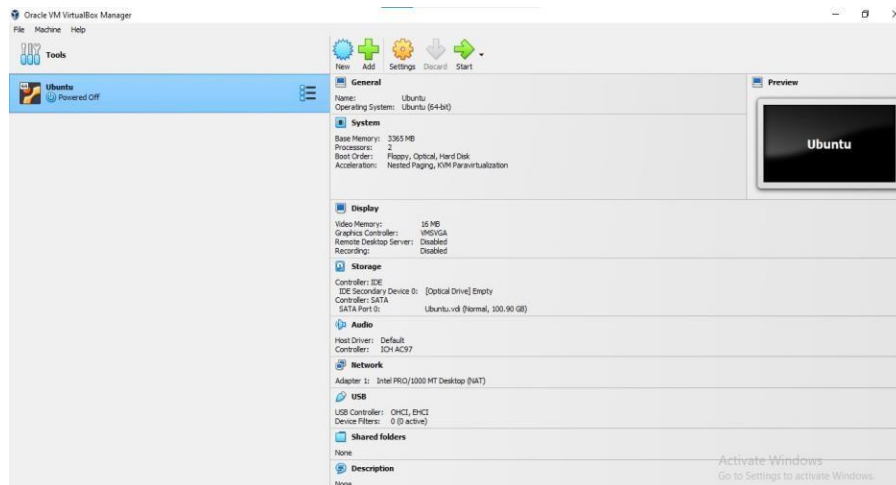
- Click "Next" to proceed through the installation wizard.





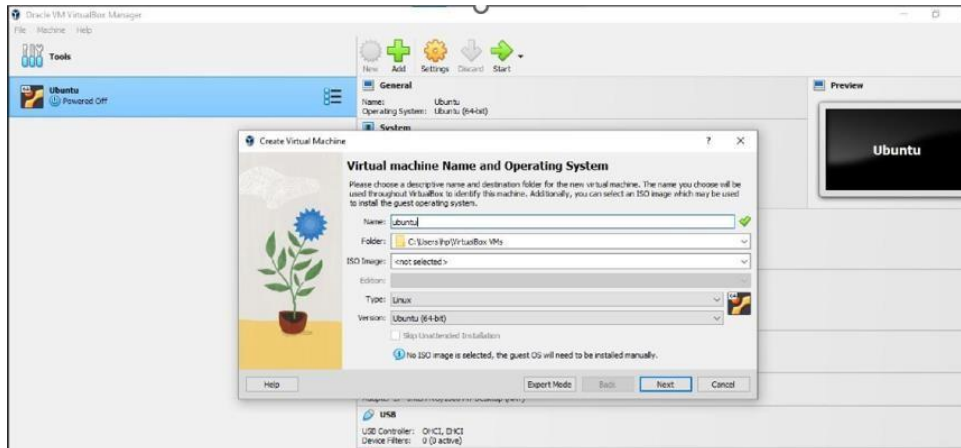
1 Launch VirtualBox

If you left the "Start VirtualBox" option checked in the previous step, VirtualBox will launch automatically. If not, you can open it from the **Start Menu** or **Desktop shortcut**.



3.3. Steps to install Ubuntu Linux

- Click the "New" button in the toolbar.
- Name the Operating System Name: Enter a name for your VM (e.g., "Ubuntu 22.04").
- Type: Select Linux.



2. Memory Allocation:

- Allocate memory according to your need or it recommended by Ubuntu



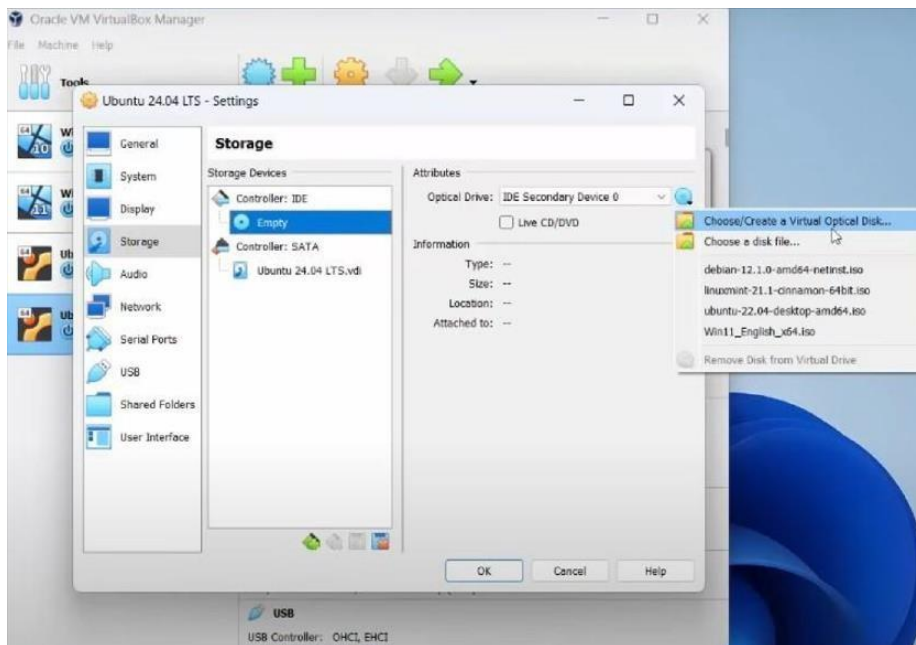
3. Create Virtual Hard Disk

- Specify the size of the virtual hard disk. A minimum of **20 GB** is recommended for Ubuntu.



4. Storage Configuration

- Go to Storage tab under controller IDE Click On the empty disk icon.
- Navigate and select the download Ubuntu ISO file click OK to save the setting.

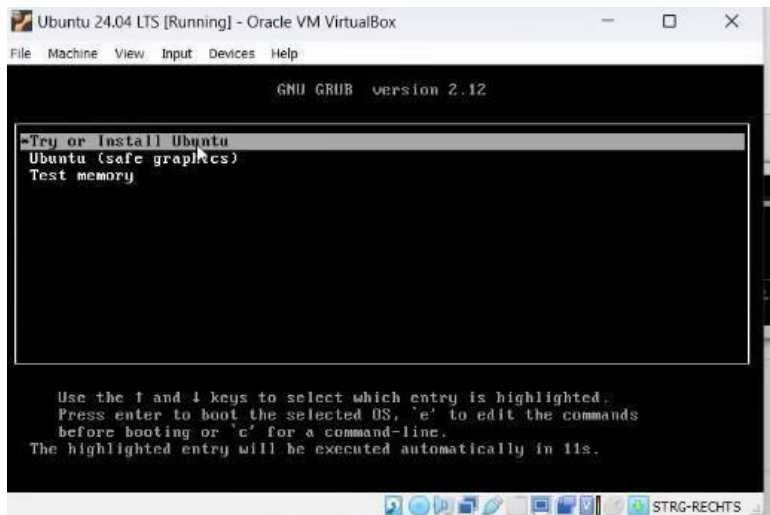


5 Start the Virtual Machine

- In the Virtual Machine top of the box there is start button click on that.
- It will launch the Ubuntu ISO now it will ask for the interface.
- Like try to install or try ubuntu.

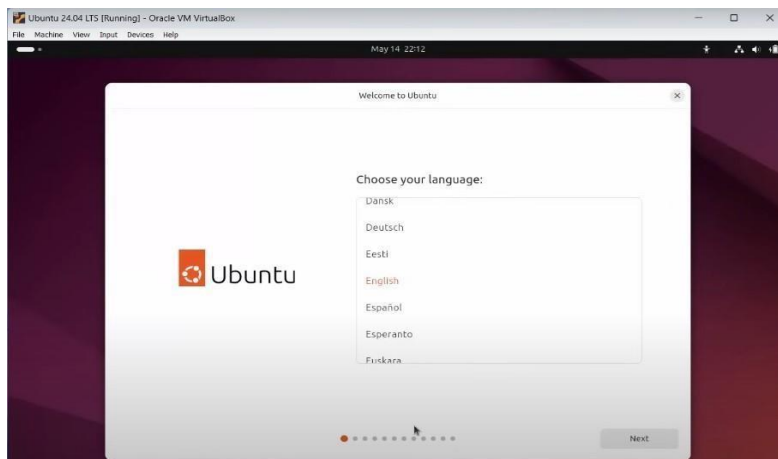
5. 1 Install Ubuntu

- I. **Select Installation Option:** Choose "Try Ubuntu" or "Install Ubuntu". If you select "Try Ubuntu", you can explore the OS before installation. If you choose "Install Ubuntu", it will guide you through the installation process.

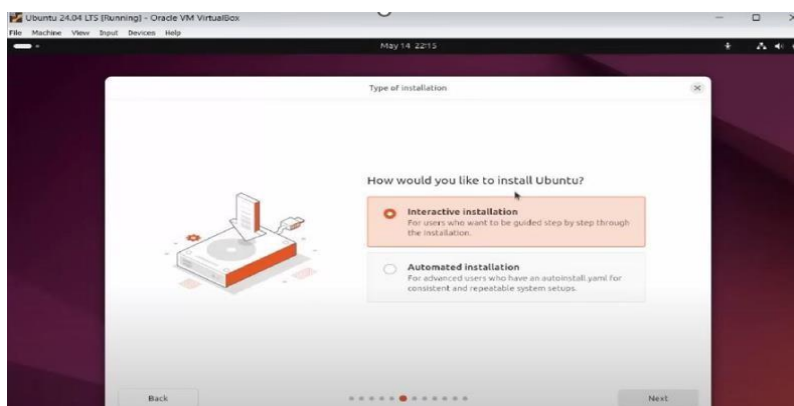


II. Choose Language:

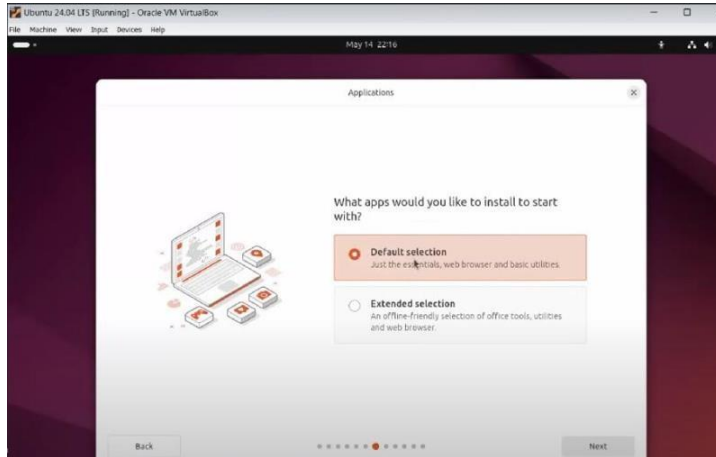
Select your preferred language and click **Continue**.



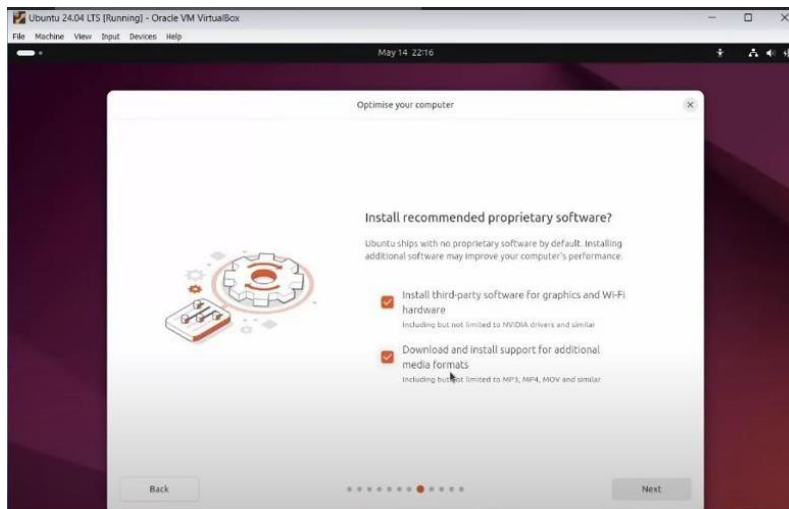
III. Click in Next and choose Interactive Installation.



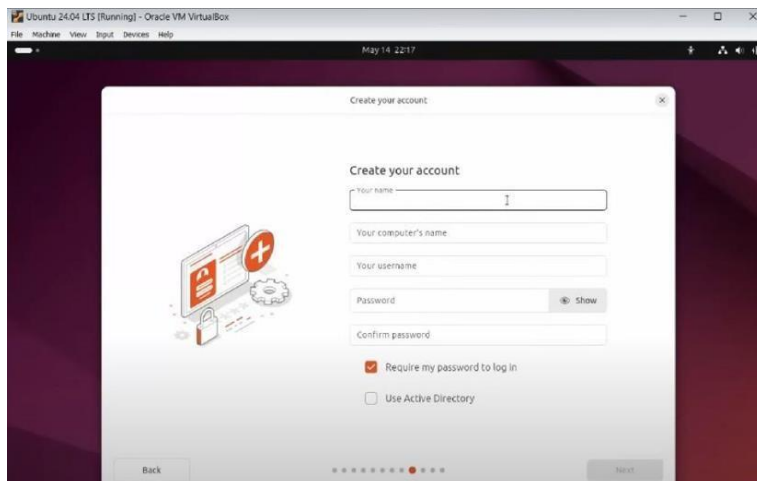
iv. Click Next and choose Default selection.



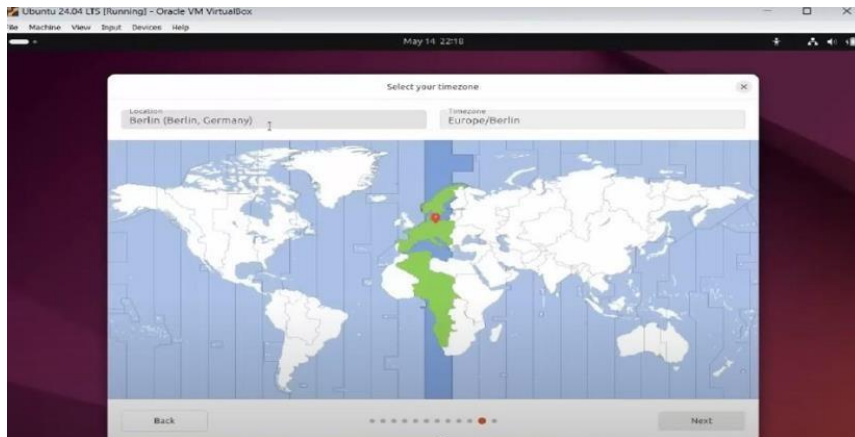
V. Choose whether to download updates and install third-party software (recommended) and click **Continue.**



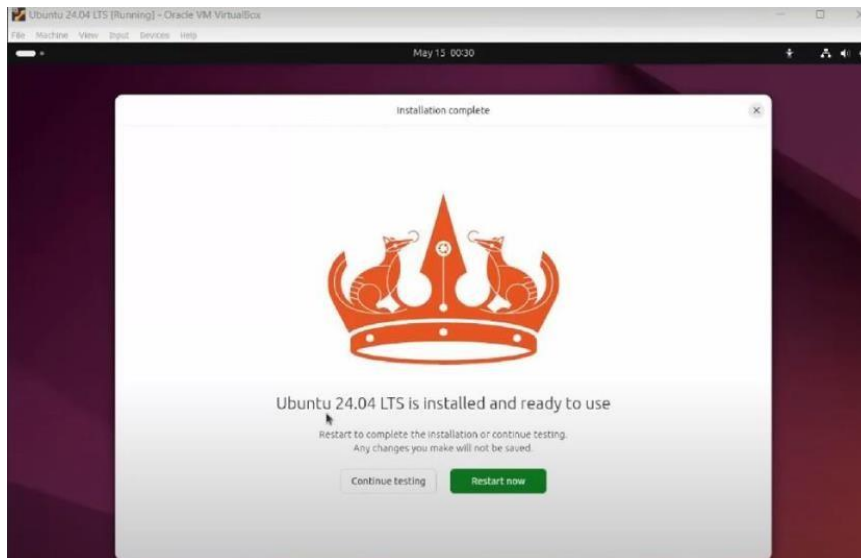
VI. Now Create your Account on Ubuntu



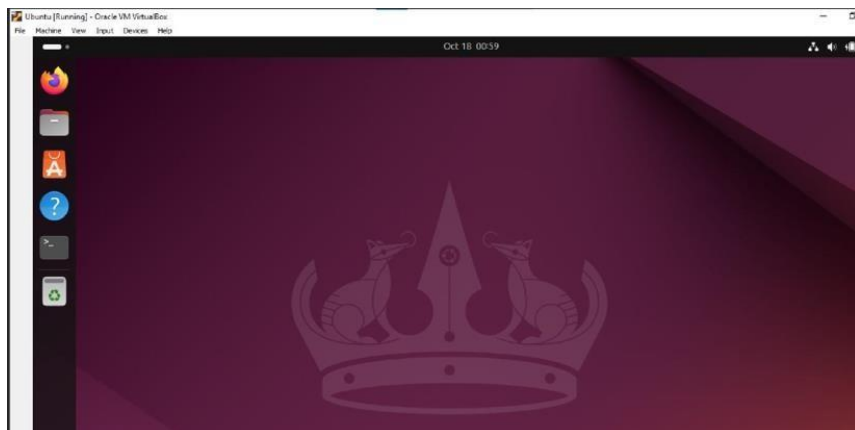
VII. Now Select your time zone and continue.



VIII. After setup all the installation now restart you Virtual Box and reboot the system.



IX. After reboot now launch the ubuntu and login your account and it will start working on this.



Conclusion

By successfully installing Ubuntu on VirtualBox, you've gained access to a powerful tool that allows you to run a full-fledged Linux environment seamlessly within your existing operating system. This setup grants you the freedom to experiment, explore, and develop in a Linux environment without any risk to your primary system, offering a variety of benefits for learners, developers, system administrators, and anyone curious about open-source software.

Unlocking the Power of Virtualization

VirtualBox, a popular virtualization software, provides a unique sandbox environment, where you can install and interact with Ubuntu as if it were running on dedicated hardware. This method of virtualization is ideal for those who want to experiment with Linux, as it avoids the potential risks and complexities of dual-booting or replacing your current operating system entirely. It offers a safer, more flexible alternative, enabling you to tinker with configurations, run commands, and explore Ubuntu's offerings without fear of causing damage to your primary OS or hardware setup.

By setting up Ubuntu in this virtualized space, you gain full access to the Linux operating system. This allows you to run Linux-native applications, explore command-line interfaces, and test development environments, all while maintaining the comfort and security of your main system. Whether you're looking to learn the basics of Linux, experiment with software development, or delve into advanced system administration, this setup provides an excellent learning environment with minimal risk.

Advantages of Ubuntu in a Virtual Machine (VM)

Running Ubuntu in VirtualBox gives you the freedom to take full advantage of Ubuntu's feature-rich environment, including its extensive library of open-source software. Ubuntu is widely praised for its stability, robust security, and vast software ecosystem, which makes it ideal for a range of uses—from general computing to more advanced development tasks.

One of the major benefits of running Ubuntu in a VM is the ability to test different software configurations without risking system corruption. You can install and remove applications, test system changes, and explore Linux configurations in a completely isolated environment. Should anything go wrong, VirtualBox's snapshot feature provides a convenient fallback. With a snapshot, you can save the current state of your virtual machine and revert to it later, ensuring that you can always return to a stable environment.

This flexibility is a significant advantage when working on complex projects or learning new skills, such as system administration, network configuration, or software development. The safety of the virtual machine environment means you can push the limits of your experimentation without worrying about causing irreparable harm to your system. If something breaks, a quick snapshot recovery puts you back on track.