

UNIVERSITY INSTITUTE OF COMPUTING

PROJECT REPORT

ON

Linux System installation and configuration

Program Name: BCA

Linux Administration Lab

23CAP-308

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Section/ Group: 23BCA-2A

Semester :5TH

SUBMISSION DATE : 06-Nov-2025

SUBMITTED TO:

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SUBMISSION DATE : 06-Nov-2025

Designation:Asst.Professor

sign: _____



BONAFIDE CERTIFICATE

Certified that this project report “**Linux System installation and configuration**” is the Bonafide work of “**Rohit**” under UID “**23BCA10217**” who carried out the project work under my supervision.

.....

SIGNATURE

UIC DEPARTMENT

ASSISTANT PROFESSOR

RAJAT PATIAL

LINUX ADMINISTRATION LAB

TITLE: Linux System installation and configuration

Aim of the Project:

To install and configure a Linux operating system (Ubuntu or CentOS) on a virtual or physical machine, and perform basic administrative tasks including network configuration and package management

Performing Task:

Introduction: Linux is a popular open-source operating system widely used for servers, development, and networking. It provides better stability, security, and flexibility compared to other operating systems. This project focuses on installing and configuring Linux on a virtual machine, setting up the environment, managing packages, and configuring the network.

Objectives:

- To install and configure the Linux OS on a physical or virtual environment.
- To understand manual partitioning during installation.
- To learn how to install software packages using terminal commands.
- To configure network settings and verify connectivity.
- To use basic administrative commands for system management.

Tools and Technologies Used:

- **Operating Systems:** Ubuntu / CentOS
- **Virtualization Software:** VirtualBox / VMware
- **Commands Used:**
 - `ifconfig` – Displays network configuration.
 - `hostnamectl` – Manages system hostname and information.
 - `ping` – Tests network connectivity.
 - `sudo apt install <package>` – Installs packages on Ubuntu.
 - `yum install <package>` – Installs packages on CentOS.

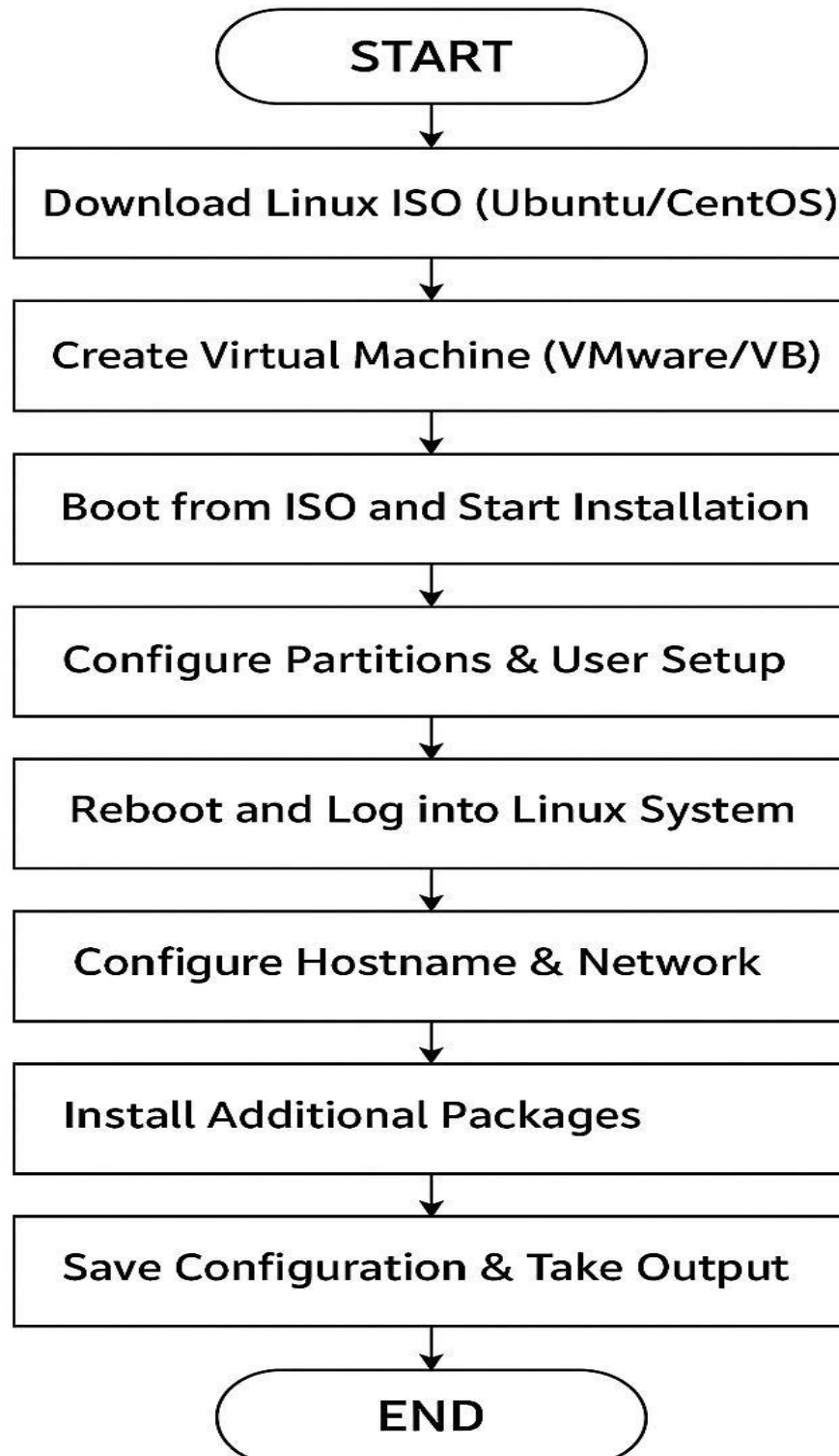
STEPS INCLUDE:

- S1)** Download and install the Linux distribution ISO file (Ubuntu/CentOS).
- S2)** Create a new virtual machine using VirtualBox or VMware and allocate CPU, memory, and storage.
- S3)** Boot from the ISO file and start the installation process.
- S4)** Perform manual partitioning (/ , /home, swap).
- S5)** Create a user account and complete the installation.
- S6)** Log in to the Linux system and verify the installation.
- S7)** Configure hostname using hostnamectl.
- S8)** Set up network connection and test with ifconfig and ping. **S9)** Install additional software packages as needed.

Algorithm / Logic / Flow chart:

- Start system and load Linux installer.
- Choose installation type and create partitions.
- Install Linux packages and system files.
- Set up user credentials.
- Configure hostname and network settings.
- Verify installation and connectivity.
- End process.

Flowchart:

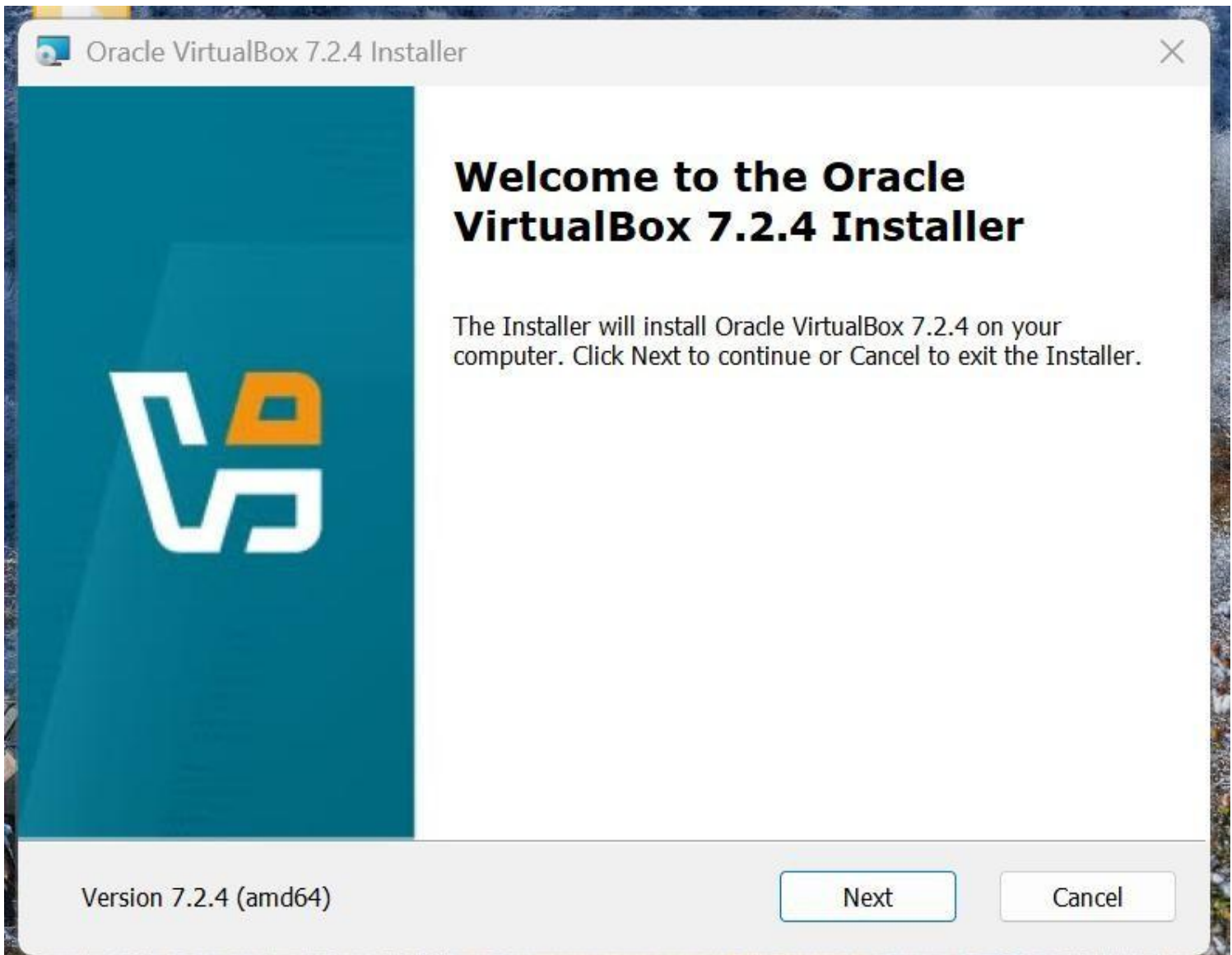


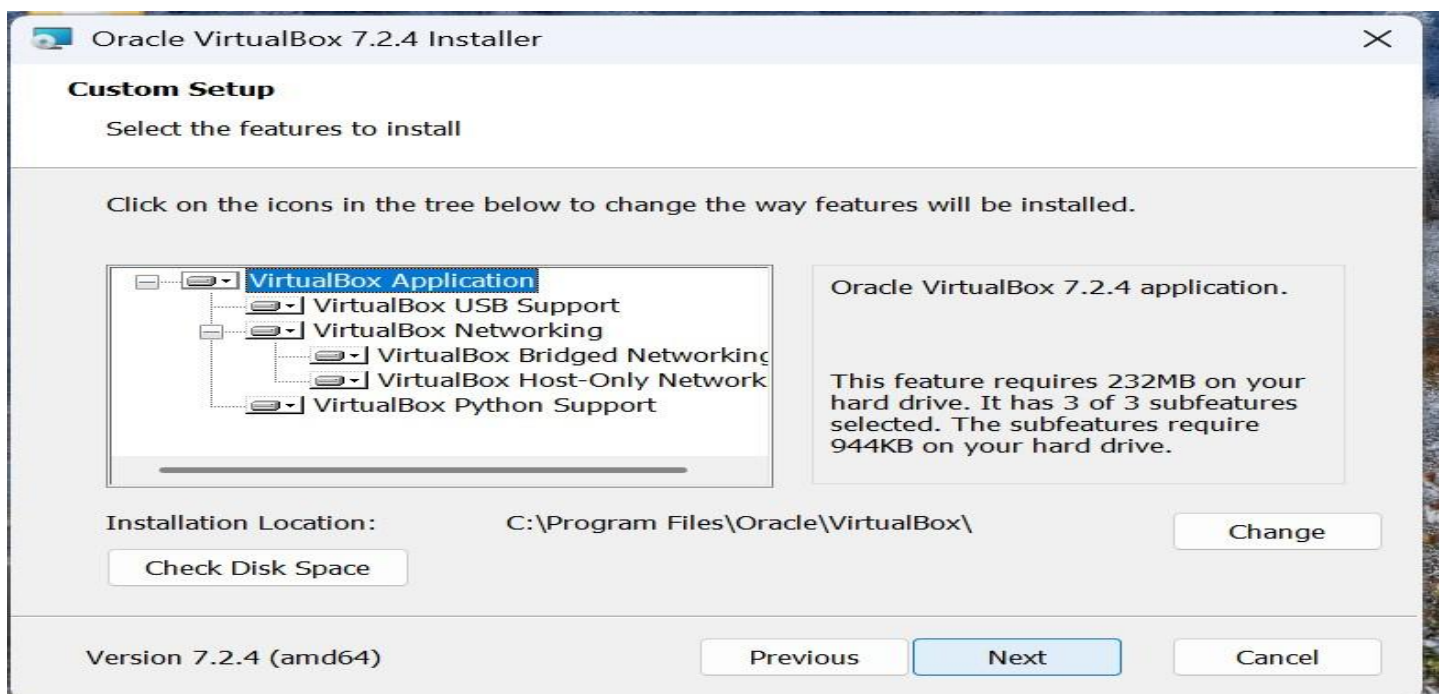
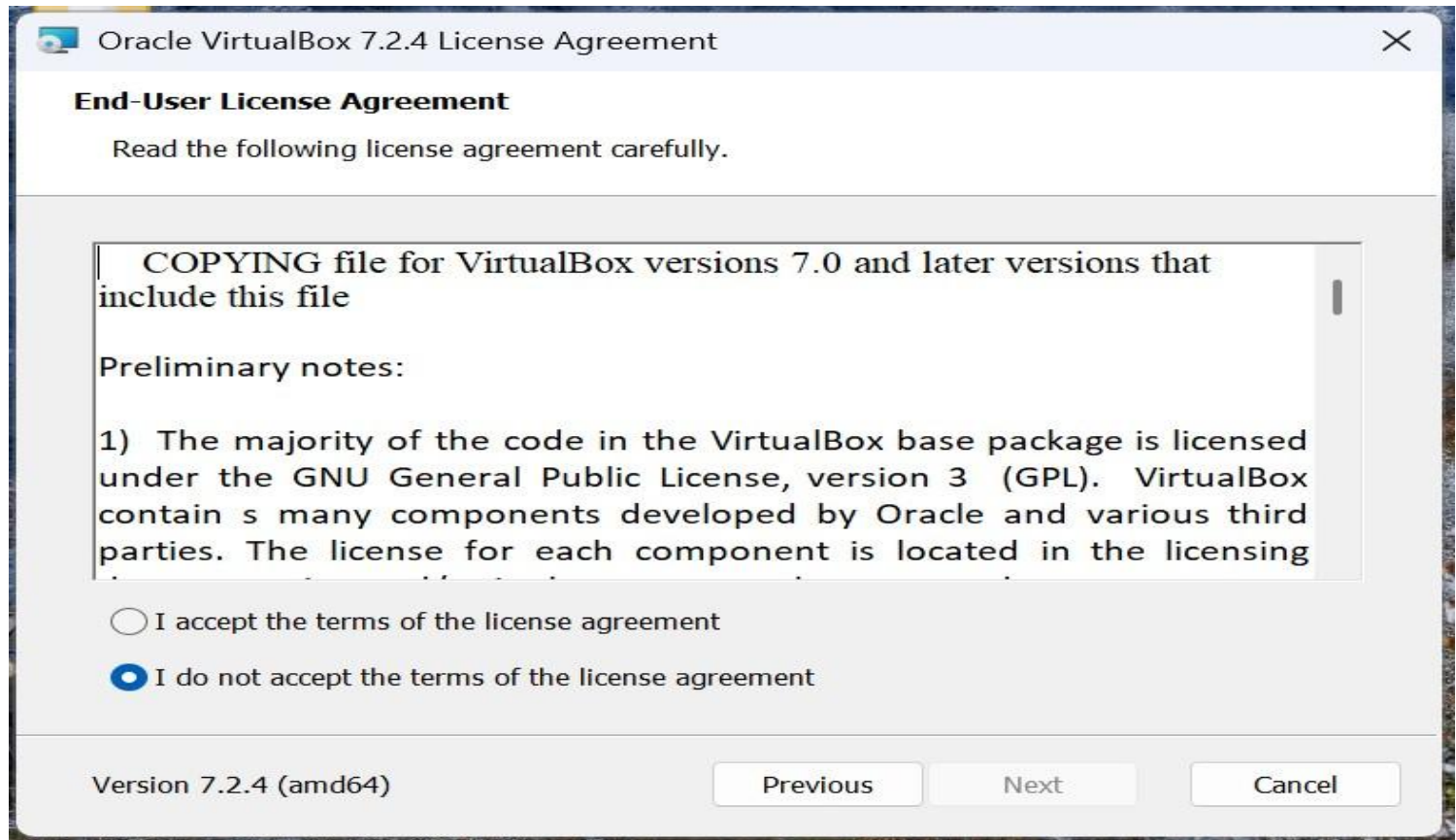
Code Overview:

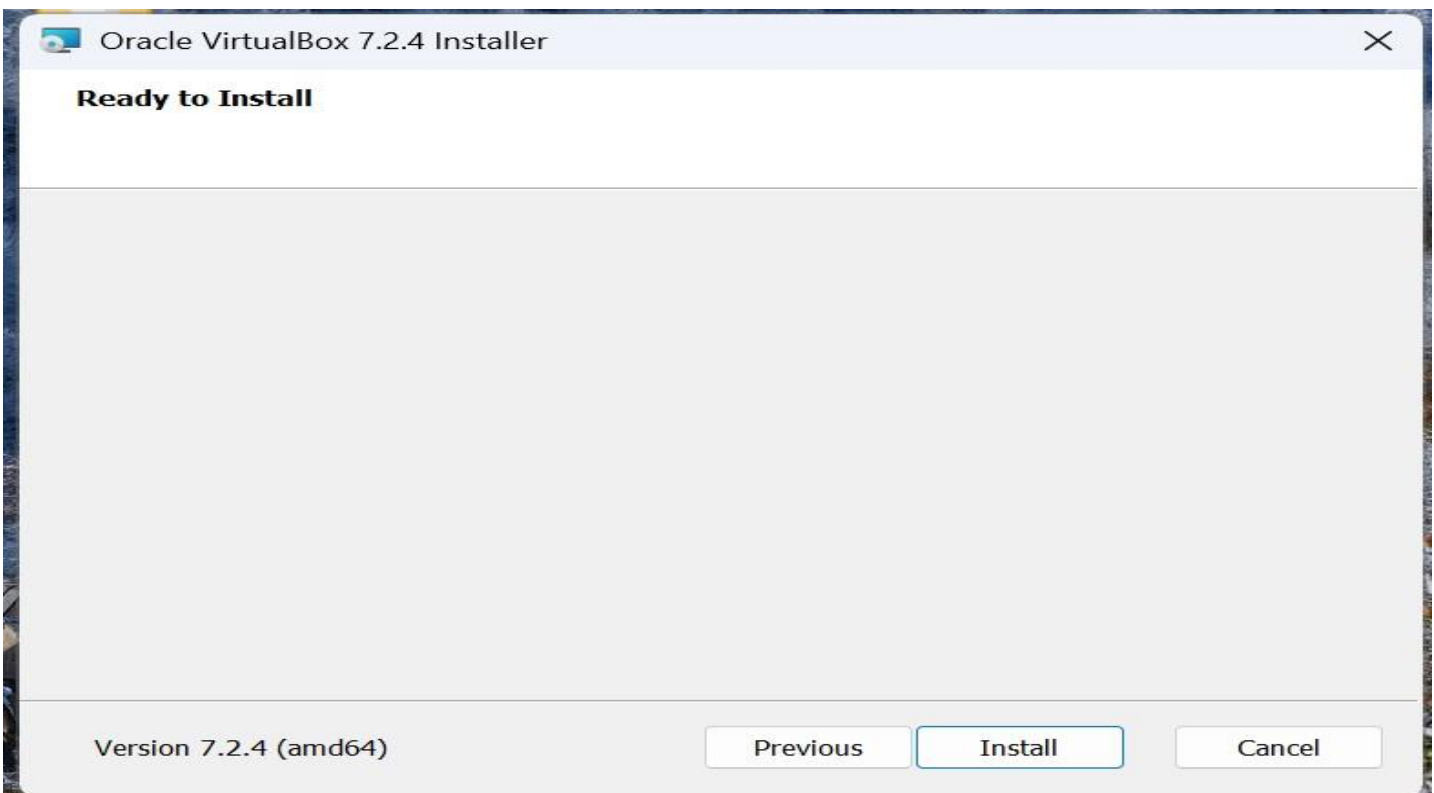
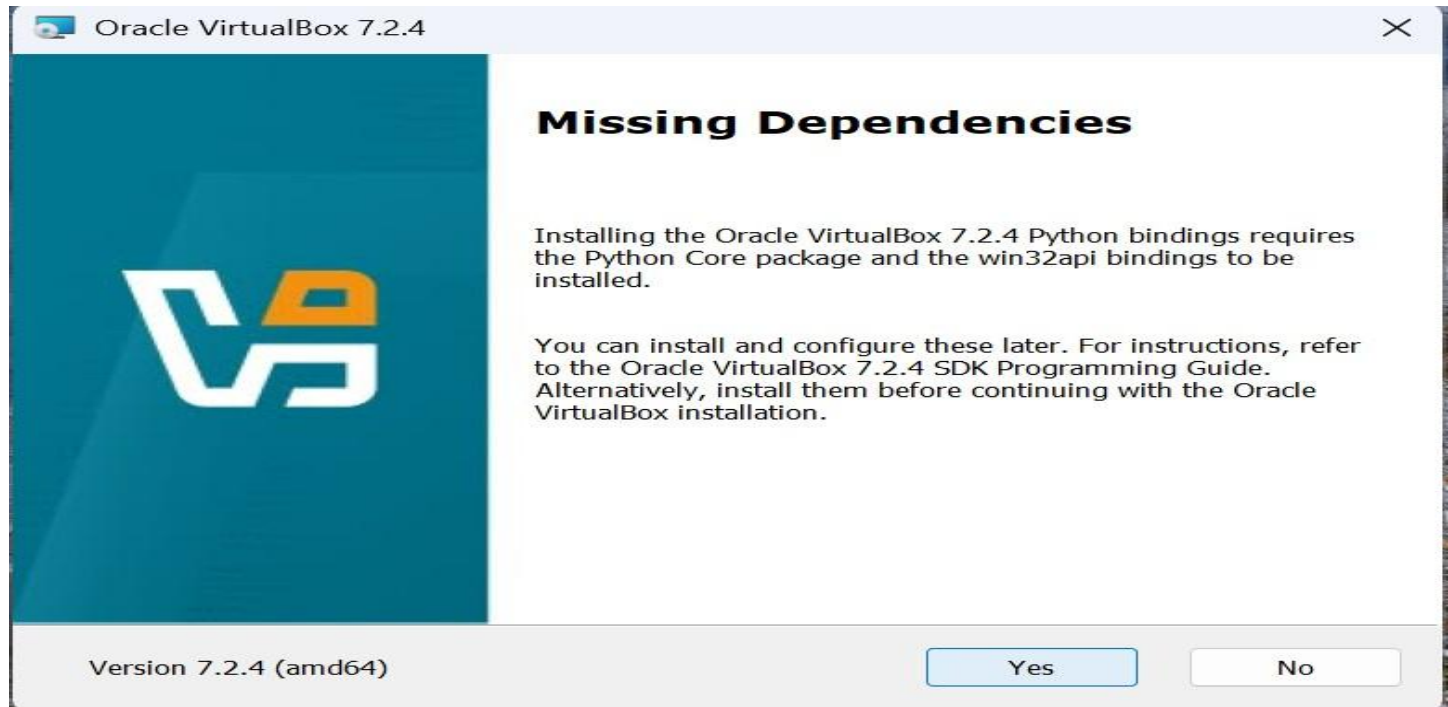
Commamd:

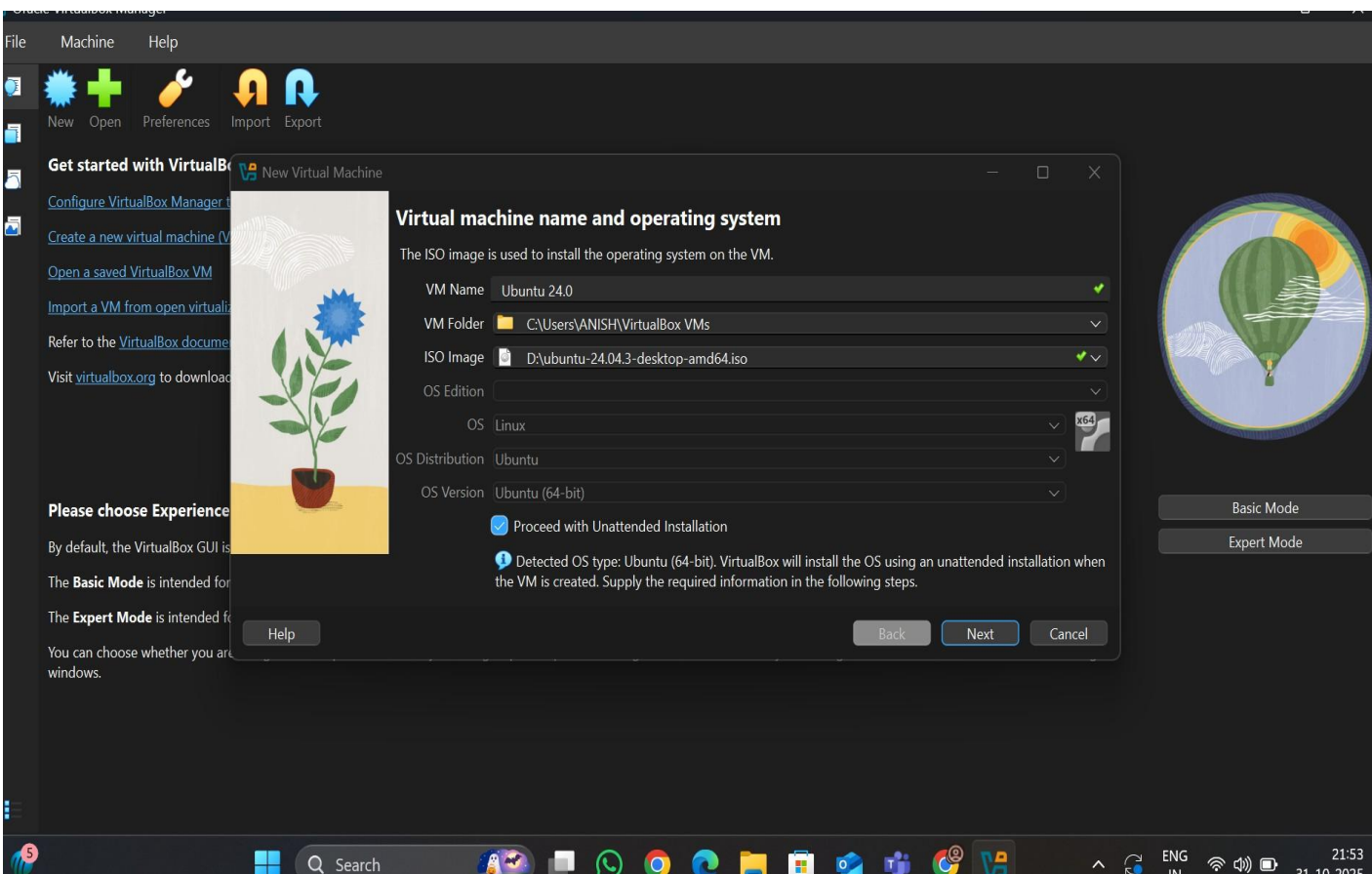
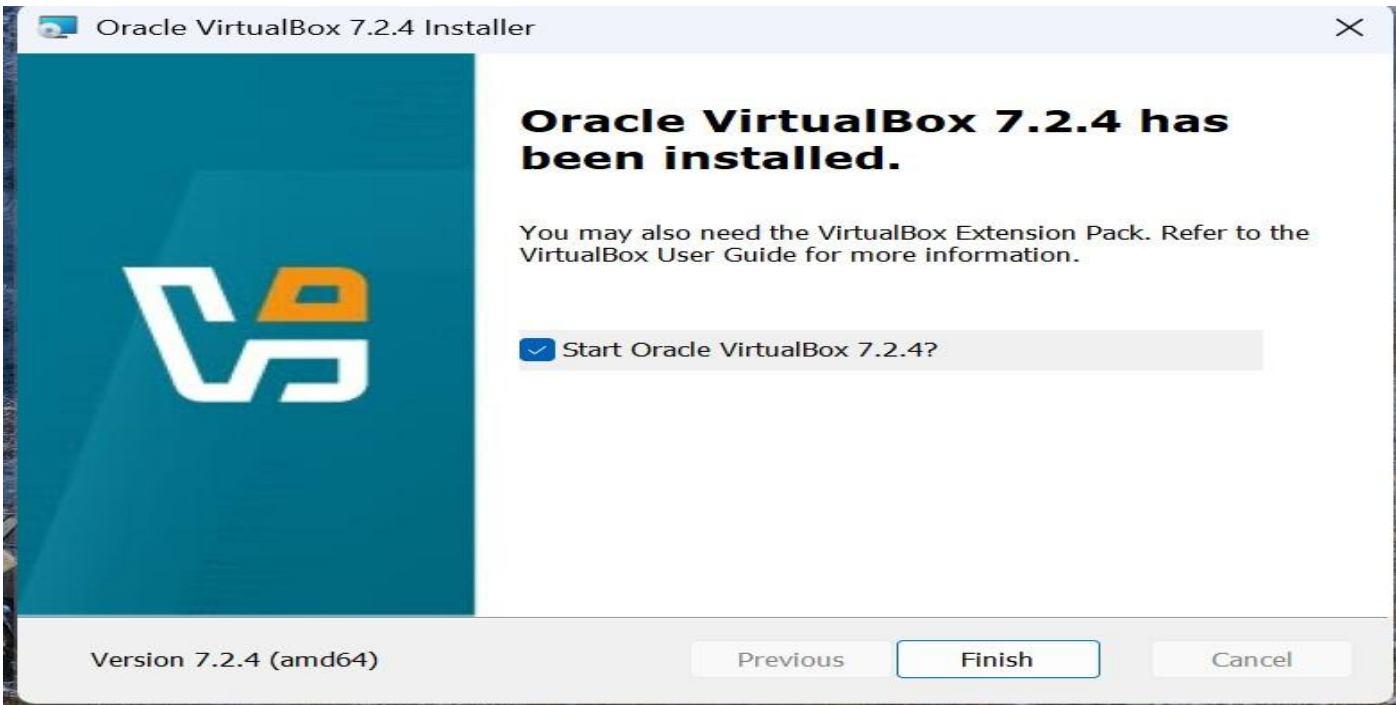
- **sudo apt update** : for update packages.
- **sudo apt install net-tools**: install additional software packages.
- **Ifconfig** : for check netork configuration.
- **Hostnmectl** : it helps to view system information.
- **Ping google.com** : check connectivity.

Installation and configuration process Screenshots and Output:









New Virtual Machine

Set up unattended guest OS installation

Enter the information that will be required when the OS is installed.

User Name and Password

User Name:

Password:

Confirm Password:

OS Installation Options

Product Key:

Host Name:

Domain Name:

☐ Install in Background

☐ Install Guest Additions

Guest Additions ISO Image:

[Help](#) [Back](#) [Next](#) [Cancel](#)

New Virtual Machine

Specify virtual hardware

Specify the VM's hardware. Resources allocated to the VM will not be available to the host when the VM is running.

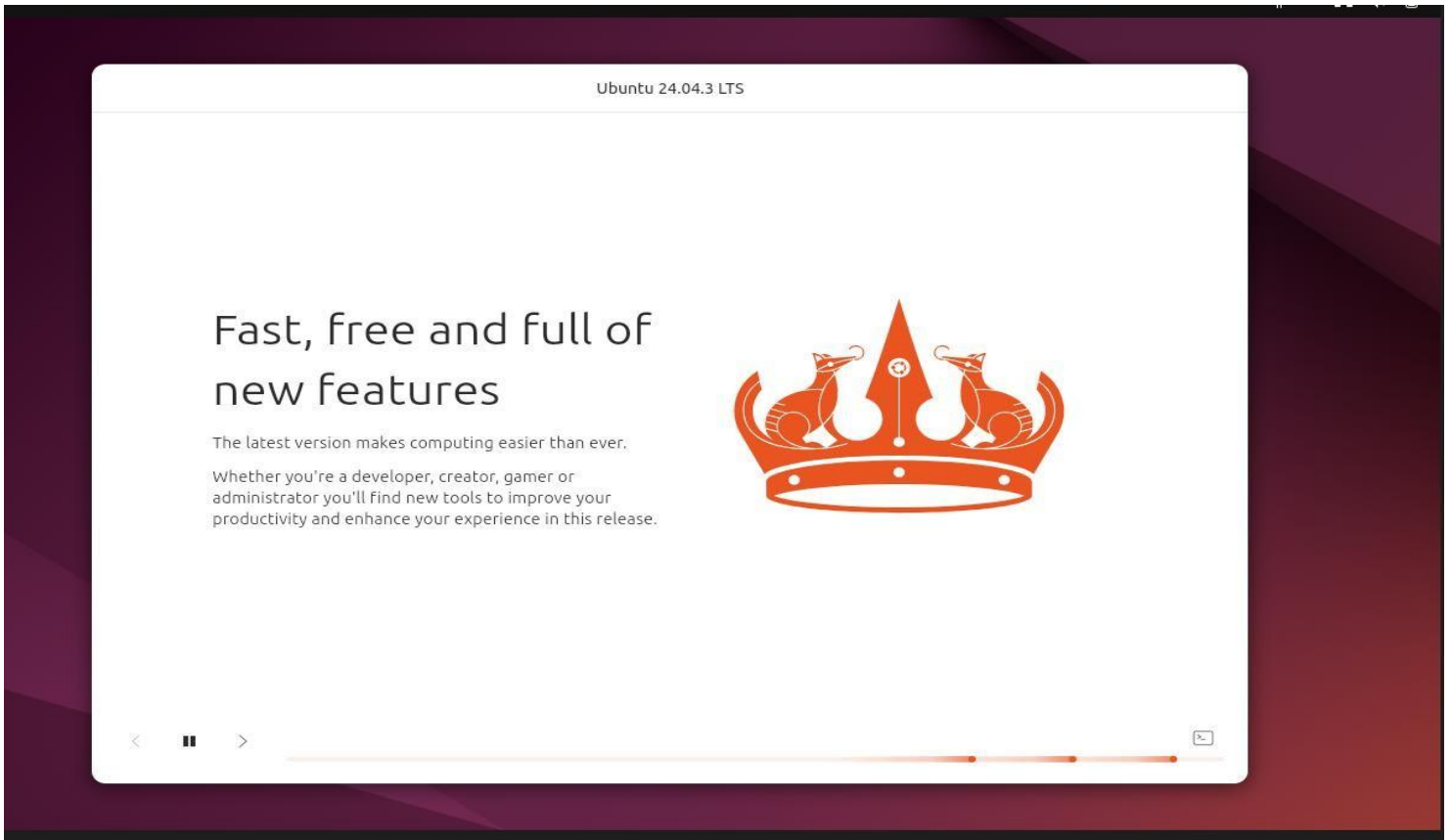
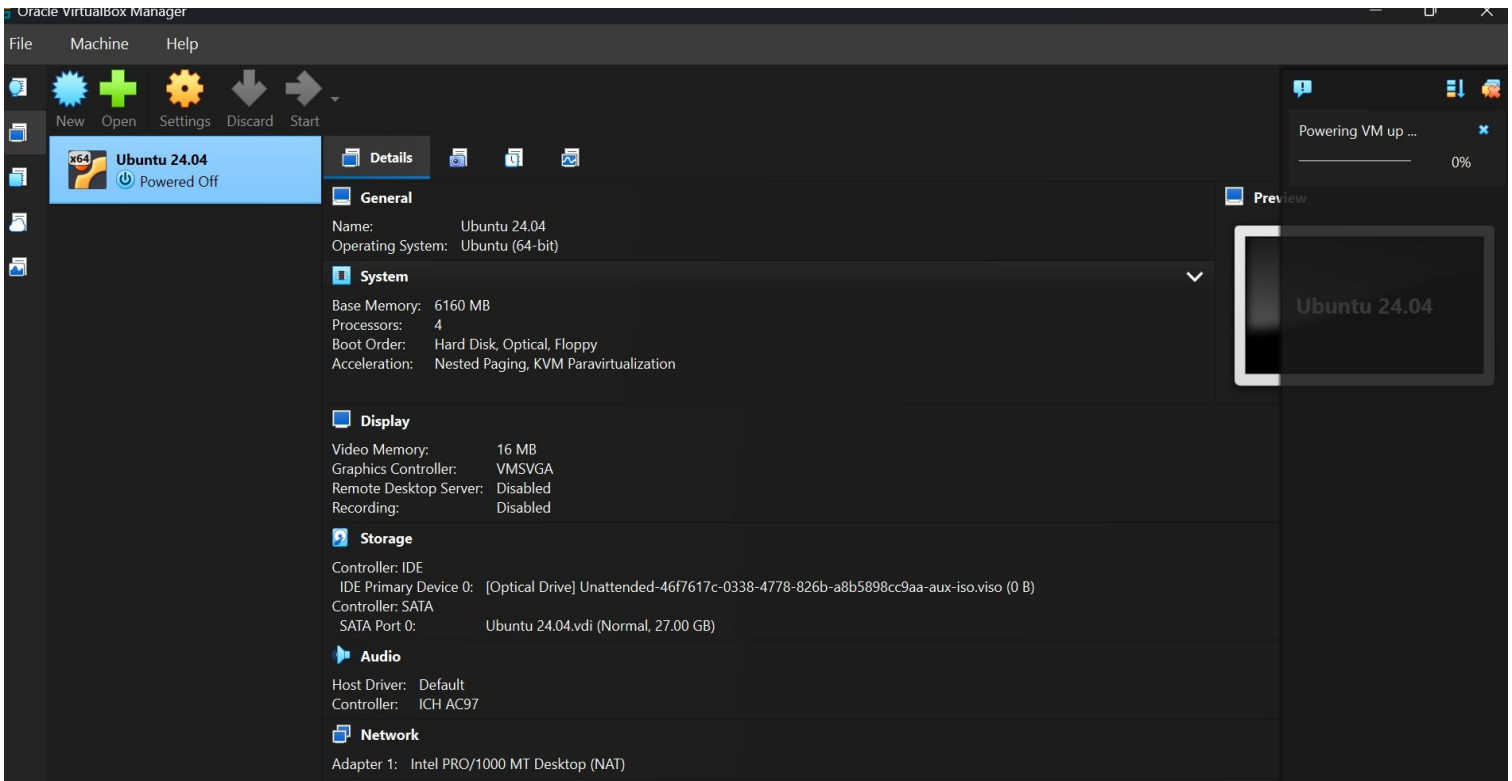
Base Memory: 8328 MB

Number of CPUs: 4

Disk Size: 30.00 GB

☐ Use EFI

[Help](#) [Back](#) [Next](#) [Cancel](#)



Nov 1 09:05

ubuntu@ubuntu: ~

```
ubuntu@ubuntu:~$ sudo apt update
Ign:1 cdrom://Ubuntu 24.04.3 LTS _Noble Numbat_ - Release amd64 (20250805.1) noble InRelease
Hit:2 cdrom://Ubuntu 24.04.3 LTS _Noble Numbat_ - Release amd64 (20250805.1) noble Release
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1270 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-updates/main i386 Packages [545 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/main i386 Packages [344 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [211 kB]
Get:12 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:13 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [9008 B]
Get:14 http://security.ubuntu.com/ubuntu noble-security/universe amd64 P
```

Nov 1 12:46

ubuntu@ubuntu: ~

```
ubuntu@ubuntu:~$ sudo apt install net-tools vim curl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  vim-runtime
Suggested packages:
  ctags vim-doc vim-scripts
The following NEW packages will be installed:
  curl net-tools vim vim-runtime
0 upgraded, 4 newly installed, 0 to remove and 0 not upgraded.
Need to get 9592 kB of archives.
After this operation, 43.0 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.6 [226 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 net-tools amd64 2.10-0.1ubuntu4.4 [204 kB]
Ign:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 vim-runtime all 2:9.1.0016-1ubuntu7.8
Ign:4 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 vim amd64 2:9.1.0016-1ubuntu7.8
Ign:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 vim-runtime all 2:9.1.0016-1ubuntu7.8
```



```
Nov 1 09:07
ubuntu@ubuntu: ~
Processing triggers for gnome-menus (3.36.0-1.1ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
ubuntu@ubuntu:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fd17:625c:f037:2:c08e:85f5:d236:86a3 prefixlen 64 scopeid
    0x0<global>
    inet6 fe80::a00:27ff:fe4c:d2b8 prefixlen 64 scopeid 0x20<link>
    inet6 fd17:625c:f037:2:a00:27ff:fe4c:d2b8 prefixlen 64 scopeid
    0x0<global>
    ether 08:00:27:4c:d2:b8 txqueuelen 1000 (Ethernet)
    RX packets 22137 bytes 29211272 (29.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 5080 bytes 383529 (383.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 208 bytes 20570 (20.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 208 bytes 20570 (20.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
Nov 1 09:07
ubuntu@ubuntu: ~
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 208 bytes 20570 (20.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 208 bytes 20570 (20.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

ubuntu@ubuntu:~$ hostnamectl
Static hostname: ubuntu
    Icon name: computer-vm
    Chassis: vm
    Machine ID: 9a1ab2297bc841d1bd57278e9d087cfb
    Boot ID: e14eab3a83674cb99ca926c79acabd80
    Virtualization: oracle
    Operating System: Ubuntu 24.04.3 LTS
    Kernel: Linux 6.14.0-27-generic
    Architecture: x86_64
    Hardware Vendor: innotek GmbH
    Hardware Model: VirtualBox
    Firmware Version: VirtualBox
    Firmware Date: Fri 2006-12-01
    Firmware Age: 18y 11month 1d
ubuntu@ubuntu:~$
```

```
ubuntu@ubuntu: ~  
ubuntu@ubuntu:~$ ping google.com  
PING google.com (142.250.67.78) 56(84) bytes of data.  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=1 ttl=255 time=16.1 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=2 ttl=255 time=22.0 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=3 ttl=255 time=18.9 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=4 ttl=255 time=23.1 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=5 ttl=255 time=21.9 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=6 ttl=255 time=33.1 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=7 ttl=255 time=25.5 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=8 ttl=255 time=19.8 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=9 ttl=255 time=20.1 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=10 ttl=255 time=24.5 ms  
64 bytes from tzdela-bf-in-f14.1e100.net (142.250.67.78): icmp_seq=11 ttl=255 time=19.4 ms
```

Conclusion:

The project on “**Linux System Installation & Configuration**” provided a comprehensive understanding of the Linux operating system and its setup process. Through this project, the complete installation of Linux on a virtual environment was successfully carried out using tools such as **Virtual Box** and **VMware**, followed by essential configuration steps including **manual partitioning**, **network setup**, and **package management**.

Students learned how to work with fundamental Linux commands like `ifconfig`, `hostnamectl`, and `ping` to verify system and network configurations. The project also demonstrated how Linux ensures flexibility, security, and performance across multiple system environments.

LEARNING OUTCOMES:

- **Practical Understanding of Linux OS:**

Gained hands-on experience in installing and configuring Linux (Ubuntu/CentOS) on virtual and physical systems. ○ **System Administration Skills:**

Learned to perform essential administrative operations such as user management, network setup, and hostname configuration. ○ **Command-Line Proficiency:**

Developed confidence in using terminal-based commands like `ifconfig`, `hostnamectl`, `ping`, and package installation commands. ○

Understanding of Virtualization:

Understood how to create and manage virtual machines using tools such as VirtualBox and VMware.

○ **Network Configuration Knowledge:**

Acquired the ability to configure and troubleshoot network interfaces, ensuring connectivity within virtual environments. ○ **Problem Solving & Troubleshooting:**

Learned to identify and fix issues related to installation errors, network failures, and package dependencies. ○ **Package Management Concepts:**

Understood the use of package managers such as `apt` and `yum` for installing, updating, and managing software packages.

Github Link:

<https://github.com/Rohitgurgaon01/Linux-project>

Teacher Signature