

Section: 4 Laboratory Experiments Skill Development

Ex. No: 1

Date:

Installing Guest OS on Virtual Machine

AIM

To install Guest OS on Virtual Machine using Oracle VirtualBox.

SCENARIO

You are part of an IT support team tasked with setting up a development environment for a new project. Your manager asks you to create a Virtual Machine using Oracle VirtualBox and install Ubuntu Linux as the Guest OS.

DESCRIPTION

VIRTUALIZATION

- Virtualization is the creation of virtual servers, infrastructures, devices and computing resources.
- Virtualization changes the hardware-software relations and is one of the foundational elements of cloud computing technology that helps utilize the capabilities of cloud computing to the full.
- Virtualization techniques allow companies to turn virtual their networks, storage, servers, data, desktops and applications.

Hypervisor or Virtual Machine Monitor (VMM)

A **hypervisor** or **virtual machine monitor (VMM)** is a piece of computer software, firmware or hardware that creates and runs virtual machines. A computer on which a hypervisor is running one or more virtual machines is defined as a *host machine*. Each virtual machine is called a *guest machine*. The hypervisor presents the guest operating systems with a virtual operating platform and manages the execution of the guest operating systems. Multiple instances of a variety of operating systems may share the virtualized hardware resources.

Types of Virtualization

- **Operating System Level Virtualization:** Server virtualization method where the kernel of an operating system allows for multiple isolated user-space instances, instead of just one. Such instances (sometimes called **containers**, **software containers**, virtualization engines (VE), virtual private servers (VPS)) may look and feel like a real server from the point of view of its owners and users.

- **Platform / Hardware Virtualization:** Software executed on these virtual machines is separated from the underlying hardware resources. For example, a computer that is running Microsoft Windows may host a virtual machine that looks like a computer with the Ubuntu Linux operating system; Ubuntu-based software can be run on the virtual machine.
- **In hardware virtualization**, the host machine is the actual machine on which the virtualization takes place, and the guest machine is the virtual machine. The words *host* and *guest* are used to distinguish the software that runs on the physical machine from the software that runs on the virtual machine. Different types of hardware virtualization include:
 - **Full Virtualization:** Almost complete simulation of the actual hardware to allow software, which typically consists of a guest operating system, to run unmodified.
 - **Partial Virtualization:** Some but not all of the target environment is simulated. Some guest programs, therefore, may need modifications to run in this virtual environment.
 - **Para Virtualization:** A hardware environment is not simulated; however, the guest programs are executed in their own isolated domains, as if they are running on a separate system.
- **Application Virtualization:** A software technology that encapsulates computer programs from the underlying operating system on which it is executed. A fully virtualized application is not installed in the traditional sense, although it is still executed as if it were.

PROCEDURAL STEPS

1. Download and Install Oracle Virtual Box latest version & Extension Package.

Link 1: <https://www.virtualbox.org/wiki/Downloads>

Link 2:

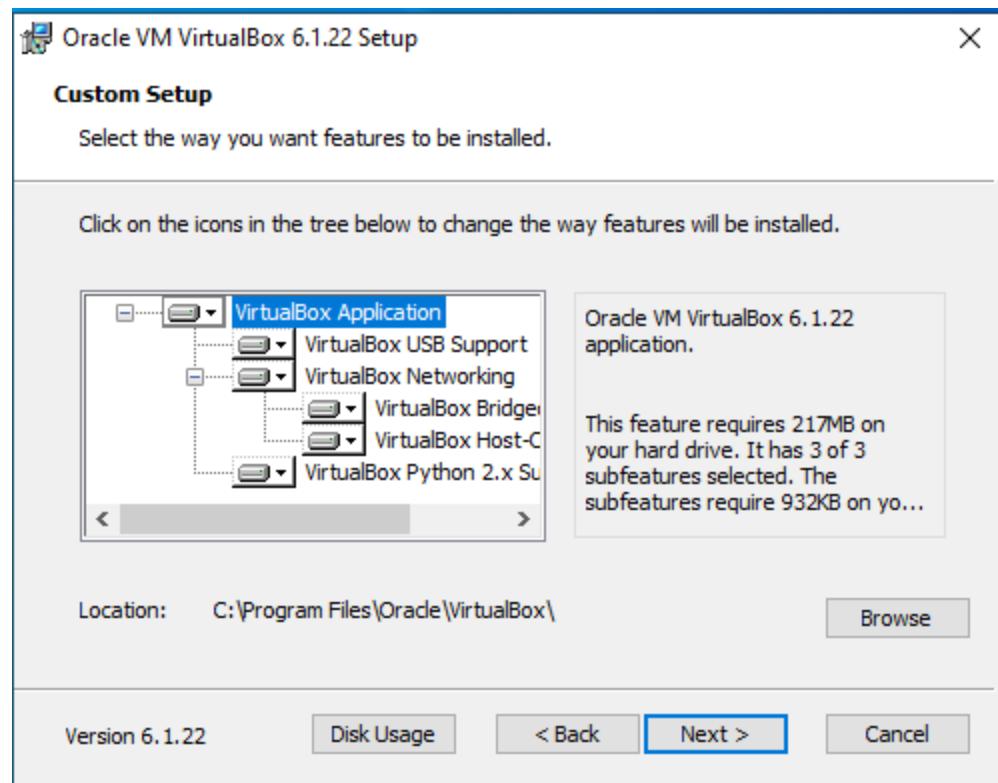
<https://www.oracle.com/in/virtualization/technologies/vm/downloads/virtualbox-downloads.html>

2. Download Ubuntu 14.4 OVA (Open Virtual Appliance)
Link: <https://www.osboxes.org/ubuntu/>

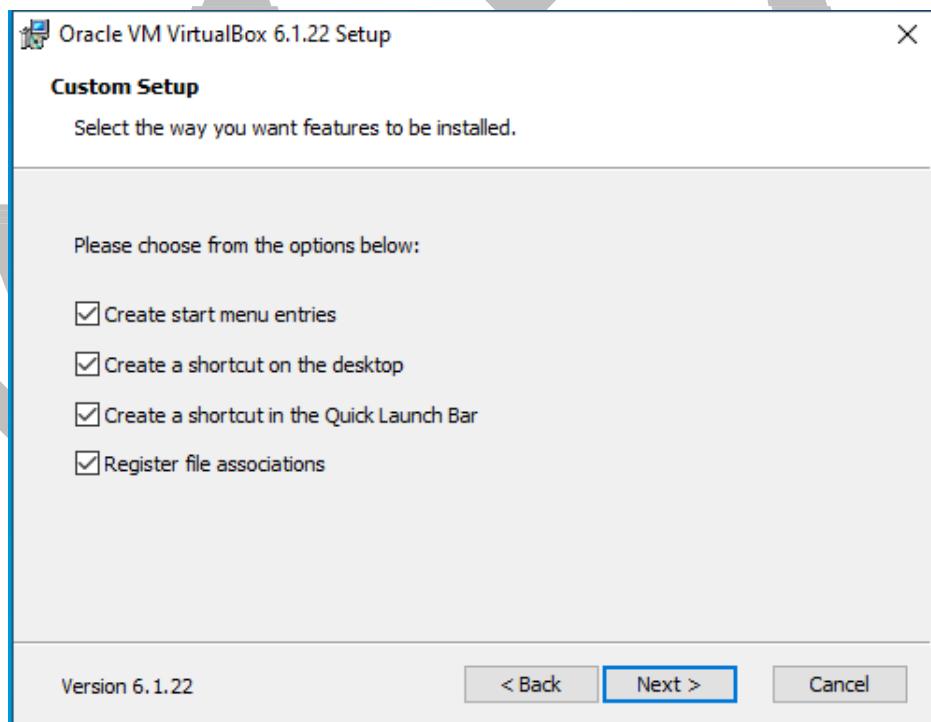
3. The files are downloaded in Local Machine → Click the Oracle VM VirtualBox 6.0.8 & Setup Wizard Move to run time environment (Open Terminal)



4. Custom Setup → Check VirtualBox Application



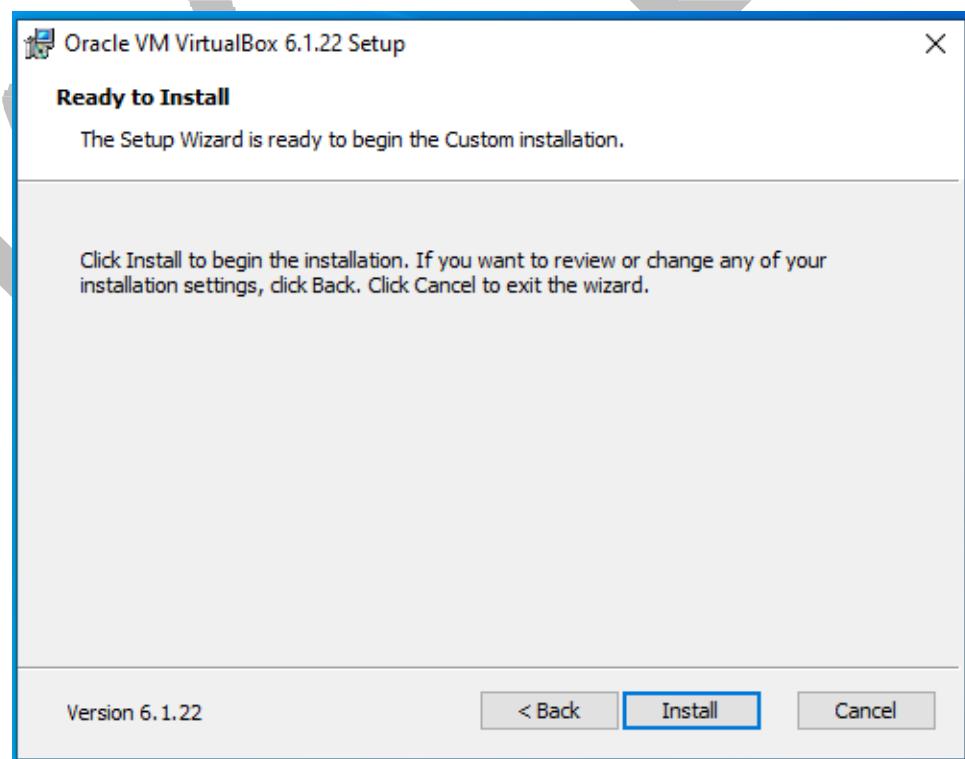
5. Custom Setup → Select the features to be installed



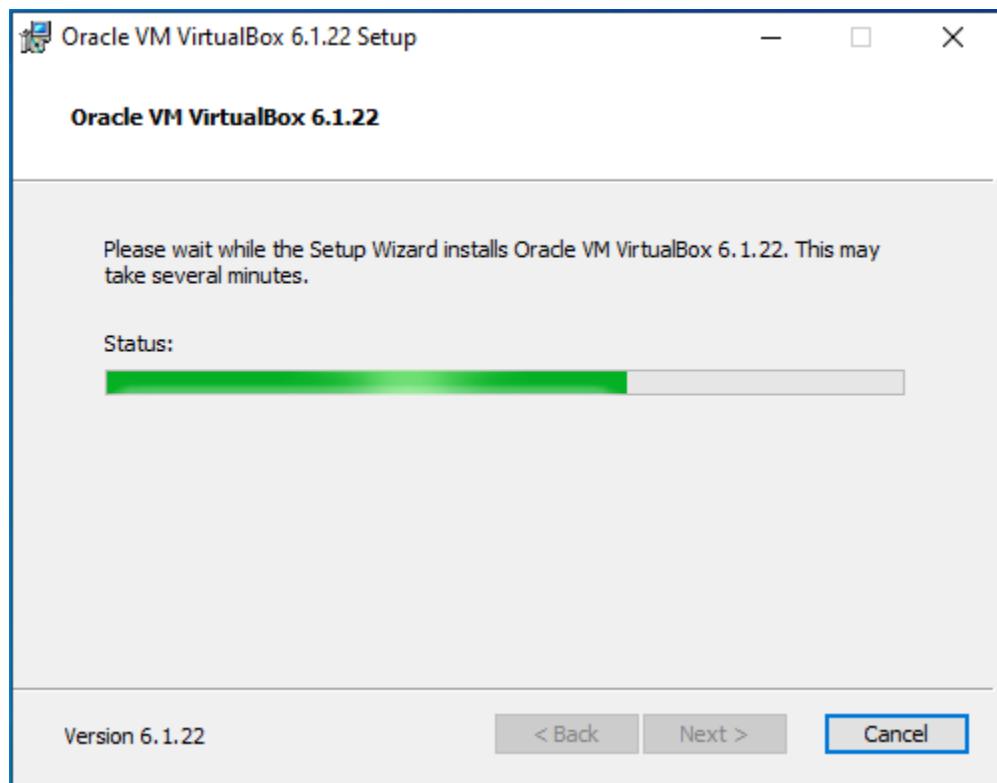
6. Warning: Network Interfaces → Click 'Yes' & Proceed to install



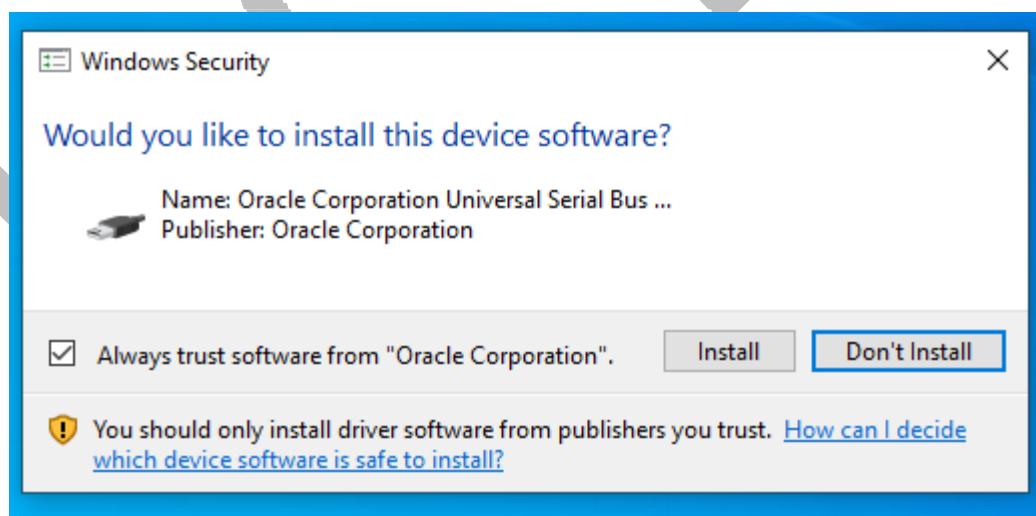
7. Ready to install → Click 'Install'



8. Oracle VM VirtualBox 6.1.22 installing



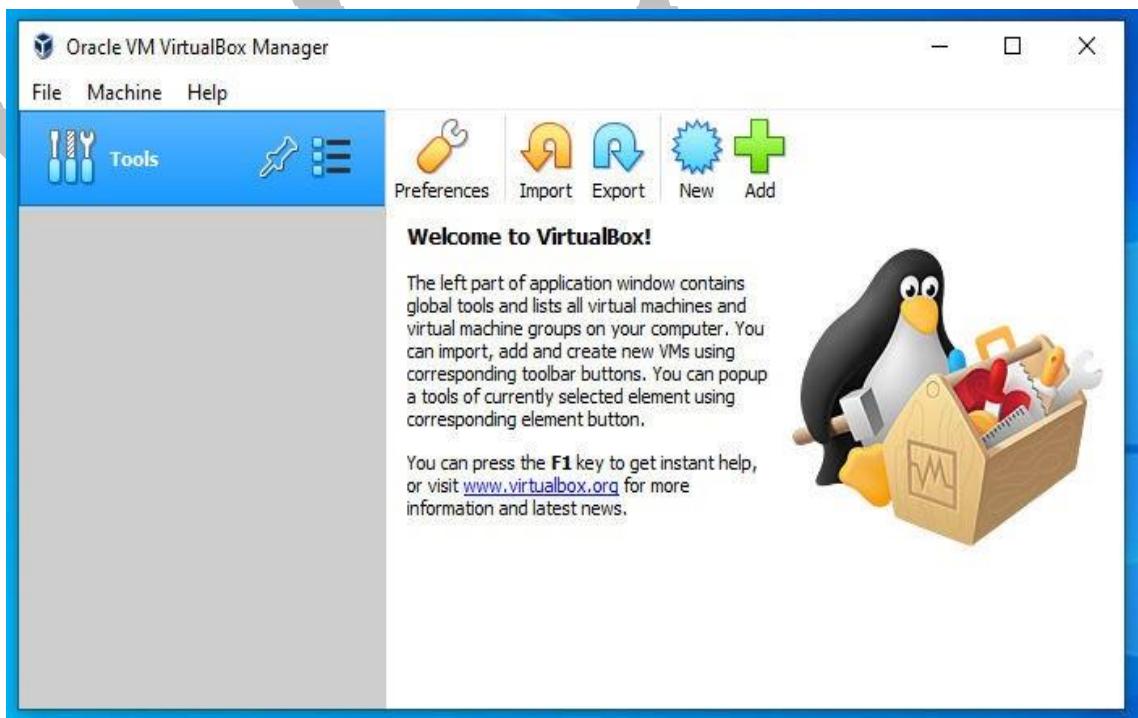
9. To install device software → Click 'Install'



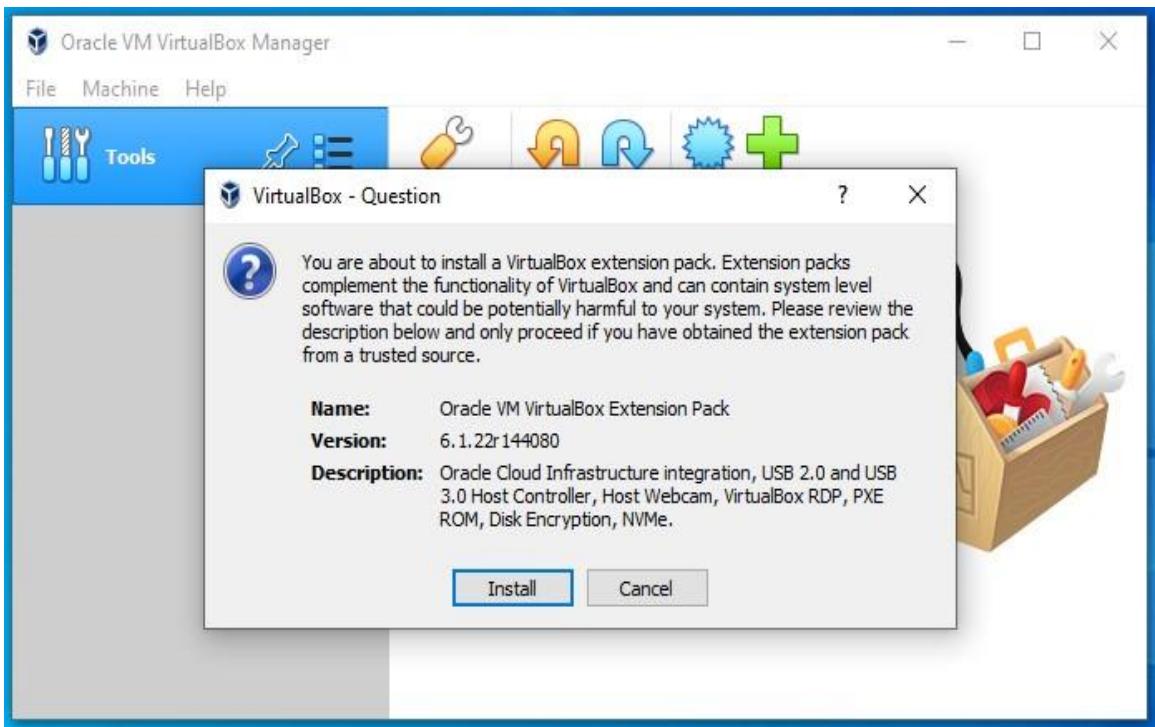
10. Oracle VM VirtualBox 6.1.22 installation is complete → Click ‘Finish’



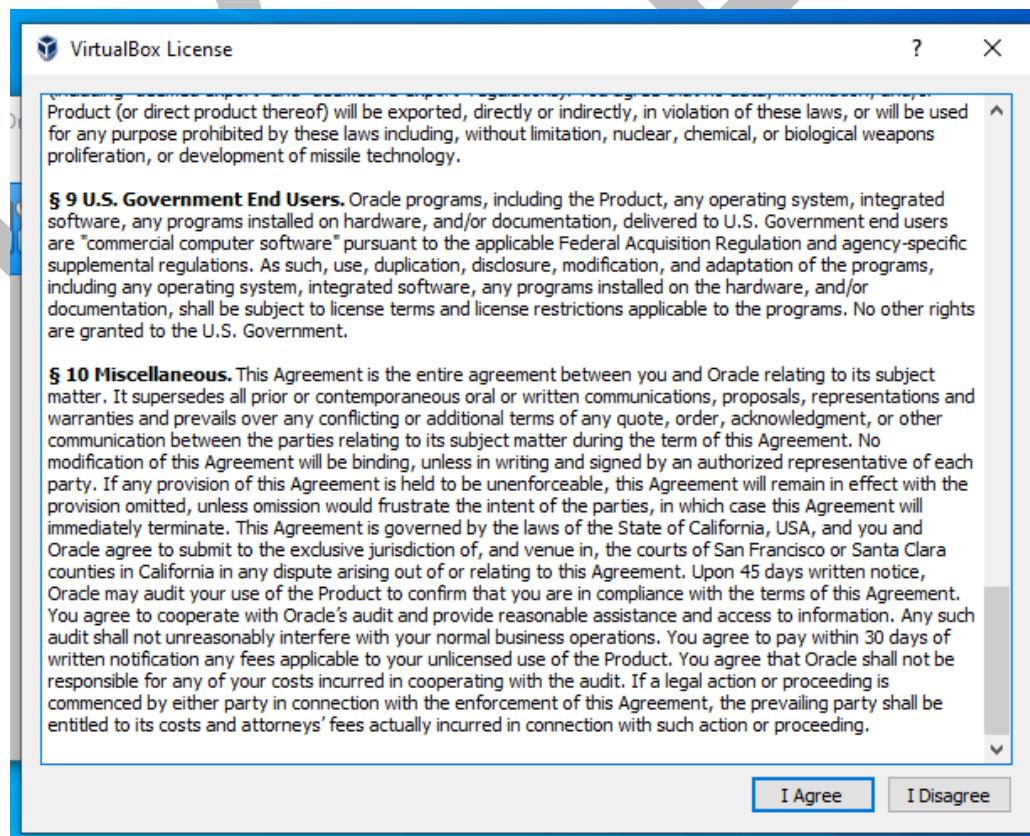
11. Import the Oracle VM Virtual Extension Pack into Oracle VirtualBox



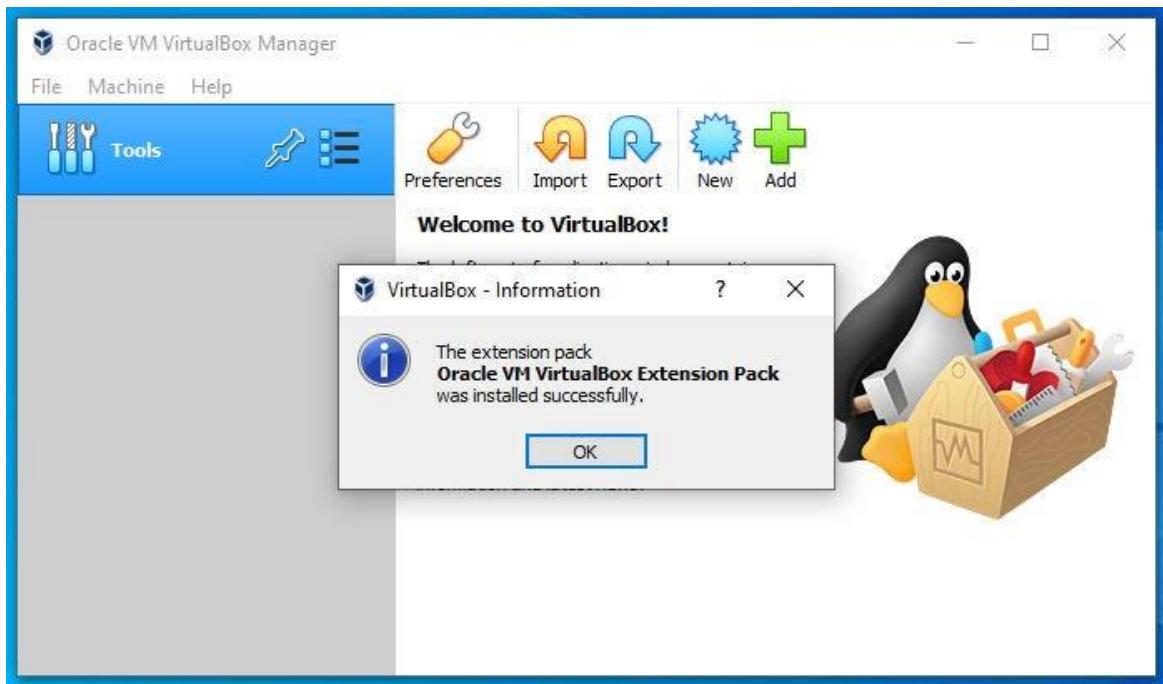
12. Click 'Install' Oracle VM Virtual Extension Pack



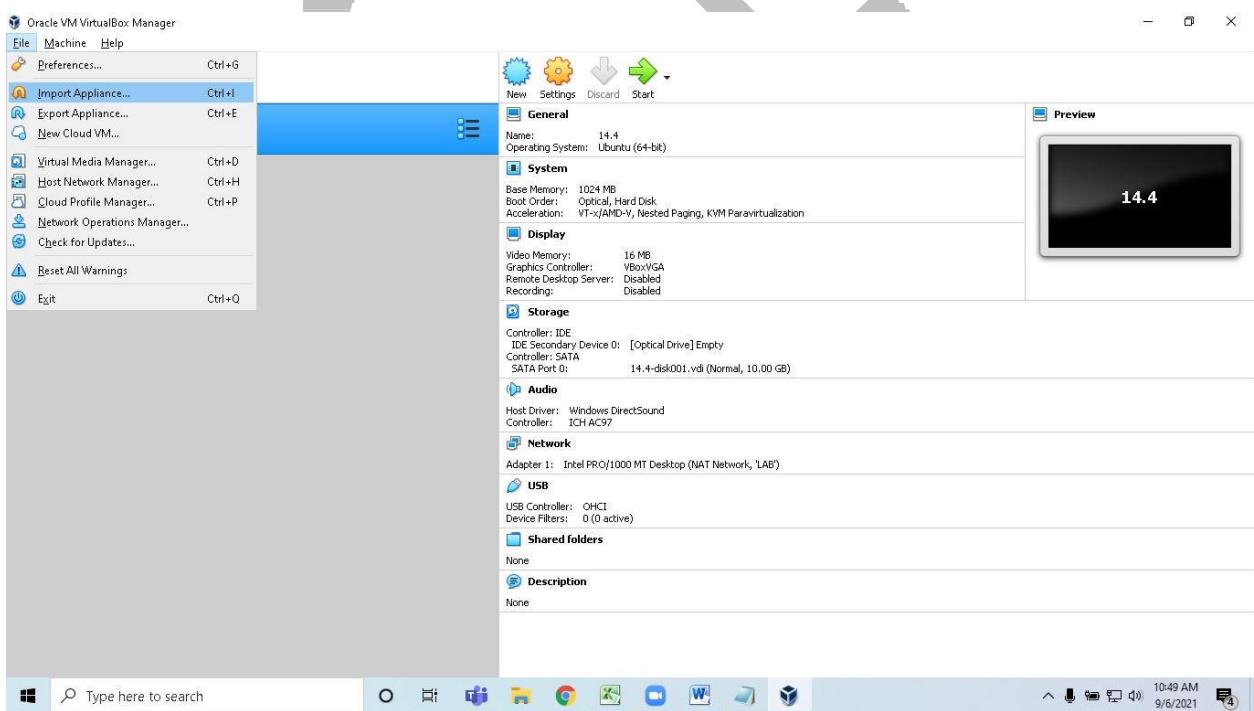
13. VirtualBox License → Click 'I Agree'

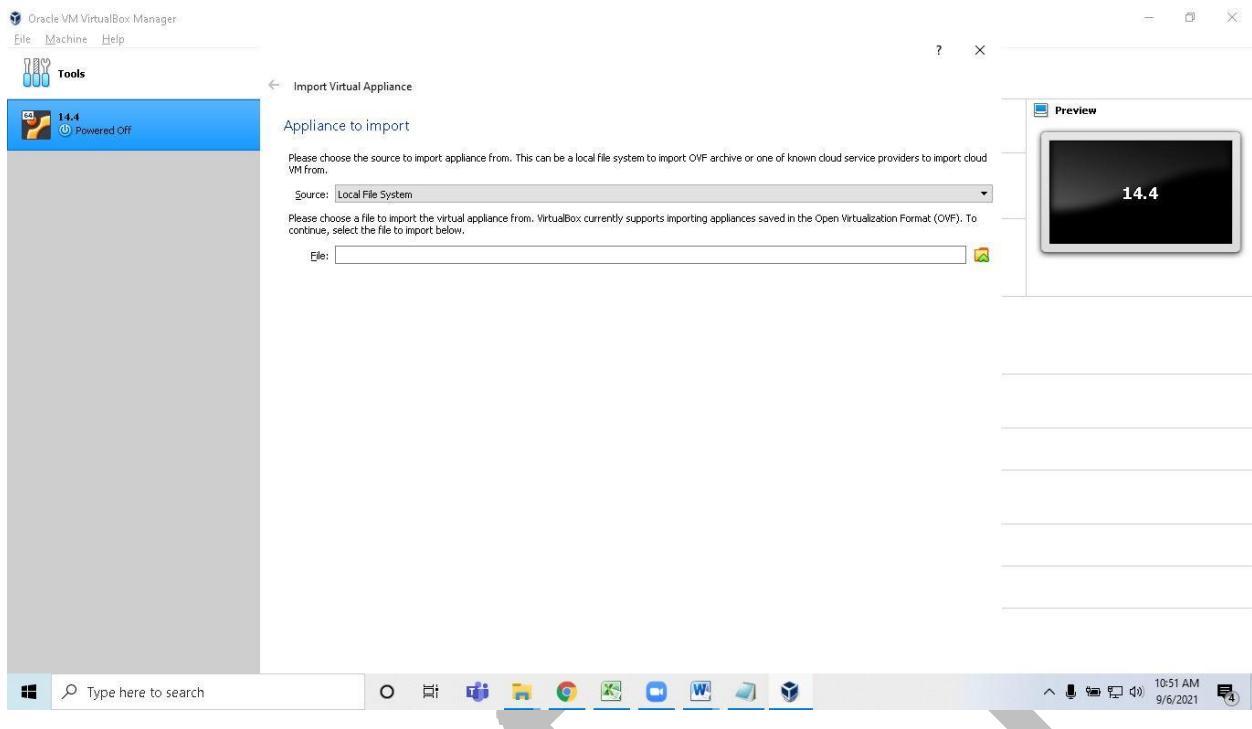


14. Extension Pack installation successful → Click ‘OK’

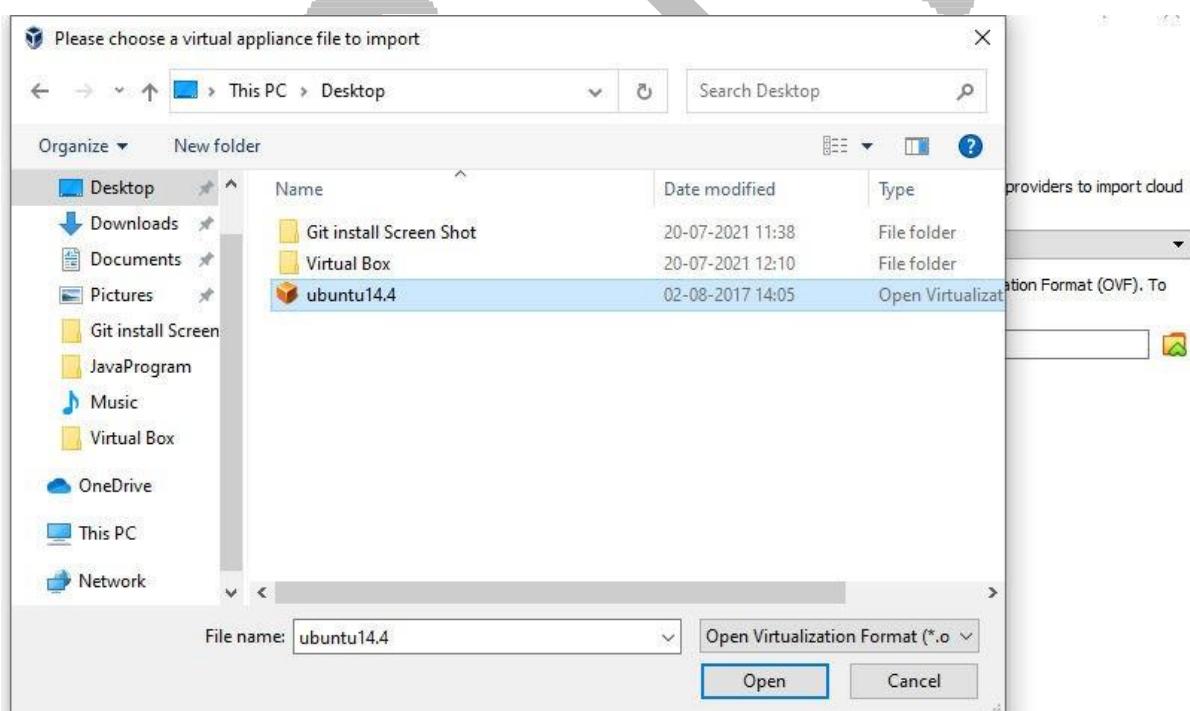


15. To install Virtual Machine: File → Import Appliance

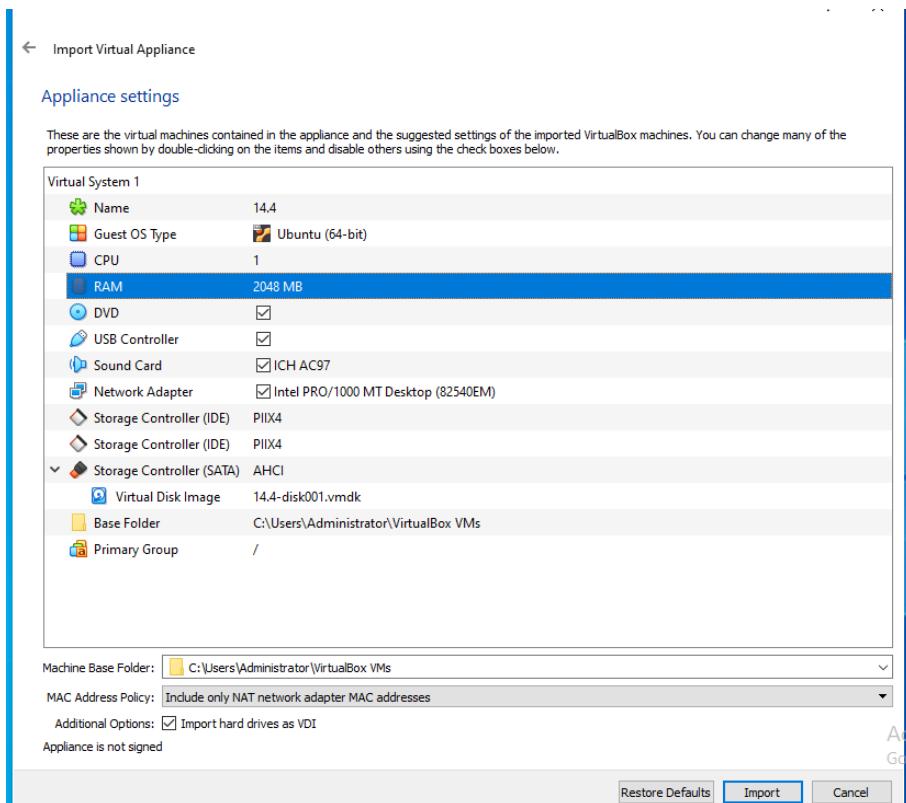




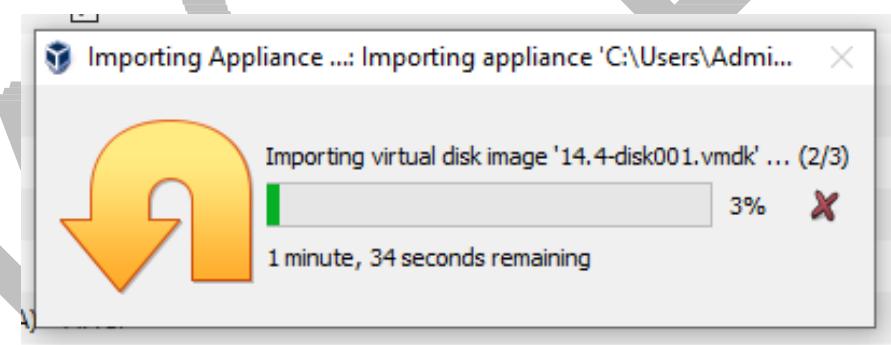
16. Select Ubuntu 14.4 OVA from directory



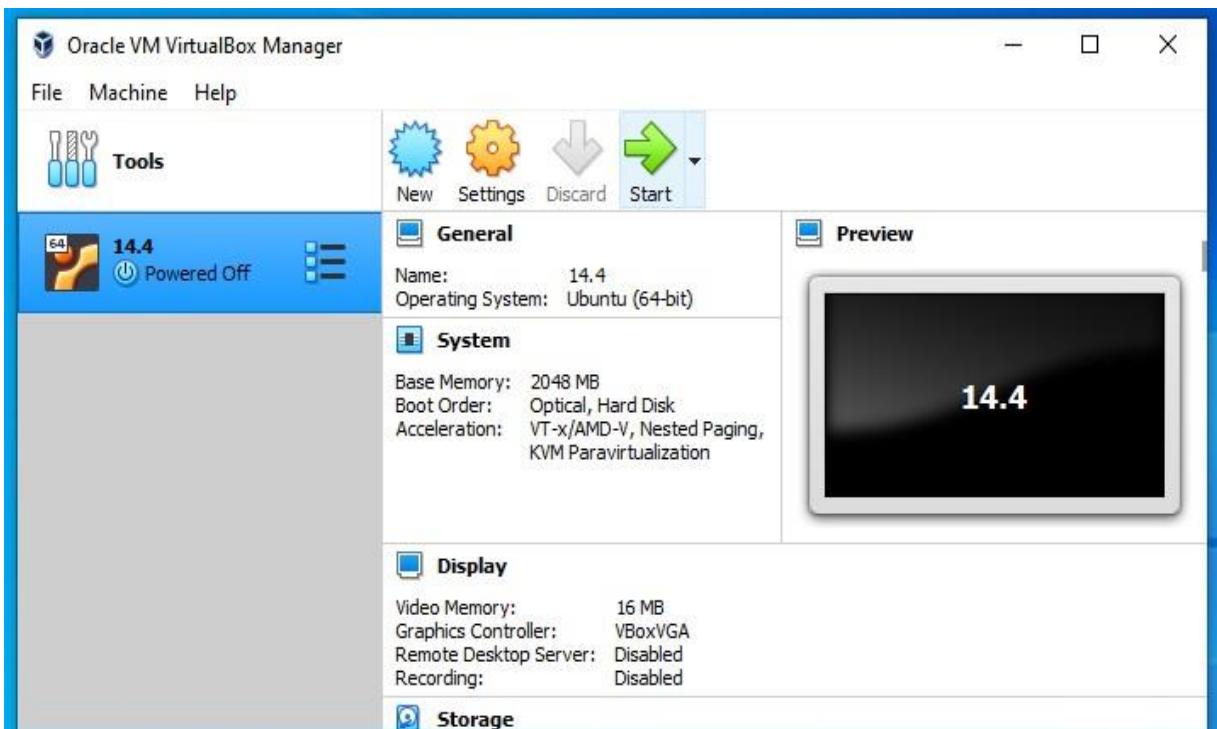
17. Appliance Settings → Choose ‘RAM’ Size → Click ‘Import’



18. Importing the Virtual Disk Image



19. Guest OS ‘Ubuntu 14.4’ is installed successfully and Click ‘Start’ button to lunch the virtual machine



20. Login to Ubuntu 14.4

Login Details:

User name: hadoop

Password: Test1234

VIVA QUESTIONS

1. What is virtualization in cloud computing?

2. What is Host OS in Virtualization?

3. What is Guest OS in Virtualization?