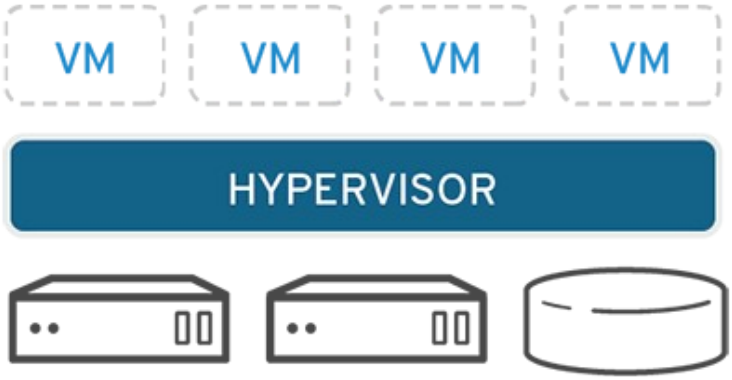
# Experiment No. 4

**Aim:** To study and implement virtualization through installation of Ubuntu on VirtualBox

**Theory**:

Virtualization is technology that you can use to create virtual representations of servers, storage, networks, and other physical machines. Virtual software mimics the functions of physical hardware to run multiple virtual machines simultaneously on a single physical machine.
Software called hypervisors separate the physical resources from the virtual environments—the things that need those resources. Hypervisors can sit on top of an operating system (like on a laptop) or be installed directly onto hardware (like a server), which is how most enterprises virtualize. Hypervisors take your physical resources and divide them up so that virtual environments can use them.




Types of virtualization:

- Server virtualization
- Storage virtualization
- Network virtualization
- Data virtualization
- Application virtualization
- Desktop virtualization

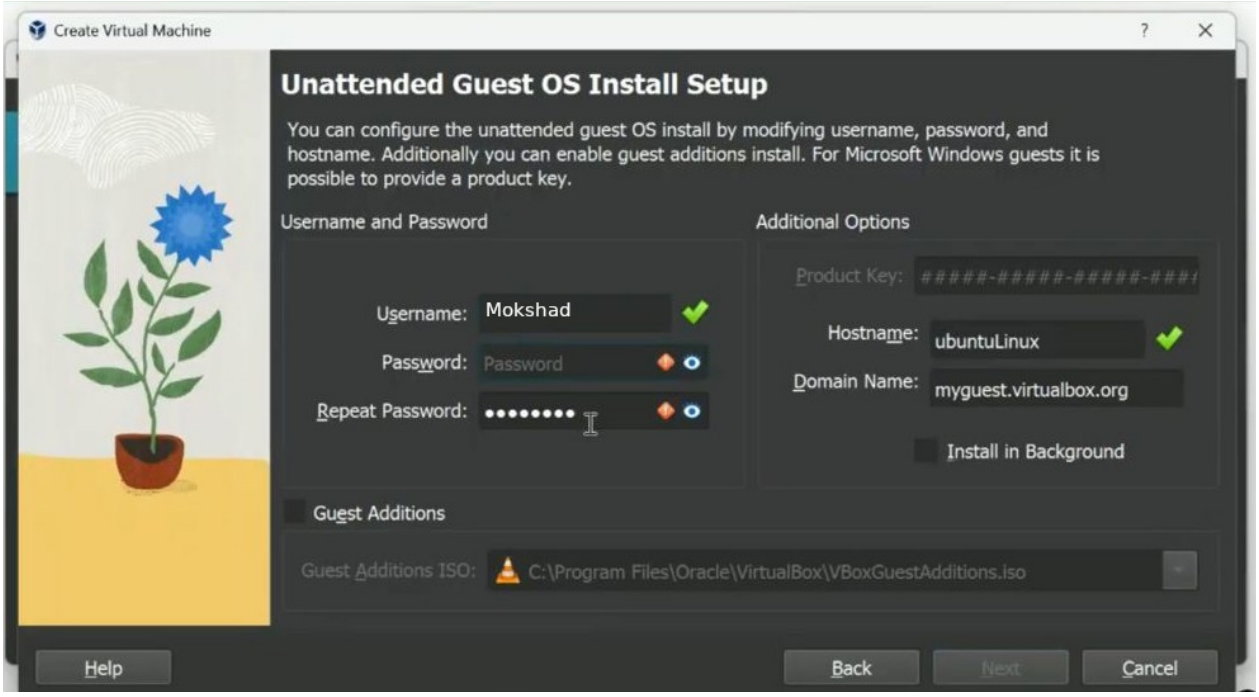
Steps of implementation:

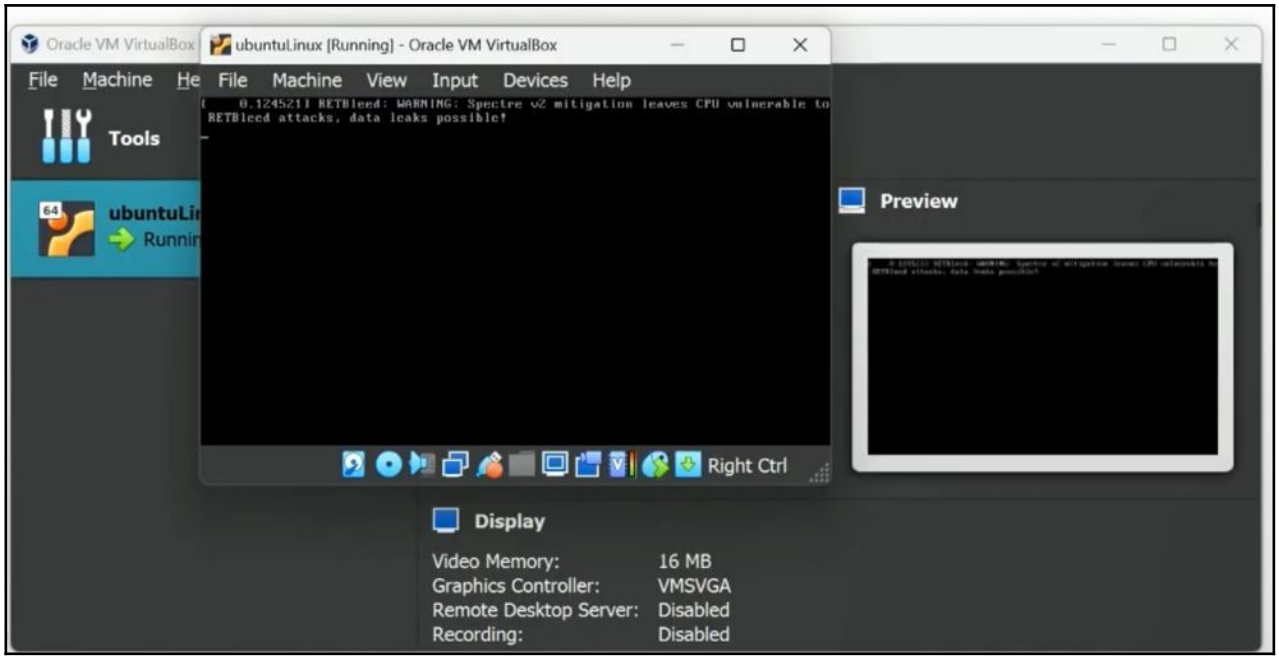
1. Installation of virtual box
2. Installation of ubuntu on virtual box

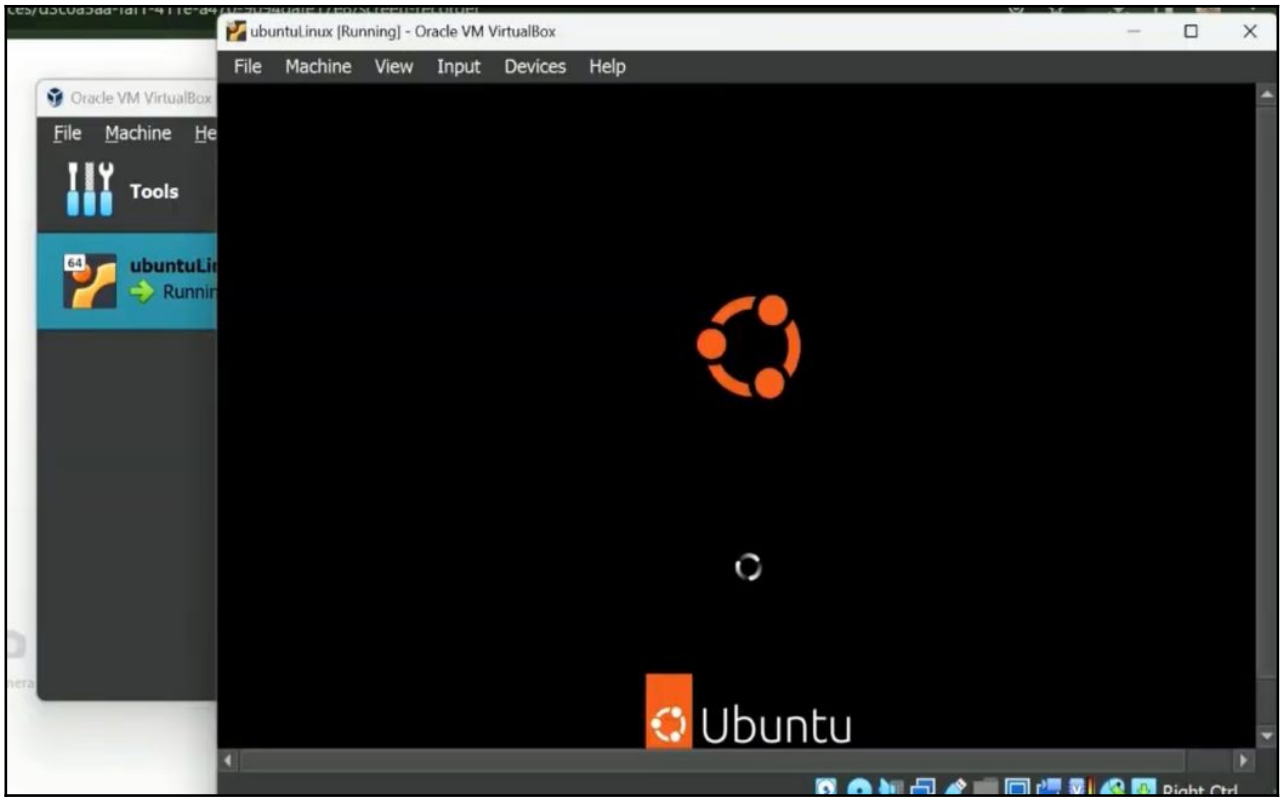
Virtual box:

VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use. Not only is VirtualBox an extremely feature rich, high performance product for enterprise customers, it is also the only professional solution that is freely available as Open Source Software

**Output:**


Create Virtual Machine
Unattended Guest OS Install Setup
You can configure the unattended guest OS install by modifying username, password, and hostname. Additionally you can enable guest additions install. For Microsoft Windows guests it is possible to provide a product key.
Username and Password
Additional Options
Username: Mokshad
Password: Password
Repeat Password: ••••••••
Product Key: #####-#####-#####-####
Hostname: ubuntuLinux
Domain Name: myguest.virtualbox.org
Install in Background
Guest Additions
Guest Additions ISO: C:\Program Files\Oracle\VirtualBox\VBoxGuestAdditions.iso
Help
Back
Next
Cancel


Oracle VM VirtualBox
ubuntuLinux [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Tools
Preview
Right Ctrl
Display
Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled




**Conclusion:**

**Comment on the type of virtualization used for installation of ubuntu on virtual box**

VirtualBox utilizes a type of virtualization called Hardware-assisted Virtualization (HAV).
HAV relies on extensions built into modern CPUs from Intel (VT-x) or AMD (AMD-V) to create a virtualized environment.
This approach offers several benefits:

- Improved Performance: HAV leverages the hardware's virtualization capabilities, resulting in smoother performance for the guest operating system (like Ubuntu in this case) compared to software-only virtualization.
- Security Enhancements: HAV enables features like hardware-based memory management, which can improve security within the virtual machine.

However, for VirtualBox to use HAV, two things are necessary:

1. CPU Compatibility: Your computer's CPU needs to support VT-x or AMD-V extensions.
2. BIOS Configuration: These extensions must be enabled in your system's BIOS settings.