



BAHIRDAR UNIVERSITY

BAHIRDAR INSTITUTE OF TECHNOLOG

FACULTY OF COMPUTING

DEPARTMENT OF INFORMATION TECHNOLOGY(BED)

**Course Name: Operating system**

INDIVIDUAL ASSIGNMENT:

Submitted to: Dr Wendesen

Submitted date: 27/04/2018 E.C

Name ID

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❖ Installation of Operating System in a Virtual Environment tools(vm ware work station oracle vm virtual box)

## ❖ WINDOW 7

### A. Introduction (Background & Motivation)

- Virtualization technology allows multiple operating systems to run on a single physical machine by creating virtual environments. Instead of installing an operating system directly on hardware, a virtual machine (VM) runs the OS in a software-based environment. This approach is widely used in education, testing, software development, and system administration.
  
- The motivation for this project is to gain practical experience in installing and configuring an operating system using virtualization tools. It also helps in understanding how operating systems interact with virtual hardware without affecting the host system.

### b. Objectives

The main objectives of this documentation are:

- To understand the concept of operating system virtualization
- To install an operating system in a virtual environment

- To identify hardware and software requirements for virtualization
- To document installation steps clearly
- To identify problems faced during installation and their solutions
- To understand file system support of the installed OS

## C. Requirements

### i. Hardware Requirements

Minimum hardware requirements for running a virtual machine:

- **Processor:** Intel or AMD CPU with virtualization support (VT-x / AMD-V)
- **RAM:** Minimum 4 GB (8 GB recommended)
- **Storage:** At least 40 GB free disk space
- **System Type:** 64-bit PC

### ii. Software Requirements

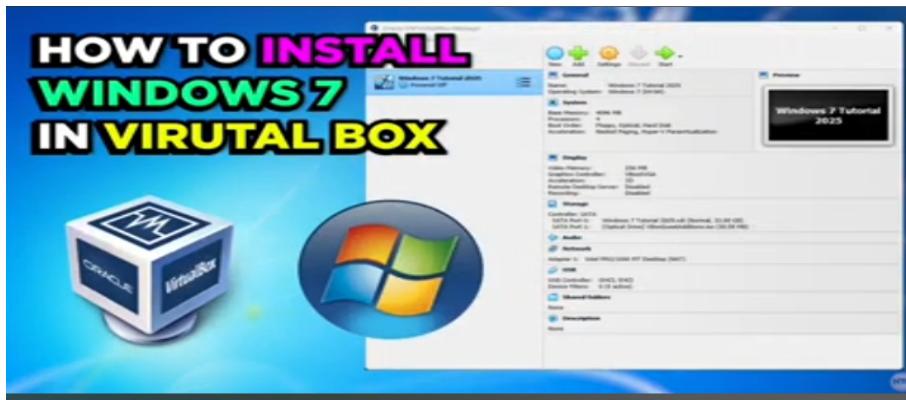
- **Host Operating System:** Windows 10 / Windows 11
- **Virtualization Software:** Oracle VM VirtualBox
- **Guest OS ISO file:** Windows 7 ISO image
- **VirtualBox Extension Pack**

## d. Installation Steps

### i. Steps to Install Windows 7 on VirtualBox

1. Download and install Oracle VM VirtualBox on the host computer.
2. Open VirtualBox and click **New**.
3. Enter the VM name using your full name (e.g., Minibel Engida Windows 7).
4. Select OS type: **Microsoft Windows**.

5. Select version: **Windows 7 (64-bit)**.
  6. Allocate RAM (e.g., 2048 MB or higher).
  7. Create a virtual hard disk (VDI format, dynamically allocated).
  8. Set disk size (minimum 40 GB).
  9. Attach the Windows 7 ISO file in **Setting** then **Storage**.
  10. Start the virtual machine.
  11. Follow on-screen Windows 7 installation instructions.
  12. Create a user account using your full name.
- (Snipped images should be included here during final submission)



[VirtualBox](#)

[Download VirtualBox](#)

The VirtualBox Extension Pack is available for personal and educational use on this page under the PUEL license. The VirtualBox Extension Pack is also available under commercial or enterprise terms. By downloading, you agree to the terms and conditions of the respective license.

**VirtualBox Platform Packages**

VirtualBox 7.1.6 platform packages

- Windows hosts
- macOS / Intel hosts
- macOS / Apple Silicon hosts
- Linux distributions
- Solaris hosts
- Solaris 11 IPS hosts

Platform packages are released under the terms of the [GPL version 3](#)

**VirtualBox Extension Pack**

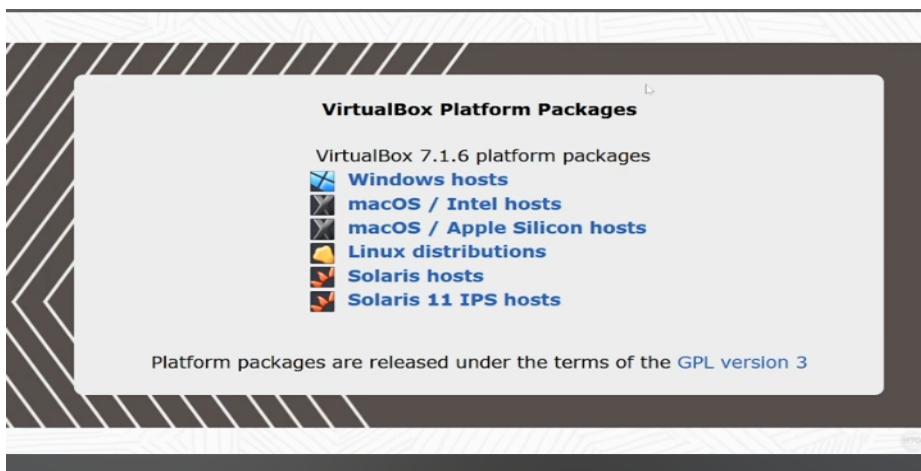
VirtualBox 7.1.6 Extension Pack

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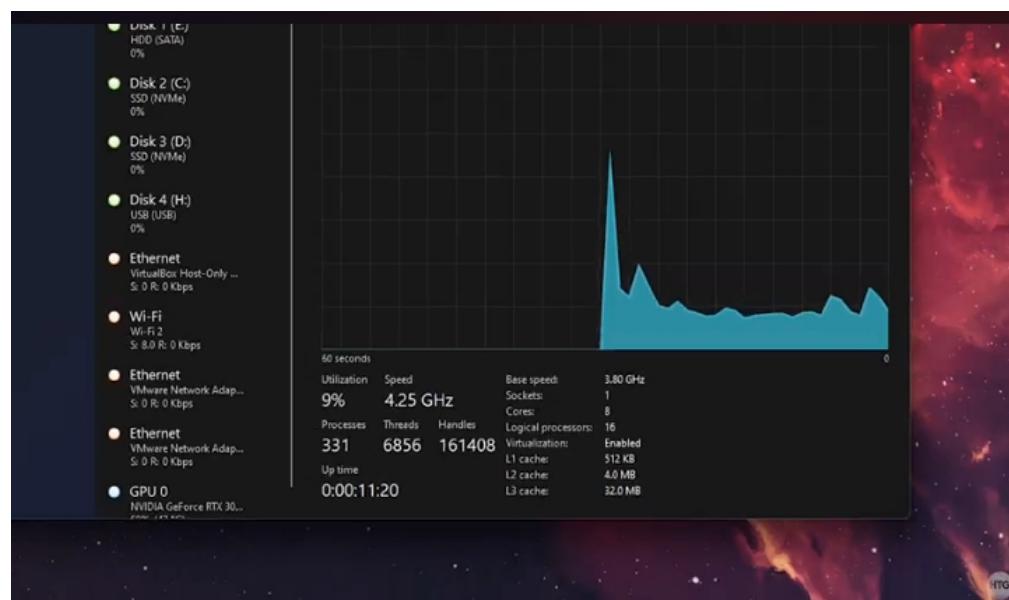
See our [FAQ](#) for answers to common questions.

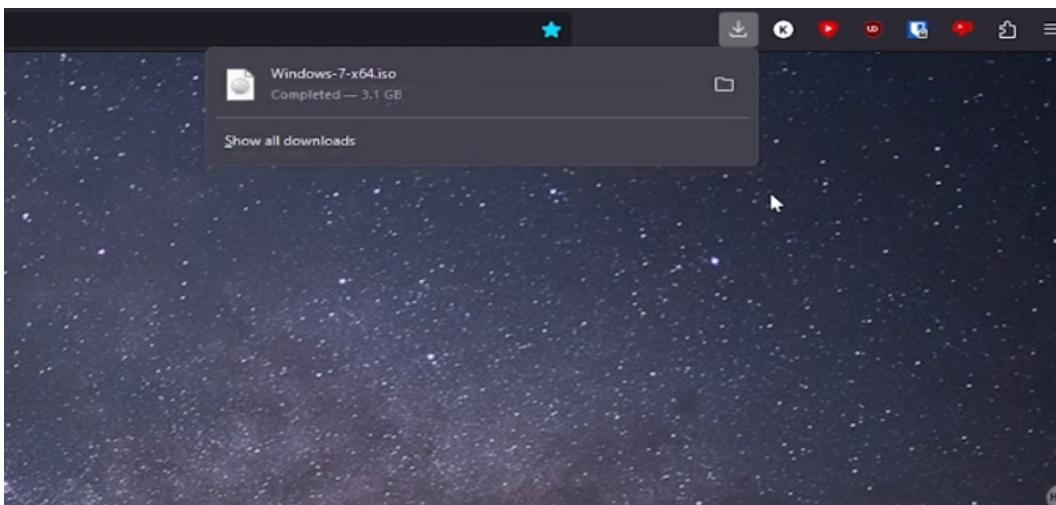
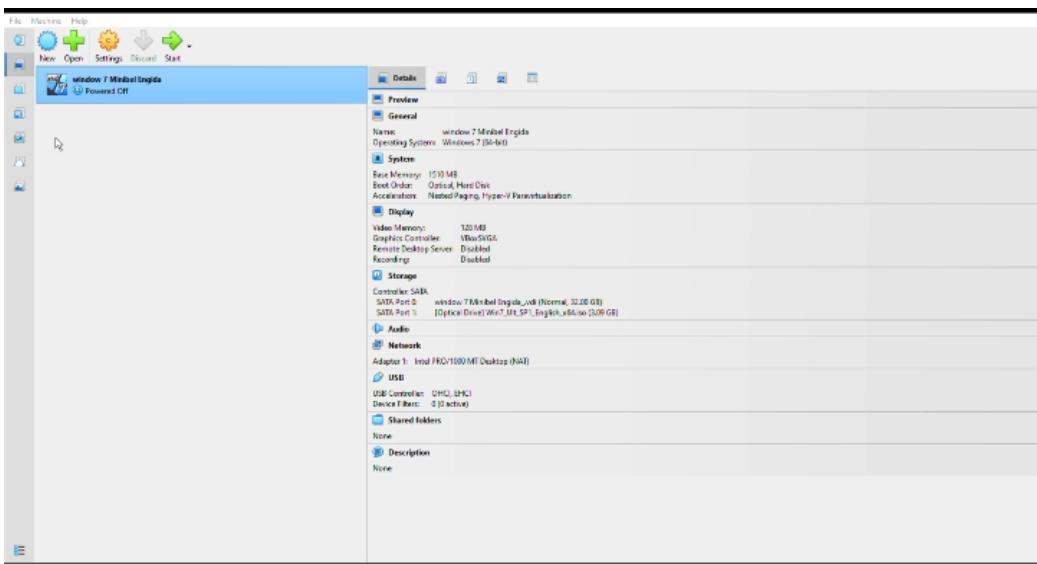
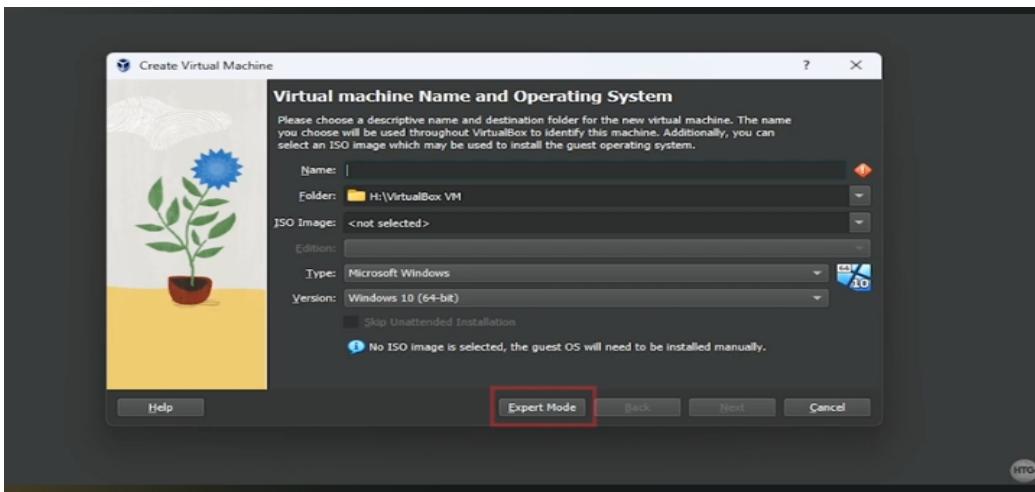
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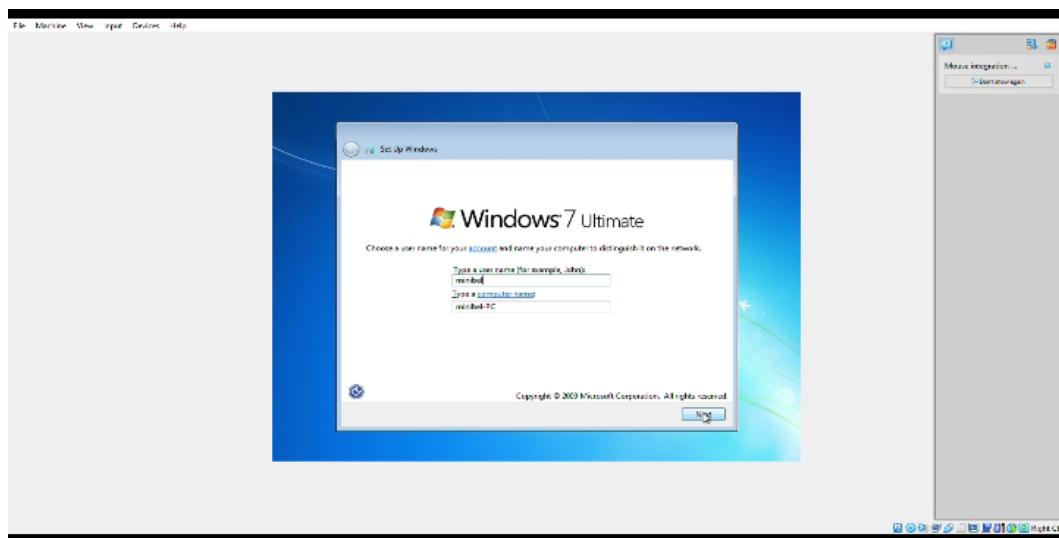
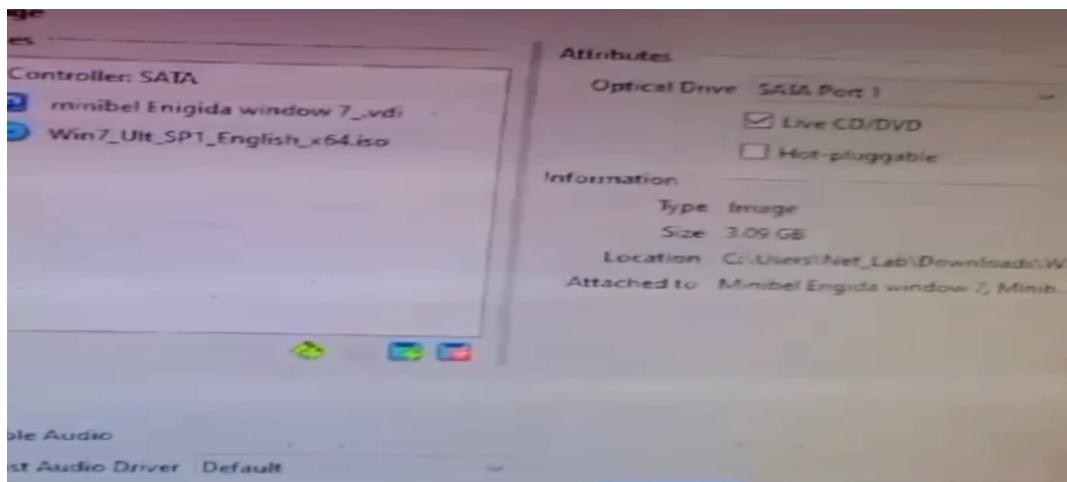
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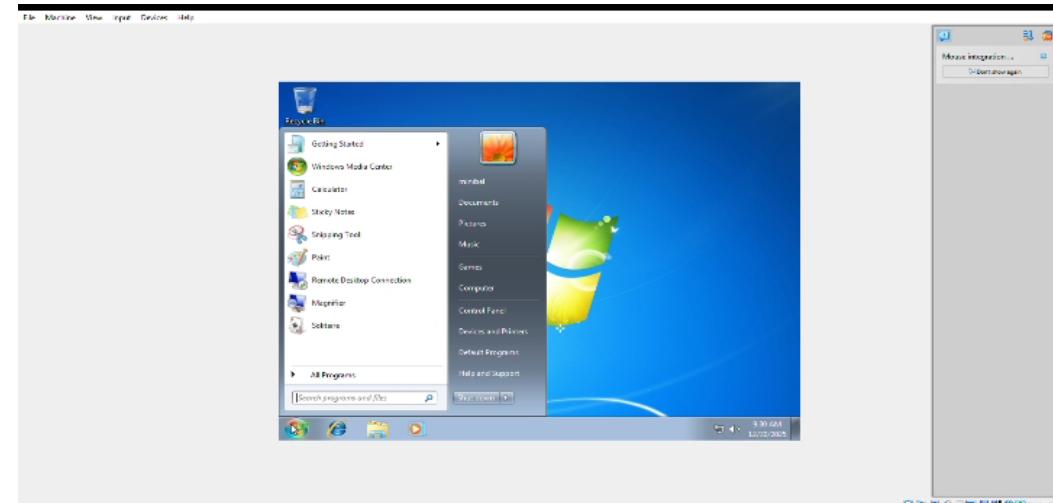
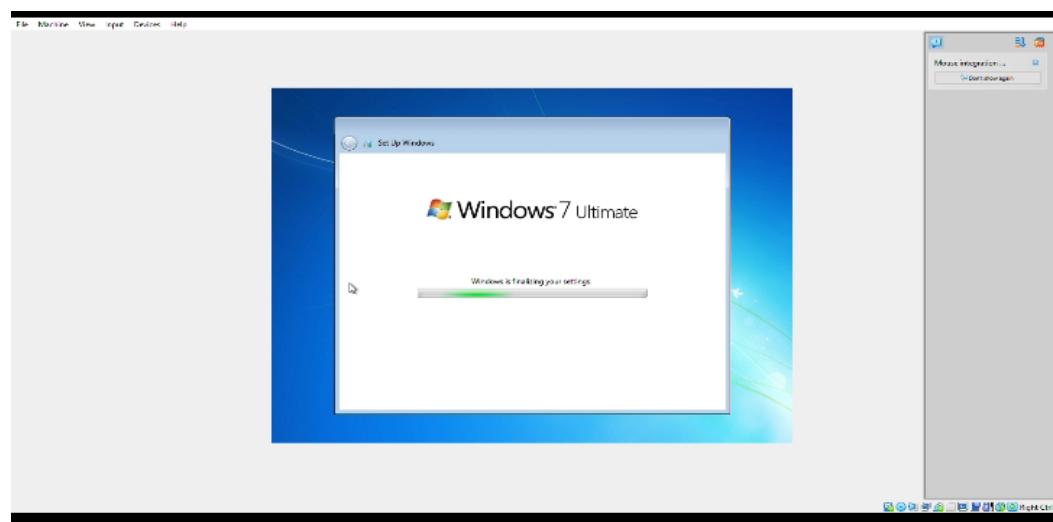
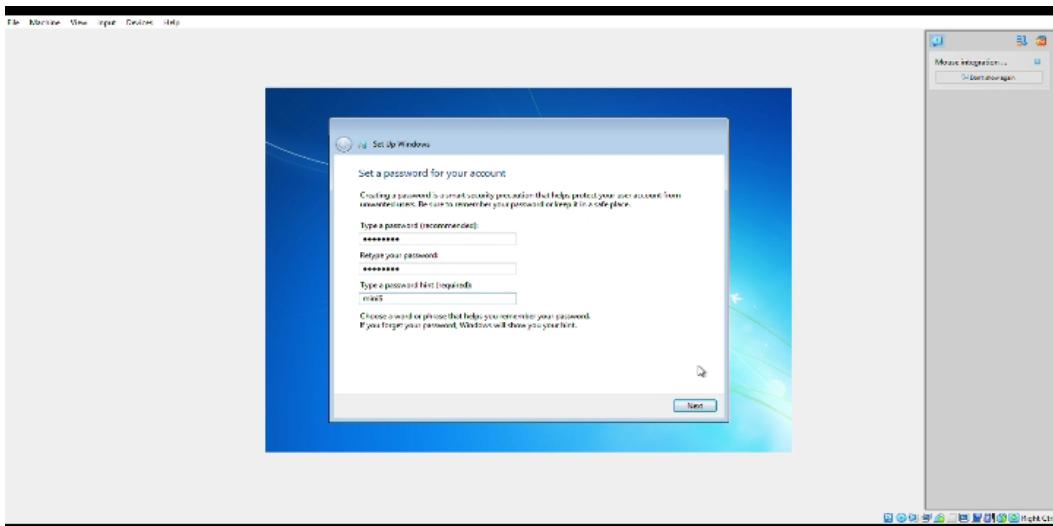


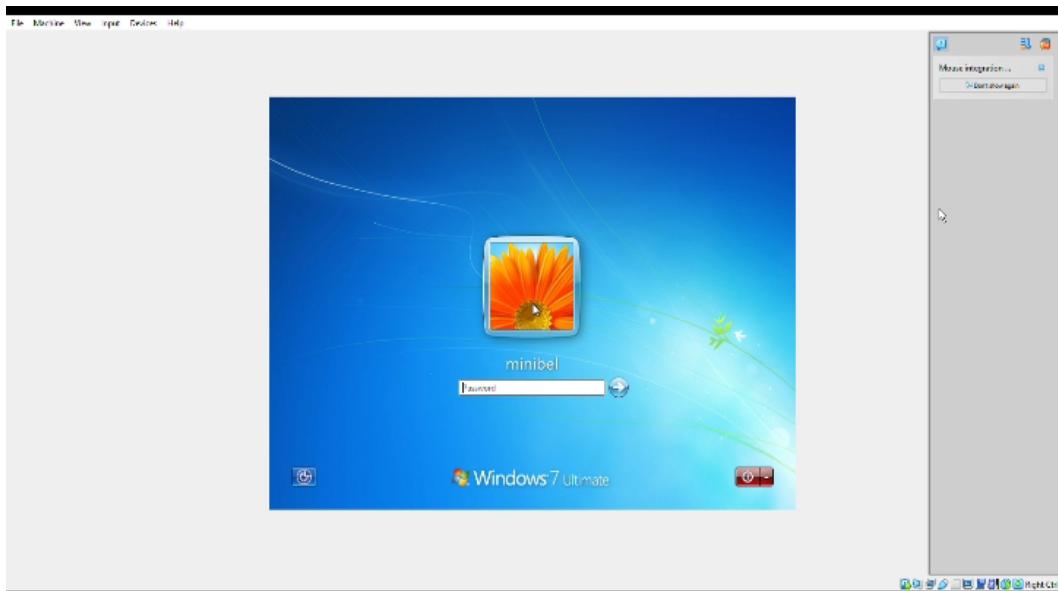
The screenshot shows the "Task Manager" interface. On the left is a sidebar with options like Processes, Performance, App history, Startup apps, Users, Details, and Services. The main area is titled "Processes" and contains two sections: "Apps (2)" and "Background processes (108)". The "Background processes" section lists various Adobe-related services and helpers. A search bar at the top says "Type a name, publisher, or PID to search".









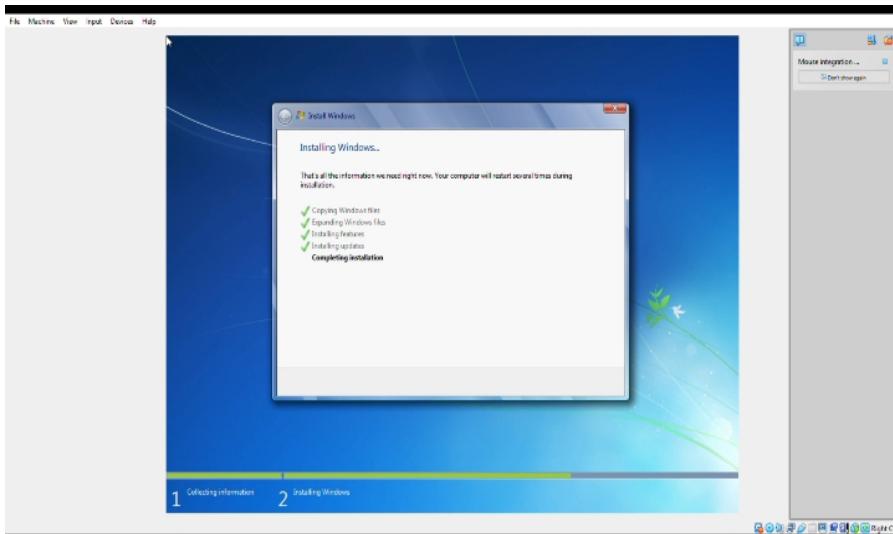


## E. Issues (Problems Faced)

• Common problems faced during installation include:

- VirtualBox showing only 32-bit OS options
- Installation freezing during setup
- Virtual machine running very slowly
- Display resolution issues

(Screenshots of error messages should be attached if available )



## F. Solutions

- Enable virtualization (VT-x / AMD-V) from BIOS settings
- Increase RAM and CPU allocation
- Install VirtualBox Extension Pack
- Install Guest Additions for better display and performance
- Ensure ISO file is not corrupted

## G. File System Support

File System Used: NTFS

Supported File Systems in Windows 7:

- NTFS
- FAT32
- exFAT

## **Why NTFS?**

- Supports large files and partitions
- Provides better security (file permissions)
- Supports journaling, improving reliability More efficient than FAT32

## **H. Advantages and Disadvantages**

### **Advantage:**

- Safe environment for testing OS
- No risk to host operating system
- Easy to create, delete, or clone machines
- Cost-effective (no extra hardware required)

### **Disadvantages:**

- Performance is slower than native installation
- Requires sufficient RAM and CPU resources
- Older OS like Windows 7 has no long-term support (LTS)

## **I. Conclusion**

- ❖ Installing an operating system in a virtual environment is an effective way to learn and practice operating system concepts. Through this project, virtualization tools such as VirtualBox provided a flexible and secure platform for OS installation without affecting physical hardware.

## **J. Future Outlook / Recommendations**

- Use modern OS versions with long-term support (e.g., Windows 10, Ubuntu LTS)

- Explore other virtualization tools such as VMware Workstation
- Practice installing Linux-based operating systems
- Learn advanced virtualization concepts like snapshots and networking

## 2. Virtualization in Modern Operating Systems

### What is Virtualization?

- ❖ Virtualization is the technology that allows multiple operating systems to run simultaneously on a single physical computer by creating virtual machines.

### Why Virtualization is Important?

- Efficient use of hardware resources
- Cost reduction
- Safe testing and experimentation
- Easy backup and recovery
- Widely used in cloud computing

### How Virtualization Works?

- ❖ A hypervisor (VirtualBox, VMware, Hyper-V) sits between hardware and operating systems. It allocates CPU, memory, storage, and network resources to each virtual machine, making each OS believe it has its own hardwares

**<Good luck>**