Lab – Install Linux in a Virtual Machine and Explore the GUI

Objectives

Part 1: Prepare a Computer for Virtualization

Part 2: Install a Linux OS on the Virtual Machine

Part 3: Explore the GUI

Background / Scenario

Computing power and resources have increased tremendously over the last 10 years. A benefit of multi-core processors and large amounts of RAM is the ability to install multiple operating systems through the use of virtualization on a computer.

With virtualization, one or more virtual computers can operate inside one physical computer. Virtual computers that run within physical computers are called virtual machines. Virtual machines are often called guests, and physical computers are often called hosts. Anyone with a modern computer and operating system can run virtual machines.

In this lab, you will install a Linux OS in a virtual machine using a desktop virtualization application, such as VirtualBox. After completing the installation, you will explore the GUI interface. You will also explore the command line interface using this virtual machine in a lab later in this course.

Required Resources

Computer with a minimum of 2 GB of RAM and 10 GB of free disk space

High-speed Internet access to download Oracle VirtualBox and Linux OS image, such as Ubuntu Desktop

Instructions

Part 1: Prepare a Computer for Virtualization

In Part 1, you will download and install desktop virtualization software and a Linux OS image. Your instructor may provide you with a Linux OS image.

Step 1: Download and install VirtualBox.

VMware Player and Oracle VirtualBox are two virtualization programs that you can download and install to support the OS image file. In this lab, you will use the VirtualBox application.

a. Navigate to https://www.virtualbox.org/. Click the download link on this page.

b. Choose and download the appropriate installation file based on your operating system.

c. After the VirtualBox installation file is downloaded, run the installer and accept the default installation settings. When prompted regarding missing dependencies python code / win32 api, click **Yes** to proceed.

Step 2: Download a Linux Image.

a. Navigate to the Ubuntu website at http://www.ubuntu.com. Click the **Download** menu.

b. Click the Download link on this page to download and save an Ubuntu Desktop image.

Step 3: Create a New Virtual Machine.

a. If you did not choose to open VirtualBox after your installation, click **Start** and search for **VirtualBox**. Click **Oracle VM VirtualBox** to open the manager. When the manager opens, click **New** to start the Ubuntu installation.

b. In the **Virtual machine Name and Operating System** screen, type **Ubuntu** in the **Name** field.

Review the location of the **Folder** field. This will be the location of the virtual hard drive for this virtual machine.

In the **ISO Image** field, click the dropdown and locate the downloaded Ubuntu Desktop image. Notice that the Type and Version fields are automatically filled in and grey out.

Click the checkbox **Skip Unattended Installation** to install the guest OS manually.

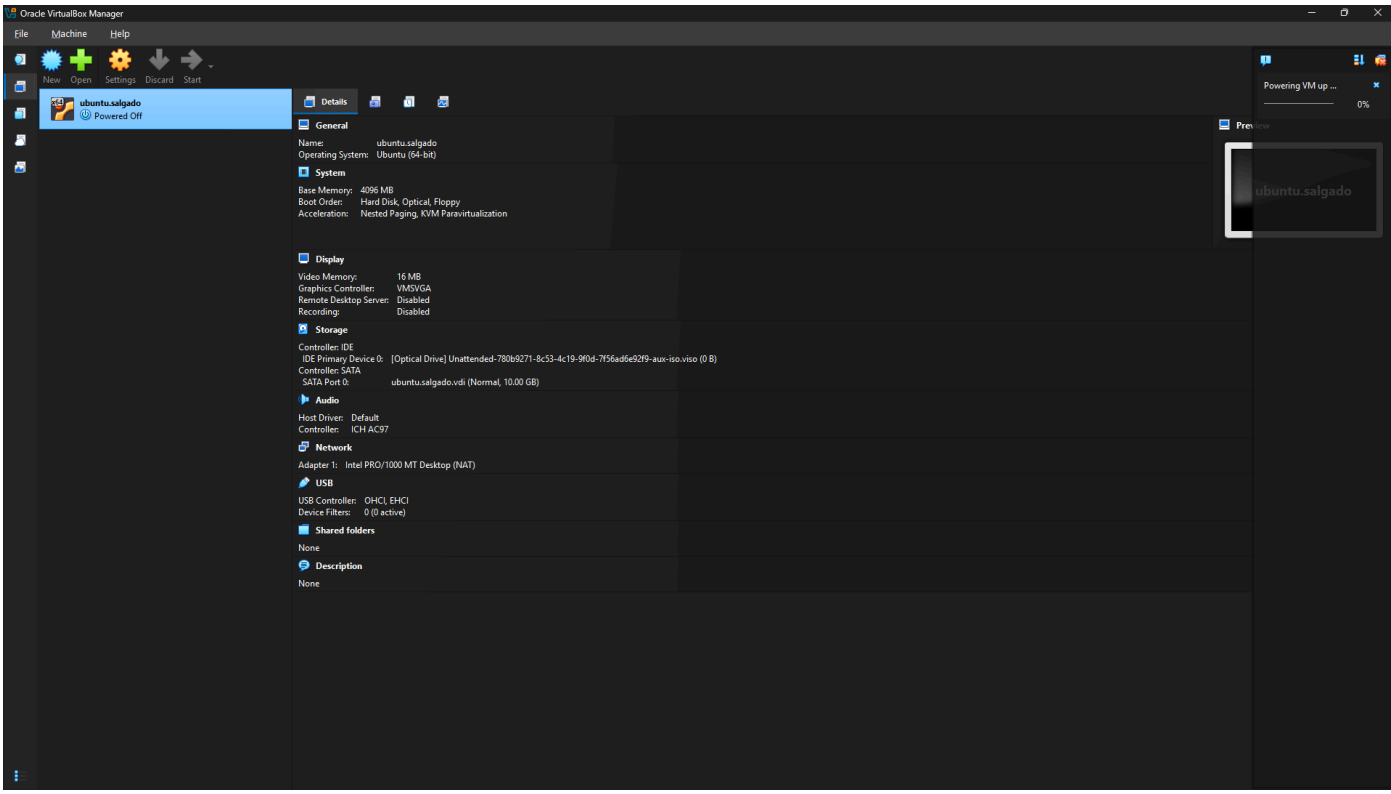
Click **Next** to continue.

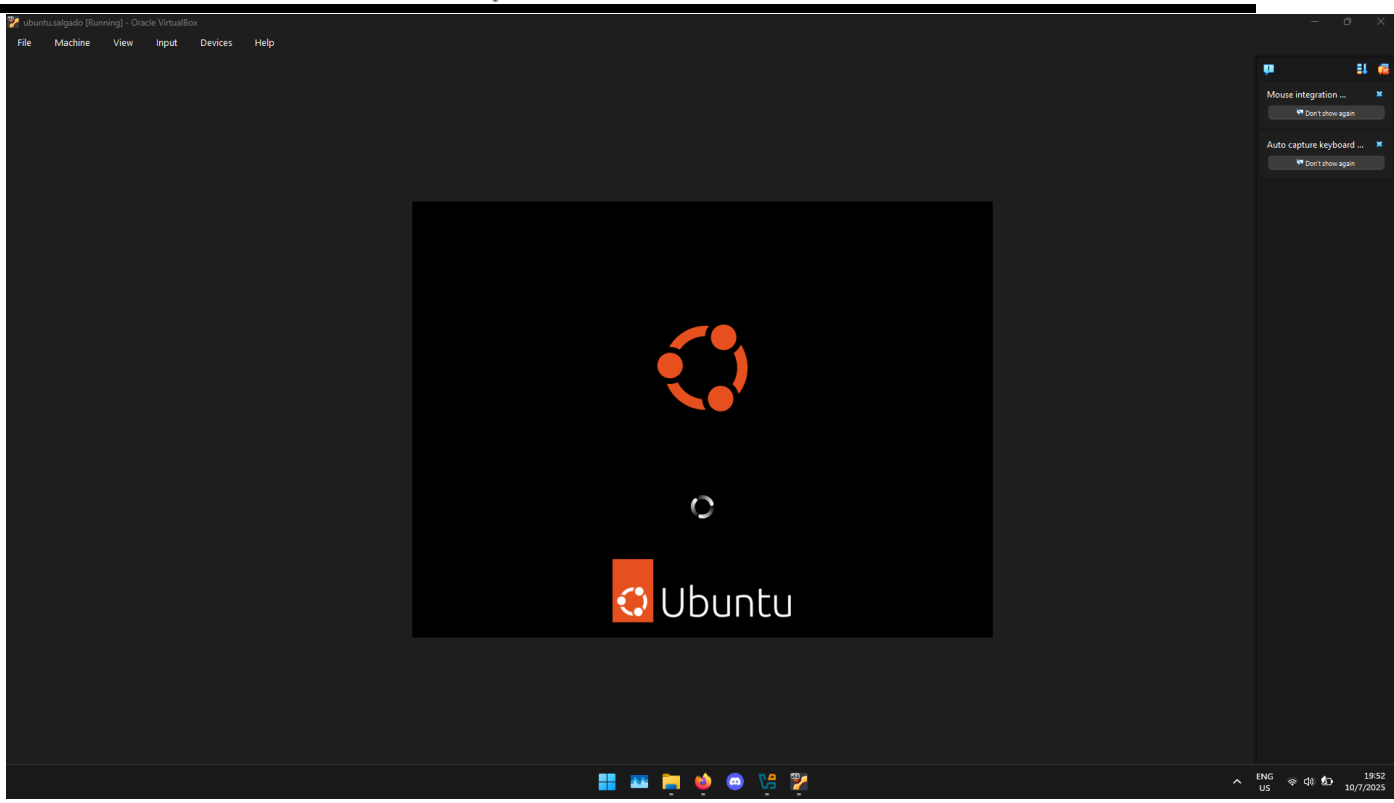
c. In the **Hardware** screen, increase the amount of RAM or number of CPUs as desired. Make sure the selection stays in the green area so it does not adversely affect the performance of the host. You should not need more than 4096 MB of RAM or more than 1 CPU for this lab. You can always adjust it later. Click **Next** to continue.

d. In the **Virtual Hard disk** screen, click **Next** to accept the option to create a virtual hard disk now with the suggested size. Change as desired. The default storage settings for the hard drive is dynamically allocated. Click **Next** to continue.

e. Review the setting in the summary page. Click **Finish** when done.

f. When the hard drive creation is done, the new virtual machine is listed in the **Oracle VM VirtualBox Manager** window. Select **Ubuntu** and click **Start** in the top menu.





Part 2: Install Ubuntu on the Virtual Machine

a. In the GNU GRUB screen, press **Enter** on the highlighted **Try or Install Ubuntu** to start the loading process. This can take several minutes.

b. In the **Welcome** screen, you are prompted to try or install Ubuntu. The try option does not install the OS, it runs the OS straight from the image. In this lab, you will install the Ubuntu OS in this virtual machine. Click **Install Ubuntu**.

c. Follow the on-screen instructions and provide the necessary information when prompted.

Note: If you are not connected to the internet, you can continue to install and enable the network later.

1) Accept the defaults on the **Updates and other software** screen. You can also check **Install third-party software…** if you wish.

2) Because this Ubuntu installation is in a virtual machine, it is safe to erase the disk and install Ubuntu without affecting the host computer. In the **Installation type** screen, select **Erase disk and install Ubuntu**. Otherwise installing Ubuntu on a physical computer would erase all data on the disk and replace the existing operating system with Ubuntu. Click **Install Now** to start the installation.

3) In the **Write the changes to disks?** screen, click **Continue** to erase the disk and install Ubuntu.

4) In the **Who are you?** screen, provide your name and choose a password. Use **iteuser** for **Your Name** and **ITEpass!** for the password. You can use the username generated or enter a different username. If desired, you can change the other settings. Click **Continue**.

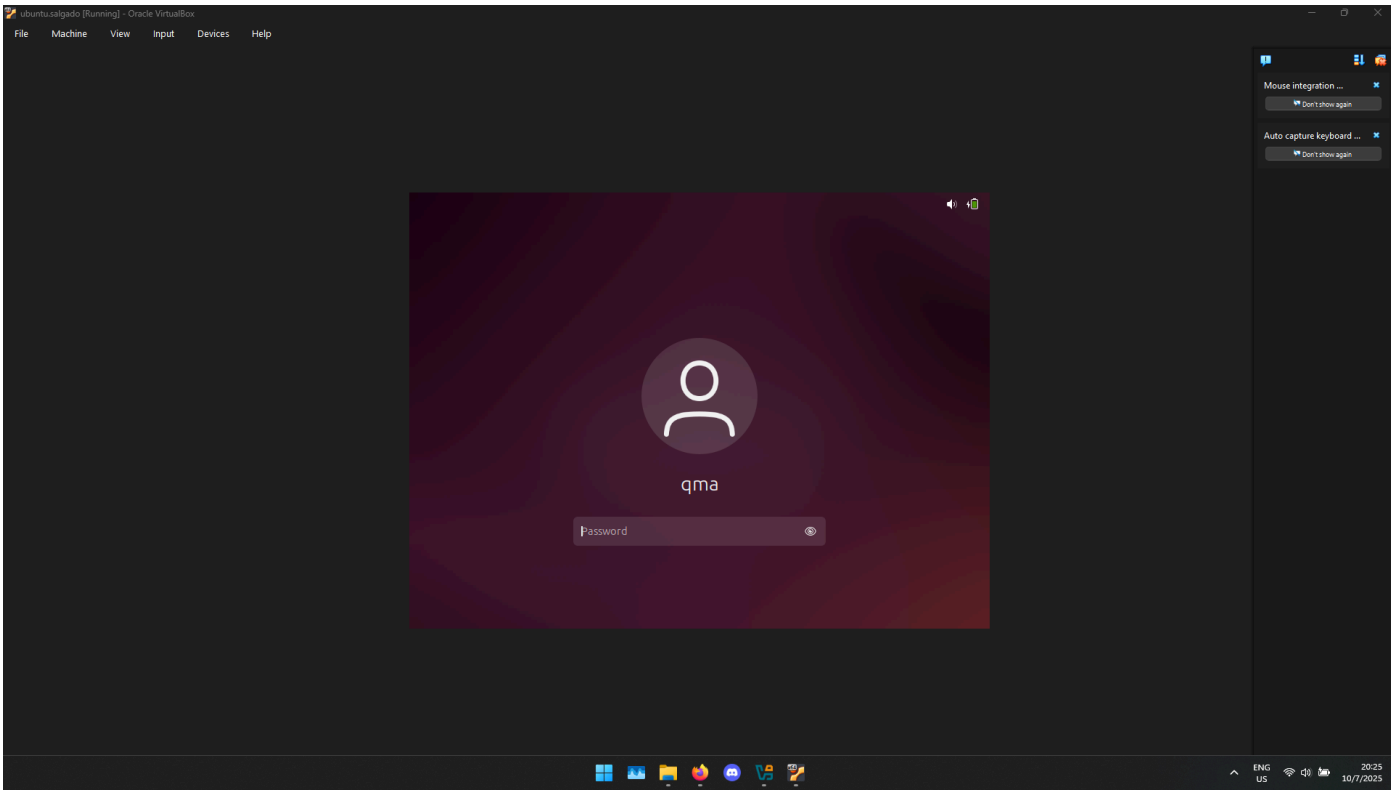
d. The Ubuntu OS is now installing in the virtual machine. This will take several minutes. When the **Installation is complete** message displays in Ubuntu, click **Restart Now** to restart the virtual machine. When prompted to remove the installation medium, press **Enter** to continue the booting process.

Part 3: Explore the GUI

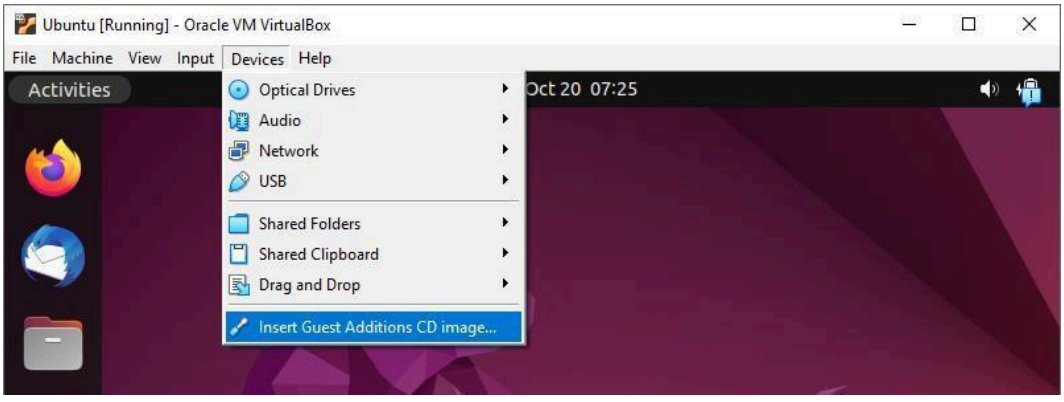
In this part, you will install the VirtualBox guest additions and explore the Ubuntu GUI.

Step 1: Install Guest Additions.

a. Log on to your Ubuntu virtual machine using the user credentials created in the previous part.



b. Your Ubuntu Desktop window may be smaller than expected. This is especially true on high-resolution displays. Click **Device > Insert Guest Additions CD image…** to install the Guest Additions. This allows more functions, such as changing the screen resolution in the virtual machine.



c. Click **Run** to install the additions. When prompted for a password, use the same password that you used to log on. Click **Authenticate** to continue.

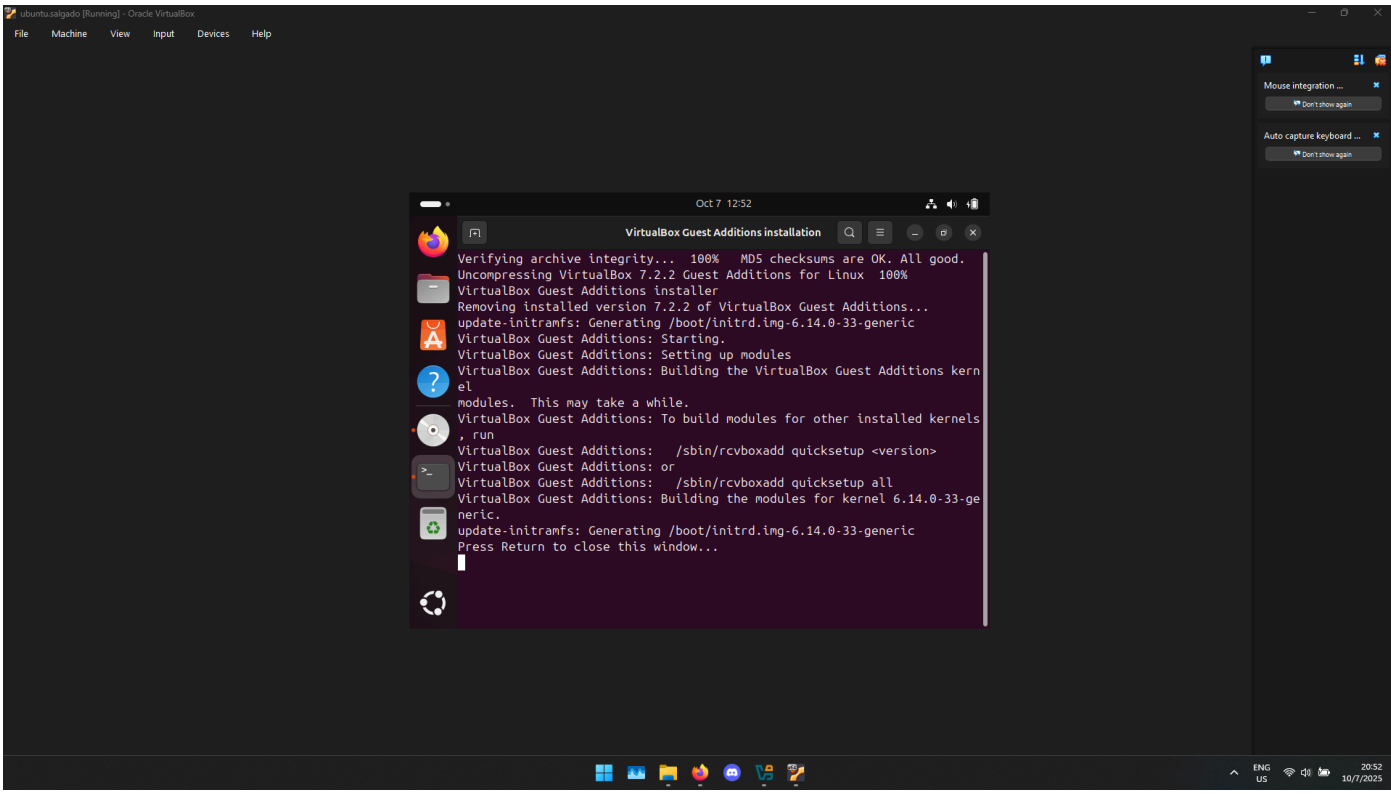
Note: If you were not prompted to install the additions, you can access the Guest Additions CD image to install the guest additions.

1) In the list of **Activities** on the left, scroll down until you see the disk labeled **VBox_GAs_x** where **x** is the version number (e.g. **7.0.2**). Click the CD icon to open it.

2) Right click **autorun.sh** and choose **Run as a Program**.

3) When prompted for a password, use the same password that you used to log on. Click **Authenticate** to continue. Following the instructions on the screen to complete the installation.

d. When the installation of the additions is done, restart the virtual machine again. Click the menu in the upper-right corner and click **Power Off / Log Out**. Click **Restart** to restart Ubuntu.



Step 2: Run applications.

In this step, you will open a couple of applications in the virtual machine.

Note: If the host computer is not connected to the internet, re-connect to the internet and verify that the virtual machine has access to the internet. If the network connection settings need to be changed, power off the virtual machine and click **Settings** in Oracle VM VirtualBox Manager > click **Network** to change the network settings.

a. Power on virtual machine as needed and log into Ubuntu again. After you are logged in again, you can resize the virtual machine window.

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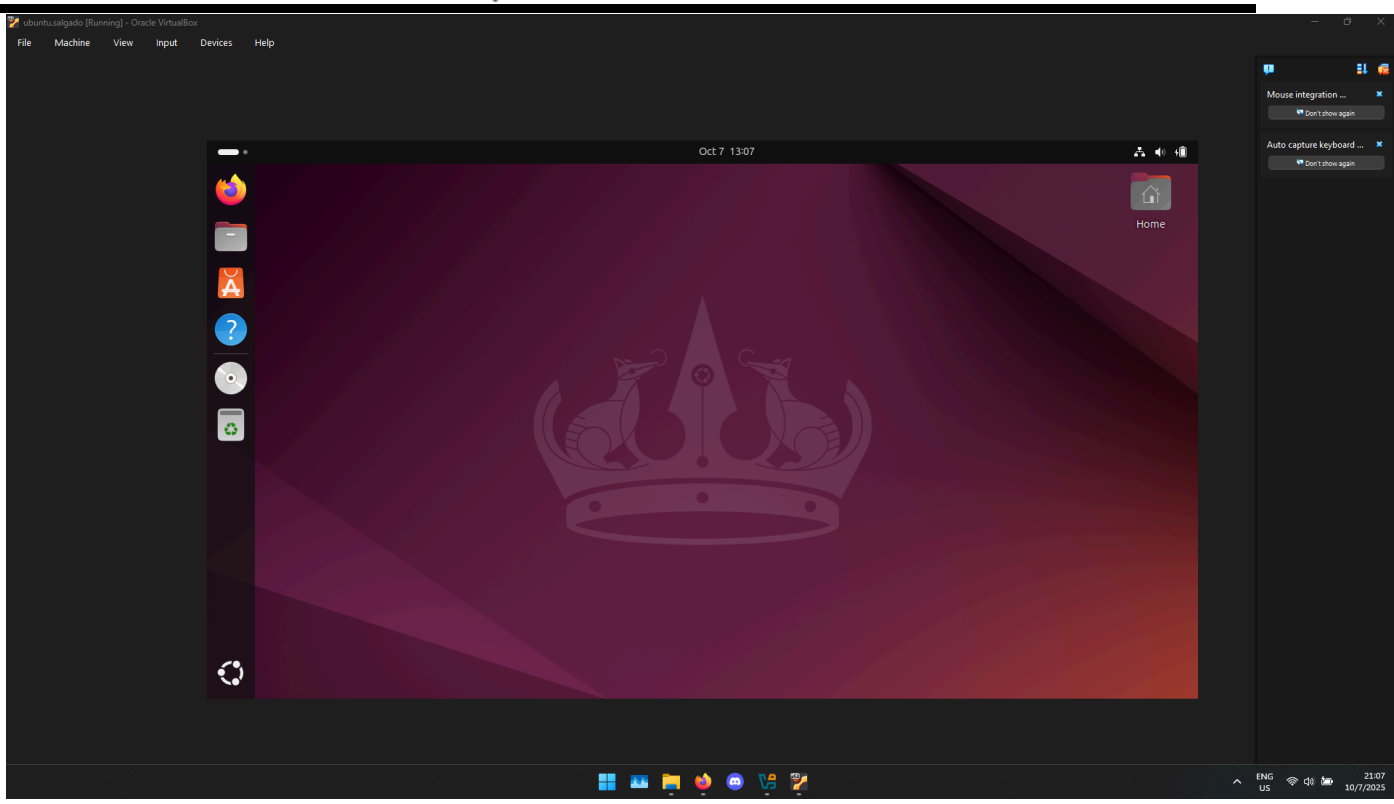
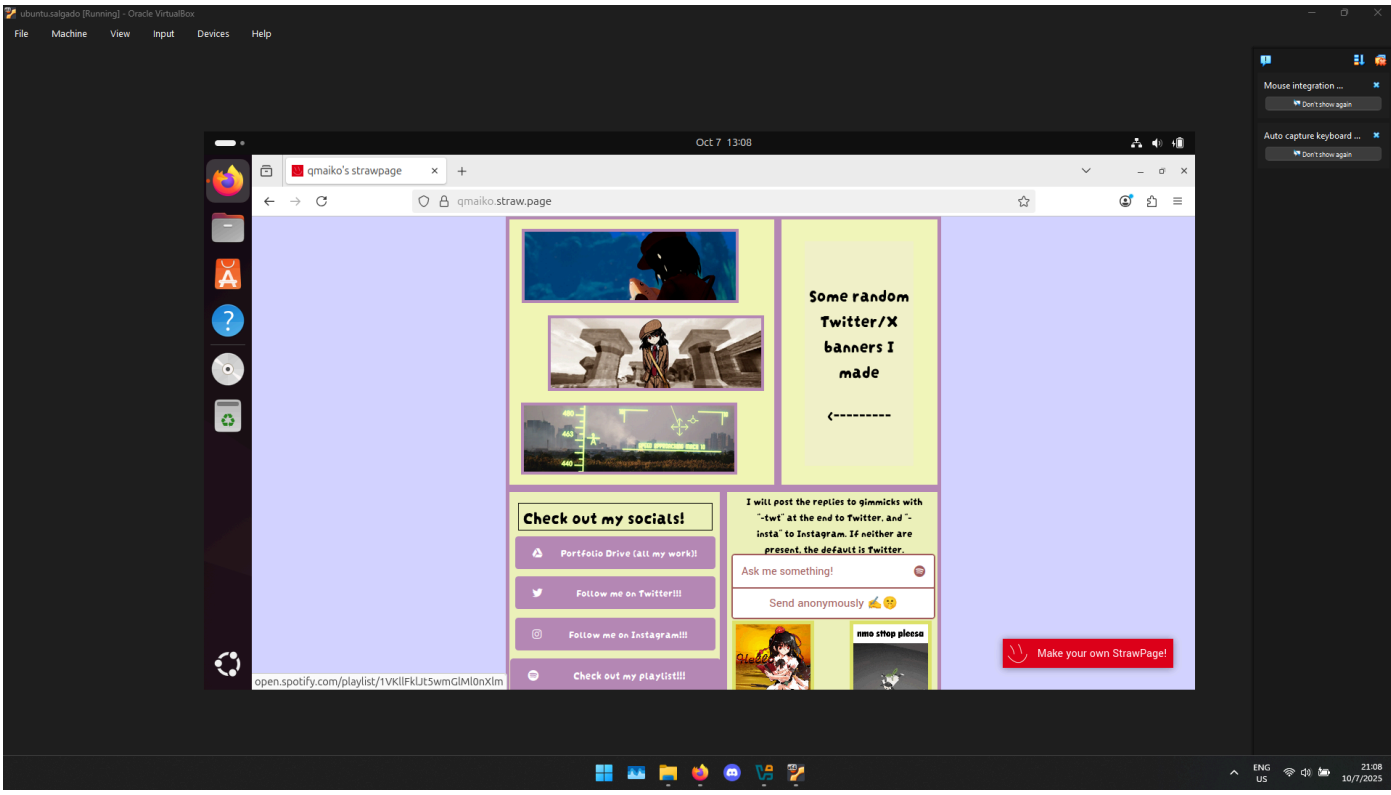


b. Open a web browser. Depending on the Linux distribution, you may need to search for a web browser or there is a link to a web browser already on the Desktop. Navigate to a few websites if desired.



c. Right click the Desktop and choose **Open in Terminal**. You will be using a terminal emulator in later labs.

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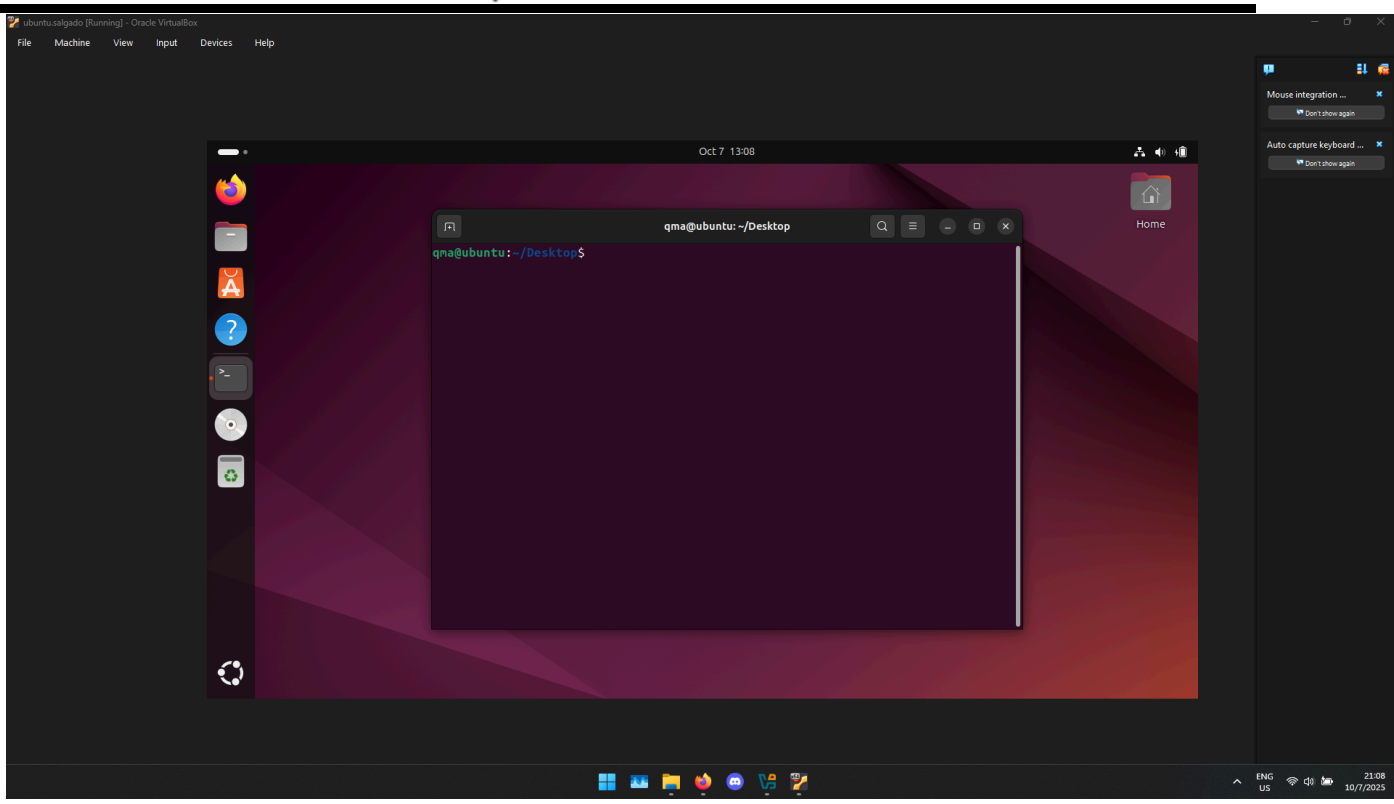
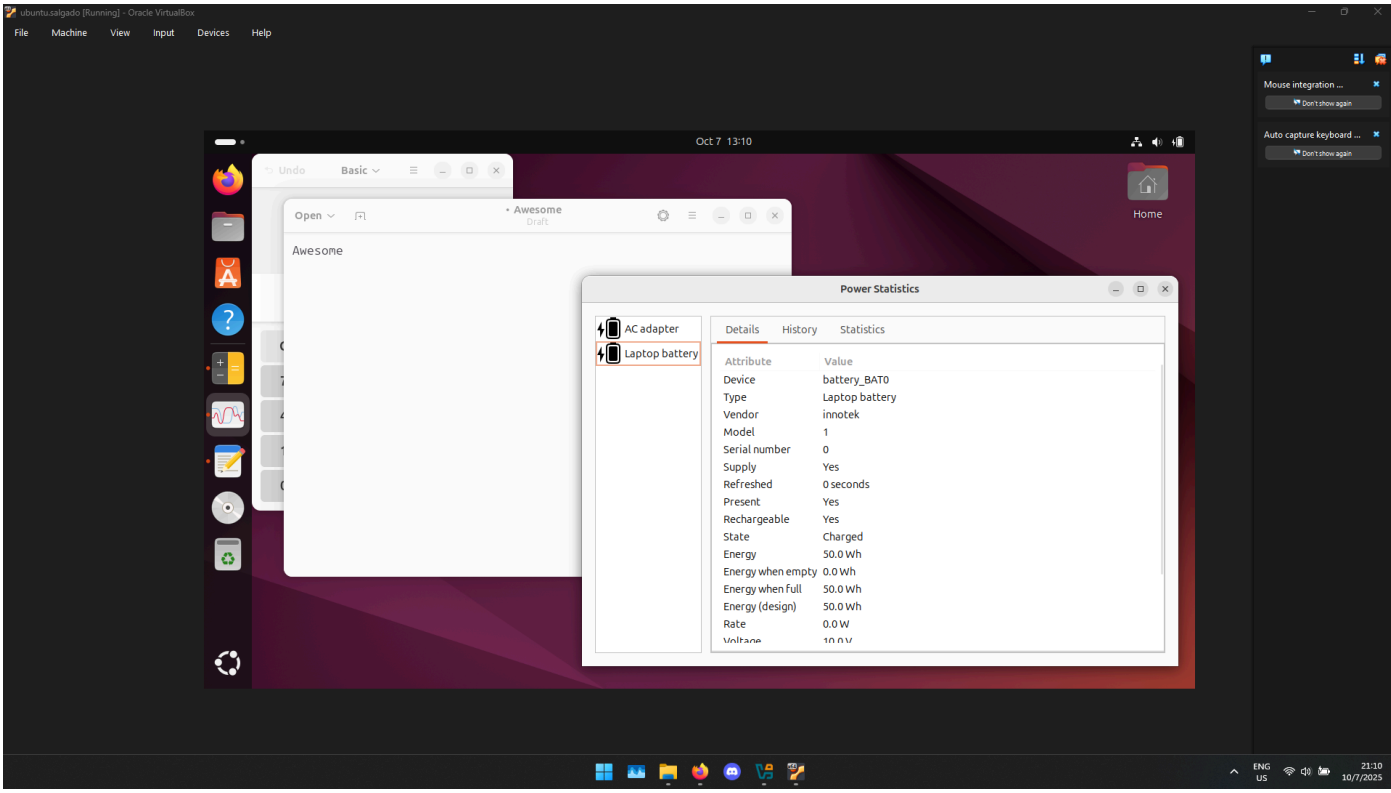


d. Explore the installed Linux distribution and locate a few applications that you may use.



Reflection Question

What are the advantages and disadvantages of using a virtual machine?

Well, using a VM lets me basically have another computer within my computer that I can use to emulate a different OS, and such. This lets me practically have a second secure computer that is separated through my Host device due to them being on different hard drive partitions.

The downside of this is that I do need to reserve a certain amount of disk space for it, and that I am running 2 different operating systems on my computer, which can cause heavy performance issues on weaker devices. Not all devices are capable of running VMs as well, some devices may not have the necessary hypervisor software/versions to run a VM, nor do all devices have virtualization which lets these VMs run.