Lab1: Virtual Machines and Linux Basics

Complete

1/30/2025

Attempt 1

Review Feedback
1/24/2025

Attempt 1 Score:
Complete

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Anonymous Grading: **no**

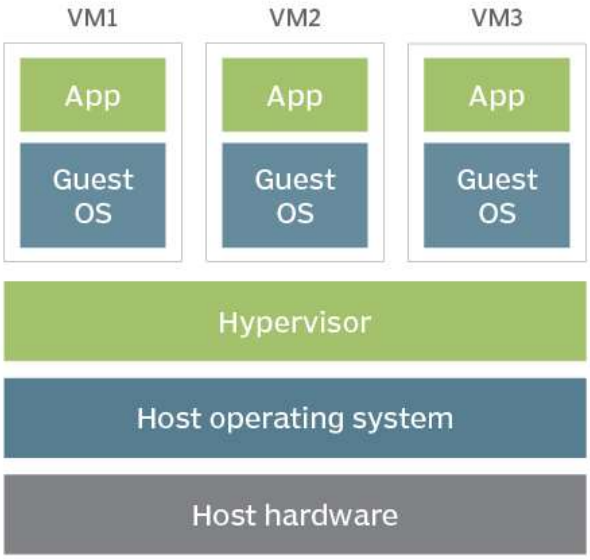
Unlimited Attempts Allowed

Details

INTRODUCTION

The goal of this lab is to introduce you to Virtual Machines (VMs) and the Ubuntu operating system. You will learn to navigate the VirtualBox GUI, create and configure a new VM, and install Ubuntu on it. Additionally, we will cover a few essential Linux commands to help you get started. You will continue to use this VM in subsequent labs.

Virtual machine technology enables multiple virtual machines to run on a single physical machine. Each VM operates as an independent and isolated system, with its own virtualized hardware resources, including CPU, memory, and storage. This can lead to a more efficient use of hardware resources, improving overall resource utilization and reducing costs. The underlying technology that facilitates this virtualization is known as a hypervisor.



TASK #1

For this task, you are required to pre-install Oracle VM VirtualBox (version 7.0 or the latest available). Afterward, download *Ubuntu Desktop 22.04.5 LTS* image **here (https://releases.ubuntu.com/22.04/ubuntu-22.04.5-desktop-amd64.iso)** which has a better compatibility than the latest version released.

Now, create a new Virtual Machine:

- Select a meaningful name for the machine, e.g., *DVA260Lab1*.
- As ".iso" file, select the Ubuntu image you have downloaded.
- Click the checkbox "Skip unattended installation" so that you can customize the installation the new VM with your language, keyboard layout, username, password, …
- Here the HW configuration required

    - Processors: at least 2 (choose the highest value in the green zone)
    - Base Memory: at least 4096 MB (choose the highest value in the green zone)
    - Hard Drive: 35 GB (opt for "Pre-allocate Full Size" to get better performance when the VM is running)
- Before you start the new VM, open VirtualBox, select your VM and click on Settings:
    - access the Display menu and set the Video Memory to 128 MB.
- Now, click on Start to switch your VM and follow the installation steps setting properly:
    - the system language (e.g., *English*)
    - keyboard layout (e.g., *Swedish with no dead keys*)
    - username (use your student id, e.g., *abc12345*) and password
    - hint: opt for *minimal installation* and disable the *automatic update* during the installation process

Some Basic Linux Commands 🧢 📨 **(https://ubuntu.com/tutorials/command-line-for-beginners#1-overview)**

Here you will try basic Linux commands and programs that may be useful throughout this course. First of all open the Ubuntu Termnal (find the related icon in the App menu or press CTRL+ALT+T). Some useful Terminal commands and tools that you should know:

- **cd -** to change directory
- **ls -** to list the content of the current directory
- **cp -** to copy file
- **rm -** to remove file/directory
- **mkdir -** to create a directory
- **pwd -** to show current directory
- **cat -** to show the content of the filename passed as argument
- **nano -** it is a versatile, easy-to-use, and quick to learn text editor for the Linux terminal. It is useful for editing files in the terminal.
- **gedit -** it is the default text editor for the GNOME desktop environment on Linux.
- **sudo -** it stands for "superuser do" and it is a command in Ubuntu and other Linux-based operating systems that allows users to run commands with administrative (or "root") privileges. It is used to perform tasks that would normally require logging in as the root user, such as installing software, modifying system settings, and managing system resources. For example, the following command attempts to install python3 in the system. However, the installation fails as a regular user can not modify the system.
- **apt-get** 🧢 📨 **(https://www.cyberciti.biz/faq/how-do-i-update-ubuntu-linux-softwares/)** - it stands for "Advanced Package Tool" and it is a package manager used on Ubuntu and other Debian-based Linux distributions. It is used to install, update, and remove software packages, as well as manage dependencies between different packages.
- **ssh** 🧢 📨 **(https://www.digitalocean.com/community/tutorials/how-to-use-ssh-to-connect-to-a-remote-server)** - it enables secure system administration and file transfers over the network.
- **scp** 🧢 📨 **(https://linuxize.com/post/how-to-use-scp-command-to-securely-transfer-files/)** - utility enables file transfers over the networks.

TASK #2

Perform the following sub-tasks:

a. Open a new terminal window, type the following commands `nproc; cat /proc/meminfo | head -n1; df -h --total | tail -n1` and take a screenshot of the output.
b. Launch nano from the prompt of a terminal window, type your name and surname, and save the file as `name.txt` in your home directory.

c. Launch gedit from the prompt of a terminal window, type the line `print("Hello World")` and save the file as `script.py` in your home directory.
d. Use `sudo` and `apt-get` and to update and upgrade your system.
e. Open a new terminal window and use `sudo` and `apt-get` and to install the package `python3` on your VM (it could be already installed, tries anyway) then, from the home directory, type `python ./script.py` and take a screenshot of the output the terminal window (it should be the *Hello World* message).
f. Use the command `cat` to show the content of the two files that you have saved in your home directory and take a screenshot of the terminal.
g. Open a new terminal window. Use `sudo` and `apt-get` and to install the package `openssh-server`, then:

- Use `ssh` to connect to the `localhost` with your username and take a screenshot of the terminal window.
- Use `scp` to copy the two files created in your home directory in the directory `/tmp/dva260` preventively created and take a screenshot of the terminal window.

SUBMISSION

Submit the screenshots required.

	File Name	Size	
	25001_lab...shot1.png	645 KB	✓
	25001_lab...shot2.png	650 KB	✓
	25001_lab...shot5.png	684 KB	✓
	25001_lab...shot3.png	679 KB	✓
	25001_lab...shot4.png	727 KB	✓