EXERCISE

2

LINUX INSTALLATION AND ENVIRONMENT FAMILIARIZATION

I. PROGRAM OUTCOME/S (PO) ADDRESSED BY THE LABORATORY EXERCISE

- Ability to demonstrate understanding and proficiency of IT specialization [PO: I]
- Ability to use and apply current technical concepts and practices in the core information technologies; human computer interaction, information management, programming, networking and web systems and technologies. [PO: J]

II. COURSE LEARNING OUTCOME/S (CLO) ADDRESSED BY THE LABORATORY EXERCISE

- Demonstrate an understanding of Disk Operating System (DOS) and LINUX history and concepts. [CLO: 1]
- Perform file and directory creation and manipulation using DOS commands; LINUX installation in virtual machine, file and directory creation and manipulation, and system administration using LINUX commands. [CLO: 2]

III. INTENDED LEARNING OUTCOME/S (ILO) OF THE LABORATORY EXERCISE

At the end of this exercise, students must be able to:

- Able to perform file and directory creation, and move between directories using LINUX commands

IV. BACKGROUND INFORMATION

CentOS

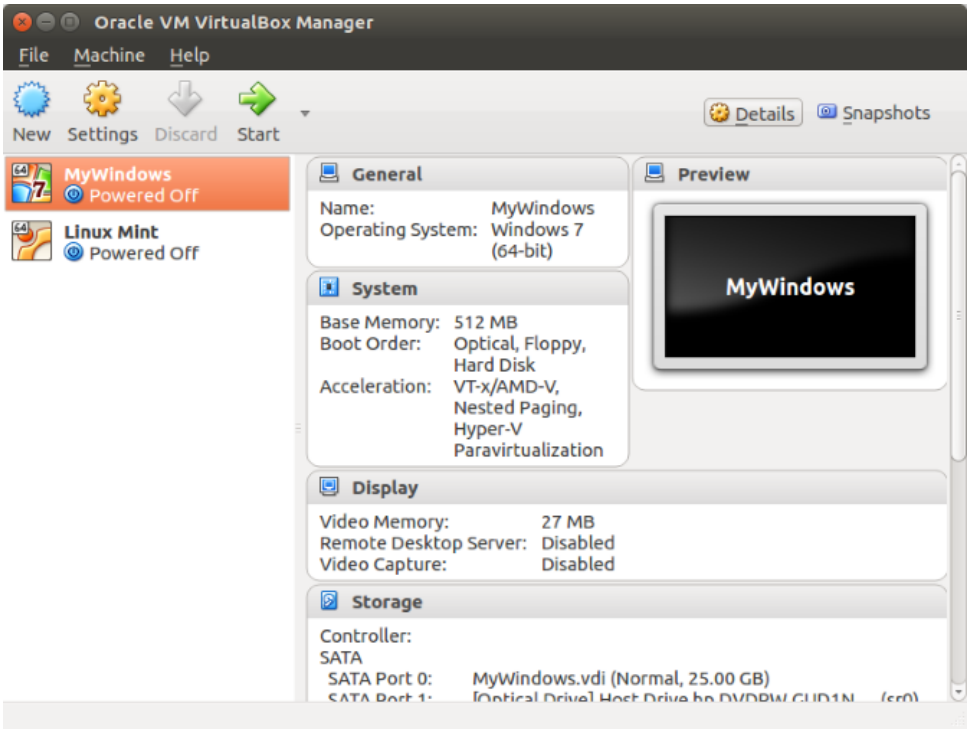
CentOS (/ˈsɛntɒs/, from Community Enterprise Operating System) is a Linux distribution that provides a free, enterprise-class, community-supported computing platform functionally compatible with its upstream source, Red Hat Enterprise Linux (RHEL). In January 2014, CentOS announced the official joining with Red Hat while staying independent from RHEL, under a new CentOS governing board.

What is a virtual machine?

A virtual machine (VM) is an operating system (OS) or application environment that is installed on software, which imitates dedicated hardware. The end user has the same experience on a virtual machine as they would have on dedicated hardware.

VirtualBox

Offering versatile virtualization, VirtualBox can create a virtual machine with virtually any operating system (except those intended for ARM devices). It also offers software and hard assisted virtualization, storing virtual machines as disk images. This makes it easy to backup or migrate to other PCs or VM applications.



VirtualBox is particularly good at running 32-bit and 64-bit Linux distros, as well as Windows. It's even possible to run OS X on VirtualBox.

V. GRADING SYSTEM / RUBRIC (please see separate sheet)

VI. LABORATORY ACTIVITY:

A. Setup

1. Open your Virtual Machine in your respective terminal.
2. Double click CentOS 6.4 from your Public OVAs folder located on your Desktop.
3. Click IMPORT to load your CentOS
4. Double click CentOS 6 from your VirtualBox then wait until the OS is loaded to the VM.
5. Log-in as Student and the password is password

B. Exercises

Now you're ready to begin.

1. Explore the LINUX environment to determine the hardware requirements, bundled software applications, graphical user interface (ease of use and look and feel of the environment) and security features
2. Explore the Windows 10 environment and determine as well the above-mentioned requirements
3. Use the table below in writing down your comparison between LINUX and Windows 10

Answers:

Linux	Windows 10
Minimum Hardware Requirements	
● To run the CentOS Linux operating system smoothly, you'll need at least 1-2 GB of RAM. The Linux operating system's total minimal RAM requirements (without any additional software) are lowered to 512 MB. ● The system and other critical data for a Linux distribution can be kept on a 4 to 5 GB hard disk. Users should, however, have at least a 20 GB hard disk to keep their stuff on. ● 64-bit processor, x86-64, 2 GHz or faster ● To install Data Connect, you'll need at least 2 GB of free hard disk space.	● Processor: 1 gigahertz (GHz) or faster processor or SoC ● RAM: 2GB for both 32-bit and 64-bit ● Hard disk space: 16GB for 32-bit OS or 20GB for 64-bit OS ● Graphics card: DirectX 9 or later with WDDM 1.0 driver ● Display: 800 x 600 resolution

Linux	Windows 10
Bundled Software Applications	
● Mozilla Firefox web browser ● VLC Media Player ● Visual Studio Code ● Shotcut etc. ● There are far fewer applications designed specifically for Linux, although some Windows programs can run on Linux. ● In Linux, the majority of programs, drivers and packages are supplied via fixed repositories.	● Microsoft Edge ● Dropbox ● Microsoft Office ● File Explorer ● Notepad etc. ● Most software released is compatible with Windows.

Linux	Windows 10
Graphical User Interface	
● Linux distributions released recently are easier to use than older versions. Some Linux variants have a graphical user interface (GUI) similar to Windows, making them easy to use for the ordinary computer user. Linux GUI distributions are more user-friendly and do not include as much "bloatware" as Windows. Ubuntu and Linux Mint are two examples of easier-to-use distributions. ● Users of Linux distributions have many freedoms in designing the GUI and can even do away with it altogether.	● Windows has the most user-friendly desktop operating systems. User friendliness and ease of basic system activities are two of its key design elements. Its simplicity and lack of complication are viewed favorably by users who want their system to function. More experienced users, on the other hand, may be disappointed by the simplifying of system duties at the expense of fine-grained system management. ● Microsoft set standards with its Windows GUI.

Linux	Windows 10
Security Features	
● Linux is a very safe operating system to use. Although new attack vectors are continuously being identified, the source code is open and accessible to anyone, making it easier to find and fix flaws. Linux systems are only attacked very rarely. ● One of the ways CentOS helps to protect you from cyber-attacks is by utilizing Security-Enhanced Linux (SELinux). ● SELinux is an access control mechanism that can enforce rules on processes and files, based on policies that you define. One of the most beneficial features is that it reduces vulnerabilities on privilege escalation attacks; If a process is compromised, the attacker would only have access to the normal functions of the process, and only the files that process has been configured to have access to.	● Over the years, Microsoft has made significant security upgrades to Windows. However, as the most used operating system, it is the major target for malicious coders, especially among new computer users. As a result, Microsoft Windows is the most vulnerable to viruses and malware of all major operating systems. ● Microsoft Defender Antivirus - formerly known as Windows Defender, Microsoft Defender Antivirus still delivers the comprehensive, ongoing, and real-time protection you expect against software threats like viruses, malware, and spyware across email, apps, the cloud, and the web.

Observation:

Users who are considering making a change from Windows to Linux or Linux to Windows commonly want to know the advantages and disadvantages of each operating system. I find the Linux OS to be interesting to add it as a new skill or tool to my CS study. Since all Linux distributions use the same Linux kernel at their core, no matter which Linux distribution you use, you will get all features and functions of standard Linux across all distributions.

Conclusion:

Windows is designed for a wide range of users, from novice to expert. The operating system is excellent for both professional and recreational use because to the vast choice of Windows-compatible software. The latest Windows operating system has many different versions and pricing options. Using Linux distributions are free of charge (at least for private users) but requires a set of skills as well as some specialized knowledge. Furthermore, because leisure softwares such as video games are only available in limited versions, Linux distributions are better suited for professional IT users.

VII. REFERENCES:

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