Lab Assignment 1

# Module ET4725 Operating Systems 1

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# **Assignment Objectives**

1. Install Lubuntu as a guest OS in VirtualBox.
2. Share data between Lubuntu and the host OS.
3. Get comfortable with the UI and terminal in Linux.

**Installation of VirtualBox**

The specifications of my host OS system including Desktop Environment(DE) and Window Manager(WM):

*Host: HP Laptop 15-db0xxx*

*CPU: AMD Ryzen 3 2200U with Radeon Vega Mobile Gfx (4) @ 2.500*

*GPU: AMD Radeon Vega Series*

*Memory: ~4GB*

*HDD: ~1TB*

*OS: Ubuntu 18.04.1 LTS x86\_64*

*Kernel: 4.15.0-43-generic*

*Shell: bash 4.4.19*

*DE: GNOME 3.28.3*

*WM: GNOME shell*

Now that we have the specifications of the system we will be using, lets go to the [VirtualBox](http://virtualbox.org/wiki/Linux_Downloads) website and download a verions that is specific to our OS.

The latest version for Linux OS’s is VirtualBox 6.0.2, I chose the Ubuntu 18.04 / 18.10 / Debian 10 link which downloads a .deb package. When package finished installing I used the *sha256sum* *packagename.deb* command on the package to make sure the checksums matched, Then I went ahead and installed the package using *sudo dpkg -i packagename.deb*.

*Missing dependency*

An small problem I ran into while installing VirtualBox was the installation required a dependency that was missing. The error was ***dpkg:*** *dependency problems ... virutalbox-6.0 depends on libqt5opengl5 is not installed* . Which is a missing OpenGL version 5 problem.

The solution was to install OpenGL using sudo apt install libqt5opengl5 -yy

**Installation of Linux as a guest OS**

The next step of was to install a Linux OS as a guest OS on VirutalBox, for this task I chose Lubuntu. I visited the [Lubuntu website](http://lubuntu.net/downloads/) and downloaded Lubuntu 16.04.3 LTS Desktop 64-bit version.

I then setup a profile on VirtualBox that would run the lubuntu.iso file that was downloaded. Here is my initial setup:

Name: lubuntu18.04.1LTS

Type: Linux

Version: Ubuntu (64-bit)

Base Memory: 1024 MB

Storage: VDI - Normal, 10.00GB (8.00GB primary mounted at /, 2.00GB swap)

Acceleration: Virtualization switched on (VTx/AMD-V, Nested Paging)

Since Lubuntu is such a lightweight OS I opted to give it only 1GB of memory, I will explain my decision here in the conclusion.

*Unable to boot*

After I had completed confiuring the settings for Lubuntu on VirtualBox, I tried to boot up the system to find a message “*This kernal requires an x86-64 CPU, but only detected an i686 CPU*”. From this message I started to think that I miss read my laptop specs, as this is a relitivly new laptop I double checked this specs using *uname -p* which returned x86\_64.

So my next step was to boot into the BIOS on my pc. There I found a Virtualization setting, which was disabled by default. After I logged back I ran Lubuntu again on VirtualBox to great success.

**Setting up Lubuntu**

With the installation phase of Lubuntu, everything worked as expected, with no issues(swap)(gccandinstall). The first steps I took after installation was to update the system using the LXTerminal, I used the command *sudo apt update && sudo apt upgrade -yy*. When the system updated successfully, I wanted to setup a shared folder between the host and geust OS’s at this point I found out I need to install the guest add-ons to mount the share folder.

*Permissions using scripts in guest add-ons*

When I was attempting to enable guest add-ons to allow me to set up the shared drive. I ran into a problem with permissions in this folder. When I tried to exicute the VboxLinuxAdditions.run script it would not

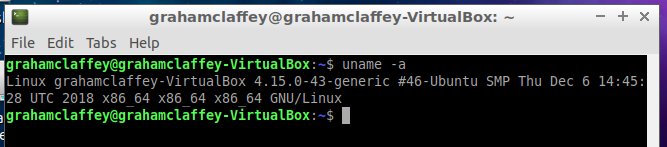
**Using Lubuntu**

While I have very briefly used Lubuntu in the past, back when I was distro-hopping from one Linux OS to another. I really enjoy the LXDE desktop environment for the responsivness and simple for effective disign. Even when I gave Lubuntu 1GB of memory to work with, it still has no trouble because of it’s lightweight, using only 200MB whille idle and while under load it was topping out at ~400-550MB. Lubuntu feels very similar to it’s parent Ubuntu in terms of package management at least. I have used most applications that Lubuntu offers, including Htop, Vim, Gdebi etc. I have also gotten firmiliar with some other applications as part of this assignement. Most notably System profiler benchmark which has me interested in trying it out on my host machine. (sf\_VirtualShare error)

**Using terminal commands**

Since I use Linux on a regular basis, I feel fairly confident within a terminal setting. I am by no means an expert but I would know the more commonly used commands. An example of these commands would be:

* the apt for managing packages
  + *sudo apt update && apt upgrade -yy*
  + *sudo apt install htop -yy*
  + *sudo apt autoremove*
* Using the ls command to list segments of the file system
  + *ls*
  + *ls -l*
  + *ls -al*
* The grep command to filter the specific text you are looking for in at search, very useful when output from another command is piped into grep
  + *history | grep -i “systemctl”*
  + *cat example.cpp | grep -i -n “\*.h”*
  + *sudo find / -type f -iname “\*.conf” | grep -i -n “systemd/user.conf” > ~/log.txt*
* The uname command used to print your system information. Use the -a option to print all.
  + *Uname -a*

**

**Shutting down Lubuntu**

In regards to the states of the Lubuntu VM, I was able to suspend the execution of Lubuntu by using the GUI Machine drop down menu and selecting the Pause (Host + P) option. This done from the lubuntu18.04.1LTS window not the Machine drop down on the VirtualBox Manager window.

**A side note:** when closing the lubuntu VM you can also choose the “Save the machine state” if you wish to come back to the same save state later.

**Plan for remaining assignments**

After the experience gained from doing this assignment, I plan for the other assignments to be carried out using a combination of my host Ubuntu machine and the guest Lubuntu machine. Since part of the assignement was to setup a shared folder between the host and guest, I don’t see any reason not to continue in this manner.

It will be make more sense in terms of the module structure if the plan is to continue expanding on our Linux/Lubuntu building skills, so I can more easily compare my progress to what has been covered in class.

**Concluding comments**

In conclusion I gained valuble knowledge in setting up a guest operating system on VirtualBox, creating the shared folder between them will be usfull in future projects. I did run into some bumps in the road, but with some work and help from Google I managed to fix any difficulties that I encountered.