

FIT9137 Workshop

Week 1

Topics:

- Introduction to FIT9137 and ask-me-anything-admin
- Set-up your Bring-Your-Own-Machine for FIT9137

Covered Learning Outcomes:

- Describe basic concepts of computer hardware and software architectures;

Instructions:

- One of the main targets of workshops is to anchor the learner into the session and create many opportunities to reinforce the learning in different ways – individually and in small groups. Sometimes we also teach key practical/theoretical concepts to you during these sessions.
- Form groups of 4-5 students to work through the exercises. If you meet a problem, try to solve it within your group by discussing it with your group members. If not resolved within the group, ask one of the support tutors to help you.
- You still have a question? Jump into one of many consultation hours run by our experienced tutors and seek help. Please visit the “Teaching Team and Unit Resources” tile in the FIT9137 Moodle site.

Activity A: Lecturer’s introduction to FIT9137

Activity B: Setting Up Your Laptop/Device for FIT9137¹

We will require certain software for the lab exercises throughout the semester. We have prepared a Virtual Machine that contains almost all of the required software for the subject during the semester. In the following steps you will be instructed to install Virtual Box, an open source hypervisor that allows the use of virtual machines.

The steps below work for systems **except Apple MacBook devices with an M1 or M2 chip** (to find out if your Mac has M1/M2 chip, refer to [here](#)). **If you have a Mac M1/M2 device**, refer to **VM Installation Instructions for Apple M1/M2 devices** on Week 1’s Moodle page. Otherwise, follow the instructions below.

¹ These steps are tested multiple times across years. Please refer to Moodle for a set of common Q&A and troubleshooting for this activity.

B.1 Download and Install VirtualBox

- Download the *VirtualBox* from <https://www.virtualbox.org>. It is available for all three major platforms: Windows, macOS, and Linux.
- Follow the installation instructions for your operating system.
- Download the *VirtualBox Oracle VM VirtualBox Extension Pack* from the same web page (the file is read by VirtualBox and is the same for all platforms).
- Install the Extension Pack after you have successfully installed the VirtualBox. To install simply double-click it and it should open in VirtualBox dialogue and prompt for approval.

As VirtualBox installs various system drivers it will ask for administrative privileges.

B.2 Download and Import Prepared Virtual Machine for FIT9137

The VM contains required software used in lab exercises and or assignments. One such tool is the Core Network Emulator which allows to mimic complex network scenarios without the need for accessing physical equipment. In exercises related to operating systems, we can safely perform tasks which are contained in the VM without accidentally changing the state of the operating system that runs our physical machine. It also allows us to provide universal instructions and exercises that would work the same way for all students as they will be run within the VM.

- Download the VM file: lu16d-coremu-v1.3.ova
 - <https://drive.google.com/file/d/1R2g1Iuss2iY0ko4xDZR3f-vMs3F1SUoJ/view>
- The file is about 2.6 GB so it may take some time to download.
- There are two ways to import the file into VirtualBox:
 - Simply double click on the file and a dialogue box from VirtualBox should open up that will guide you through the importing process.
 - Open VirtualBox and then from the Menu Bar: **File** → **Import Appliance** → **Browse (find the file using the OS file browser)** → **Continue** → **Import**.

B.3 Increase resources allocated to VM

By default the resources (such as number of CPU cores and amount of RAM) allocated to VM are quite low. This may lead to very slow processing while running a VM. To increase the allocated resources,

1. Right click on the VM and select **Settings**
2. Click **System** icon
3. Under **Motherboard** tab, increase **Base Memory** to at least 2048 MB (preferably even more if you have available)
4. Click **Processor** tab
5. Increase **Processors** to at least 2 (preferably even more if you have available)

B.4 Set up a Shared Folder between VM and the Host

In this step you will configure a folder on your host machine (OS running on your physical device) to be shared with the VM (guest which runs a flavour/distribution of Linux). We can use the shared folder to transfer files between the host and guest.

1. Open VBox and select the imported VM in Step-
2. Right click on the VM and select **Settings** as shown in Figure-1.

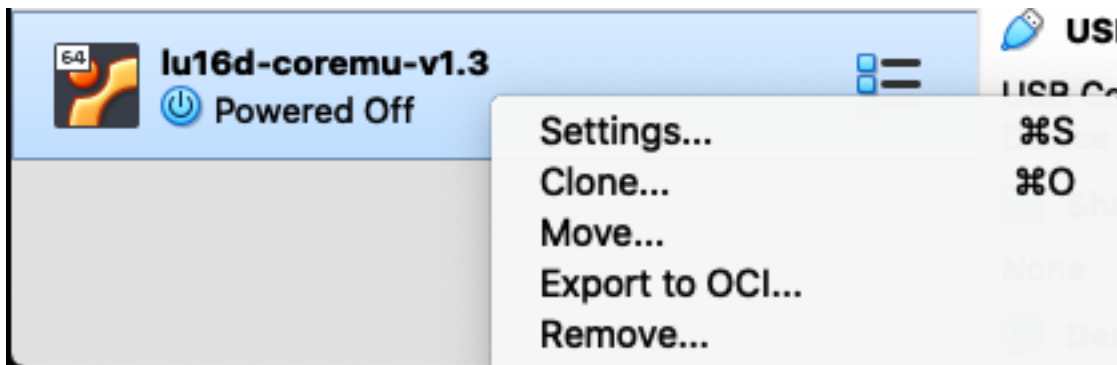


Figure 1: VM Settings - Method 1

An alternative approach is to select the VM and then click on the settings icon in the tools panel (Figure-2).

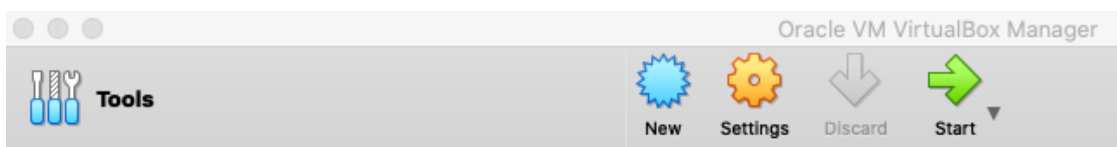


Figure 2: VM Settings - Method 2

3. Click on the **Shared Folder** icon in the settings window, then click on the folder icon with a green plus on the right side of the window to add a new shared folder (Figure-3).

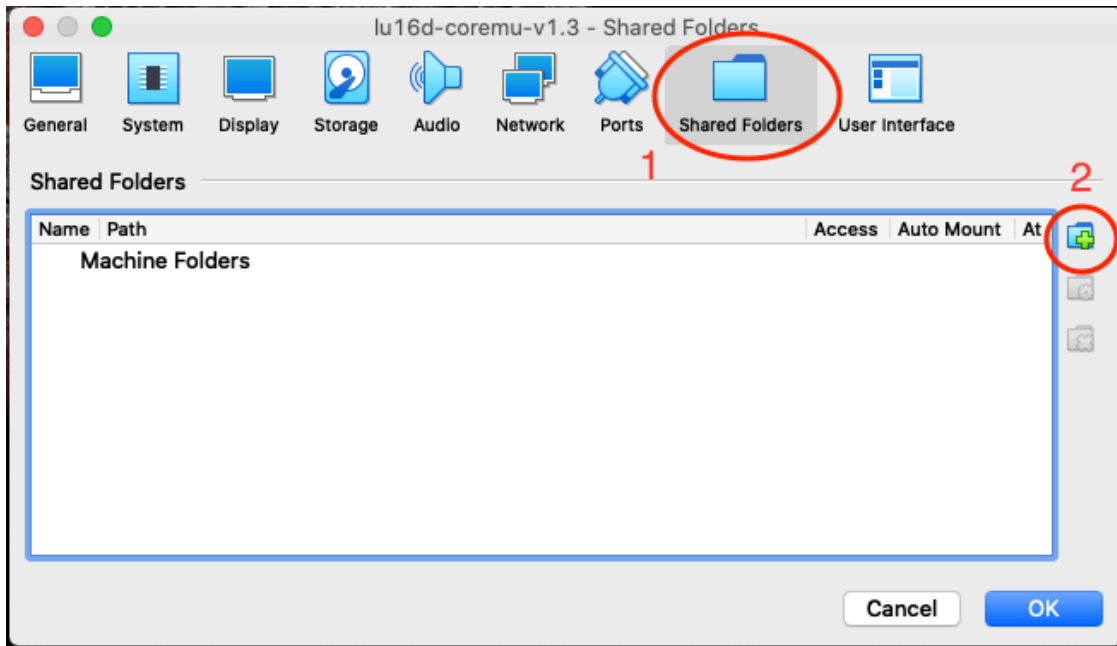


Figure 3: Adding a new shared folder

4. From the Folder Path in the opened window click on the drop down icon and select Other which will open the OS file browser to select a folder on your host machine to be shared with the VM. After selecting the folder check the Auto-mount option to make sure it will be mounted every time the VM is booted (the shared folder is presented as a network attached storage to the VM). This is shown in Figure-4.

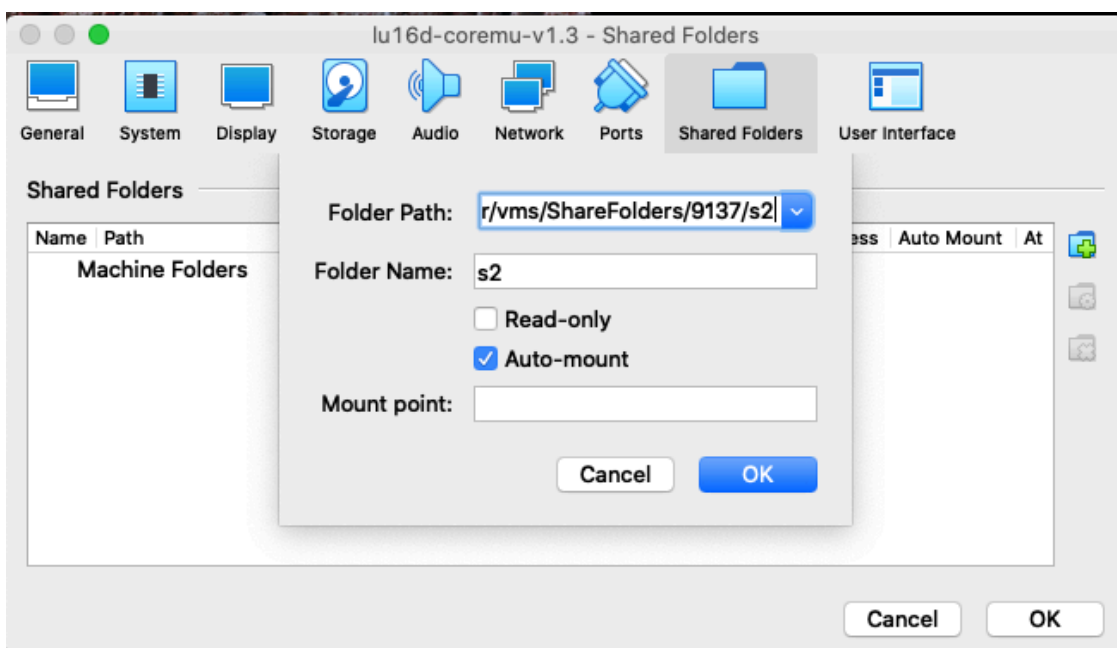


Figure 4: Selecting the shared folder and checking the Auto-mount option

B.5 Start the VM

Start it by double-clicking on its icon in the VirtualBox main window, or by selecting it in the list of VMs and then clicking on the “Start” icon. The VM runs Ubuntu version 16.04 with LXDE for its Graphical User Interface (GUI). Once booted, it will automatically log in with the user `muni` and you should see a screen as shown in Figure-5.

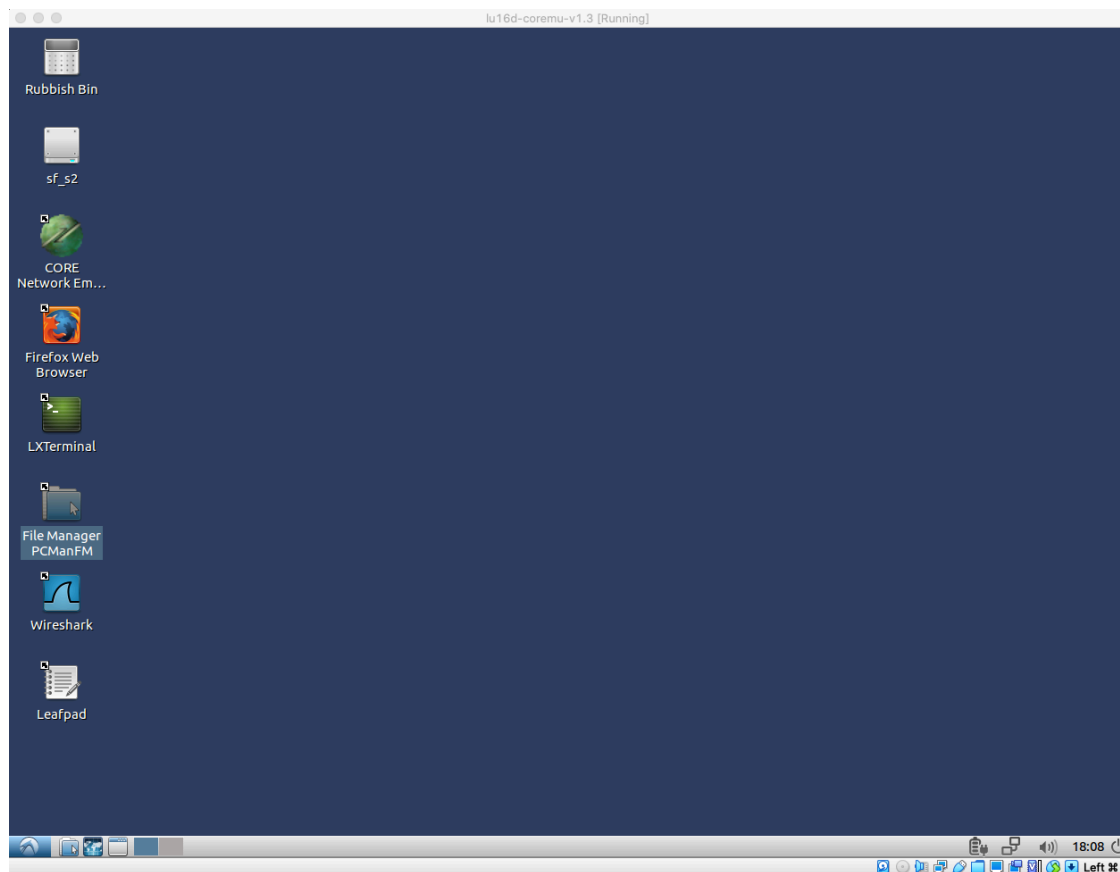


Figure 5: Booted and logged in to lu16d-coremu-v1.3

The set password for this user is also `muni` so if you log out and are presented with a logon prompt simply enter `muni` as username and password to log back in.

Note that the shared folder that I have created is showing on the desktop like a removable (or network attached) device. The given name to the mapped (mounted) shared folder under VM will start with `sf_` followed by the name of the folder on the host. For instance, I chose `s2` (semester 2) and the folder name became `sf_s2`. You will learn more about Linux file system structure in the following weeks, however, it is worth knowing now that the folder is mounted under `/media` hence in my case the *full path* to the folder is `/media/sf_s2`.

B.6 Shutdown the VM

The VM runs a proper OS and as such needs to be treated as if running on a physical machine. Once you are done with the VM and wish to close the VM window you should

shutdown the system properly. To do so click on the power button on the bottom right corner of the VM window and select **Shutdown**.