CS3235:1: - Laboratory #1 for Aug 28, 2019

This laboratory is just to familiarize yourself with the laboratory.

1 Lab 1, part 1: Getting started in the lab with Windows

Reboot the machines, and select Windows during the boot process. You should have already been emailed a usercode/password for the labs. The usercode is something like e00XXXX. The password should be kept for the whole course, as we use it for the grading labs. You can change the password for logging into the lab computers, but the grading system will always expect the original password, so keep it safe. Give your username and your password:

```
login: e00XXXX
Password: XXXXXXXX (the password is not displayed when you type it)
```

The first time you log in to a particular machine in the laboratory, there will be a delay, as Windows sets things up for you. The next time you log in, it will all be much faster. When the login procedure is completed you should see the GUI, and be able to select programs from the menus and run them.

Assuming you can log in OK, you can do the following short task, to get a mark for this part (part 1) of laboratory 1. This will also give you an opportunity to familiarize yourself with the lab environment, and marking techniques and so on. To get your mark:

- Open a `Cmd` prompt window. If you have not used the command line interface before, this is a good time to start!
- Use the `certutil` (Certificate utility) program to find the MD5 checksum of a file in the `C:\windows` directory: `ampa.exe`. You will use this checksum as a security code when you get your mark.

```
C:\WINDOWS> certutil -hashfile ampa.exe MD5
```

- Access the cs3235 grading website, and enter your username, password, and the MD5 checksum, along with whatever you want to give yourself as a mark:
  `https://hugh.comp.nus.edu.sg/cs3235/lab1/gradeslab1-1.php`
  You can give yourself whatever mark you believe you deserve, 1, 10, 100, or even a tasty chocolate fish!

When you have finished this part of the lab session using Windows you must reboot your computer so you can run the Ubuntu OS, although when you leave the lab you should just log out, and leave the machines going, NOT shut down the OS.

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2 Lab 1, part 2: Getting started in the lab with UNIX

Reboot, select Ubuntu, and you may give your usercode and your password:

```
login: e00XXXX
Password: XXXXXXXX (the password is not displayed when you type it)
```

The very first time, login as `e00XXXX`, with password `XXXXXXXX`. When the login procedure is completed you should see the GUI, and be able to select programs from the menus and run them. It is not too different from operating Windows systems, although it is common on UNIX systems to use a terminal window to type in commands. You can open up a terminal window by clicking on the icon. You can use the `yppasswd` command to change the login password to something else if you wish. If you later forget this login password, ask Chan Tim Fook (`chantf@comp.nus.edu.sg`) to reset your password. Make sure you type it correctly (it asks you twice).

Check that the password is OK, by logging out, and then logging back in again. Assuming you can log in OK, you can do the following short task, to get a mark for this part (part 2) of laboratory 1:

- Open a terminal window (ctrl-Alt-T).
- Use the `md5sum` (File Checksum Integrity Verifier) program to find the MD5 checksum of file `/usr/local/share/vms/SEEDUbuntu-16.04-32bit/SEEDUbuntu-16.04-32bit-s002.vmdk`. You will use this checksum as a security code when you get your mark.
- Access the cs3235 grading website, and enter your username, password, and the MD5 checksum, along with whatever you want to give yourself as a mark:
  `https://hugh.comp.nus.edu.sg/cs3235/lab1/gradeslab1-2.php`
  You can give yourself whatever mark you believe you deserve.

2.1 Some points...

The following points are to be noted for Unix in general and also Linux:

1. Unix is case sensitive. Most commands are lowercase.
2. Unlike Windows, Unix has no drive letters (A: B: C:). Everything is in some directory, starting at / (the "root" directory - you can find this in the graphical file browser by selecting the osXXX item on the left). Unix uses forward slash (/) to separate directory names, while Windows uses backslash (\). The * wildcard is treated uniformly by Unix shells. In Windows, * works differently for different programs.
3. It is worthwhile to look first at the manual page of a command: `man man`

The lab machines are on a private network, so it is not possible to connect to them from the outside. However, from the lab machines, you can connect to the outside.

To transfer your files elsewhere, eg. for backup, printing, etc., one easy way is to use a thumb drive. If you plug in a thumb drive, after a while, an icon should appear on the desktop. You can drag and drop files to and from the thumb drive. When you are finished with the thumb drive, right-click on it, and select **Unmount**. This is much safer than just pulling the thumb drive out of the PC. It is a good idea to backup your work.

When you have finished your lab session using Ubuntu Linux you must log out from the system.

3 Lab 1, part 3: Trying out Virtual Machines

In later laboratories, you will be using virtual machines to do laboratories. Both the Windows and Linux OS have VM software installed (called VirtualBox), and a default VM that you can copy and use. Lets try running the virtual machine on Linux. We begin by starting the Virtual Box software. Click the top left Start icon, and type "VM" in the search box, and then click the "Oracle VM VirtualBox" icon to start VirtualBox:

Right-click the VirtualBox icon in the Dash bar on the left side, and select "Lock to Launcher". Next time you can quickly start VirtualBox from there. Next we copy the Ubuntu Virtual disk to a temporary folder on the local machine, by starting the "Terminal" app, creating a user's own workspace under `/tmp`, and copying an Ubuntu VM disk folder (`/usr/local/share/vms/SEEDUbuntu-16.04-32bit`) to the user's workspace. You can use the following commands (`$USER` means the current user - if you happen to be `e0191234`, then `$USER` will be `e0191234`):

```
$ mkdir /tmp/$USER
$ cd /tmp/$USER
$ cp -rp /usr/local/share/vms/SEEDUbuntu-16.04-32bit .     ⟸ Note the ‘.’ here!
```

This copy command takes about five minutes. When it completes, we will configure the Ubuntu VM in VirtualBox by following the instructions from

`http://www.cis.syr.edu/~wedu/seed/Labs_16.04/Documents/SEEDVM_VirtualBoxManual.pdf`

Follow the steps in that document (`UseVirtualBox.pdf`), but note that in Step 4: "Select the Pre-built VM File", you should select `/tmp/$USER/SEEDUbuntu16.04-32bit/SEEDUbuntu-16.04-32bit.vmdk`, the VM file in your own workspace. Do not try to directly use `/usr/local/share/vms/SEEDUbuntu-16.04-32bit`, which is read-only. In addition, in part 6, use the directory `/tmp/$USER` for the snapshots:

`http://www.cis.syr.edu/~wedu/seed/lab_env.html`

Read the SEED documents from the web page above and specifically, note the User Manual which contains the user login information `Ubuntu16_04_VM_Manual.pdf`. Ubuntu does not allow `root` to login directly from the login window. You have to login as a normal user, and then use the command `su` to login to the `root` account. The passwords are:

```
User ID: root, Password: seedubuntu
User ID: seed, Password: dees
```

Inside the virtual machine, compute the MD5 checksum of the file `/bin/gzip`, and as before, enter your username, password, and the MD5 checksum, along with your mark. Note that cut-and-paste from VMs may not work for you...

`https://hugh.comp.nus.edu.sg/cs3235/lab1/gradeslab1-3.php`

You can give yourself whatever mark you believe you deserve.