Virtual Machines 101
Assignment Due Date: 1/22/16

Virtual machines play a crucial role for developers today by emulating an entire system within your host OS that can be used to do any number of things; what once required multiple pieces of hardware (not to mention multiple thousands of dollars!) can now be had on a single, high-end desktop or laptop. Virtual machines are created and managed by virtualization software; one of the biggest players in the virtualization game, VMware, offers their virtualization software to Mizzou's CS and IT students free of charge. The software is already installed on the lab computers, but you can learn how to get your free copy of the virtualization software at the end of this assignment document.

In order to complete this assignment, you'll need an appropriate ISO (disk image) file. We will be creating an Ubuntu 14.04.3 LTS virtual machine; while you can use the 32-bit (i386) version, I recommend using the 64-bit (amd64) version. Once you've got the ISO file on your external HDD, you're logged in to the lab computer, and your external HDD is connected to the lab computer, follow the steps below to create your virtual machine.

1. Start VMware Workstation
2. Click "Create a New Virtual Machine"
3. Ensure that "Typical" is selected and click "Next"
4. Select the "Installer disc image file" option and browse to your downloaded Ubuntu 14.04.3 .iso file, then click "Next"
5. Fill out the requested information, then click "Next"
6. Name your virtual machine "<PAWPRINT>_ubuntu_1404", replacing <PAWPRINT> with your pawprint, and click "Next"
7. Select the "Store virtual disk as a single file" option and then click "Next"
8. Review your settings; ensure that your virtual machine is properly named to avoid losing points! If everything looks okay, click "Finish"
    a. You may get some messages about keyboard strokes and removable devices… don't worry about it and just click "Ok"
    b. If you are asked to download and install VMWare Tools for Linux, click "Remind me Later"
9. Installation will take a little bit of time, but you shouldn't have to do anything during the installation process

10. Once Ubuntu has finished installing, you will be greeted with a login prompt; login to your virtual machine to verify that everything is working and take a screenshot that clearly displays your logged in and running (properly named) virtual machine. Name this screenshot "VM101 Part 1".

Now that your virtual machine is up and running, complete the tasks listed below to receive credit for this activity. For the first five tasks, take a screenshot of you having completed the task for submission. Name the first one "VM101 Part 2-1", the second one "VM101 Part 2-2", etc. For the last five tasks, record your response in your preferred text editor.

1. Update your virtual machine

2. Change the network type to "host only"

3. Change the network type to "bridged"

4. Give the virtual machine 2 processor cores

5. Give the virtual machine 4 GB of RAM

6. What type(s) of virtualization does VMware Workstation employ?

7. If your PC has 8 logical cores, how many VMs could you run if you gave them 1 core each? Explain your reasoning.

8. If your PC has 32 GB of RAM, how many VMs could you run if you gave them 4 GB each? Explain your reasoning.

9. You have two VMs running: one is using NAT for the network adapter, the other is using Host Only. Should you be able to receive a response if you ping one VM from the other? Why or why not?

10. You have two VMs running: one is using Bridged for the network adapter and is running on your laptop, while the other is using Host Only and running on your desktop. Should you be able to receive a response if you ping one VM from the other? Why or why not?

When you are finished with all tasks, submit your response document and all of the required screenshots in an archive (.zip) to Blackboard for grading.

The link below can be used to obtain a 2-year license key at no cost. Login using your pawprint credentials, go to the "Software" section, and choose the VMware product that matches your host operating system. If you have your own computer, I would highly suggest installing your own copy of VMware in order to give you more flexibility with when and where you complete VM-related activities.

https://e5.onthehub.com/WebStore/ProductsByMajorVersionList.aspx?cmi_cs=1&cmi_mnuMain=16a020b5-ed3c-df11-b4ab-0030487d8897&ws=daaa906c-5745-de11-b696-0030485a8df0&vsro=8