Exercise 1 Setting up the Virtual Machine
SDM 409232 2015

Get VirtualBox and the Pre-prepared Virtual Machine

1. Make sure VirtualBox is installed on your machine. If NOT, then you can download and install the free VirtualBox on your host computer, which can be any Intel-based Mac, Windows PC, or Linux box
2. Copy/download the .zip file "VM_SDM_2015" and unzip the VM image (~2GB zipped, ~5GB unzipped) from the links in the table at the top of this page. If you encounter problems unzipping the VM (default unzip software may not be sufficient on older operating systems), 7zip is a free unzip program. You should get a file VM_SDM_2015.vdi.

Start and Configure VirtualBox with the VM

3. Run VirtualBox and click the New button to create a new VM.
4. When the VM Wizard appears, select the following options:
   - Name: *yourname*SDM2015 (*yourname* = type your first and last name with no spaces e.g. JimBuchanSDM2015)
   - operating system: Linux
   - version: Ubuntu (Press "Continue")
   - RAM base memory: at least 1024 MB (Press "Continue")
   - Select "Use existing hard disk" and click on the small folder icon to browse your local files and choose the .vdi file you downloaded in step 2
   - "Continue" after the summary and select "Create"
   - "Start" the new VM using the arrow key in the menu
   - This will take a few minutes to startup
   - Login to Ubuntu (username is "saasbook" and password is "saasbook")
5. This screencast (or "2.1.1_getting started" video) explains how to set up, boot and log in to the VM.
6. Make sure you have network access by opening the Firefox browser (icon located along left screen edge when VM is running) and visiting a popular site such as Google.com. Here is troubleshooting information if you have networking issues.
7. Highly recommended: enable Shared Folders and Copy/Paste, which allows you to view and edit files residing in the VM image using an editor on your host computer and to copy and paste text between the VM and your host computer (For this to work, you need to install VM Guest Additions):
   - In VirtualBox, choose Devices > Insert Guest Additions CD image…
     On the popup window click *Run* button, after that give the password (saasbook) and click on the *Authenticate* button.
   - In VirtualBox, choose Devices > Shared Clipboard > Bidirectional
     This will allow you to do copy and paste between your host computer and the virtual machine. However, if you're copying from or pasting to a terminal window within the VM then you should use Ctrl+Shift-C, Ctrl+Shift-V instead of the more usual Ctrl-C and Ctrl-V

FYI A typical work session using the VirtualBox VM

1. Start VirtualBox, select the "*yourname*SDM2015" VM, and click the Start button.
2. Do your work.
3. When you're ready to quit, select Close from the VirtualBox Machine menu. You have three choices of what to do with your VM state.
   1. *Save virtual machine state* means the next time you resume, the VM will be exactly as you left it, like standby/resume on your host computer.
   2. *Send shutdown signal* will shut down the VM's (guest) OS in an orderly way; your changes will be saved, but the next time you restart the VM, any programs that were running *in the VM* will have been shut down. This is like using the shutdown command in the table of "useful VM commands" above.
   3. *Power off* is like pulling the plug on the VM, and there is a risk that some data may be lost. This option is not recommended except as a last resort if the other options don't work. This is like using the reboot -q command in the table below.

A note on VirtualBox VM networking
VirtualBox uses network address translation (NAT) by default, giving your VM a 10.0.0.* address that is routable from your host computer but not from the outside world. VirtualBox offers other networking options if this doesn't work in your setup.
If your host computer is connected to the Internet, your VM will be too. However, if you suspend (sleep) your host computer and then wake it up on a different physical network (for example, sleep your computer at work, then travel home and wake it up there), you will need to restart the VM's networking subsystem or networking will appear to be broken. The table of useful VM commands below shows how to do this. If the network restart doesn't work, reboot your VM.

Useful commands while working with the VM
The VM's root (administrator) password is saasbook - you will need to supply it when doing certain administration tasks, such as any command line that begins with sudo.

sudo /etc/init.d networking restart	Restart VM networking when host computer is suspended and then resumed on a different network. (Not applicable if using EC2)
sudo /sbin/reboot	Reboot VM gracefully
sudo /sbin/reboot -q	Reboot VM forcibly (if gracefully doesn't work)
sudo /sbin/shutdown	Shut down VM gracefully (add -q for forcefully, if gracefully doesn't work)

Check that the installation is correct

1. Open a Terminal window in Ubuntu
2. In the terminal window, at the shell prompt switch from your home directory to the rottenpotatoes directory (where the code files for the rotten potatoes app are) use the command
   cd Documents/rottenpotatoes
3. Start the http server (this will hold the console and you cannot use it anymore, if you want to stop you can do CTRL+C)
   rails server
4. Using a browser in Ubuntu (e.g. Firefox) check if the application can be accessed using the URL http://localhost:3000/ and you should be able to see the rotten potatoes application running
5. Add a new movie to the rotten potatoes database "Minions". Look up the other details on the rotten tomatoes web site and enter these into the rotten potatoes application through the web interface.

You will need to create a free Github account for version control and a free Heroku account for a Platform as a Service (PaaS) cloud deployment of your SaaS. Create these two accounts from the corresponding websites now, remembering your logins!