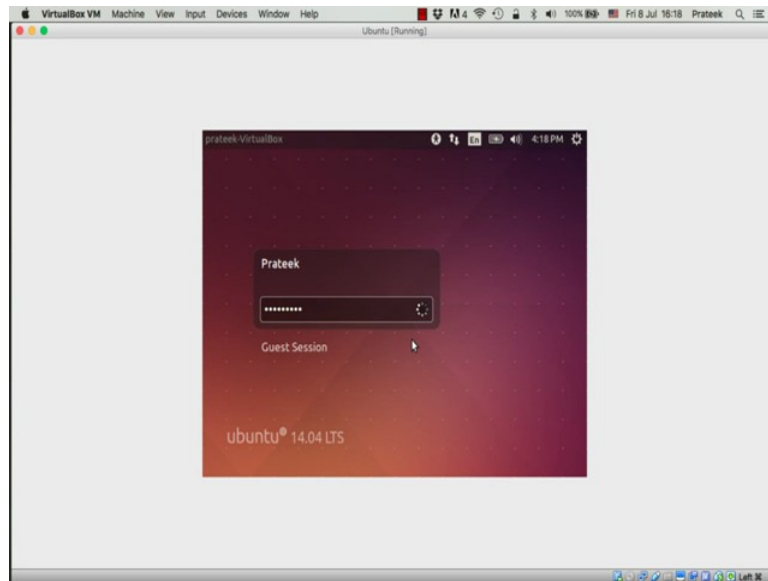


Privacy and Security in Online Social Networks
Department of Computer Science and Engineering
Indian Institute of Technology, Madras

Lecture – 05
Tutorial 1 Part 2 Python

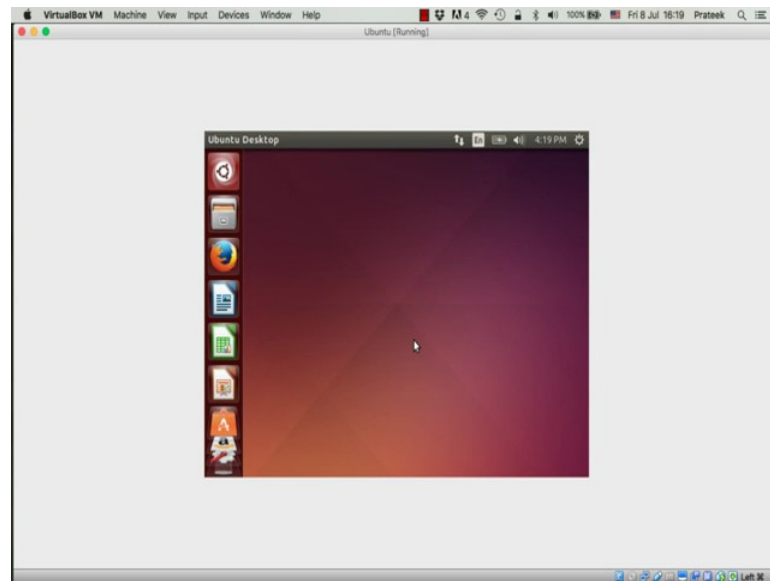
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Hi everyone. In the last **video** we learnt how to install Linux on our systems. We installed Ubuntu 14.04 desktop edition in a virtual environment. So, now in this video, we will start off from where we left in the last part.

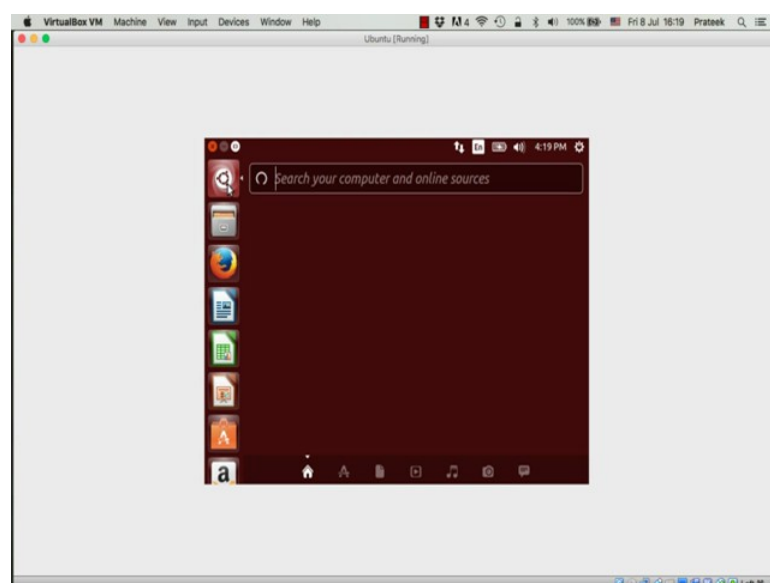
In this video, we will learn how to use the terminal, and see how to run python on Ubuntu. So, after you have completed the installation process of Ubuntu, and restarted your system, you will reach this login screen. This login screen will have a user account that you created, and a guest session. So, just put in the password that you created at the time of installing Ubuntu, and press enter to login. Now, since it is the first time that you **are logging** into your new virtual machine, it will take a few seconds before the desktop loads. So, this is how the Ubuntu desktop looks like.

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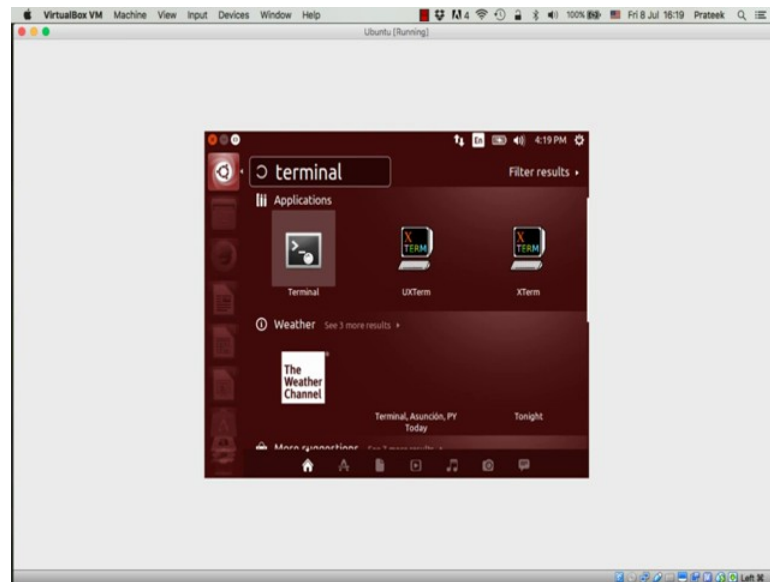
You can see a bunch of icons in the left hand side column. They are some applications that are preinstalled in Ubuntu. So, first, we will see how to reach the terminal. Take the mouse pointer to the left top, the first icon in the bunch of icons in the left column, and click on the first icon.

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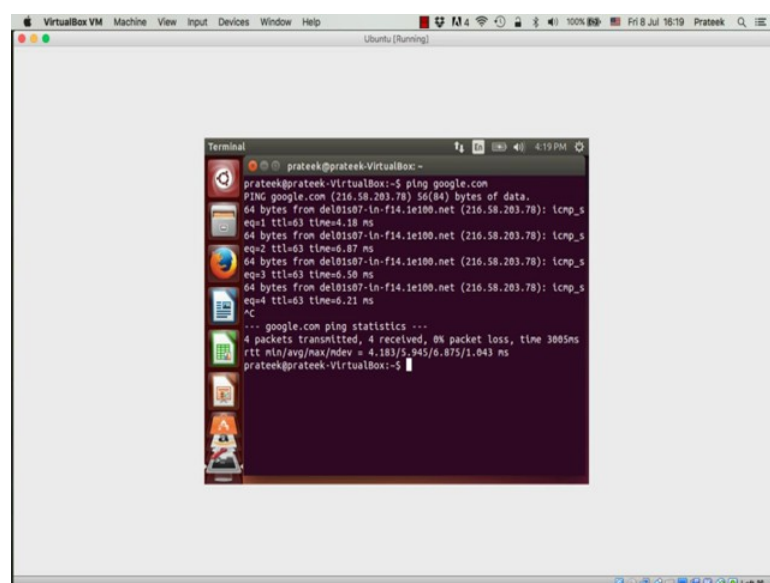
This will open a search area where you can search for applications, or anything, in your virtual machine. Now, here type in terminal, and you should see the terminal app.

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Left click on the app to open the terminal.

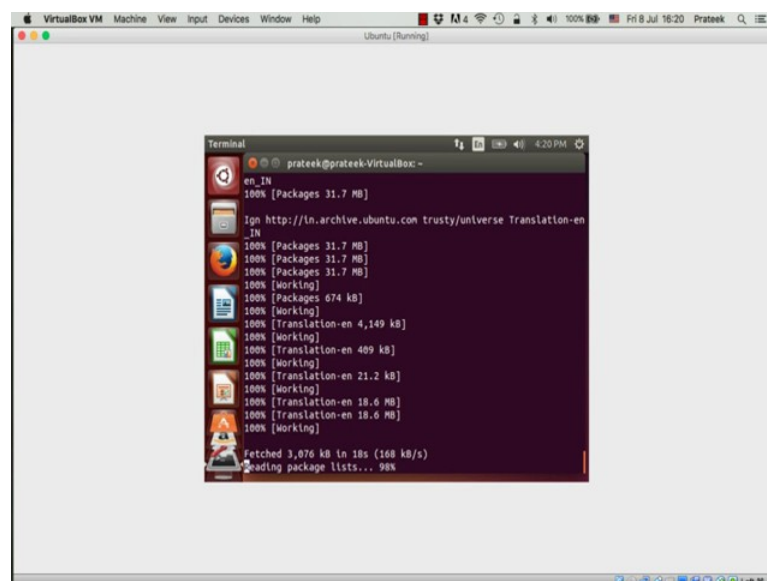
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The terminal is a command line interface for Ubuntu, and it is very similar to MSDOS for windows. But, it is very different than MSDOS, in terms of the commands and functions that it supports, and in many ways, is much more powerful than MSDOS. So, first, let us verify if the internet is working on this virtual machine. You type ping space Google dot com, and press enter.

Now, if you see such replies, you know that, the internet is working. Press control c to stop pinging. If you see some other error messages, like request timed out, or destination host unreachable, that means that, the internet is not working on this virtual machine. Please refer to the previous video, to check the settings of this virtual machine, and make sure that, you have configured the virtual machine in a way that the internet works. Now, an important thing to do with a fresh installation of Ubuntu is to update the list of packages that are available for installation on this operating system.

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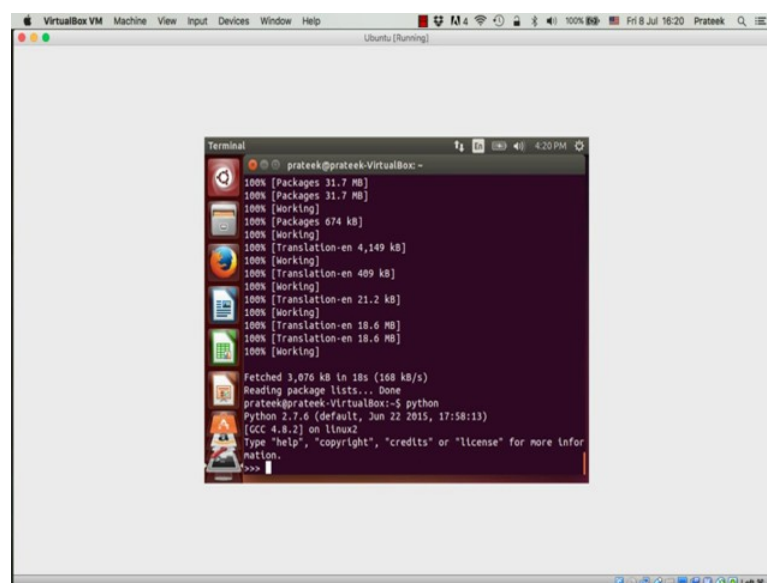


This can be done by running the sudo apt get update command on the terminal. Now, this is a system level operation; so, only a super user, or a user with administrative rights, can execute this command. This is why we add sudo before executing most apt get commands. Sudo is short for super user do. Now, it will ask you for your account

password. So, apt get is a command line package management tool for Ubuntu, which is used to install, remove, and manage software packages.

When you type update with apt get, it instructs this package manager to download a list of all the latest software packages, and their latest available versions, from the internet. You can see a list of URLs here on the screen, from where the apt get is downloading the latest list of packages. These URLs are online software repositories, which maintain the list of latest software packages available for various versions of Ubuntu. Now, we do not need to go into more details for the purpose of this course; once the apt get update operation is complete, let us get started with python. Now, python comes preinstalled with most versions of Ubuntu.

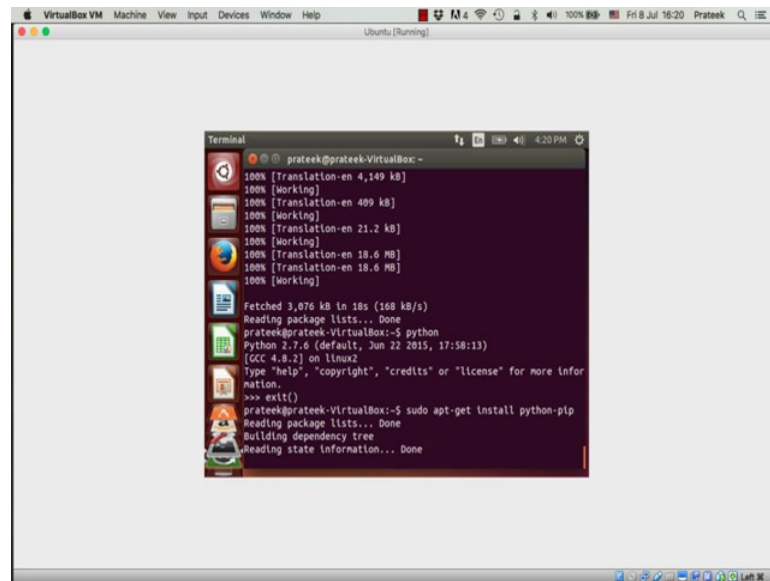
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A screenshot of a VirtualBox VM window titled 'prateek@prateek-VirtualBox'. Inside the VM, a terminal window is open showing the output of an 'apt-get update' command. The terminal displays progress for various packages and translations, all at 100% completion. The output includes package sizes (e.g., 31.7 MB, 674 kB) and translation sizes (e.g., 4,149 kB, 409 kB, 21.2 kB, 18.6 MB). It also shows 'Fetched 3,076 kB in 18s (168 kB/s)' and 'Reading package lists... Done'. At the bottom, it indicates 'Python 2.7.6 (default, Jun 22 2015, 17:58:13) [GCC 4.8.2] on linux2' and provides instructions on how to get help, copyright, credits, or license information.

```
prateek@prateek-VirtualBox:~$ apt-get update
100% [Packages 31.7 MB]
100% [Packages 31.7 MB]
100% [Working]
100% [Packages 674 kB]
100% [Working]
100% [Translation-en 4,149 kB]
100% [Working]
100% [Translation-en 409 kB]
100% [Working]
100% [Translation-en 21.2 kB]
100% [Working]
100% [Translation-en 18.6 MB]
100% [Translation-en 18.6 MB]
100% [Working]
Fetched 3,076 kB in 18s (168 kB/s)
Reading package lists... Done
prateek@prateek-VirtualBox:~$ python
Python 2.7.6 (default, Jun 22 2015, 17:58:13)
[GCC 4.8.2] on linux2
Type "help", "copyright", "credits" or "license()" for more
In [ ]: >>>
```

You can enter the python shell by simply typing in python in the terminal, and pressing enter. So, we can see here that, python version 2.7.6 is installed. So, before we start working with python, let us install a package manager for python, so that, we can install and manage new python packages easily.

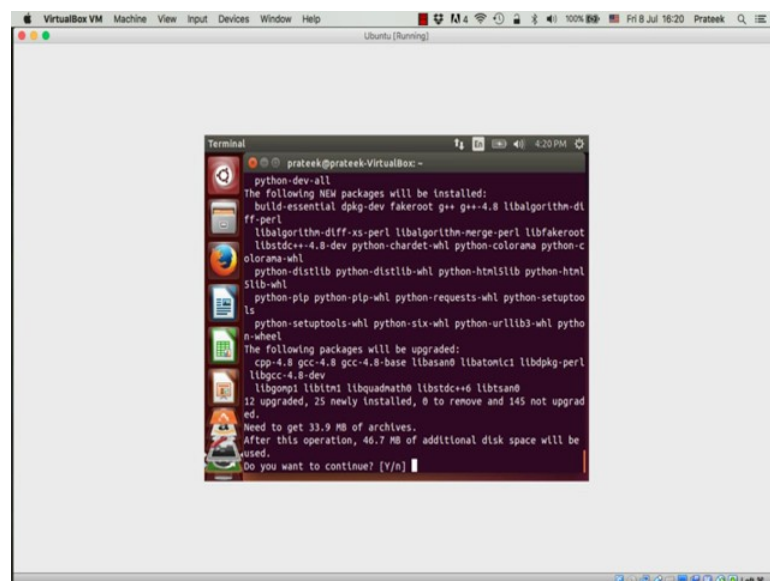
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```
prateek@prateek-VirtualBox:~$ python
Python 2.7.6 (default, Jun 22 2015, 17:58:13)
[GCC 4.8.2] on linux2
Type "help", "copyright", "credits" or "license()" for more
>>> exit()
prateek@prateek-VirtualBox:~$ sudo apt-get install python-pip
Reading package lists... Done
Building dependency tree
Reading state information... Done
```

Exit the python shell, and type ‘sudo apt get install python hyphen pip’. Now, this command instructs the apt get package manager to download and install the package name python hyphen pip.

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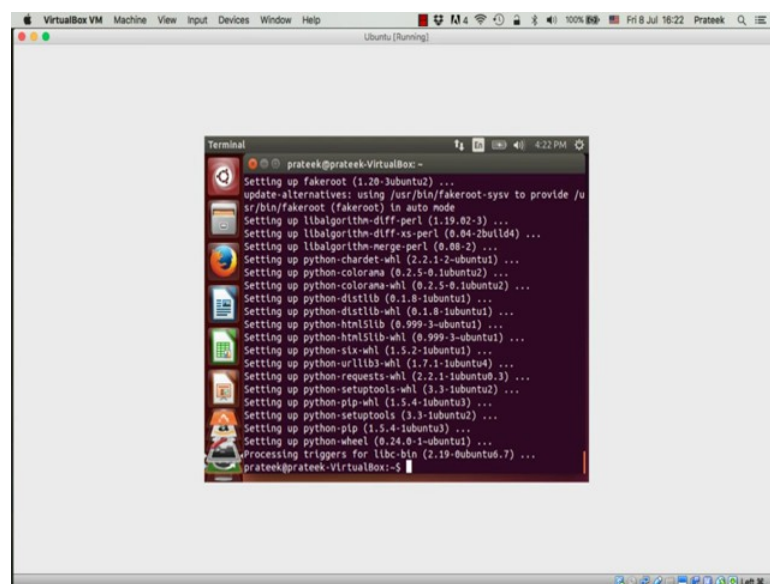


```
prateek@prateek-VirtualBox:~$ sudo apt-get install python-pip
python-dev-all
The following NEW packages will be installed:
build-essential dpkg-dev fakeroot g++ g++-4.8 libalgorithm-diff-perl
libalgorithm-diff-xs-perl libalgorithm-merge-perl libfakeroot
libstdc++-4.8-dev python-chardet-whl python-colorama python-c
olorama-whl
python-distlib python-distlib-whl python-html5lib python-html
5lib-whl
python-pip python-pip-whl python-requests-whl python-setuptools
python-setuptools-whl python-six-whl python-urllib3-whl python
-wheel
The following packages will be upgraded:
cpp-4.8 gcc-4.8 gcc-4.8-base libasan0 libatomic1 libdpkg-perl
libgcc-4.8-dev
libgomp1 libitm1 libquadmath0 libstdc++6 libtsan0
12 upgraded, 25 newly installed, 0 to remove and 145 not upgrad
ed.
Need to get 33.9 MB of archives.
After this operation, 46.7 MB of additional disk space will be
used.
Do you want to continue? [Y/n]
```

Now, we just updated the list of repositories. So, apt get will install the latest available version of python pip. So, as you can see here, apt get automatically finds out all the dependencies for this new package, and gathers a list of all the packages that would need to be installed, or upgraded, to successfully install python pip. This makes installing and managing packages extremely convenient.

And, this is one of the prime reasons that we are using Ubuntu. You do not have to worry about any version mismatches, or any unmet dependencies, or any missing modules, etcetera. It also tells you the amount of additional disk space that will be used, after the installation is complete. Now, press y and enter to continue.

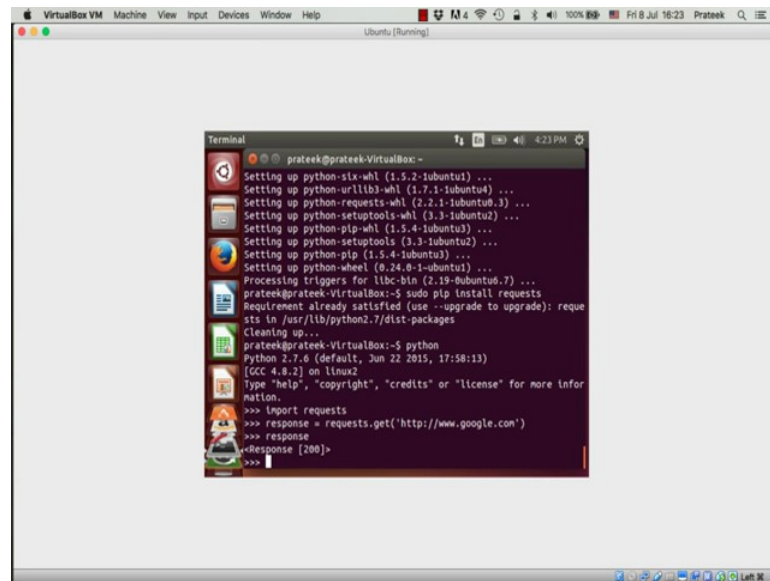
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```
prateek@prateek-VirtualBox:~$ apt-get install python-pip
Setting up fakeroot (1.20-3ubuntu2) ...
update-alternatives: using /usr/bin/fakeroot-sysv to provide /u
sr/bin/fakeroot (fakeroot) in auto mode
Setting up libalgorithm-diff-perl (1.19.02-3) ...
Setting up libalgorithm-diff-xs-perl (0.04-2build4) ...
Setting up libalgorithm-merge-perl (0.08-2) ...
Setting up python-chardet-whl (2.2.1-2-ubuntu1) ...
Setting up python-colorama (0.2.5-0.1ubuntu2) ...
Setting up python-distro (0.1.0-1ubuntu1) ...
Setting up python-distlib (0.1.0-1ubuntu1) ...
Setting up python-html5lib (0.999-3-ubuntu1) ...
Setting up python-html5lib-whl (0.999-3-ubuntu1) ...
Setting up python-six-whl (1.5.2-1ubuntu1) ...
Setting up python-urllib3-whl (1.7.1-1ubuntu4) ...
Setting up python-requests-whl (2.2.1-1ubuntu0.3) ...
Setting up python-setuptools-whl (3.3-1ubuntu2) ...
Setting up python-pip-whl (1.5.4-1ubuntu3) ...
Setting up python-setuptools (3.3-1ubuntu2) ...
Setting up python-pip (1.5.4-1ubuntu3) ...
Setting up python-wheel (0.24.0-1-ubuntu1) ...
Processing triggers for libc-bin (2.19-0ubuntu6.7) ...
prateek@prateek-VirtualBox:~$
```

Now, just like apt get is used to install and manage packages for Ubuntu, pip is used to install and manage packages for python. So, just like we used apt get install to install packages for Ubuntu, we can use pip install to install packages for python.

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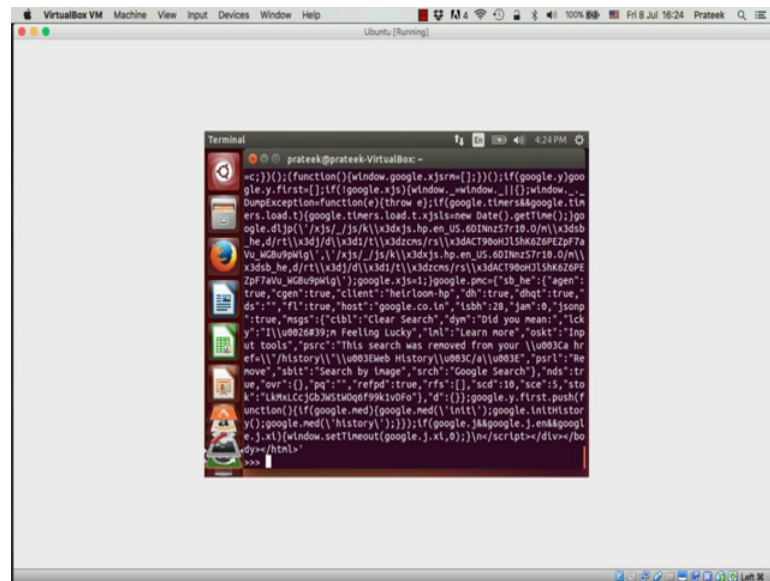
A screenshot of a VirtualBox VM window titled 'prateek@prateek-VirtualBox'. The terminal window shows the following commands and output:

```
prateek@prateek-VirtualBox:~$ sudo pip install requests
Requirement already satisfied (use --upgrade to upgrade): requests in /usr/lib/python2.7/dist-packages
Cleaning up...
prateek@prateek-VirtualBox:~$ python
Python 2.7.6 (default, Jun 22 2015, 17:58:13)
[GCC 4.8.2] on linux2
Type "help", "copyright", "credits" or "license()" for more
>>> import requests
>>> response = requests.get('http://www.google.com')
>>> response
<Response [200]>
```

Now, let us try to install a package using pip. Now, similar to apt get, we type sudo pip install package name; let us say, requests. Now, a request is http library for python. We will use this package to send get requests to some of the social network APIs in the next tutorial. So, it looks like, it is already installed here. So, let us just go to the python shell, and try out this library. Type python in the terminal and press enter. Now, to use any library, we will have to import it first. So, we write import requests, and press enter. This is very similar to the hash include statements in C or C++ programming.

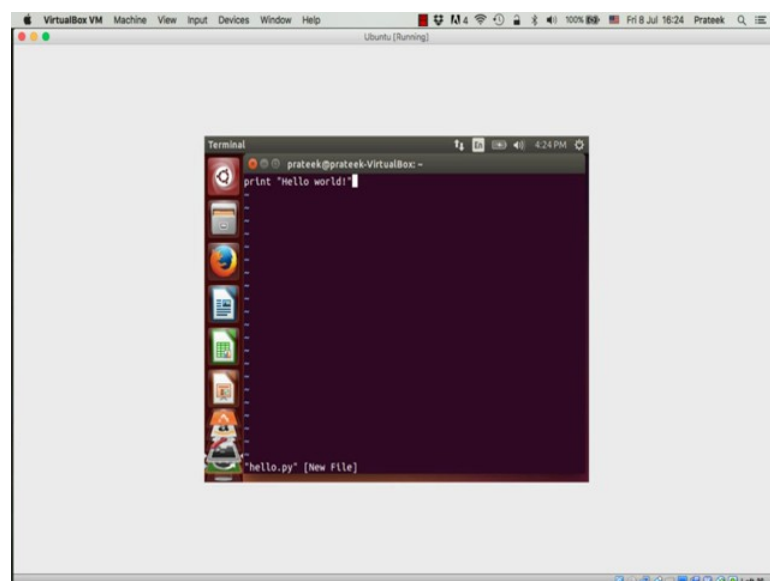
Now, let us start by a sending a get request to Google dot com. This is essentially the same thing that your internet browser does, when you open Google, or any other website, in your browser. It sends a get request to the website, receives a response, and displays it. Now, we are doing the same thing in python. So, we write response equal to requests dot get Google dot com, and press enter. Now, you should type response and press enter; you see this response object with the code 200. Now, 200 is the http code for an OK response. It means that, we were successfully able to send the request and get a response.

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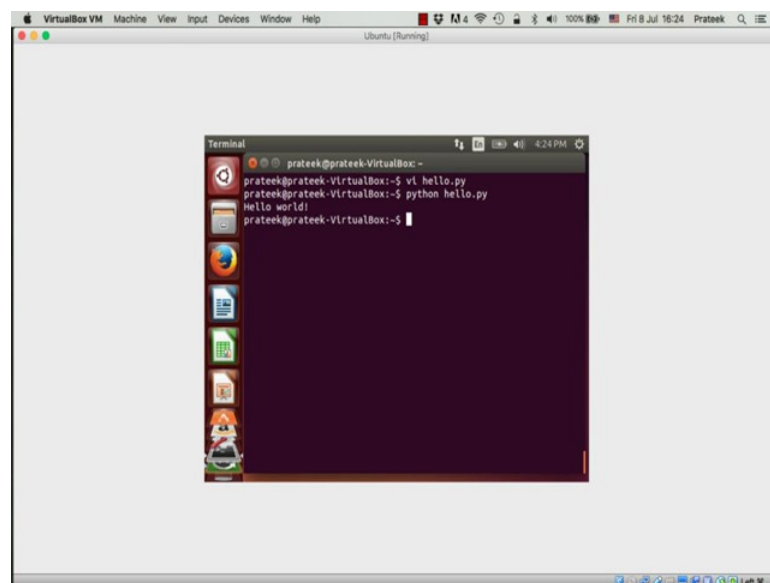
Now, to see the text part of this response, we type response dot text, and press enter. This is the HTML source code of google.com. You get the same response when you open Google in your browser; but, the browser is capable of understanding this HTML code, and showing it as a pretty looking web page that you see, OK.

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Let us get out of the python shell, and write a python code in a script, or a file, which you can reuse; because you cannot program in the shell forever; because, as soon as you exit the shell you just lose all your code. So, now, let us open a new python script file, and name, and call it, hello dot py. I will be using the vi editor to write this script, but you can use any text editor you like. So, let us write the customary hello world program. This is just very easy; you just type print 'hello world' in the file, and save it.

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A screenshot of a VirtualBox VM window titled 'VirtualBox VM'. Inside the VM, there is a terminal window titled 'Terminal' with a dark background. The terminal shows the following commands and output:

```
prateek@prateek-VirtualBox:~$ vi hello.py
prateek@prateek-VirtualBox:~$ python hello.py
Hello world!
prateek@prateek-VirtualBox:~$
```

The terminal window is open on a desktop environment with various icons on the left side. The VirtualBox window has a menu bar with 'Machine', 'View', 'Input', 'Devices', 'Window', and 'Help'. The status bar at the bottom shows 'Ubuntu (Running)' and 'Prateek'.

To execute the python script, just write python space hello dot py, and press enter, and there you have it; you have the first hello world program in python. Now, this is all for this tutorial. This tutorial was just a getting started kit for Ubuntu and python.

In the next tutorial, we learn how to collect data from Facebook, using the graph API. If you have any questions, or comments, please post them on the NPTEL discussion forum. We will be happy to assist you with any doubts or clarification or help.

Thanks.