Today, we are going to talk about Python and Jupyter Notebooks. This will be the first of a few hands on sessions discussing the basics of data science leading up to analyzing our own honeypot data.

We will start by learning what Jupyter Notebooks are and how to get started with them, and then we will fill in the blanks on a pre-made notebook to learn the basics of Python.

1   Jupyter Notebooks

Jupyter is a web application that allows us to mix code, text, and images into a single, dynamic document, called a "Notebook". From a data scientist's point of view, Jupyter Notebooks are useful since they allow us to execute code in segments. This becomes important when working with large amounts of data. We can execute long-running parts of our code, such as loading in our data set, only once and then make changes to our analysis code very quickly.

1.1   Installing Jupyter

To install Jupyter Notebooks to our system, we are going to use Python's package manager "pip". Pip works in a very similar way to the Linux package manager, apt, that we talked about last week. However, we must first install pip using the following command:

```
wse380@wse380−Virtualbox:~$ sudo apt install python3−pip
```

Notice how we specify that we want to install the Python3 version of pip. Python currently has two major versions in use: 2 and 3. At the end of this year, support for Python2 is going to stop so it is important to use Python3. Thus, when we try to install a package using pip, we must make sure we are using the Python3 version, pip3. Use the following command to install Jupyter for Python3:

```
wse380@wse380−Virtualbox:~$ sudo pip3 install jupyter
```

We use the "install" command with the package name "jupyter" to install the latest version. Attempting to run jupyter from the command line should display a help message, signifying a successful install.

```
wse380@wse380−Virtualbox:~$ jupyter
usage: jupyter [−h] [−−version] [−−config−dir] [−−data−dir] [−−runtime−dir]
               [−−paths] [−−json]
               [subcommand]
```

1.2   Creating and Opening a Jupyter Notebook

Now that we have successfully installed Jupyter to our computers, we can start it up to create or open an existing notebook. When we start Jupyter, it will use the current directory as it's project directory. Therefore, we want to first create a new directory so we can keep all of our notebooks and data together. We will use a couple of the commands we learned last week to do so:

```
wse380@wse380−Virtualbox:~$ mkdir notebooks
wse380@wse380−Virtualbox:~$ cd notebooks
```

Here, we simply created a new directory called "notebooks" with the mkdir command, and changed our current directory to it. Our last step before starting Jupyter would be to place any notebooks we already have and would like to edit into this directory. Once we have done that, we can start Jupyter with the following command:

```
wse380@wse380−Virtualbox:~$ jupyter notebook
```

As you can see, running this command opens a new tab in your default web browser. This page displays your current directory. If you placed an existing notebook here before starting, you can open it by clicking on its name. Otherwise, you can create a new notebook using the "Create" button the top right, and then selecting "Python 3" as the type of notebook. Either of these options will open the notebook in a new browser tab.