**Environment (Saturn Cloud) Overview, Jupyter Notebook Walkthrough**

[00:00:00.48] [MUSIC PLAYING]

[00:00:07.63] RYAN AHMED: Hello, everyone, and welcome to this lesson. In this lesson, I'm going to provide you with an overview of the Practical Skills module outline, and then I'm going to show you a walk through our Jupyter Notebooks. And these are the notebooks that we are going to use to run Python code.

[00:00:26.29] So the Practical Skills module on Python Programming Fundamentals starts with the CFA Institute's candidate code of conduct, and then we cover key learning outcomes, environment setup, and Jupyter Notebook walkthrough, and then we cover the frequently asked questions. Afterwards, the Practical Skills module contains five units. In the first unit, we cover Python Programming Fundamentals, part one. So we cover the variable assignments, math operations, data types, and then we cover the print operation and how to get user input.

[00:01:03.01] Afterwards, in unit number 2, we're going to cover Python Programming Fundamentals, part two. Those include Python lists, dictionaries, strings, comparison operators, and conditional statements. Next, in unit 3, we're going to cover Python Programming Fundamentals, part three. So we'll learn about for loops, Python range function, why loops, and then we're going to cover how to define your own custom-built functions in Python. And then we'll learn about Python built-in functions.

[00:01:37.92] Afterwards, in unit 4, we're going to cover data wrangling and analysis with Pandas. First, we're going to cover what do you mean by Pandas, how to handle missing data with Pandas. And then we'll learn about dataframe filtering and sorting. And then we're going to cover Pandas data frames and functions, and then we'll learn how to perform Pandas data frames concatenation and merging. And then finally, we'll learn how to get financial market data.

[00:02:08.71] Afterwards, in unit 5, we're going to have our final capstone project. So we'll learn how to calculate percentage daily returns, how to analyze individual stocks, how to analyze portfolios as well, to learn how to visualize various stocks using various Python libraries. We'll learn how to do portfolio weights generation, how to perform asset allocation. And then, finally, we'll learn how to run Monte Carlo simulations and perform portfolio optimization.

[00:02:39.79] All right. Next, I would like to give you a quick introduction to Jupyter Notebooks. The Jupyter Notebooks are interactive computational environments that empower developers to create and share code, text, equations, and visualizations in one place. Here is a link to Jupyter home page. So if you click on this link here, that is going to open Jupyter homepage. And then if you scroll down, I wanted to show you what Jupyter Notebooks look like.

[00:03:09.70] So this is what Jupyter Notebooks looks like. As I mentioned, you can include text data here. You can also include equations as well. You can also write your code here in Python or other programming language. You can also see the output that is generated after you run or execute your code. So Jupyter Notebooks offer various features. First, you can use it to support over 40 programming languages. Of course, this Practical Skills module is only going to focus on Python programming language, but if you'd like to code in R or any other programming language, you can also use Jupyter Notebooks.

[00:03:50.06] Notebooks can also be shared with others using email, dropbox, or Github. Again, that's the power of Jupyter Notebooks. You can include everything you need in one place and easily share it with other people. Next, your code can produce rich interactive outputs. So you can include images, videos, HTML. And you can also leverage Jupyter Notebooks if you'd like to do big data integration. You can leverage big data tools such as Apache Spark from Python, R, or Scala as well.

[00:04:24.10] All right. So let me show you how you can launch Jupyter Notebooks in our Practical Skills module. But before I do that, I would like to highlight two important information. The first one is that this Practical Skills module is designed so students can learn by doing. Every lesson has its own practice opportunity associated with it. And then here, you will find the practice opportunity solution lecture. So I strongly recommend that you attempt to solve the practice opportunity first on your own, and then you can compare your answers to mine afterwards.

[00:04:59.41] The second point that I would like to elaborate on is that you won't be able to proceed, let's say, from unit 2 to unit 3 before you watch all the video lectures and then complete the knowledge check or the quiz at the end of the unit. So after you do that, then you will find unit 3, for example, will be unlocked for you, and you will be able to access it.

[00:05:23.86] OK. So let me show you a quick example. Let's assume that I would like to study Python dictionaries as an example. So if you click on lesson 2.2 here, see that first, we start with a quick introduction to the lesson, what are the key learning objectives that we are going to cover in this lesson. And then [AUDIO OUT] lecture here. So I strongly recommend that you go ahead and watch the video lecture.

[00:05:49.68] You have the option to download a transcript of that video in a Microsoft Word document format. And then afterwards, here's the practice opportunity that I'm referring to. In order for you to launch this practice opportunity, you need to go ahead and click here on this link. That is going to direct you to the Jupyter Notebook associated with that lesson. Please note that this might take a minute or so for the Jupyter notebook to start, so please just practice some patience with it.

[00:06:20.02] And here we go. So you will find the Jupyter Notebook for Python dictionaries, as an example. And that's what Jupyter Notebooks look like. As I mentioned, you can include everything you need in one place. So here, I have the course slides embedded in the Jupyter Notebook. You can also see here we have the code cell as well. So all of these are code cells.

[00:06:44.14] And you can see here the practice opportunity. So in order for you to solve the practice opportunity or write your own code, you would need to write your code here. And then afterwards, you can simply compare your answers to the solution that I included at the end of the notebook here. And, of course, you can go ahead and watch the video lecture associated with it.

[00:07:07.36] And that's it. That's all I have for this video. I hope you enjoyed it, and see you in the next video.

[00:07:12.76] [MUSIC PLAYING]