**Python Coding – Key Notes**

**1. Scripts vs. Programs**

* A **script** in Python is like the **dialogue** in a theater script—specific instructions written for the computer to follow.
* A **program** is like the full theater **performance**, involving various design elements (lighting, costumes, stage setup)—it includes structure, logic, and user interaction.
* Programming combines design and logic, while scripting focuses on writing specific instructions.

**2. Comments in Python**

* Begin with a **hash symbol (#)**.
* Used to **explain the purpose** of the code.
* Comments are **ignored by the computer** during execution but are helpful for humans reading the code.

**3. Writing Your First Line of Code**

* Use the **print()** function to output text to the screen.
* Example:
* print("Hello Python!")
* Quotation marks (" ") are used to enclose **string data** (text).

**4. Syntax in Python**

* **Syntax** refers to the **rules** of the language (like grammar in English).
* Example rules:
  + Strings must be inside **quotes**
  + Statements like print() must use **parentheses**

**5. Running Python Code**

* When the syntax is correct, the code **runs without errors** and produces the expected output.
* In this case, Hello Python! is shown on the screen.

**6. Moving Forward**

* Now that you’ve seen how to **write, explain, and run basic Python code**, you’re ready to explore its **core components** (like variables, data types, and more).

**Python environments**

You can run Python through a variety of environments. These environments include notebooks, integrated development environments (IDEs), and the command line. This reading will introduce you to these environments. It will focus primarily on notebooks because this is how you'll interact with Python in this course.

**Notebooks**

One way to write Python code is through a notebook. In this course, you'll interact with Python through notebooks. A **notebook** is an online interface for writing, storing, and running code. They also allow you to document information about the code. Notebook content either appears in a code cell or markdown cell.

**Code cells**

Code cells are meant for writing and running code. A notebook provides a mechanism for running these code cells. Often, this is a play button located within the cell. When you run the code, its output appears after the code.

**Markdown cells**

Markdown cells are meant for describing the code. They allow you to format text in the markdown language. Markdown language is used for formatting plain text in text editors and code editors. For example, you might indicate that text should be in a certain header style.

**Common notebook environments**

Two common notebook environments are [Jupyter Notebook](https://jupyter.org/about)

and [Google Colaboratory](https://colab.sandbox.google.com/)

(or Google Colab). They allow you to run several programming languages, including Python.

**Integrated development environments (IDEs)**

Another option for writing Python code is through an **integrated development environment (IDE),** or a software application for writing code that provides editing assistance and error correction tools. Integrated development environments include a graphical user interface (GUI) that provides programmers with a variety of options to customize and build their programs.

**Command line**

The command line is another environment that allows you to run Python programs. Previously, you learned that a **command-line interface (CLI)** is a text-based user interface that uses commands to interact with the computer. By entering commands into the command line, you can access all files and directories saved on your hard drive, including files containing Python code you want to run. You can also use the command line to open a file editor and create a new Python file.

**Key takeaways**

Security analysts can access Python through a variety of environments, including notebooks, integrated development environments, and the command line. In this course, you'll use notebooks, which are online interfaces for interacting with code. Notebooks contain code cells for writing and running code as well as markdown cells for plain text descriptions.