Understanding how Python works

In today’s assignment we will be covering the underlying infrastructure required to make Python work on our workstations or computers. First, let’s pickup from the course notes and understand what pieces we need to start programming.

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| Typing  Workstation  Keyboard  Source Code  **IDE**  Executes on  **Interpreter**  Python  (Optionally)    Gives input to  Compiles  to  **Compiler**  C  Runs  on  **Virtual Machine**  Byte Code  Interpreter  *The basic requirements to run a Python program* |

Python is made up of two components: the **language**, and the **interpreter**. It is important you understand the terminology since when you eventually start to find errors you need to be able to understand in which of the two components the error is occurring. To get a grasp of the system's setup take a look at the diagram above. Let’s break down what's going on step by step.

1. When we write code using our workstation’s keyboard. This is what we call Source code, and it typed into a text editor called an integrated development environment. We will be using Jupyter Notebooks hosted by Anaconda.
2. When we execute our code it is sent to the interpreter which interpreters what the code means. It also allows us to give any input to the program that was not in the source code.
3. The interpreter then converts the source code to a byte-code capable language, in Python’s case this is the C programming language.
4. The byte code is then sent to a byte code interpreter, which for Python is a virtual machine. This then runs the code on the computer and we can observe the output the program gives.

This entire process may seem daunting but luckily the Anaconda platform will do all the heavy lifting for us by installing all the components automatically. When the time comes where we actually write and run code, it’s as simple as pressing a “run code” button without giving it any further thought. Though being aware of the entire process is important.

Installation

Follow the instructions in the lecture notes and install the Anaconda platform. By following the default installation options these components will also be installed:

* Jupyter Notebooks
* Jupyter Lab
* Python 3.9
* Pip
* 3rd party modules like numpy and pandas

# Remember!

During the Anaconda installation, you need to enable “Add Anaconda3 to my PATH environment variable” under Advanced Settings

Text

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Otherwise you will not be able to run Python in the terminal!