MODULE 1

PYTHON PROGRAMMING FUNDAMENTALS

MODULE OVERVIEW

In this module, you will learn about the different concepts under Python Programming and what are the reasons why you should learn Python. Furthermore, you will also know how to implement and install Python Application and Interpreter.

MODULE LEARNING OBJECTIVES

By the end of this module, you should be able to:

- Know the different concepts of Python.
- Distinguish the reasons why you should learn python.
- Implement python environment.
- Install and run Python IDE on your workstation.

LEARNING CONTENTS

Introduction

1.1 What is Python?

Python is a popular programming language. It was created by Guido van Rossum and released in 1991. It is used for web development (server-side), software development, mathematics, and system scripting. Python code mirrors the syntax of all high-level programming languages which computers are unable to understand English language. Codes for The Python code we create must be interpreted by a specialized application called Python interpreter which we need before we can code, test, and execute our Python scripts.

1.2 Why Learn Python?

There are many high-level programming languages out there, such as Java, C, and C++. The good news is that all programming is high level. There are many similarities across languages. The main difference is the syntax, the available libraries, and how we use those libraries. Simply, a library is a collection of materials and ready-made codes that we can employ when we write our programs. If you are proficient in one language, you are capable of quickly picking up a new language in comparison to the time it took you to learn the language of origin.

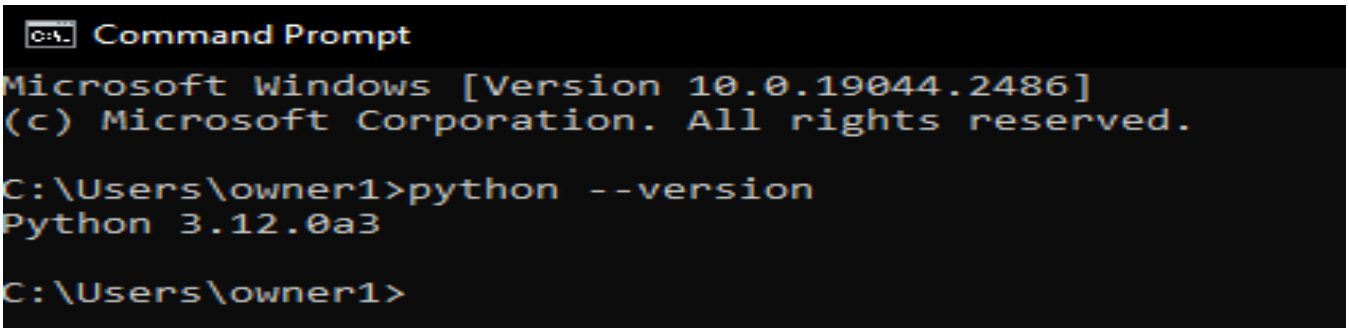
Python is a wonderful programming language to learn if you're just getting started. One of the key features of this language is its simplicity, making it the ideal language for beginners to learn. Compared to other languages like C, most Python programs execute the same task with significantly less lines of code. As a result, there are fewer programming errors, and less time is required for development.

Additionally, Python includes a large selection of outside resources that enhance its functionality.

As a result, Python may be applied to a wide range of tasks, including the creation of desktop applications, database applications, network programs, games, and even mobile applications. Finally, Python is a cross-platform language, which means that programs created for one operating system, like Windows, will run without modification on Mac OS or Linux.

1.3 Implementation of Python Environment

Before we can write our first Python program, we must download the appropriate interpreter for our computers or laptops. Numerous computers will have python already installed on them. To check if you have python installed on a Windows PC, search in the start bar for Python or run the following on the Command Line (cmd.exe):

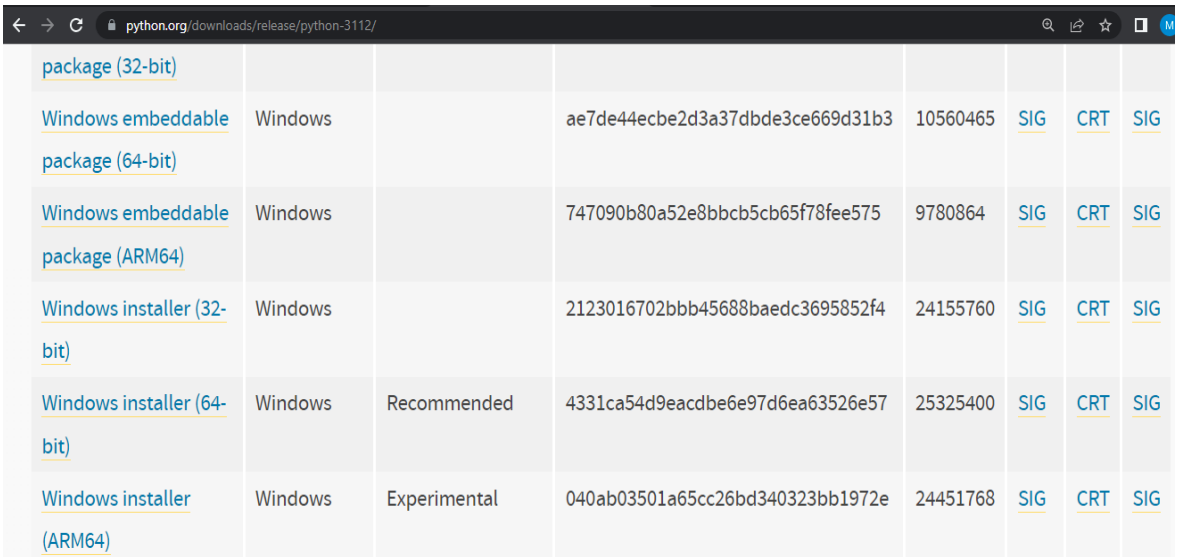


1.3.1 Downloading Python

When you do that and python is already installed, you should get the current version of your python. If not, you can download it for free from the following website: https://www.python.org/downloads/ and follow these steps.

1. **Click** on "Download Python 3.11.2"

2. **Scroll down** towards the end of the page and you'll see a table listing various installers for that version.



package (32-bit)							
Windows embeddable package (64-bit)	Windows		ae7de44ecbe2d3a37dbde3ce669d31b3	10560465	SIG	CRT	SIG
Windows embeddable package (ARM64)	Windows		747090b80a52e8bbcb5cb65f78fee575	9780864	SIG	CRT	SIG
Windows installer (32-bit)	Windows		2123016702bbb45688baedc3695852f4	24155760	SIG	CRT	SIG
Windows installer (64-bit)	Windows	Recommended	4331ca54d9eacdbe6e97d6ea63526e57	25325400	SIG	CRT	SIG
Windows installer (ARM64)	Windows	Experimental	040ab03501a65cc26bd340323bb1972e	24451768	SIG	CRT	SIG

Choose the correct installer for your computer. The installer to use depends on two factors:
1. The operating system (Windows, Mac OS, or Linux) and
2. The processor (32-bit or 64-bit) that you are using.

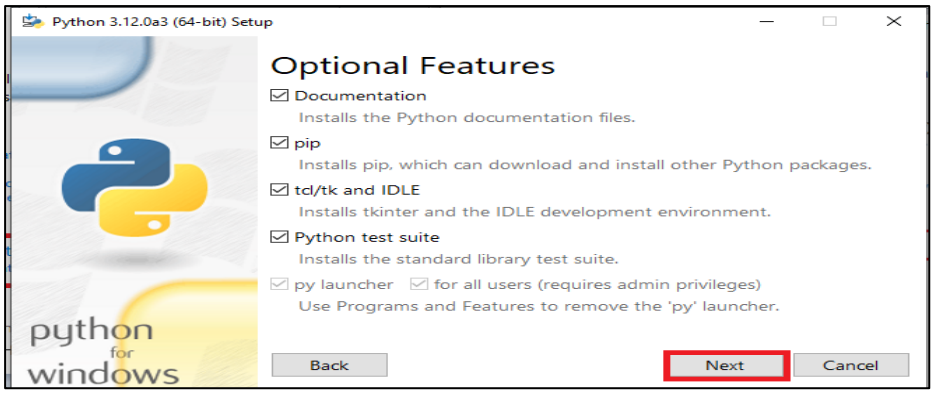
To download it, simply click the provided link. No concerns if you download and launch the incorrect installer. The interpreter won't be installed, and you'll receive an error message. You only need to download the appropriate installer, and you're ready to start. Python coding can begin as soon as the interpreter has been successfully installed.

1.3.2 Installing Python

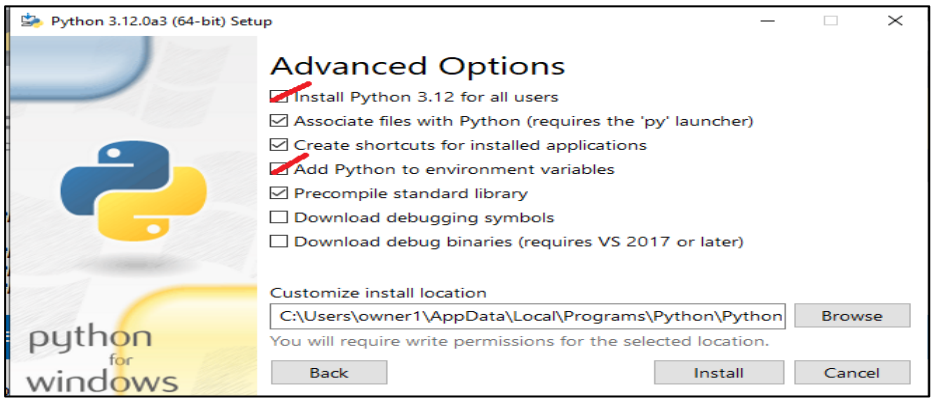
To install the downloaded .exe file of Python, you should follow these steps.

Step 1 *Check on "Add python.exe to PATH" then select "Customize installation".*

Step 2 *Click on Next.*

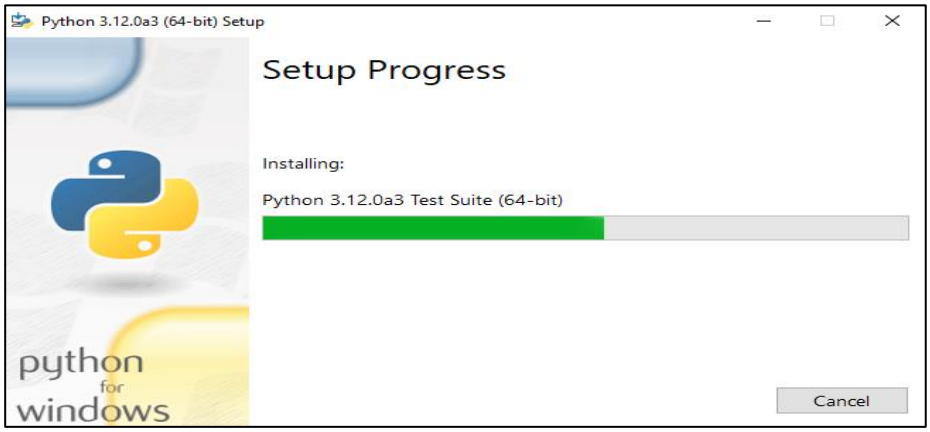


Step 3 *Check on "Install Python 3.12 for all users" and "Add Python to environment variables" then, click install.*



Step 4 *A dialogue box will appear, click "Yes".*

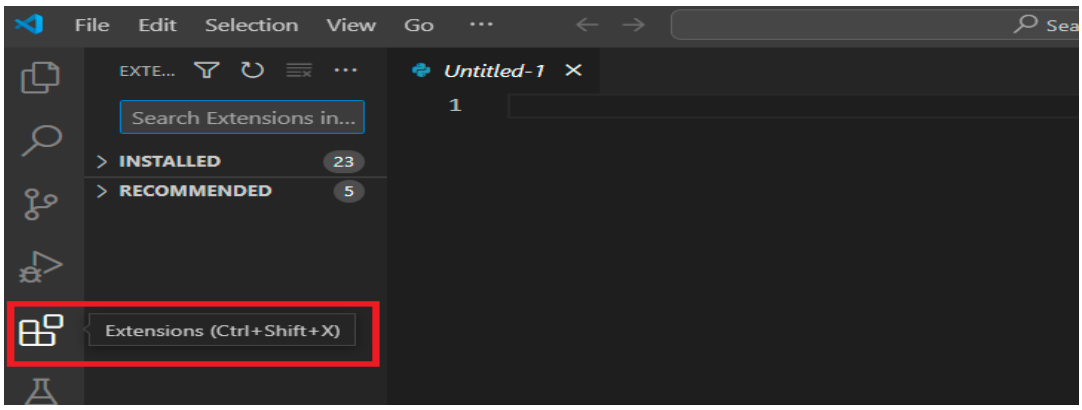
Step 5 *Wait for the installation. Once done, click "Close".*



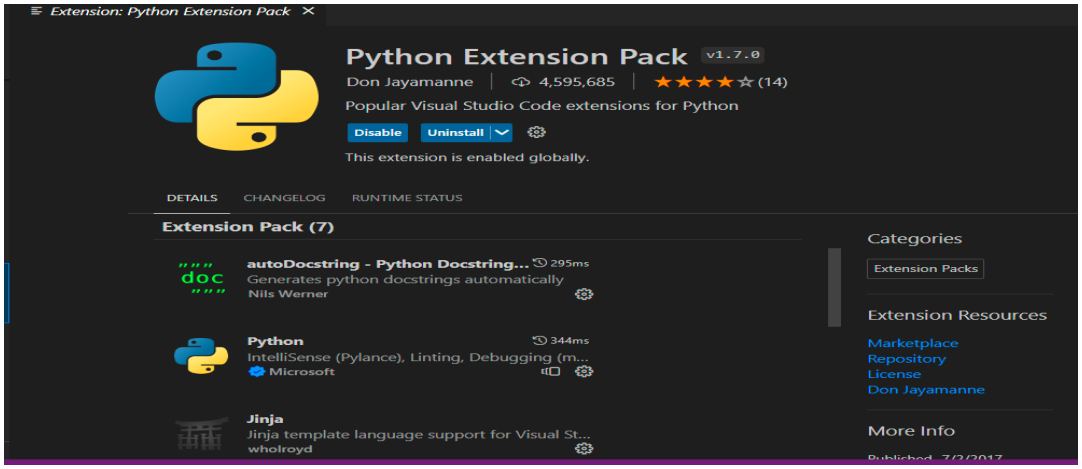
You can run Command Prompt again to check if it's successfully installed. Just type *python --version*, then you should get the current python version installed on your computer.

You can also use Visual Studio Code in writing our Python code but, you need to install a python extension to do so. Just follow the steps below:

Step 1 *On your VSCode, go to extensions as shown below.*

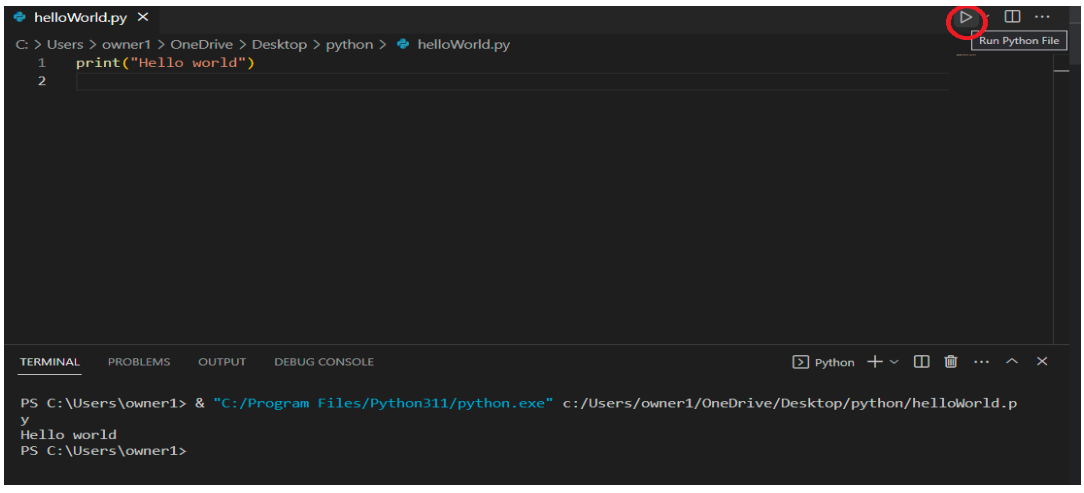


Step 2 *Search on "Python Extension Pack v1.7.0" and install it.*



Step 3 *Wait for it to be installed and you are done installing.*

Step 4 *Now you can create a python file (.py) and run it on VSCode by pressing F5 or the button on the upper right part as shown below.*



The good thing when using VSCode is that it has its own terminal where the output of the programs is displayed.

You can also install these extensions for better coding.

Python v2023.2.0

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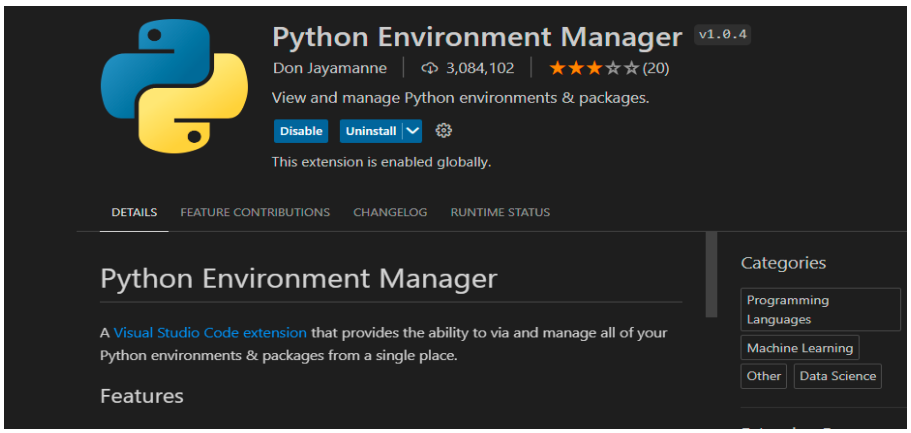

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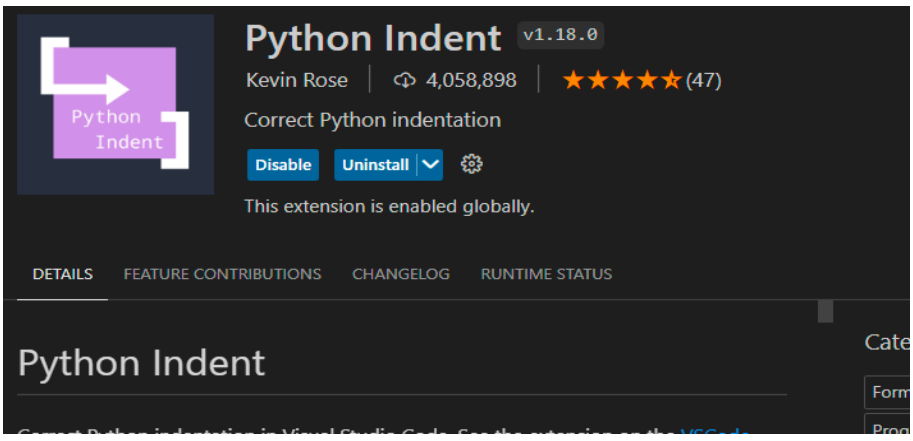

REFERENCES

https://www.w3schools.com/python/

https://www.freecodecamp.org/news/how-to-setup-virtual-environments-in-python/