Python Programming

Python is a widely used high-level programming language that has gained popularity over the years. It is a general-purpose programming language used for web development, data analysis, artificial intelligence, and scientific computing. Let's explore!

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What is Python?

Not a Snake 🙆‍♀️

Python is not a poisonous snake but a programming language that is easy to learn and understand.

Flexible 🐍

Python is flexible and can be applied in numerous fields including web development, scientific computing, and artificial intelligence.

Easy to Learn 👦

Python is a beginner-friendly programming language and is easy to learn and understand.

Why Learn Python?

① Industry Demands 💻

Python is in high demand in the tech industry due to its versatility and use in a variety of fields like web development, machine learning, data analysis, and more.

② Easy-To-Understand Syntax 🤓

The syntax of Python is clear and easy to understand compared to other programming languages. This makes it easy to learn.

③ Robust Libraries 📚

Python comes with numerous libraries that simplify complex programming tasks and make it easier to program applications quickly.

④ Community Support 👨‍👩‍👧

The Python community is welcoming and passionate, providing a wealth of resources from which learners can benefit.

Basic Syntax and Data Types

1 —— **Variables**

Variables hold the value or data for later use. Variables can be assigned to different datatypes like int, float, string, and others.

Operators —— **2**

Operators are symbols that help in performing operations on values and variables. Operators can be arithmetic, assignment, or comparison.

3 —— **Control Flow**

The control flow in Python manages the order in which the statements are executed. It includes conditional statements such as if, elif, and else, as well as loops such as while and for.

Control Flow and Loops

If Statements

If statements allow for execution of different code based on whether a condition is true or false. This is also known as conditional branching.

Loops

Python supports two types of loops: for loops and while loops. Loops allow you to run a block of code repeatedly.

Exception Handling

Exception handling is a way to handle runtime errors. It prevents the program from crashing when an error occurs and provides a way to handle it gracefully.

Functions and Modules

1 — **Functions**

Functions are reusable pieces of code that perform a specific task. You can pass arguments to a function when calling it and return values when it's finished executing.
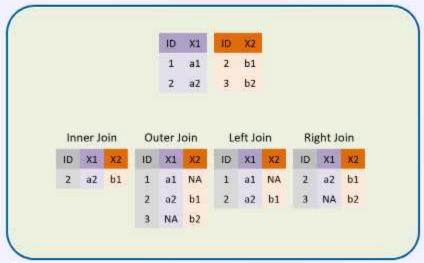
Modules — **2**

Modules are Python files that contain statements and definitions. You can import a module to use its functions, classes, or variables.

3 — **Libraries**

Python comes with a vast array of built-in libraries. You can also install third-party libraries that simplify complex programming tasks and make it easier to program applications quickly.

File Handling and Manipulation

File Handling in Python

Files

Open and Close Files

In Python, you can open a file using the built-in `open()` function to read, write, or append to it. Make sure you close the file after you are finished with it.

ID	X1		ID	X2
1	a1		2	b1
2	a2		3	b2

Inner Join			Outer Join			Left Join			Right Join		
ID	X1	X2	ID	X1	X2	ID	X1	X2	ID	X1	X2
2	a2	b1	1	a1	NA	1	a1	NA	2	a2	b1
			2	a2	b1	2	a2	b1	3	NA	b2
			3	NA	b2						

Merge and Join Files

In Python, you can join two or more files to create a new file using the `shutil` module. You can also merge data from multiple files in Python using the pandas library.

Advanced Topics and Real-World Applications

Data Analysis 📊

Python has numerous libraries for data analysis, such as Pandas, Numpy, and Matplotlib. These libraries aid in data cleansing, manipulation, visualization and presentation.

Web Development 🌐

Python is widely used in web development frameworks such as Django and Flask. These frameworks are used to develop dynamic and interactive web applications.

Artificial Intelligence 🤖

Python is a powerful language in the field of Artificial Intelligence and Machine Learning. Python libraries like SciPy, Scikit-Learn and TensorFlow enable developers to build AI models more rapidly.