

What is Python?

- Python is a simple, easy to use , high level programming language that was developed by Guido Van Rossum in the year 1991.
- Python was named after a famous BBC comedy show . **Monty's Python Flying Circus.**

Advantages/Characteristics of Python:

- It is an object oriented programming language which means its concepts are relatable to real life entities.
- It is a cross platform language which means python codes remain same over different operating systems.
- It is an open source programming language which means python is free to use , copy, modify as well as redistribute. It can be freely downloaded from the internet.
- Python uses interpreter to convert program into machine level language.
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Compiler	Interpreter
It Scans the entire program in one go and generates the corresponding machine code	It Scans only one line of the program at a time and generates the corresponding machine code
It shows all the errors and warnings at the same time	It shows only one error at a time
Debugging is slow	Debugging is fast
Execution is fast	Execution is slow
Used by languages such as C,C++, Java etc	Used by languages such as Python, Java etc.

Applications of python:

Python is a versatile programming language with many applications, including:

- **Machine learning and artificial intelligence:** Python is a good choice for AI and machine learning projects because it's stable, flexible, and simple.
- **Data analysis:** Python can collect, manipulate, and organize data.
- **Automation:** Python can automate repetitive tasks, such as working with files and folders.
- **Web development:** Python can be used to develop web applications.
- **Game development:** Python can be used for tasks like linking C and C++ modules.
- **Desktop applications:** Python can be used to develop complex desktop software systems.
- **Business applications:** Python can be used to generate reports, interact with business databases, and more.
- **Data analytics:** Python can be used for data analytics, which is a fast growing field.

Modes of working in Python

In Python, the primary modes of working are interactive mode where you type commands directly and get immediate results, and script mode where you write code in a text file (with a .py extension) and run the entire file as a program; essentially, interactive mode is for testing individual lines of code, while script mode is for executing larger, structured programs.

Key points about the two modes:

Interactive Mode:

- Access by opening the Python interpreter directly.
- Useful for quick testing, exploring syntax, or calculating simple values.
- Each line of code is executed as you type it.

Script Mode:

- Used to write the entire code in a file with a ".py" extension.
- Run the entire file from beginning to end using the Python interpreter.
- Suitable for larger projects and complex logic.