## **Python Introduction**

## **What is Programming?**

### **Programming is a way for us to tell computers what to do. Computer is a very dumb machine and it only does what we tell it to do. Hence we learn programming and tell computers to do what we are very slow at - computation.**

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## **What is Python?**

### **Python is a dynamically typed, general purpose programming language that supports an object-oriented programming approach as well as a functional programming approach.**

### **Python is an interpreted and high-level programming language.**

### **It was created by Guido Van Rossum in 1989.**

### **It is used in business and accounting to perform complex mathematical operations along with quantitative and qualitative analysis.**

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### **Python History**

Introduce the history and evolution of the Python programming language

* **Introduction to Guido van Rossum:** Python was created by Guido van Rossum in the late 1980s and released in 1991.
* **Origin of the Name:** Named after Monty Python's Flying Circus, a British comedy group.
* **Python 2 vs. Python 3:** Discuss the transition from Python 2 to Python 3, highlighting the major differences.
* **Community and Growth**: Python has a vibrant and supportive community of developers worldwide.
* **Usage in Industry:** Python is widely used in various domains such as web development, data science, artificial intelligence, and more.

### **Python Features**

Explore the key features and characteristics of the Python programming language.

* **Simple and Readable Syntax:** Python emphasizes readability and simplicity, making it easy to learn and understand.
* **Interpreted and Dynamic Typing:** Python is an interpreted language with dynamic typing, enabling rapid development and prototyping.
* **Multi-paradigm:** Supports multiple programming paradigms including procedural, object-oriented, and functional programming.
* **Extensive Standard Library**: Python has a rich set of libraries and modules for various tasks.
* **Platform Independent:** Python code is portable across different platforms like Windows, macOS, and Linux.
* **Open Source and Community-driven**: Python is open-source, with an active community contributing to its development and improvement.

### **Python Applications**

Discuss Python's diverse applications and use cases in various industries.

* **Web Development:** Frameworks like Django and Flask are popular for building web applications.
* **Data Science and Machine Learning:** Python is widely used in data analysis, machine learning, and AI due to libraries like NumPy, Pandas, and TensorFlow.
* **Scripting and Automation:** Python is commonly used for scripting and automation tasks due to its simplicity and versatility.
* **Scientific Computing:** Python is used in scientific computing for simulations, modeling, and visualization.
* **Game Development**: Python is utilised in game development, often for scripting and prototyping.

## **Features of Python**

### **Python is simple and easy to understand.**

### **It is Interpreted and platform-independent which makes debugging very easy.**

### **Python is an open-source programming language.**

### **Python provides huge library support. Some of the popular libraries include NumPy, Tensorflow, Selenium, OpenCV, etc.**

### **It is possible to integrate other programming languages within Python.**

## **What is Python used for**

### **Python is used in Data Visualization to create plots and graphical representations.**

### **Python helps in Data Analytics to analyze and understand raw data for insights and trends.**

### **It is used in AI and Machine Learning to simulate human behavior and to learn from past data without hard coding.**

### **It is used to create web applications.**

### **It can be used to handle databases.**

### **Python Installation and Environment Setup**

Guide viewers through installing Python and setting up their development environment.

* **Downloading Python:** Visit the official Python website (python.org) to download the latest version of Python for your operating system.
* **Installation:** Run the installer and follow the on-screen instructions to install Python.
* **Setting up PATH:** During installation, ensure that Python is added to the system PATH to enable running Python from the command line.
* **IDE Options:** Introduce different IDEs such as PyCharm, VSCode, and Jupyter Notebook for Python development.

### **Writing Your First Program in Python**

Demonstrate how to write and execute a simple Python program.

* **Using an IDE:** Open your preferred IDE (e.g., PyCharm, VSCode).
* **Creating a New File:** Create a new Python file with a .py extension.
* **Writing the Program:** Write a simple "Hello, World!" program or another introductory example.
* **Running the Program**: Execute the program within the IDE or from the command line using the Python command.

Introduction Reference

[Learn Python Tutorial | Python Programming Language - javatpoint](https://www.javatpoint.com/python-tutorial)