Introduction of python

what is python

- *High-Level and Interpreted:* Python is a high-level language, meaning it abstracts complex details of the computer's hardware, and it's interpreted, which allows for dynamic execution of code without needing compilation.
- *Readable and Concise Syntax:* Designed for readability, Python's syntax emphasizes simplicity and clarity, which helps developers write code that is easy to understand and maintain.
- *Versatile and Extensible:* Python supports various programming paradigms (procedural, object-oriented, and functional), and has a rich set of libraries and frameworks for diverse applications, from web development to data science.

  ###History of python *Python, created by Guido van Rossum and released in 1991, began as a simple, readable programming language and has grown into a widely used language with major updates, including Python 3.0 in 2008, which improved its features and performance.

  #Features of pthon

1. *Readable Syntax:* Python's clear and easy-to-read syntax makes it accessible for beginners and helps with code maintenance.
2. *Dynamic Typing:* Variables in Python do not require explicit type declarations; their types are determined at runtime.
3. *Extensive Libraries:* Python comes with a large standard library and has a vast collection of third-party libraries for various applications.
4. *Versatile:* Supports multiple programming paradigms, including procedural, object-oriented, and functional programming.
5. *Interpreted Language:* Python code is executed line-by-line, which makes it easier to test and debug.

Applications of pthon

- *Web Development:* Building websites and web applications using frameworks like Django and Flask.
- *Data Analysis:* Analyzing and visualizing data with libraries such as Pandas and Matplotlib.

- *Automation:* Creating scripts to automate repetitive tasks and workflows.
- *Artificial Intelligence:* Developing machine learning models and AI applications using libraries like TensorFlow and scikit-learn.
- *Software Development:* Creating desktop applications and tools with libraries like Tkinter and PyQt.

Advantages of python

- *Easy to Learn and Use:* Python's straightforward syntax and readability make it accessible for beginners and efficient for experienced developers.
- *Versatile and Powerful:* It supports various programming paradigms and is used in diverse fields like web development, data analysis, and AI.
- *Large Ecosystem:* Python has a vast collection of libraries and frameworks, along with strong community support, which accelerates development and problem-solving.

Disadvantages of python

- *Performance:* Python can be slower than compiled languages like C++ or Java due to its interpreted nature and dynamic typing.
- *Memory Consumption:* Python's dynamic typing and garbage collection can lead to higher memory usage compared to some lower-level languages.
- *Mobile Development:* Python is less commonly used for mobile app development, where languages like Swift for iOS and Kotlin for Android are more prevalent.

Python First Program

```
print ("Hello,World!")
```

```
Hello,World!
```

The following program displays [Hello, World!] on the screen

Coments in python

In Python, comments are used to explain or annotate code. They are ignored by the interpreter and have no effect on program execution. There are two main types of comments:

1. *Single-Line Comments:* These start with a # symbol. Everything following # on that line is a comment. python

   # This is a single-line comment
   print("Hello, world!") # This comment is inline with code

2. *Multi-Line Comments:* Although Python does not have a specific syntax for multi-line comments, you can use triple quotes to create multi-line strings that are not assigned to any variable, effectively acting as multi-line comments. python

   #This is a multi-line comment that spans multiple lines.

   print("Hello, world!")

keywords in python

- Keywords in Python are reserved words that define the language's syntax and structure and cannot be used as variable names.
- There are total 35 keywords in python.

```
import keyword
# List of all keywords
print(keyword.kwlist)
# Print the total number of keywords
print("Total number of keywords:", len(keyword.kwlist))
```

```
['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await',
'break', 'class', 'continue', 'def', 'del', 'elif', 'else', 'except',
'finally', 'for', 'from', 'global', 'if', 'import', 'in', 'is',
'lambda', 'nonlocal', 'not', 'or', 'pass', 'raise', 'return', 'try',
'while', 'with', 'yield']
Total number of keywords: 35
```