**PYTHON ASSIGNMENT**

**Fundamentals Of Python Language**

**Q1. Introduction to Python and its Features (simple, high-level, interpreted language).**

Ans. **Python** is a popular, interpreted, high-level programming language created by **Guido van Rossum** and released in **1991**. It is known for its **simplicity**, **readability**, and **versatility**, making it a great choice for both beginners and professionals.

KEY FEATURES :-

1. Simple and Easy to Learn
2. High-level language
3. Interpreted language
4. Dynamically typed
5. Object-Oriented and Functional

**Q2. History and evolution of Python.**

Ans. Python was created by Guido van Rossum in year 1991

History of PYTHON:

* **Late 1980s**: Guido van Rossum began working on Python as a hobby project to create a successor to the ABC language.
* **1991**: First official release — **Python 0.9.0**. It included classes, functions, exceptions, and core data types.
* **1994**: **Python 1.0** released, adding lambda, map, filter, and reduce.
* **2000**: **Python 2.0** launched with list comprehensions and garbage collection via reference counting.
* **2008**: **Python 3.0** released — a major update that broke backward compatibility to fix long-standing design flaws.

Evolution of PYTHON:

**Python 2.x** : Widely adopted, but had some design issues. Python 2.7 was the final release, with official support ending in **2020**.

**Python 3.x** : Ongoing improvements in performance, typing, async programming, and standard libraries.

* **Python 3.5** : Introduced async/await.
* **Python 3.6–3.9**: Added f-strings, dataclasses, and performance boosts.
* **Python 3.10** : Introduced pattern matching.
* **Python 3.11** : Big speed improvements.
* **Python 3.12** : Continued refinement, speed, and modern features.

**Q3. Advantages of using Python over other programming** **languages.**

Ans:

* Python is easy to read and write — it looks almost like plain English.
* Ideal for beginners and boosts productivity for pros.
* Write code once and run it on any OS (Windows, macOS, Linux) with little or no modification.
* Supports object-oriented, procedural, and functional programming
* Used in web development, data science, AI/ML, automation, game dev, and more.
* Web: Django, Flask
* Data Science: NumPy, pandas, matplotlib
* AI/ML: TensorFlow, PyTorch, scikit-learn
* Automation: Selenium, PyAutoGUI

**Q4. Installing Python and setting up the development environment (Anaconda, PyCharm, or VS Code).**

Ans: **Step 1: Install Python**

**Install from Official Website**

1. Go to: <https://www.python.org/downloads/>
2. Download the latest version (Python 3.x).
3. Run the installer.

**Step 2: Install Anaconda (for Data Science / ML / Easy Package Management)**

**How to Install:**

1. Download: https://www.anaconda.com/products/distribution
2. Install and follow on-screen instructions.
3. Open **Anaconda Navigator** or use the **Anaconda Prompt** to manage environments.

**Step 3: Choose an IDLE**

**Option A: PyCharm**

* Download: <https://www.jetbrains.com/pycharm/>
* Choose **Community Free** or **Professional** version.
* During setup, associate .py files and enable path environment settings.

**Option B: VS Code**

* Download: <https://code.visualstudio.com/>
* Install Python extension:  
  Open VS Code → Go to Extensions (Ctrl+Shift+X) → Search for **"Python"** → Install

Q5. Writing and executing your first Python program

Ans.

**Step 1: Write Your First Python Program in Idle**

**print("Hello, Python!")**

**Step 2: Save the File**

**Save the file with .py extention**

**Step 3: Run the Program**

**With use of f5 key you can run your program.**