Introduction to Python

What is Python?
Python is a high-level, interpreted, and general-purpose programming language.
It is known for its simplicity and readability, making it one of the most popular programming
languages in the world.
Python supports multiple programming paradigms including object-oriented, procedural, and
functional programming.

Applications of Python:
1. Web Development (using frameworks like Django, Flask)
2. Data Science and Machine Learning (using libraries like NumPy, pandas, scikit-learn)
3. Artificial Intelligence and Deep Learning (TensorFlow, PyTorch)
4. Automation and Scripting (automating repetitive tasks)
5. Game Development (using libraries like Pygame)
6. Desktop Applications (Tkinter, PyQt)
7. Networking and Cybersecurity
8. Internet of Things (IoT)

Advantages of Python:
1. Easy to learn and use with simple syntax.
2. Large standard library and active community support.
3. Cross-platform compatibility (runs on Windows, Mac, Linux, etc.).
4. Supports integration with other languages like C, C++, and Java.
5. Rich ecosystem for data science, AI, and web development.

Disadvantages of Python:
1. Slower execution speed compared to compiled languages like C++ or Java.
2. Not suitable for mobile app development.
3. Consumes more memory than some other languages.
4. Dynamic typing can lead to runtime errors if not handled carefully.

Summary:
Python is a versatile and beginner-friendly language with wide applications across various fields.
Despite some limitations, its advantages and popularity make it one of the most powerful tools for
modern software development.