1. What is Python and why is it called an interpreted language?

Python is a high-level, versatile programming language known for its clear syntax and readability, making it suitable for both beginners and professionals. It is called an interpreted language because Python code is executed line-by-line by an interpreter at runtime, rather than being compiled into machine code beforehand.

2. Key features of Python for beginners and professionals

Simple and easy-to-read syntax

Huge standard library and active community support

Platform independence (can run on various operating systems)

Dynamically typed (no need to declare variable types)

Supports multiple programming paradigms (object-oriented, procedural, functional)

Integration capabilities with other languages and tools

Extensive use in data science, machine learning, web development, and scripting

3. Difference between Python 2 and Python 3

Feature	Python 2	Python 3
Release Year	2000	2008
Print statement	print "Hello"	print("Hello")
Division	7/2 = 3 (integer division)	7/2 = 3.5 (float division)
Strings	ASCII by default	Unicode by default
xrange/range	xrange() exists	Only range(), more memory-efficient
Library support	No longer maintained	Actively maintained
Exception syntax	except Exception, e	except Exception as e
Backwards compat.	Code not compatible with Python 3	Not backwards compatible

4. Python's applications in real-world projects

Web development (Django, Flask)

Data analysis and visualization (Pandas, Matplotlib)

Machine learning and AI (scikit-learn, TensorFlow)

Scripting and automation

Desktop application development

Game development

Network programming

Scientific and numeric computing

5. What is PEP 8 and why is it important?
PEP 8 is the official style guide for Python code. It provides conventions for writing readable and consistent Python programs. Following PEP 8 enhances code quality, readability, and maintainability, which is especially important in collaborative projects.

6. Who developed Python and when was it released?
Python was developed by Guido van Rossum, and it was first released in 1991.

7. What does "dynamically typed" mean in Python?
Dynamically typed means that Python determines the type of a variable at runtime, not in advance. You do not need to explicitly declare variable types, and a variable can hold different types of values during program execution.

8. Compiler vs Interpreter: What does Python use?

A compiler translates the entire code to machine language before execution, producing an executable file.

An interpreter reads and executes the code line-by-line at runtime.

Python uses an interpreter, which means it executes code directly and allows for interactive programming and immediate error detection