30/10/2025

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

→ Python is a high-level, general purpose programming language known for its simplicity and readability. It is called an interpreted language because Python code is executed line by line by an interpreter (not compiled directly into machine code). This allows for quick testing & debugging but can be slightly slower than compiled languages like C or C++.

2) What are the key features of python that make it popular for beginners and professionals?

- Simple and easy to learn - Python's syntax is close to English.
- Interpreted and dynamically typed - No need to compile or declare variable types.
- Extensive libraries - Rich standard library and third party modules (NumPy, Pandas, TensorFlow, etc.).
- object-oriented and procedural - supports multiple programming paradigms.
- Cross-platform - Works on Windows, macOS, Linux, etc.
- Strong community support → Huge global community and resources.

- Integration capabilities - Easily integrates with C, C++, Java, & other languages.

3.) What is the difference between Python 2 and Python 3 ?

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Feature	Python 2	Python 3
Print Statement	Print "Hello"	Print("Hello")
Integer Division	5/2 = 2	5/2 = 2.5
Unicode Support	Limited	Default (All strings are Unicode)
Development	Discontinued (after 2020)	Actively maintained
Syntax & Libraries	Old syntax, many libraries deprecated	Modern syntax, new library support

4) What are Python's application in real-world projects?

→ Python is widely used in various fields such as :

- Web Development - Django, Flask, FastAPI
- Data Science & Machine Learning - Numpy, Pandas, TensorFlow, Scikit-learn
- Automation & Scripting - Automating repetitive tasks.
- Game Development - Pygame

- Cybersecurity - Ethical hacking tools & scripts
- Desktop Applications - Tkinter, PyQt
- IOT & Embedded Systems - Raspberry Pi. projects
- Cloud & DevOps - AWS, Azure automation scripts.

5) What is PEP 8 and why is it important in Python programming?

→ PEP 8 (Python Enhancement Proposal 8) is the official style guide for writing clean and readable Python code.

It defines conventions for :

- Naming variables, functions, and classes.
- Indentation and spacing
- Line length
- Import order and organization.

Importance :

Following PEP 8 ensures code consistency, readability & team collaboration in Python projects.

6) Who developed Python & in which year was it released?

→ Python was developed by Guido van Rossum in the late 1980s, and it was officially released in 1991.

He designed Python to emphasize code readabili

and simplicity.

7) What do you mean by "dynamically typed" in Python?

→ Python is dynamically typed, meaning you don't need to declare variable types explicitly. The interpreter automatically determines the data type at runtime.

eg: x = 10 # integer
x = "Hello" #now a string

Hence the same variable x changes its type dynamically during execution.

8) What is the difference between a compiler and an interpreter, and which does Python use?

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Aspect	Compiler	Interpreter
Execution	Translates entire code at once	Execute code line by line
Speed	Faster (runs compiled machine code)	Slower (interprets each line)
Error detection	Shows all errors after compilation	Stops at first error
Languages	C, C++	Python, Javascript, Ruby.

Python uses an Interpreter - specifically the CPython interpreter, which executes code line by line.