02/11/25

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

Python is a high-level, general-purpose programming language known for its simple syntax and readability.

Python is called an interpreted language because it executes code line by line, instead of converting the entire program into machine code at once.

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

- Simple and easy to learn makes it beginner friendly
- Interpreted language.
- High-level language - Python handles low level details like memory management automatically.
- Supports both object-oriented programming and procedural programming

- Huge standard library & Third-Party Modules
- Cross Platform compatibility
- Large community support
- Can be combined with other languages like C, C++, Java

3) What is the key differences between Python 2 and Python 3.

Feature	Python 2	Python 3
Status	No longer supported	Actively supported and updated
Print statement	Print "Hello"	Print ("Hello") Print is function.
Integer Division	5/2 = 2	5/2 = 2.5 (True division)
Unicode support	Text is ASCII by default	Text is Unicode by default
Input Function	raw_input() for strings input() for eval	input() always returns string.
Range/xrange	range() creates list, xrange() for generator	range() behaves like xrange()
Iterating Dictionaries	.items() returns list	.items() returns a view object
Error handling	except Exception, e:	except Exception as e:
Library support	Many newer libraries don't support it	All modern libraries support Python 3

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

1) Web Development
2) Data Science and Data Analysis
3) Machine learning and Artificial Intelligence
4) Automation / scripting
5) Web Scraping

6. Game Development
7. GUI Graphical user interface (Desktop applications)
8. cybersecurity & Ethical Hacking
9. DevOps & cloud computing
10. Internet of Things (IOT)

5. what is PEP 8 and why is it important in Python programming ?

PEP stands for Python Enhancement Proposal.
It defines the coding style guidelines for Python.

Its importance :

→ Improves readability
→ Maintains Consistency
→ Better collaboration
→ Professional practice - codes look professional
→ Avoids errors.

eg.

Rule	correct	wrong
spaces around operators	a = b + c	a=b+c
Function names	def calculate_sum()	def calculatesum()
Variable names	total_amount	TotalAmount

6. Who developed Python and in which year was it released ?

Python was developed by Guido Van Rossum and year of initial release is 1991.

7. what do you mean by "dynamically typed" in Python ?

In Python, "dynamically typed" means that you do not need to declare the data type of a variable when you create it. The type is determined automatically at runtime based on the value assigned to the Variable.

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

Feature	compiler	Interpreter
How it works	Converts the entire code into machine code at once	converts and executes, code line by line
Execution speed	Faster while running (after compilation)	slower because it translates line by line
Error detection	shows all errors after compiling the whole program.	stops immediately when an error is found.
output	Creates a separate executable file	Does not create an executable file.
examples	C, C++, Java	Python, Javascript, Ruby