

1> What is python and why is it called an interpreted language?

Python is high-level, general-purpose programming language known for its readability and simplicity. It's called an interpreted language because python code is executed line by line by the python interpreter at runtime. It doesn't need to be compiled into machine code beforehand like C or Java.

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

⇒ Simple and readable syntax

⇒ Interpreted - fast to test and debug

⇒ Dynamically typed

⇒ Object Oriented language and functional

⇒ Extensive libraries

⇒ Cross-platform - runs on windows, macOS, Linux, etc.

⇒ Large community

3> What is difference between python 2 and python 3?

Feature	Python 2	Python 3
Release Year	2000	2008
Print statement	Print "Hello" (no parenthesis)	Print ("Hello") (quadruple)
Integer Division	$5/2 = 2$	$5/2 = 2.5$
Unicode Support	Strings are ASCII by default	Strings are Unicode by default
Support status	No longer supported	Actively maintained
Libraries	Some old libraries only	All new libraries support python 3

4> What are python's applications in real-world projects?

- ⇒ Web app development - Django, Flask
- ⇒ Data Science & analytics - pandas, Numpy
- ⇒ Machine learning & AI - TensorFlow, PyTorch
- ⇒ Automation & scripting - Task automation
- ⇒ Game development - pygame
- ⇒ Cybersecurity - Penetration testing scripts
- ⇒ Software testing - selenium, pytest.
- ⇒ IoT & robotics - raspberry Pi projects.

5> What is PEP 8 and why is it important in python programming?

PEP 8 is the python Enhancement Proposal that defines the style guide for writing python code. it covers naming conventions, indentation, line length and more.

It's important because:

- * It ensures readability and consistency across projects.
- * Makes collaboration easier
- * Encourages clean and maintainable code.

6> Who developed python and in which year was it released?

python was developed by Guido van Rossum in the late 1980s and the first version (python 0.9.0) was released in the year 1991.

7> What do you mean by "dynamically typed" in python?

In python, you don't need to declare the data type of a variable when you create it. python automatically figures out (infers) the type of the variable when the program runs, based on the value you assign.

Ex: `x = 5` # x is an integer

`x = "Hello"` # x is a string.

The type can change dynamically, which makes coding flexible but can also cause runtime errors if not handled carefully.

8> What is D/B a compiler & interpreter & which does python use?

Feature	Compiler	Interpreter
Execution	Translates entire code to machine code at once	Translates & executes line by line
Speed	Faster execution	Slower execution
Error handling	Shows error after fully compilation	stops at the first error
Example	C, C++	Python, Js

Python uses an interpreter to run code line by line, which makes it easy to test, debug and develop quickly.