**PYTHON’S INTERVIEW BASIC QUESTIONS AND ANSWER**

**Q1. Who created Python and when?**  
➡ Guido van Rossum created Python in **1991**.

**Q2. Why is Python called "Python"?**  
➡ Named after the British comedy group **“Monty Python’s Flying Circus”**, not the snake.

**Q3. What are the main features of Python?**  
➡ Simple, interpreted, high-level, dynamically typed, portable, and supports OOP & functional programming.

**Q4. What is PEP 8?**  
➡ **Python Enhancement Proposal 8** → A style guide for writing clean Python code.

**Q5. What are Python’s key philosophies?**  
➡ Captured in **“The Zen of Python”** (import this), e.g., *Simple is better than complex*.

**Q6. What type of language is Python – compiled or interpreted?**  
➡ **Interpreted** (runs line by line, though internally converted to bytecode).

**Q7. What are Python 2 vs Python 3 differences?**  
➡ Python 2 → Legacy, print as statement, no Unicode by default.  
➡ Python 3 → Actively maintained, print as function, Unicode strings default.

**Q8. What is CPython?**  
➡ The default **C-based implementation** of Python.

**Q9. What are other implementations of Python?**  
➡ Jython (Java), IronPython (.NET), PyPy (faster JIT).

**Q10. Why is Python popular in Data Science & AI?**  
➡ Large libraries (NumPy, Pandas, TensorFlow), easy syntax, strong community support.

**Q11. Is Python strongly typed or weakly typed?**  
➡ **Strongly typed** (can’t mix incompatible types without explicit conversion).

**Q12. Is Python statically typed or dynamically typed?**  
➡ **Dynamically typed** (variable types checked at runtime).

**Q13. What are Python’s major applications?**  
➡ Web (Django, Flask), Data Science, Machine Learning, Automation, Scripting, AI.

**Q14. What is the latest version of Python?**  
➡ As of **2025**, it’s **Python 3.13.x** (constantly updating).

**Q15. What makes Python slower compared to C/Java?**  
➡ Because it’s **interpreted and dynamically typed**, not compiled to machine code.

Q16. short difference between Compiled and Interpreted languages?

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| --- | --- |
| **Compiled** | **Interpreted** |
| Code is **translated into machine code** (binary) before execution. | Code is **executed line by line** by an interpreter. |
| Runs **faster** after compilation. | Easier to debug, but **slower** than compiled. |
| Example: **C, C++, Java (bytecode compiled then interpreted by JVM)**. | Example: **Python, JavaScript, Ruby**. |

**Q17. What is Python’s memory management?**  
➡ Uses reference counting + garbage collector.

**Q18. What are Python namespaces?**  
➡ Containers that map names to objects (local, global, built-in).

**Q19. Difference between @staticmethod, @classmethod, and instance method?**  
➡ staticmethod → No self/cls.  
➡ classmethod → Uses cls.  
➡ instance method → Uses self.

**Q20. What is inheritance in Python?**  
➡ Mechanism to create a new class from an existing one. Supports multiple inheritance.

**Q21. What are Python decorators?**  
➡ Functions that modify other functions/classes.

**Q22. What are Python generators?**  
➡ Functions that use yield to return iterators (lazy evaluation).

**Q23. What are Python comprehensions?**  
➡ One-liner constructs for lists, dicts, sets (e.g., [x\*x for x in range(5)]).

**Q24. What are modules and packages?**  
➡ Module = single .py file.  
➡ Package = collection of modules with \_\_init\_\_.py.

**Q25. What is PEP 8?**  
➡ Python’s style guide for clean and readable code.

**Q26. Why is Python slower than C?**  
➡ Interpreted, dynamically typed, not compiled to machine code.

**Q27. How to make Python faster?**  
➡ Use NumPy, Cython, PyPy, multiprocessing, or vectorization.

**Q28. What is GIL (Global Interpreter Lock)?**  
➡ A mutex in CPython that allows only one thread to execute Python bytecode at a time.

**Q29. Difference between deep copy and shallow copy?**  
➡ Shallow copy → copies references.  
➡ Deep copy → copies objects recursively.

**Q30. How is memory managed in Python?**  
➡ Automatic garbage collection, reference counting, memory pools.