🧮 Interview Questions : Data Types in Python

🎯 **Objective**:

To assess a candidate's understanding of Python's built-in data types, type conversions, mutability, and appropriate usage in real-world programming.

🟢 **Beginner-Level Questions**

1. What are the basic data types available in Python?

2. How do you check the data type of a variable in Python?

3. What is the difference between `int` and `float`?

4. What is the difference between `list` and `tuple`?

5. Explain the difference between `str` and `bool` with examples.

6. How do you convert a string `"100"` into an integer?

7. What is the output of `type(3 + 4.5)` and why?

8. Are strings in Python mutable or immutable?

🟡 **Intermediate-Level Questions**

9. What is the difference between a list and a set in Python?

10. How does a dictionary differ from a list? When would you use one over the other?

11. What are mutable and immutable data types in Python? Give examples.

12. What is the difference between `None`, `0`, and `False`?

13. How are tuples more memory-efficient than lists?

14. What are some real-life examples where a `set` would be preferred over a `list`?

15. Can you store different data types in a single list or tuple in Python?

🔴 **Advanced-Level Questions**

16. What is the difference between deep copy and shallow copy in relation to data types like lists and dictionaries?

17. How do Python dictionaries handle duplicate keys?

18. What are frozen sets? When would you use them?

19. Can dictionary keys be mutable data types? Why or why not?

20. Explain how Python internally manages memory for immutable and mutable data types.

21. How is Python's `bool` type related to `int`?

🧪 Scenario-Based Questions

22. You're building a contact book — which data type(s) would you use to store names and phone numbers? Why?

23. Which data type would you use to store the following data:

    - A student's marks in 5 subjects

    - Unique visitor IDs on a website

    - Employee details (name, ID, department)

24. You need to keep items in insertion order — which Python data type would you use (pre and post Python 3.7)?

25. How would you implement a case-insensitive word counter using suitable data types?