# 🧮 Interview Questions : Dictionary in Python

### 🎯 **Objective**:

To assess a candidate's understanding of Python dictionaries — their creation, manipulation, efficiency, and real-world usage.

## 🟢 Beginner-Level Questions

1. What is a dictionary in Python?
2. How do you create a dictionary in Python? Provide an example.
3. How do you access a value in a dictionary?
4. What happens if you try to access a key that doesn't exist in a dictionary?
5. What is the difference between `dict.get(key)` and `dict[key]`?
6. How do you add a new key-value pair to a dictionary?
7. How do you update the value of an existing key in a dictionary?
8. How can you delete a key-value pair from a dictionary?

## 🟡 Intermediate-Level Questions

9. How do you loop through keys and values in a dictionary?
10. Explain the use of `items()`, `keys()`, and `values()` methods.
11. How do you merge two dictionaries in Python?
12. What are nested dictionaries? Provide an example.
13. Can dictionary keys be of any data type? Why or why not?
14. How do you check if a key exists in a dictionary?
15. What is the difference between `pop()` and `del` when removing items from a dictionary?

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## 🔴 Advanced-Level Questions

16. What happens if you use a mutable type like a list as a dictionary key?
17. How are Python dictionaries implemented internally (hashing)?
18. How does Python handle key collisions in dictionaries?
19. What is dictionary comprehension? Give a use case.
20. How is dictionary performance (insertion, lookup) compared to lists or sets?
21. Explain how `defaultdict` and `OrderedDict` from the `collections` module are different from standard dictionaries.
22. What is the time complexity of looking up a key in a dictionary?

## 🧪 Scenario-Based Questions

23. You are given a list of names, some of which repeat. How would you count the frequency of each name using a dictionary?
24. How would you represent a JSON-like data structure using Python dictionaries?
25. Design a student record system using a dictionary. What keys and values would you include?
26. How would you remove duplicate values from a list while preserving insertion order using a dictionary?
27. Write a program to reverse the keys and values of a dictionary (assuming all values are unique).