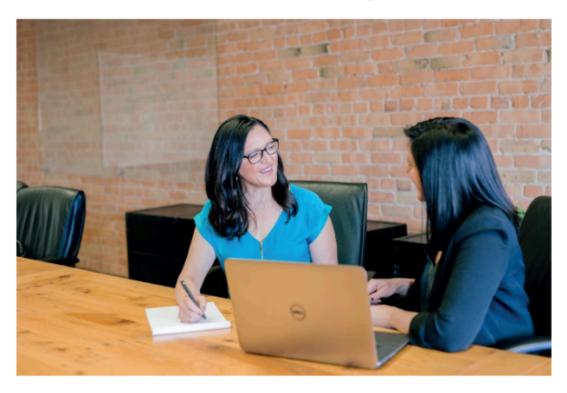# Top 24 Coding Interview Questions

I. Conceptual Interview Questions

1. Data Structure Fundamentals
• Defines storage, organization, and manipulation of data.
• Common types: Arrays, Trees, Graphs.

2. Array
• Collection of items in contiguous memory locations.
• Items of the same type.
• Facilitates easy sorting and searching.

3. Linked List
• Linear structure with non-contiguous elements.
• Comprises a sequence of nodes in a chain-like structure.

4. LIFO (Last In First Out)
• Data access method: last stored, first retrieved.

5. Stack

• Linear structure operating on LIFO principle.

• Accessible from the topmost element downwards.

6. FIFO (First In First Out)

• Data access method: first stored, first retrieved.

7. Queue

• Linear structure operating on FIFO principle.

• Opposite of stack in element removal order.

8. Binary Trees

• Linked list extension with a maximum of two child nodes.

• Comprises a left and a right node.

9. Recursion

• Function calling itself until a terminating condition.

• Utilizes LIFO, thus leveraging the stack structure.

10. OOPs Concepts

• Object-Oriented Programming System.

• Core concepts: Objects, Classes, Inheritance.

11. OOPs Key Concepts

• Object: Real-world entity with state and behavior.

• Class: Blueprint for object creation.

• Inheritance: Object gains properties/behaviors of a parent.

• Polymorphism: Task execution in multiple ways.

• Abstraction: Hides internal details, shows functionality.

• Encapsulation: Code and data bundled into a unit.

12. Binary Search Tree

• Efficient data retrieval structure.

• Left sub-tree: nodes with keys less than the node's key.

• Right sub-tree: nodes with keys greater or equal.

13. Doubly Linked Lists

• Nodes linked in both directions.

• Allows bidirectional traversal.
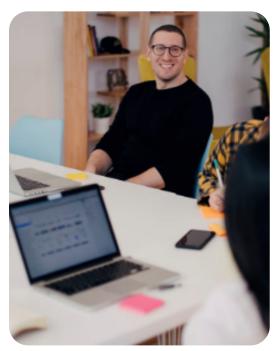
14. Graph

• Contains a set of ordered pairs (edges or arcs).

• Connects nodes to store and retrieve data.

15. Linear vs Non-Linear Structures

• Linear: Adjacent data elements.

• Non-Linear: Data elements connect to multiple others.

16. Deque (Double-Ended Queue)

• Elements inserted/removed from both ends.

17. Sorting Algorithms

• Types: Bubble, Quick, Merge, Radix, etc.
• No "best" algorithm; depends on data structure context.

18. Variable Memory Allocation

• Memory reserved based on data type.
• Example: Integer type reserves 32 bits.

19. Dynamic Data Structures

• Adjusts size based on data needs.
• Provides flexibility in data manipulation.

2. Programming Interview Questions

20. Reversing a String in Java

• Process involves looping and reordering characters.

21. Palindrome Check

• A palindrome remains the same when characters are reversed.
• Verification by comparing original and reversed strings.

22. Vowels and Consonants Count

• Loop through the string.
• Count vowels and consonants separately.

23. Matching Elements in Array

• Utilize nested loops for comparison.
• Identify and print matching elements.

24. Reversing an Array

• Invert elements from start to end up to the half-length.

Taken and adapted from:
https://www.simplilearn.com/coding-interview-questions-article