

1. **Which data structure is used to reverse a string efficiently?**
 - A. Queue
 - B. Tree
 - C. Stack
 - D. Graph
2. **Which operation removes the top element from the stack?**
 - A. peek()
 - B. push()
 - C. pop()
 - D. top()
3. **What will happen if you pop an empty stack?**
 - A. Returns zero
 - B. Stack Overflow
 - C. Stack Underflow
 - D. Null is returned
4. **Which of the following is NOT an application of stacks?**
 - A. Undo feature in editor
 - B. Checking balanced brackets
 - C. Recursion tracking
 - D. Level-order traversal
5. **Which data structure is used in Depth First Search (DFS)?**
 - A. Queue
 - B. Stack
 - C. Tree
 - D. Graph
6. **What is the time complexity of push operation in stack (array-based)?**
 - A. $O(n)$
 - B. $O(\log n)$
 - C. $O(1)$
 - D. $O(n^2)$

7. What does **peek()** do in a stack?
 - A. Removes and returns bottom element
 - B. Inserts at the top
 - C. Returns top element without removing it
 - D. Deletes all elements
8. **Stacks are helpful in converting:**
 - A. Recursive algorithms to iterative
 - B. Loops to recursion
 - C. Classes to objects
 - D. Files to arrays
9. **Which Java class implements a stack?**
 - A. Stack
 - B. Queue
 - C. List
 - D. Map
10. **Which of the following causes a stack overflow?**
 - A. Infinite loop
 - B. Too many function calls (recursion)
 - C. Large heap memory
 - D. Improper pointer usage
11. **Which technique helps to get the minimum element from a stack in $O(1)$?**
 - A. Use a set
 - B. Use binary tree
 - C. Use another stack to track mins
 - D. Use sorting on stack
12. **Which of the following allows stack implementation with dynamic size?**
 - A. Array
 - B. Linked list
 - C. Both

D. None

13. Which of the following operations is not valid on a stack?

- A. Insert at position
- B. Push
- C. Pop
- D. Peek

14. Which real-life example represents a stack?

- A. Queue at ATM
- B. Stack of plates
- C. Playlist
- D. Elevator

15. If we want to implement a queue using two stacks, how many stacks are required?

- A. 1
- B. 2
- C. 3
- D. 4

16. How is memory managed in recursive calls?

- A. Using heap
- B. Using queue
- C. Using stack
- D. Using file system

17. To check if parentheses are balanced in a string, which data structure should be used?

- A. Queue
- B. Stack
- C. Array
- D. Heap

18. Which condition indicates a stack is empty (array implementation)?
- A. top == -1
 - B. top == 0
 - C. top == size
 - D. top == NULL
19. Which of the following uses stack during execution?
- A. Iterative functions
 - B. Static memory allocation
 - C. Recursive functions
 - D. Constructor overloading
20. Which structure is best for undo/redo functionality in editors?
- A. Queue
 - B. Graph
 - C. Stack
 - D. Heap
21. Which of these statements is true for a singly linked list stack?
- A. Insertion at rear
 - B. Deletion from front
 - C. Insertion and deletion at head
 - D. Random insertion
22. How can you reverse a stack using only recursion and stack operations?
- A. Not possible
 - B. Use loops
 - C. Use another stack
 - D. Use recursion to insert at bottom
23. Which of these functions is used to detect if the stack is full (in fixed size)?
- A. isEmpty()
 - B. isFull()
 - C. overflow()
 - D. isTop()

24. What will be the top of the stack after: push(1), push(2), pop(), push(3)?

- A. 2
- B. 3
- C. 1
- D. 4

25. Which traversal uses stack in its iterative form?

- A. Inorder
- B. Level order
- C. Postorder
- D. All of the above

26. What is the auxiliary space complexity for reversing a string using stack?

- A. $O(1)$
- B. $O(n)$
- C. $O(\log n)$
- D. $O(n^2)$

27. What does **top** pointer represent in a stack?

- A. Total elements
- B. Index of last inserted element
- C. Index of bottom element
- D. None

28. What happens if you perform pop operation more times than push?

- A. Stack expands
- B. Stack overflow
- C. Stack underflow
- D. Garbage values returned

29. Which of the following problems uses a stack for its optimal solution?

- A. Stock Span Problem

- B. Sorting
- C. Searching
- D. Counting

30. What will happen if you call `pop()` on an empty `std::stack`?

- A. Returns `NULL`
- B. Throws a runtime error
- C. Undefined behavior (may crash)
- D. Returns -1

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