Assignment 4

Submission Date: 28/09/2025

Stack Coding Questions

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1. Implement a Stack using arrays.

2. Implement a Stack using linked list.

3. Write a program to push, pop, peek, and display elements of a stack.

4. Check if a string of parentheses is balanced using a stack.

   * Example: "({[]})" → Balanced.

5. Reverse a string using stack.

6. Evaluate a postfix expression using stack.

   Example: 231*+9- → -4.

7. Convert an infix expression to postfix using stack.

   Example: A+B*C → ABC*+.

8. Find the next greater element for each element in an array using stack.

Example: [4, 5, 2, 25] → [5, 25, 25, -1].

9. Implement two stacks in a single array.

10. Design a stack that supports getMin() in O(1) time.

Queue Coding Questions

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1. Implement a Queue using arrays.

2. Implement a Queue using linked list.

3. Write a program to enqueue, dequeue, and display elements of a queue.

4. Implement a Circular Queue using arrays.

5. Check if a queue is palindrome (using stack or two-pointer approach).

Example: 1 → 2 → 3 → 2 → 1 → Palindrome.

6. Implement a Double Ended Queue (Deque).

7. Implement a Priority Queue (using array or heap).

8. Reverse the first K elements of a queue.

Example: Queue = [1,2,3,4,5], K=3 → [3,2,1,4,5].

9. Implement a queue using two stacks.

10. Implement a stack using two queues.