Critical Problem Solving
Assignment-1(String, Array, Stack, Queue)

Week-1

1. *Leetcode_Link(225)*
    Implement a last-in-first-out (LIFO) stack using only two queues. The implemented stack should support all the functions of a normal stack (push, top, pop, and empty).
2. *Leetcode_Link(232)*
    Implement a first in first out (FIFO) queue using only two stacks. The implemented queue should support all the functions of a normal queue (push, peek, pop, and empty).
3. *Leetcode_Link(496)*

    The **next greater element** of some element x in an array is the **first greater** element that is **to the right** of x in the same array.

4. *Leetcode_Link(682)*
You are keeping the scores for a baseball game with strange rules. At the beginning of the game, you start with an empty record.

You are given a list of strings operations, where operations[i] is the ith operation you must apply to the record and is one of the following:

- An integer x.
    - Record a new score of x.
- '+'.
    - Record a new score that is the sum of the previous two scores.
- 'D'.
    - Record a new score that is the double of the previous score.
- 'C'.
    - Invalidate the previous score, removing it from the record.

Return *the sum of all the scores on the record after applying all the operations*.

The test cases are generated such that the answer and all intermediate calculations fit in a **32-bit** integer and that all operations are valid.

5. *Leetcode_Link(1047)*
You are given a string s consisting of lowercase English letters. A **duplicate removal** consists of choosing two **adjacent** and **equal** letters and removing them.

We repeatedly make **duplicate removals** on s until we no longer can.

Return *the final string after all such duplicate removals have been made*. It can be proven that the answer is **unique**.

Critical Problem Solving
Assignment-2(String, Array, Stack, Queue)

Week-2

1. **Leetcode_Link**(118)
   Given an integer numRows, return the first numRows of Pascal's triangle.

2. **Leetcode_Link**(121)
   You are given an array prices where prices[i] is the price of a given stock on the ith day.You want to maximize your profit by choosing a single day to buy one stock and choosing a different day in the future to sell that stock.Return *the maximum profit you can achieve from this transaction*. If you cannot achieve any profit, return 0.

3. **Leetcode_Link**(125)
   A phrase is a palindrome if, after converting all uppercase letters into lowercase letters and removing all non-alphanumeric characters, it reads the same forward and backward. Alphanumeric characters include letters and numbers. Given a string s, return true *if it is a palindrome, or* false *otherwise*.

4. **Leetcode_Link**(144)
   Given the root of a binary tree, return *the preorder traversal of its nodes' values*.

5. **Leetcode_Link**(145)
   Given the root of a binary tree, return *the postorder traversal of its nodes' values*.

6. **Leetcode_Link**(205)
   Given two strings s and t, *determine if they are isomorphic*. Two strings s and t are isomorphic if the characters in s can be replaced to get t. All occurrences of a character must be replaced with another character while preserving the order of characters. No two characters may map to the same character, but a character may map to itself.

7. **Leetcode_Link**(234)
   Given the head of a singly linked list, return true *if it is a palindrome or* false *otherwise*.

8. **Leetcode_Link**(463)
   You are given a row x col grid representing a map where grid[i][j] = 1 represents land and grid[i][j] = 0 represents water. Grid cells are connected horizontally/vertically (not diagonally). The grid is completely surrounded by water, and there is exactly one island (i.e., one or more connected land cells). The island doesn't have "lakes", meaning the water inside isn't connected to the water around the island. One cell is a square with side length 1. The grid is rectangular, width and height don't exceed 100. Determine the perimeter of the island.