1. 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.

   Eg: Input: s = abbabc

   Output = bc

   TC : O(n), SC : O(1)

2. We are given an array asteroid of integers representing asteroids in a row.

   For each asteroid, the absolute value represents its size, and the sign represents its direction (positive meaning right, negative meaning left). Each asteroid moves at the same speed.

   Find out the state of the asteroids after all collisions. If two asteroids meet, the smaller one will explode. If both are the same size, both will explode. Two asteroids moving in the same direction will never meet.

   Eg: Input: asteroids = [5, 10, -5]

   Output: [5,10]

   Input: [10, -10] -> []

3. You are given an array of integers nums, there is a sliding window of size k which is moving from the very left of the array to the very right. You can only see the k numbers in the window. Each time the sliding window moves right by one position.

Return the max sliding window.

i/p [10, -1, 2, 5, 15, -4, 3, 7, 9]

k=3

Output : 22, Try to do it In O(n).

4. You are given the head of a linked list. Delete the middle node, and return *the head of the modified linked list*.

   The middle node of a linked list of size `n` is the `⌊n / 2⌋th` node from the start using 0-based indexing, where `⌊x⌋` denotes the largest integer less than or equal to `x`.

5 Given a matrix of dimension m*n where each cell in the matrix can have values 0, 1 or 2 which has the following meaning:

   0: Empty cell

   1: Cells have healthy person

   2: Cells have infected person

   Determine what is the minimum time required so that every person is infected. An infected person at index [I , j] can infect other healthy person at indexes [i-1,j], [i+1,j], [i,j-1], [i,j+1] (up, down, left and right). If it is impossible to infect every person then simply return -1.

   Test Cases:
   [[2,1,1], [1,1,0], [0,1,1]], output -> 4
   [[2,1,1], [0,1,1], [1,0,1]], output-> -1
   [[0,2]] output -> 0

6. Given head of a singly-linked list. The value of each node in the linked list is either 0 or 1. The linked list holds the binary representation of a number.

   Return the *decimal value* of the number in the linked list.

   The most significant bit is at the head of the linked list.

   Eg: Input: 0 -> 1 -> 1

   Output: 3

7. The school cafeteria offers circular and square sandwiches at lunch break, referred to by numbers 0 and 1 respectively. All students stand in a queue. S

The number of sandwiches in the cafeteria is equal to the number of students. The sandwiches are placed in a stack. At each step:

If the student at the front of the queue prefers the sandwich on the top of the stack, they will take it and leave the queue.

Otherwise, they will leave it and go to the queue's end.

This continues until none of the queue students want to take the top sandwich and are thus unable to eat.

You are given two integer arrays students and sandwiches where sandwiches[i] is the type of the ith sandwich in the stack (i = 0 is the top of the stack) and students[j] is the preference of the jth student in the initial queue (j = 0 is the front of the queue). Return the number of students that are unable to eat.

8. On day 1, one person discovers a secret.

You are given an integer delay, which means that each person will share the secret with a new person every day, starting from delay days after discovering the secret. You are also given an integer forget, which means that each person will forget the secret forget days after discovering it. A person cannot share the secret on the same day they forgot it, or on any day afterwards.

Given an integer n, return the number of people who know the secret at the end of day n. Since the answer may be very large, return it modulo 109 + 7