Lab 3: Design and Analysis of Algorithms Lab Questions:

03.02.2023

Use the greedy approach for the following questions:

1. Given string num representing a non-negative integer num, and an integer k, return the smallest possible integer after removing k digits from num

   Input: num = "1432219", k = 3
   Output: "1219"
   Explanation: Remove the three digits 4, 3, and 2 to form the new number 1219 which is the smallest

2. Balanced strings are those that have an equal quantity of 'L' and 'R' characters. Given a balanced string s, split it into some number of substrings such that: Each substring is balanced. Return the maximum number of balanced strings you can obtain.

   Input: s = "RLRRLLRLRL"
   Output: 4
   Explanation: s can be split into "RL", "RRLL", "RL", "RL", each substring contains same number of 'L' and 'R'.

3. Given an array of integers nums, find the maximum length of a subarray where the product of all its elements is positive. A subarray of an array is a consecutive sequence of zero or more values taken out of that array. Return the maximum length of a subarray with positive product.

   Input: nums = [0,1,-2,-3,-4]
   Output: 3
   Explanation: The longest subarray with positive product is [1,-2,-3] which has a product of 6. Notice that we cannot include 0 in the subarray since that'll make the product 0 which is not positive.