
Question 1:

There is an array of N items, and item i costs C_i. You have a coupon that allows you to buy contiguous sequences of items for possibly a cheaper price: buying the sub-array from item i to item j costs $(C_i - C_j)^2$. However, you only have K coupons. What is the minimum cost needed to purchase all items?

$N \leq 100000, K \leq 100$.

Question 2:

You are given an array of N integers. How many ways are there to partition the array such that the maximum elements in each partition, from left to right, form a non-decreasing sequence?

$N \leq 100000$