SubArray

Q1. Sum of All Subarrays

Problem Description
- You are given an integer array A of length N.
- You have to find the sum of all subarray sums of A.
- Return a single integer denoting the sum of all subarray sums of the given array.

Example Input

Input 1:
A = [1, 2, 3]

Output 1:
20

Input 2:
A = [2, 1, 3]

Output 2:
19

Example Explanation

Explanation 1:
- The different subarrays for the given array are:
  [1], [2], [3], [1, 2], [2, 3], [1, 2, 3].
- Their sums are: 1 + 2 + 3 + 3 + 5 + 6 = 20

Explanation 2:
- Similiar to the first example, the sum of all subarray sums for this array is 19.

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Q2. Counting Subarrays

Problem Description
- Given an array A of N non-negative numbers and a non-negative number B, you need to find the number of subarrays in A with a sum less than B.
- Return an integer denoting the number of subarrays in A having sum less than B.

Problem Constraints
1 <= N <= 103
1 <= A[i] <= 1000
1 <= B <= 107

Example Input

Input 1:
A = [2, 5, 6]
B = 10

Output 1:
4

Input 2:
A = [1, 11, 2, 3, 15]
B = 10

Output 2:
4

Example Explanation

Explanation 1:
- The subarrays with sum less than B are {2}, {5}, {6} and {2, 5},

Explanation 2:
- The subarrays with sum less than B are {1}, {2}, {3} and {2, 3}

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Q3. Good Subarray

Problem Description

- Given an array of integers A, a subarray of an array is said to be good if it fulfills any one of the criteria:

1. Length of the subarray is be even, and the sum of all the elements of the subarray must be less than B.
2. Length of the subarray is be odd, and the sum of all the elements of the subarray must be greater than B.

- Your task is to find the count of good subarrays in A.
- Return the count of good subarrays in A.

Example Input

Input 1:
A = [1, 2, 3, 4, 5]
B = 4

Output 1:
6

Input 2:
A = [13, 16, 16, 15, 9, 16, 2, 7, 6, 17, 3, 9]
B = 65

Output 2:
36

Example Explanation

Explanation 1:
- Even length good subarrays = {1, 2}
- Odd length good subarrays =
{1, 2, 3}, {1, 2, 3, 4, 5}, {2, 3, 4}, {3, 4, 5}, {5}