Problem 2

Problem Statement:

Given an array arr of size N, count the number of subarrays whose sum is k.

NOTE: Let arr be represented as $[a_1, a_2, \dots, a_N]$. A subarray of arr is an array of consecutive elements - $[a_i, a_{i+1}, \dots, a_j]$ - where $0 \leq i, j \leq N$. For example, consider the array [1,2,3,4,5]. For this array, [1,2,3], [3], [3,4] are subarrays, while [1,3,4], [3,1], [2,1] are not. The sum of a subarray is the sum of its elements. For instance, the sum of the subarray [1,3,4] is 8.

Consider the array [1,2,-3,1,-1,3]. The following are the subarrays whose sum is 0 – [1,2,-3], [2,-3,1], [1,2,-3,1,-1],[1,-1] and [-3,1,-1,3]. Thus, the number of subarrays whose sum is 0 is 5.

Function Description:

Function Signature: int solve(int N, int arr[], int k);

You will have to complete the function solve without modifying the rest of the code. The parameters of the function are described as follows.

N: The size of the array arr.

arr: The input array.

k : The value of k as described in the problem statement.

The function should return the number of subarrays whose sum is k. The template can be downloaded here:

https://drive.google.com/file/d/1tbGhAXO6UUnpZ3o9Q5wkgc0KrsxvfI2S/view?usp=sharing

Input:

The first line of the input is an integer N $\leq 10^6$, denoting the number of elements in arr. The next line contains N integers a_i $(1 \leq i \leq N, 10^{-9} \leq a_i \leq 10^9)$ for the N numbers in arr. The last line is the integer $10^{-9} \leq$ k $\leq 10^9$.

Output:

The number of subarrays whose sum is k.

Sample Testcase

Input	Output
6 1 2 -3 1 -1 3 0	5