Sort-It-Out

Project
Data Structures
Algorithms
Due date: 3 May, 2020

Problem Statement: Unsuccessful attempt...!
Anyways, here is your last chance to make peace. This time, OJ has guessed two arrays, even and odd, each of size N. The even array has first N even numbers starting from 0 and odd array has first N odd numbers starting from 1. Your task would be to guess both the arrays and output inversion count in them. Unlike usual, there will be two special queries "GT i j" and "LT i j". The first query "GT i j" takes two zero-based indices i, j and returns the value of the comparison even[i] >odd[j]. The second query "LT i j" takes two indices i, j and returns the value of the comparison even[i] <odd[j]. Both the queries returns single integer: 1 if the condition is satisfied, 0 if not. Construct both the even and odd arrays from the information and return the inversion count of both arrays in the form of "INV inve invo"(without quotes), where inve is the inversion count of even array, invo is the inversion count of odd array. These two integers are space separated, and there is space between INV and inve.

Note
BE EXTRA SURE OF THE INTERACTION. IT IS CASE SENSITIVE AND SPACE SENSITIVE. DO NOT PRINT ANY EXTRA LINES AND DO NOT PRINT ANY OTHER DEBUGGING STATEMENTS. JUST LIKE QUICKSORT, THE WORST CASE COMPLEXITY OF THE CORRECT SOLUTION DOESN'T FIT THE CONSTRAINTS, SO USE RANDOMIZATION.

Input
First fixed line will contain Q, the number of times you have to guess the arrays. For each turn of guessing, a single numbers N will be given.

Interaction
Query "GT i j"(without quotes) OR "LT i j"(without quotes), and the OJ will return single integer 0 or 1. Note that you can directly read them as an integer. You will be allowed maximum 30303 queries, irrespective of its type, i.e. number of GT queries + number of LT queies should not exceed 30303. NOTE: AFTER USING cout, ALWAYS USE fflush(NULL); statement in C++. If you don't use that, there will be issues with input.

Output
Then use the special queries to find even and odd array and output "INV inve invo"(without quotes) as mentioned above.

Constraints
$1 \leq Q \leq 10$
$1 \leq N \leq 1000$
special compare queries ≤ 30303

Time Limit: 10 sec
Memory Limit: 256 MB

Sample Test Case

Guessed even array Guessed odd array	0 4 2 1 3 5
Interaction Sample 1(on the above arrays)	
1 3 0 1 0 0 1 1 0 1 1 1 0 1	GT 0 0 LT 0 0 GT 0 1 GT 0 2 GT 1 0 GT 1 1 GT 1 2 LT 0 2 LT 1 2 LT 2 2 GT 2 1 GT 2 0 INV 1 0