HW #3. Number of Inversions

(Due: 4/5/2015)

Given a sequence [A0, A1, .., Am-1], an inversion is an integer pair (i,j) such that i<j and Ai>Aj for i,j[0,m-1]. For instance, assume sequence [A0,A1,A2,A3,A4] := [0,1,4,3,2]. There are a total of 3 inversions, which are (2,3), (2,4), and (3,4).

In this homework, you are given N integer sequences. For each sequence, you need to determine the number of inversions.

Following are the input and output formats. We use msgpack to pack the data fields.

input.txt

N

SEQ1

SEQ2

…

SEQN

N : a 32 bit signed integer indicating the number of sequences

SEQi: an array of 32 bit signed integer numbers

output.txt

NUM\_INVERSIONS1

NUM\_INVERSIONS2

…

NUM\_INVERSIONSN

NUM\_INVERSIONSi : a 64 bit signed integer indicating the number of inversions for input sequence SEQi