

Round C APAC Test 2016

[A. gRanks](#)

[B. gFiles](#)

[C. gGames](#)

D. gMatrix

Questions asked **2**

Submissions

gRanks

6pt Not attempted
1263/2254 users
correct (56%)

10pt Not attempted
923/1243 users
correct (74%)

gFiles

9pt Not attempted
529/1189 users
correct (44%)

17pt Not attempted
222/493 users
correct (45%)

gGames

10pt Not attempted
85/221 users
correct (38%)

18pt Not attempted
13/44 users correct
(30%)

gMatrix

11pt Not attempted
826/1065 users
correct (78%)

19pt Not attempted
157/549 users
correct (29%)

Top Scores

johngs	100
cchao	100
NAFIS	100
exprosic	100
orenguy	83
nhho	82
yaray	82
BananaTree	82
mkrjn99	82
tapasjain	82

Problem D. gMatrix

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input
11 points

Solve D-small

Large input
19 points

Solve D-large

Problem

You have a square N by N matrix M of nonnegative integers. We would like to make a list of the maximum values in every sub-matrix of size K by K within M , and then find the sum of those values together. (Note that the same entry of M might be the maximum value in more than one sub-matrix, in which case it will show up multiple times in the list.) Can you find that sum?

To simplify the input of the matrix, you are given two arrays A and B of length N , and two integers C and X . Then the entry M_{ij} (for the i th row and j th column of the matrix) equals $(A_i * i + B_j * j + C) \bmod X$, where i and j are in the range $[1, N]$.

Input

The first line of the input gives the number of test cases, T . T test cases follow. Each test case begins with one line with four integers, N , K , C and X . Then there are two lines with N integers each, representing the arrays A and B .

Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1) and y is the sum of the maximum values in all sub-matrices of size K by K .

Limits

$1 \leq T \leq 100$.
 $1 \leq A_i, B_i \leq 100000$.
 $1 \leq C \leq 100000$.
 $1 \leq X \leq 1000000007$.
 $1 \leq K \leq N$.

Small dataset

$1 \leq N \leq 50$.

Large dataset

$1 \leq N \leq 3000$.

Sample

Input	Output
3	Case #1: 3
1 1 1 5	Case #2: 19
1	Case #3: 80
1	
2 1 5 11	
1 2	
3 4	
3 2 3 109	
6 4 3	
2 1 5	

In the first test case, the matrix is:
 3
 So the sum of maximum values is 3.

In the second test case, the matrix is:
 9 3
 1 6
 So the sum of maximum values is 19.

In the third test case, the matrix is:
 11 11 24

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