Coding Arena

<C*deVita/>
the TCS Coding Contest

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Problem : Sub Grand Sum

Juan Marquinho is verifying a conjecture on sums of elements in sub matrices of large matrices. The conjecture involves computing the number Fibonacci (S mod 50) where S is the sum of elements in a sub matrix, and mod 50 indicates the remainder of S when divided by 50. Fibonacci numbers are the defined as follows:

Fibonacci (1) = 1, Fibonacci (2) =1 and for all n > 2, Fibonacci (n) = Fibonacci (n-1) + Fibonacci (n-2). The first few Fibonacci numbers are 1, 1, 2, 3, 5, 8, …..

Since the number of sub matrices to compute is very large, he needs some help. Write a program to help him.

Specifically, given a N x N matrix and a set of sub matrices, compute the numbers Fibonacci (S mod 50) for each of the sub matrices, where S is the sum of elements of the sub matrix.

Input Format:

The first line gives three space separated integers R, C, N, giving the number of rows, number of columns and the number of sub matrices

The next R lines each contain, space separated C integers giving the elements of the rows

The next N lines each contain space separated four integers giving the top left and bottom right coordinates of the sub matrices (rows are numbered 0 to R-1 and columns are numbered 0 to C-1, and the top left corner of the matrix has coordinates 0, 0.

Output Format:

N lines each giving the Fibonacci (S mod 50) of the sub matrices.

Constraints

5 ≤ R ≤ 1000
5 ≤ C ≤ 1000
5 ≤ N ≤ 1000000

The elements of the matrix are integers in the range 0 to 100

Constraints:
None

Example 1

Input
10 10 1
30 77 92 21 16 7 77 3 2 20
66 77 24 40 21 38 3 50 37 100
59 60 17 7 37 69 40 18 68 17
27 45 84 35 81 23 4 6 22 97
51 2 54 62 94 47 44 42 35 91
63 59 6 49 80 56 73 30 77 89
74 12 5 56 2 72 2 38 60 75
63 55 20 16 33 2 64 95 66 78
43 70 60 22 52 56 6 93 42 16
86 7 40 56 32 78 78 12 3 90
0 0 2 2

Output
1

Explanation
The first sub matrix is
30 77 92
66 77 24
59 60 17

The sum of these elements is 502 and 502 mod 50 is 2. We need the Fibonacci (2) and hence the output is 1.

Example 2

Input
10 10 1
30 77 92 21 16 7 77 3 2 20
66 77 24 40 21 38 3 50 37 100
59 60 17 7 37 69 40 18 68 17
27 45 84 35 81 23 4 6 22 97
51 2 54 62 94 47 44 42 35 91

63 59 6 49 80 56 73 30 77 89
74 12 5 56 2 72 2 38 60 75
63 55 20 16 33 2 64 95 66 78
43 70 60 22 52 56 6 93 42 16
86 7 40 56 32 78 78 12 3 90
0 0 3 3

Output
89

Explanation
The sub matrix is
30 77 92 21
66 77 24 40
59 60 17 7
27 45 84 35
And the sum of the elements is 761. The remainder of this sum when divided by 50 is 11 and the eleventh Fibonacci number is 89.

Note:

Please do not use package and namespace in your code. For object oriented languages your code should be written in one class.

Note:

Participants submitting solutions in C language should not use functions from <conio.h> / <process.h> as these files do not exist in gcc

Note:

For C and C++, return type of main() function should be int.

Submit Answer

I , **SOURAV KUMAR** confirm that the answer submitted is my own.
I would like to provide attribution to the following sources.

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