
Number of paths

P19587_en

Onzè Concurs de Programació de la UPC - Semifinal (2013-06-19)

You are located on the point $(0,0)$ of an infinite integer grid, and you need to go to (x,y) . You have to follow two conditions when moving:

- At every step, you can only go to any of the eight points horizontally, vertically or diagonally adjacent to the point where you currently are.
- Every movement must strictly reduce the geometric distance to (x,y) .

In how many ways can you reach (x,y) ?

Input

Input consists of several cases with two integers x and y , each between -2000 and 2000 . A case with $x = y = 0$ ends the input.

Output

For every case, print the number of ways to go from $(0,0)$ to (x,y) . Since this number can be huge, compute it modulo $10^8 + 9$.

Sample input

```
0 1
-1 -1
0 -2
-5 3
2000 2000
0 0
```

Sample output

```
1
3
7
9132
6647843
```

Problem information

Author : Salvador Roura

Generation : 2024-04-30 16:30:49

© Jutge.org, 2006–2024.

<https://jutge.org>