Problem Dinamo
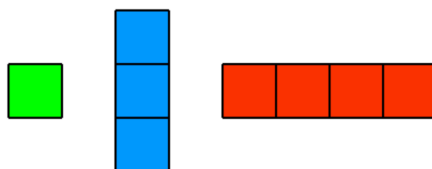
Input file   stdin
Output file   stdout

Due to the positive reviews received by the committee regarding a certain problem involving tiling on matrices, we present the following problem:

A tile is called a *ketris tile* if:

1. It has a rectangular shape, and the lengths of its sides (in meters) are natural numbers.
2. At least one of its sides has a length of 1 meter.

Examples of *ketris tiles*

A complete coverage of a surface with *ketris tiles* is called a *ketris tiling*.

How many *ketris tilings* exist for a rectangular surface with side lengths of n and m meters? Since the answer can be very large, print the result modulo $10^9 + 7$.

Two *ketris tilings* are considered different if there exists a *ketris tile* that appears in the first *tiling* in a certain location but not in the second.

Input Data

The first line of the input file contains two natural numbers n and m — the height and width of the surface, respectively.

Output Data

Print the number of possible *ketris tilings*. Since the answer can be very large, print it modulo $10^9 + 7$.

Restrictions

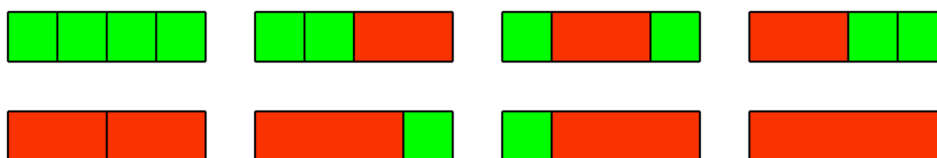- $1 \leq n \leq 10$
- $1 \leq m \leq 10^{18}$

#	Points	Restrictions
1	7	$n = 1$
2	4	$n = 2, m \leq 1000$.
3	5	$n = 2, m \leq 10^6$.
4	8	$n = 2, m \leq 10^{18}$.
5	13	$n, m \leq 5$.
6	16	$n \leq 7, m \leq 1000$.
7	26	$n \leq 7$.
8	21	No additional restrictions

Examples

Input file	Output file
1 4	8
2 2	7
2 3	29
2 11	3381689
6 5	441987135
7 420	496377800

Explanations

In the first example, there are 8 possible *ketris tilings*:

In the second example, there are 7 possible *ketris tilings*: