Problem J. Jigsaw Puzzle

Input file:	stdin
Output file:	stdout
Time limit:	1 second
Memory limit:	256 megabytes

At an online course in discrete mathematics, one of the recent lectures was devoted to correct domino coverings of different rectangular fields of size $n \times m$ consisting of square cells. Some cells may be cut from these fields. The professor called such fields *jigsaw puzzles*. To solve a jigsaw puzzle means to find a covering of the given field with dominoes of size 1×2 such that the following conditions hold:

- the dominoes cover all the non-cut cells on the field;
- all the dominoes fully lie inside the field;
- the dominoes do not intersect each other;
- the dominoes do not lie on any of the cut cells.

Now the professor wants to know how understandable his lecture was. To find this out, he decides to give jigsaw puzzles to all students to solve. The professor doesn't want to make students' lives too difficult, so he decided that each jigsaw puzzle will have at least one solution. But he also wants everybody to do their homework themselves, and therefore, he wants all jigsaw puzzles to be different.

Before the professor will create his jigsaw puzzles, he wants to know how many different puzzles exist. Can you help him?

Your task is to compute the number of different fields of size $n \times m$ that have at least one correct domino covering. Remember that some cells of a field could be cut. This number can be quite large, so you must compute it modulo $10^9 + 7$.

Two fields are considered different if there exists a cell on an $n \times m$ grid that is cut from one field but not cut from the other. A field can not be reflected or rotated.

Input

The input contains only one line with two integers n and m ($1 \le n \le 6$, $1 \le m \le 500$) separated by a single space.

Output

The output must contain a single line with a single integer: the answer to the problem.

Examples

stdin	stdout
1 2	2
2 3	18