

Problem I. Items in boxes

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

You have 2^n different boxes, each of them containing a different items. Find the number of ways to take exactly one item from each box modulo 2^{n+2} .

In other words, if the required number of ways is x , print the remainder of dividing x by 2^{n+2} .

Input

The only line of the input data contains two integers separated by a space n and a .

$$1 \leq a, n \leq 10^9$$

Output

Print a single number — the remainder of dividing the number of ways to choose one item from each box by 2^{n+2} .

Examples

standard input	standard output
5 10	0
10 5	1
1 2	4

Note

In the third example, $2^n = 2$ boxes, each with $a = 2$ items. It turns out that there are two ways to take an item from the first and two ways to take an item from the second, total $2 \cdot 2 = 4$ of the method. The remainder of the division by $2^{n+2} = 2^3 = 8$ is 4.