Mountains

2023/2024 SEASON – FOURTH ROUND

Oh, mountains! Tu and Lu won't miss out on going climbing this year. One thing has always been impressing them – the mountain ridges.

We can define mountain ridges of numbers like this: If we put the signs '>' and '<' between the values by comparing them, then they are alternating. For instance, 3 5 2 8 1 form a mountain ridge since we have '<><>', while 3 5 7 1 do not. Moreover, a co-prime mountain ridge is a mountain ridge where the numbers forming it are co-prime.

By given length and maximum allowed number, your task is to find the count of co-prime mountain ridges with such parameters. Due to the fact that this count may be too large, you have to print its value modulo $10^9 + 7$.

Input

The first line of the file **mountains.in** contains two integers n, m – the length and the maximum allowed number of the ridges.

Output

The first line of the file **mountains.out** contains one integer – the count of co – prime mountain ridges modulo $10^9 + 7$.

Constraints

$1 \leq n \leq 35$

$1 \leq m \leq 10^5$

Time limit: 0.5 sec.

Memory limit: 256 MB

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Sample test

Input (mountains.in)	Output (mountains.out)
3 4	26

Sample test explanation

Some of the sequences are: {1,2,1}, {1,3,2}, {1,3,1}, {2,1,3}, {2,3,2}, {2,1,2}, {2,3,1}, {3,2,3}, {3,1,3}, {3,1,2}, {1,4,1}, {3,4,1}, {3,4,3}, {1,4,3}

Sample test 2

Input (mountains.in)	Output (mountains.out)
18 4056	842407430