

## CMPUT 275 - Tangible Computing

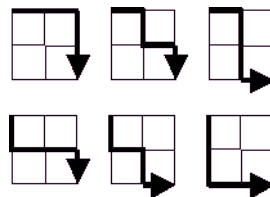
### Morning Problem: University Navigation

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#### Description

Natali has spent all of today figuring out the most efficient routes to go back and forth between her classes. She thinks she's figured out the best way to get between math 118 and math 227, but she wonders how many possible routes there are for her to take.

She's modeled the area between her math 118 class and her math 227 class as a grid, with math 118 at the top left and math 227 at the bottom right. She starts at the top left and can move either down or to the right until she hits the bottom right. She's curious how many different sequences of down and right moves exist that will allow her to reach math 227. For example, if Natali is on a 2x2 grid, there are 6 possible ways for her to get from the top left to the bottom right:



Given an  $m \times n$  grid, how many ways are there for Natali to go from the top left to the bottom right? Report your answer modulo 4,201,337 (since the number will get very large very quickly otherwise.)

**Hint:** Consider using dynamic programming, note the only ways to reach a position  $(i, j)$  are through either  $(i - 1, j)$  or  $(i, j - 1)$  if  $i, j > 0$ .

#### Input

Input consists of one line with two integers  $n$  and  $m$  ( $1 \leq n, m \leq 500$ ), denoting the height and width of the grid.

#### Output

Print one integer denoting the number of ways Natali can go from the top left of the grid to the bottom right, modulo 4,201,337.

#### Sample Input 1

2 2
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#### Sample Output 1

6
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**Sample Input 2**

2 5
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**Sample Output 2**

21
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**Sample Input 3**

3 3
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**Sample Output 3**

20
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