

Contest Duration: 2021-06-06(Sun) 17:30 ([http://www.timeanddate.com/worldclock](http://www.timeanddate.com/worldclock/fixedtime.html?iso=20210606T2100&p1=248)

/fixedtime.html?iso=20210606T2100&p1=248) - 2021-06-06(Sun) 19:10 ([http://www.timeanddate.com/worldclock](http://www.timeanddate.com/worldclock/fixedtime.html?iso=20210606T2240&p1=248)


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[Back to Home \(/home\)](#)

 [Top \(/contests/ABC204/\)](/contests/ABC204/)

 [Tasks \(/contests/ABC204/tasks/\)](/contests/ABC204/tasks/)

 [Clarifications \(/contests/ABC204/clarifications/\)](/contests/ABC204/clarifications/)

 [Submit \(/contests/ABC204/submit?taskScreenName=abc204\\_f\)](/contests/ABC204/submit?taskScreenName=abc204_f)

 [Results](#) ▼

 [Standings \(/contests/ABC204/standings/\)](/contests/ABC204/standings/)

 [Custom Test \(/contests/ABC204/custom\\_test/\)](/contests/ABC204/custom_test/)



## F - Hanjo 2



Time Limit: 2 sec / Memory Limit: 1024 MB

Score : 600 points

### Problem Statement

We have a rectangular room that is  $H$  meters long and  $W$  meters wide.

We will fill this entire room with tatami (rectangular mats) that are 2 meters long and 1 meter wide, and hanjo (square mats) that are 1 meter long and 1 meter wide. Each tatami can be placed vertically or horizontally.

How many ways are there to fill the room?

We distinguish ways that match only after rotation or reflection.

Since the count can be enormous, find it modulo 998244353.

### Constraints

- $1 \leq H \leq 6$
- $1 \leq W \leq 10^{12}$

### Input

Input is given from Standard Input in the following format:

$H$   $W$

Remaining Time  
00:24:54

## Output

Print the answer.

### Sample Input 1

[Copy](#)

2 2

[Copy](#)

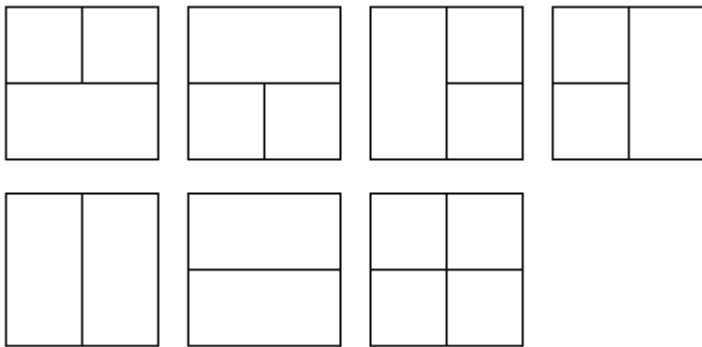
### Sample Output 1

[Copy](#)

7

[Copy](#)

We have the following seven ways:



### Sample Input 2

[Copy](#)

3 3

[Copy](#)

### Sample Output 2

[Copy](#)

131

[Copy](#)

### Sample Input 3

[Copy](#)

5 100

[Copy](#)

### Sample Output 3

[Copy](#)

379944232

Remaining Time

00:24:54

Be sure to find the count modulo 998244353.

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**Language**

C++ (GCC 9.2.1) ▼

**Source Code**

1

\* at most 512 KiB

\* Your source code will be saved as `Main.extension`.



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