Difficulty Level : Easy • Last Updated : 19 Dec, 2020

Given a "2 x n" board and tiles of size "2 x 1", count the number of ways to tile the given board using the 2 x 1 tiles. A tile can either be placed horizontally i.e., as a 1 x 2 tile or vertically i.e., as 2 x 1 tile.

Examples:

Input: *n = 4*

Output: *3*

Explanation:

For a 2 x 4 board, there are 3 ways

- *All 4 vertical*
- *All 4 horizontal*
- *2 vertical and 2 horizontal*

Input: *n = 3*

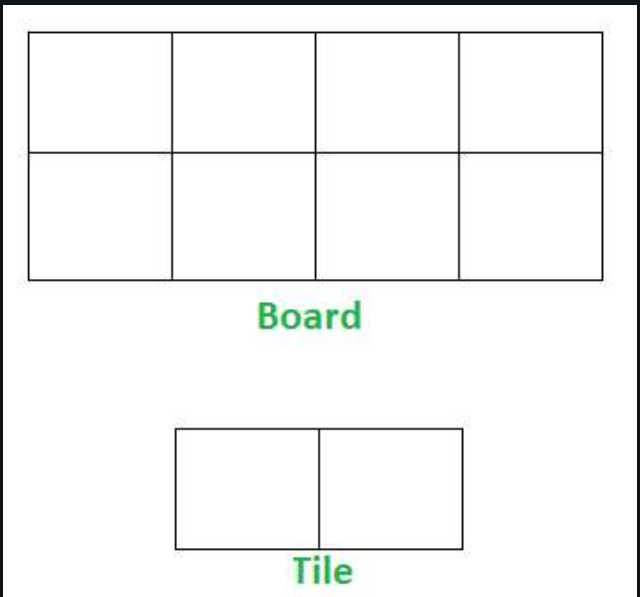
Output: *2*

Explanation:

We need 2 tiles to tile the board of size 2 x 3.

We can tile the board using following ways

- *Place all 3 tiles vertically.*
- *Place 1 tile vertically and remaining 2 tiles horizontally.*



Recommended: Please solve it on "***PRACTICE***" first, before moving on to the solution.

Implementation –

Let "count(n)" be the count of ways to place tiles on a "2 x n" grid, we have following two ways to place first tile.
1) If we place first tile vertically, the problem reduces to "count(n-1)"
2) If we place first tile horizontally, we have to place second tile also horizontally. So the problem reduces to "count(n-2)"
Therefore, count(n) can be written as below.

```
count(n) = n if n = 1 or n = 2
count(n) = count(n-1) + count(n-2)
```

Here's the code for the above approach:

C++

```
// C++ program to count the
// no. of ways to place 2*1 size
// tiles in 2*n size board.
#include <iostream>
```