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Day 9: Recursion

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Problem

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Objective

Today, we're learning and practicing an algorithmic concept called *Recursion*. Check out the [Tutorial](#) tab for learning materials and an instructional video!

Recursive Method for Calculating Factorial

$$factorial(N) = \begin{cases} 1 & N \leq 1 \\ N \times factorial(N-1) & otherwise \end{cases}$$

Task

Write a *factorial* function that takes a positive integer, *N* as a parameter and prints the result of *N!* (*N* factorial).

Note: If you fail to use recursion or fail to name your recursive function *factorial* or *Factorial*, you will get a score of **0**.

Input Format

A single integer, *N* (the argument to pass to *factorial*).

Constraints

- $2 \leq N \leq 12$
- Your submission must contain a recursive function named *factorial*.

Output Format

Print a single integer denoting *N!*.

Sample Input

3

Sample Output

6

Explanation

Consider the following steps:

- $factorial(3) = 3 \times factorial(2)$
- $factorial(2) = 2 \times factorial(1)$
- $factorial(1) = 1$

From steps **2** and **3**, we can say $factorial(2) = 2 \times 1 = 2$; then when we apply the value from $factorial(2)$ to step **1**, we get $factorial(3) = 3 \times 2 \times 1 = 6$. Thus, we print **6** as our answer.



Solved score: 15.00pts

Submissions: 53079


Max Score: 30

Difficulty: Easy

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★★★★★ Thanks!

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C#



```
1 using System;
2 using System.Collections.Generic;
3 using System.IO;
4 class Solution {
5
6     static int Factorial(int n)
7     {
8         if (n <= 1) return 1;
9         return n * Factorial(n - 1);
10    }
11
12    static void Main(string[] args)
13    {
14        int n = int.Parse(Console.ReadLine());
15        Console.WriteLine(Factorial(n));
16        // Console.ReadLine();
17    }
18
19
20
21
22 }
```

Line: 8 Col: 23

 [Upload Code as File](#)☐ Test against custom input[Run Code](#)[Submit Code](#)

Congrats, you solved this challenge!

✓ Test Case #0

✓ Test Case #1

✓ Test Case #2

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