



# Day 9: Recursion ☆

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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

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

## 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:

1.  $\text{factorial}(3) = 3 \times \text{factorial}(2)$
2.  $\text{factorial}(2) = 2 \times \text{factorial}(1)$
3.  $\text{factorial}(1) = 1$

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