# HackerRank▪

## Day 9: Recursion 3 ★

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Points: **10/15**

**30**
Days of Code
**

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**Your Day 9: Recursion 3 submission got 30.00 points.**     Share     Tweet

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**Objective**

Today, we are learning about an algorithmic concept called recursion. Check out the Tutorial tab for learning materials and an instructional video.

**Recursive Method for Calculating Factorial**

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

**Function Description**

Complete the factorial function in the editor below. Be sure to use recursion.

factorial has the following paramter:

- int n: an integer

**Returns**

- int: the factorial of $n$

**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.

**Sample Input**

```
3
```

**Sample Output**

```
6
```

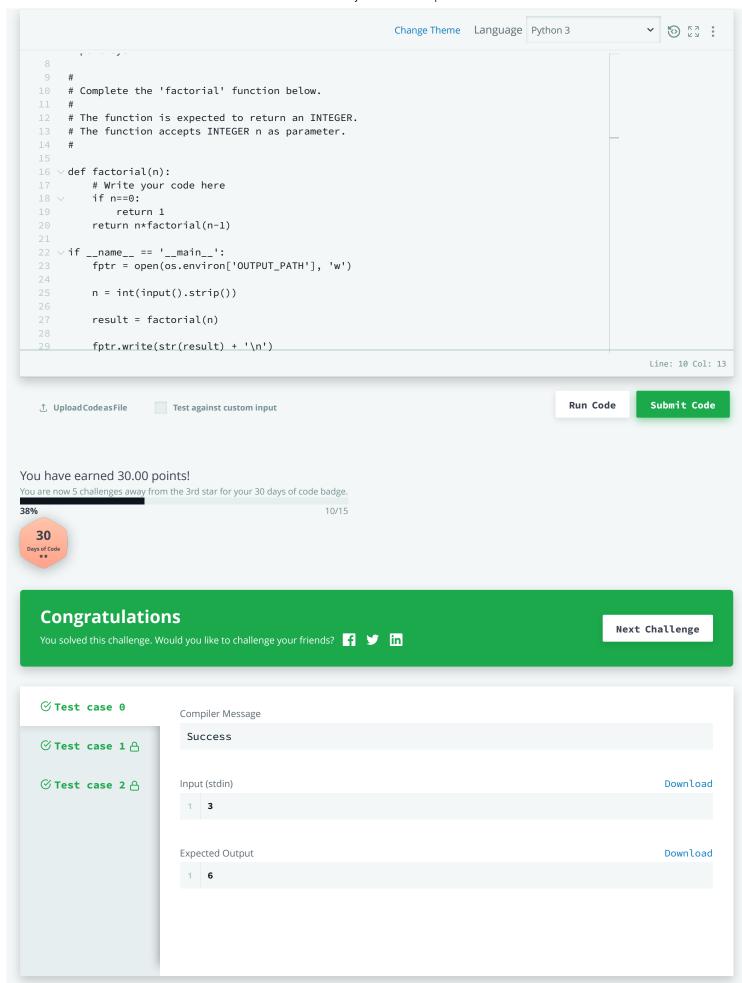**Explanation**

Consider the following steps. After the recursive calls from step 1 to 3, results are accumulated from step 3 to 1.

1. $factorial(3) = 3 \times factorial(2) = 3 \times 2 = 6$
2. $factorial(2) = 2 \times factorial(1) = 2 \times 1 = 2$
3. $factorial(1) = 1$

Change Theme    Language   Python 3

```
 8
 9    #
10    # Complete the 'factorial' function below.
11    #
12    # The function is expected to return an INTEGER.
13    # The function accepts INTEGER n as parameter.
14    #
15
16  ∨ def factorial(n):
17        # Write your code here
18  ∨     if n==0:
19            return 1
20        return n*factorial(n-1)
21
22  ∨ if __name__ == '__main__':
23        fptr = open(os.environ['OUTPUT_PATH'], 'w')
24
25        n = int(input().strip())
26
27        result = factorial(n)
28
29        fptr.write(str(result) + '\n')
```

Line: 10 Col: 13

⬆ Upload Code as File        ☐ Test against custom input

**Run Code**    **Submit Code**

You have earned 30.00 points!

You are now 5 challenges away from the 3rd star for your 30 days of code badge.

**38%**                                                                      10/15

**30**
Days of Code
★★

# Congratulations

You solved this challenge. Would you like to challenge your friends?  f  🐦  in

**Next Challenge**

⊘ **Test case 0**              Compiler Message

⊘ **Test case 1** 🔒           Success

⊘ **Test case 2** 🔒
                              Input (stdin)                        Download

                              1  **3**

                              Expected Output                      Download

                              1  **6**