

Tasks summary

Task	Time spent	Score
CountFactors Python	2 min	100%

Total score

100%

Tasks Details

Easy

1. CountFactors

Count factors of given number n.

Task Score	Correctness	Performance
100%	100%	100%

Task description

A positive integer D is a *factor* of a positive integer N if there exists an integer M such that $N = D * M$.

For example, 6 is a factor of 24, because $M = 4$ satisfies the above condition ($24 = 6 * 4$).

Write a function:

```
def solution(N)
```

that, given a positive integer N, returns the number of its factors.

For example, given $N = 24$, the function should return 8, because 24 has 8 factors, namely 1, 2, 3, 4, 6, 8, 12, 24. There are no other factors of 24.

Write an **efficient** algorithm for the following assumptions:

- N is an integer within the range $[1..2,147,483,647]$.

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Solution

Programming language used: Python

Total time used: 2 minutes

Effective time used: 2 minutes

Notes: not defined yet

Task timeline

02:27:37

02:29:19

Code: 02:29:19 UTC, py, final, score: 100

```
1 # you can write to stdout for debugging purposes, e.g.
2 # print("this is a debug message")
3
4 def solution(N):
5     # write your code in Python 3.6
6     if N == 0:
7         return 0
8     elif N == 1:
9         return 1
10    elif N == 2:
11        return 2
12    elif N == 3:
13        return 2
14    else:
15
16        ndiv = 2
17
18        for i in range(2, int(N**0.5)+1):
19            if N%i == 0:
20                ndiv += 2
21
22            if (N**0.5)%1 == 0:
23                ndiv -= 1
24
25        return ndiv
```

Analysis summary

The solution obtained perfect score.

Analysis

Detected time complexity: O(sqrt(N))

expand all	Example tests
▶ example1	OK
example test (N=24=4!)	
expand all	Correctness tests
▶ squares	OK
N=16, N=36	
▶ tiny	OK
N <= 10	
▶ simple1	OK
N=41(prime), N=42	
▶ simple2	OK
N=69, N=64, N=120=5!	
▶ simple3	OK
N=720=6!, N=1111	
▶ simple4	OK
N=5,040=7!, N=12,345	
▶ simple5	OK
N=34,879, N=40,320=8!	
▶ extreme_one	OK
N=1	
expand all	Performance tests
▶ medium1	OK
N=362,880=9!, N=1,948,102	
▶ medium2	OK
N=3,628,800=10!, N=5,621,892, N=4,999,696	
▶ big1	OK
N=27,043,111, N=39,916,800=11!, N = 39,992,976	
▶ big2	OK
N=97,093,212, N=2^28	
▶ big3	OK
N=479,001,600=12!, N=780291637(prime), N=449,991,369	
▶ extreme_maxint	OK
N=1,000,000,000, N=MAX_INT, N=2147,395,600	