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codility

Training center

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Demo ticket

Session

ID: demoTNKDGH-3UG
Time limit: 120 min.

Status: closed

Created on: 2014-03-16 03:40 UTC
Started on: 2014-03-16 03:40 UTC
Finished on: 2014-03-16 03:41 UTC

Tasks in test

Task score

Test score

100%

100 out of 100 points

EASY

1. MinPerimeterRectangle

Find the minimal perimeter of any rectangle whose area equals N.

score: 100 of 100

Task description

An integer N is given, representing the area of some rectangle.
The *area* of a rectangle whose sides are of length A and B is A * B, and the *perimeter* is 2 * (A + B).
The goal is to find the minimal perimeter of any rectangle whose area equals N. The sides of this rectangle should be only integers.
For example, given integer N = 30, rectangles of area 30 are:

- (1, 30), with a perimeter of 62,
- (2, 15), with a perimeter of 34,
- (3, 10), with a perimeter of 26,
- (5, 6), with a perimeter of 22.

Write a function:

```
def solution(N)
```

that, given an integer N, returns the minimal perimeter of any rectangle whose area is exactly equal to N.
For example, given an integer N = 30, the function should return 22, as explained above.
Assume that:

- N is an integer within the range [1..1,000,000,000].

Complexity:

- expected worst-case time complexity is O(sqrt(N));
- expected worst-case space complexity is O(1).

Solution

Programming language used: Python

Total time used: 1 minutes

Effective time used: 1 minutes

Notes: correct functionality and scalability

Task timeline

03:40:33 03:41:29

Code: 03:41:29 UTC, py, final, score: **100.00**

```
1.  def solution(N):
2.      # write your code in Python 2.6
3.      A = int(N**0.5)
4.      while N % A != 0:
5.          A -= 1
6.      return 2 * (A + N / A)
```

Analysis

Detected time complexity:

O(sqrt(N))

test	time	result
example example test	0.050 s.	OK
extreme_min N = 1 test	0.050 s.	OK

simple1 N = 36 test	0.050 s.	**OK**
simple2 N = 48 test	0.050 s.	**OK**
simple3 N = 101 test	0.050 s.	**OK**
small N = 1,234 test	0.050 s.	**OK**
medium N = 4,564,320 test	0.050 s.	**OK**
prime1 N = 15,486,451 test	0.050 s.	**OK**
square N = 100,000,000 test	0.050 s.	**OK**
prime2 N = 982,451,653 test	0.050 s.	**OK**
extreme_max N = 1,000,000,000 test	0.050 s.	**OK**

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