

Demo ticket

Session

ID: demo89NTYC-C85
Time limit: 120 min.

Status: closed

Created on: 2014-03-16 05:34 UTC
Started on: 2014-03-16 05:34 UTC
Finished on: 2014-03-16 05:42 UTC

Tasks in test

Task score

Test score

?

100%

100 out of 100 points

EASY

1. ChocolatesByNumbers

There are N chocolates in a circle. Count the number of chocolates you will eat.

score: 100 of 100



Task description

Two positive integers N and M are given. Integer N represents the number of chocolates arranged in a circle, numbered from 0 to N - 1. You start to eat the chocolates. After eating a chocolate you leave only a wrapper.

You begin with eating chocolate number 0. Then you omit the next M - 1 chocolates or wrappers on the circle, and eat the following one. More precisely, if you ate chocolate number X, then you will next eat the chocolate with number (X + M) modulo N (remainder of division). You stop eating when you encounter an empty wrapper.

For example, given integers N = 10 and M = 4. You will eat the following chocolates: 0, 4, 8, 2, 6.

The goal is to count the number of chocolates that you will eat, following the above rules.

Write a function:

```
def solution(N, M)
```

that, given two positive integers N and M, returns the number of chocolates that you will eat.

For example, given integers N = 10 and M = 4. the function should return 5, as explained above.

Assume that:

- N and M are integers within the range [1..1,000,000,000].

Complexity:

- expected worst-case time complexity is $O(\log(N+M))$;
- expected worst-case space complexity is $O(1)$.

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Solution

Programming language used: Python

Total time used: 8 minutes

Effective time used: 8 minutes

Notes: correct functionality and scalability

Task timeline



05:34:43

05:42:44

Code: 05:42:44 UTC, py, final, score: 100.00

```
1. def solution(N, M):
2.     # write your code in Python 2.6
3.     return N / gcd(N, M)
4.
5. def gcd(a, b):
6.     return b if a % b == 0 else gcd(b, a % b)
```

Analysis

Detected time complexity:

$O(\log(N + M))$

test	time	result
example example test	0.050 s.	OK
extreme_small very small N and M	0.050 s.	OK

simple simple test, N = 24, M = 18	0.050 s.	OK
small1 small tests	0.050 s.	OK
small2 small tests	0.050 s.	OK
medium medium tests	0.050 s.	OK
large large tests	0.050 s.	OK
large2 N = (3**9)*(2**14), M=(2**14)*(2**14)	0.050 s.	OK
extreme_large maximal and minimal values	0.050 s.	OK

Training center