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Training ticket

Session

ID: trainingEAYH5M-SBB
Time limit: 120 min.

Status: closed

Created on: 2015-12-31 01:08 UTC
Started on: 2015-12-31 01:08 UTC
Finished on: 2015-12-31 01:10 UTC

Tasks in test	Correctness	Performance	Task score
1 BinaryGap Submitted in: Objective-C	100%	not assessed	100%

Test score

100%

100 out of 100 points

EASY

1. BinaryGap

Find longest sequence of zeros in binary representation of an integer.

score: 100 of 100

Task description

A *binary gap* within a positive integer N is any maximal sequence of consecutive zeros that is surrounded by ones at both ends in the binary representation of N.

For example, number 9 has binary representation `1001` and contains a binary gap of length 2. The number 529 has binary representation `1000010001` and contains two binary gaps: one of length 4 and one of length 3. The number 20 has binary representation `10100` and contains one binary gap of length 1. The number 15 has binary representation `1111` and has no binary gaps.

Write a function:

```
int solution(int N);
```

that, given a positive integer N, returns the length of its longest binary gap. The function should return 0 if N doesn't contain a binary gap.

For example, given N = 1041 the function should return 5, because N has binary representation `10000010001` and so its longest binary gap is of length 5.

Assume that:

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

Complexity:

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

Solution

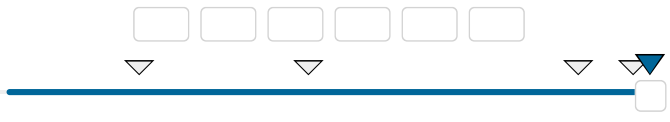
Programming language used: Objective-C

Total time used: 2 minutes

Effective time used: 2 minutes

Notes: *not defined yet*

Task timeline



Code: 01:10:50 UTC, m, final, score: **100.00**

show code in pop-up

```
1  // you can also use imports, for example:
2  // #import <Foundation/NSDictionary.h>
3
4  // you can write to stdout for debugging purposes, e.g.
5  // printf("this is a debug message\n");
6
7  int solution(NSInteger n) {
```

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```
8     // write your code in Objective-C 2.0
9     NSMutableString *str = [NSMutableString stringWithF
10    NSInteger zeroCount = 0, binaryGap=0; BOOL flag = 0
11    for(NSInteger numberCopy = n; numberCopy > 0; numbe
12    {
13        // Prepend "0" or "1", depending on the bit
14        [str insertString:((numberCopy & 1) ? @"1" : @"
15        if ((numberCopy &1 ) ==0 && flag==1) {
16            zeroCount +=1;
17        }else{
18            if (zeroCount>binaryGap) {
19                binaryGap = zeroCount;
20
21            }
22            zeroCount=0;
23            flag=0;
24        }
25
26        if ((numberCopy&1)==1) {
27            flag=1;
28        }
29    }
30    NSLog(@"%@", str);
31
32
33    return binaryGap;
34 }
```

Analysis summary

The solution obtained perfect score.

Analysis

expand all	**Example tests**	
▶	example1 example test n=1041=10000010001_2	✔ OK
▶	example2 example test n=15=1111_2	✔ OK
expand all	**Correctness tests**	
▶	extremes n=1, n=5=101_2 and n=2147483647=2**31-1	✔ OK
▶	trailing_zeroes n=6=110_2 and n=328=101001000_2	✔ OK
▶	power_of_2 n=5=101_2, n=16=2**4 and n=1024=2**10	✔ OK
▶	simple1 n=9=1001_2 and n=11=1011_2	✔ OK
▶	simple2 n=19=10011 and n=42=101010_2	✔ OK
▶	simple3 n=1162=10010001010_2 and n=5=101_2	✔ OK
▶	medium1 n=51712=110010100000000_2 and n=20=10100_2	✔ OK
▶	medium2 n=561892=10001001001011100100_2 and n=9=1001_2	✔ OK
▶	medium3 n=66561=10000010000000001_2	✔ OK
▶	large1 n=6291457=11000000000000000000001_2	✔ OK
▶	large2 n=74901729=10001110110111010001110000 1	✔ OK
▶	large3 n=805306369=11000000000000000000000000101_2	✔ OK
▶	large4 n=1376796946=10100100001000001000001000 10010_2	✔ OK
▶	large5 n=1073741825=10000000000000000000000000001_2	✔ OK
▼	large6 n=1610612737=11000000000000000000000000001_2	✔ OK

1. 0.073 s **OK**

   stderr:
   ```
   2015-12-31 01:10:55.237 user.e[2:2]
   11000000000000000000000000000001
   ```

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