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Training ticket

Session

ID: trainingZSSPG5-SZ7
Time limit: 120 min.

Status: closed

Created on: 2016-06-04 10:16 UTC
Started on: 2016-06-04 10:16 UTC
Finished on: 2016-06-04 10:17 UTC

Tasks in test	Correctness	Performance	Task score
1 BinaryGap Submitted in: Java	100%	not assessed	100%

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:

```
class Solution { public 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

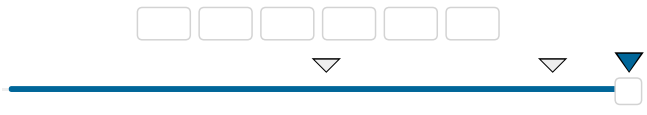
Programming language used: Java

Total time used: 1 minutes

Effective time used: 1 minutes

Notes: *not defined yet*

Task timeline



10:16:34 10:17:15

Code: 10:17:15 UTC, java, final, score: **100**

show code in pop-up

```
1  // you can also use imports, for example:
2  // import java.util.*;
3
4  // you can write to stdout for debugging purposes, e.g.
5  // System.out.println("this is a debug message");
6
7  class Solution {
8      public int solution(int N) {
9      String val = Integer.toBinaryString(N);
10     char[] SOURCE = val.toCharArray();
11
12     int BIGGEST = 0; // lenght of the sequence
13     int INDEX = 0;   // start index of longest sequence
14     int START = 0;   // start index of the current sequ
15     int[] LENGHTS = new int[SOURCE.length]; //
```

```
16      byte prior = -1; // -1 - unknown, 0 - not found, 1
17
18      for (int i=0;i < SOURCE.length; i++) {
19        if (SOURCE[i] == '0') {
20          if (prior == 0) {
21            START = i;
22          }
23          LENGHTS[START] = LENGHTS[START] + 1;
24          prior = 1;
25        } else {
26          if (prior == 1) {
27            if (LENGHTS[START] > BIGGEST) {
28              BIGGEST = LENGHTS[START];
29              INDEX = START;
30            }
31          }
32          prior = 0;
33        }
34      }
35
36      return BIGGEST;
37      }
38  }
```

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 01	✔ OK
▶	large3 n=805306373=11000000000000000000000 000101_2	✔ OK
▶	large4 n=1376796946=10100100001000001000001 00010010_2	✔ OK
▶	large5 n=1073741825=10000000000000000000000 00000001_2	✔ OK
▶	large6	✔ OK

n=1610612737=11000000000000000000000
00000001_2

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