Codility_

Candidate Report: trainingKR3DGV-9WQ

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Test Name:

Summary Timeline

Tasks summary

Task	Time spent	Score
BinaryGap Python	24 min	100%

Total score

Tasks Details

1. **BinaryGap**

Easy

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

Task Score	Correctness	Performance
100%	100%	Not assessed

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. The number 32 has binary representation `100000` and has no binary gaps.

Write a function:

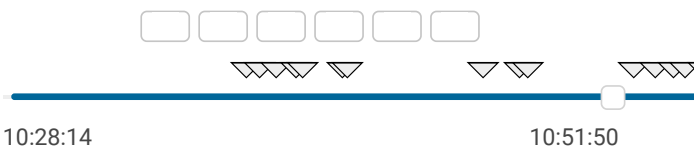
```
def solution(N)
```

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.

Solution

Programming language used:	Python
Total time used:	24 minutes
Effective time used:	24 minutes
Notes:	*not defined yet*

Task timeline



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. Given N = 32 the function should return 0, because N has binary representation '100000' and thus no binary gaps.

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

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

Code: 10:51:50 UTC, py, final, score: **100** show code in pop-up

```python
# you can write to stdout for debugging purposes, e.g.
# print("this is a debug message")

def solution(N):
    # write your code in Python 3.6
    st = toBinary(N)
    # when there is no "0"
    if "0" not in st:
        return 0
    # get all "1" positions
    pos_list = onePositions(st)
    # print(pos_list)
    L = len(pos_list)
    # where is only one "1"
    if L == 1:
        return 0
    gap = pos_list[1] - pos_list[0]
    i = 1
    while i<L-1:
        tmp = pos_list[i+1] - pos_list[i]
        if tmp > gap:
            gap = tmp
        i = i + 1
    return gap-1

def toBinary(N):
    i = N
    st = ""
    while i>0:
        tmp = i%2
        st = str(tmp) + st
        i = i // 2
    return st

def onePositions(st):
    pos_list = []
    L = len(st)
    i = 0
    while i < L:
        pos = st[i]
        if pos == "1":
            pos_list.append(i)
        i = i + 1
    return pos_list

"""N = 32
#st = toBinary(N)
st = solution(N)
# 100000, 1000010001
# 100000, 1000010001
print('----------', st)"""
```

Analysis summary

The solution obtained perfect score.

Analysis

expand all Example tests

▶ example1 ✓ OK
example test
n=1041=10000010001_2

▶

example2 example test n=15=1111_2	✓ OK	
▶ example3 example test n=32=100000_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=100011101101110100011100001	✓ OK	
▶ large3 n=805306373=11000000000000000000000000101_2	✓ OK	
▶ large4 n=1376796946=1010010000100000100000100010010_2	✓ OK	
▶ large5 n=1073741825=1000000000000000000000000001_2	✓ OK	
▶ large6 n=1610612737=1100000000000000000000000001_2	✓ OK	

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