

## Topics to discuss

Bit manipulation Problem - 10

Number of steps to reduce a number to zero.



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# 1342. Number of Steps to Reduce a Number to Zero

Easy

Topics



Companies



Hint

Given an integer `num`, return *the number of steps to reduce it to zero*.

In one step, if the current number is even, you have to divide it by `2`, otherwise, you have to subtract `1` from it.

## Example 1:

**Input:** `num = 14`

**Output:** `6`

**Explanation:**

Step 1) 14 is even; divide by 2 and obtain 7.

Step 2) 7 is odd; subtract 1 and obtain 6.

Step 3) 6 is even; divide by 2 and obtain 3.

Step 4) 3 is odd; subtract 1 and obtain 2.

Step 5) 2 is even; divide by 2 and obtain 1.

Step 6) 1 is odd; subtract 1 and obtain 0.

class Solution {

public int numberOfSteps (int num) {

int steps = 0;

if (num == 0) {

return steps;

}

if (num % 2 == 0) {

steps += numberOfSteps (num/2);

}

else {

steps += numberOfSteps (num-1);

}

steps++;

return steps;

}

```

class solution {
    public int numberOfSteps (int num) {
        int steps = 0;
        while (num > 0) {
            num = (num & 1) == 1 ? num ^ 1 : num >> 1;
            steps++;
        }
        return step
    }
}

```

if LSB = 1 then odd  
else even.

num = 14 → 1110

S = 0

while ①

1110 & 1 = 0

1110 >> 1 = 111

S = 1

② 111 & 1 = 1

111 ^ 1 = 110

S = 2

③ 110 & 1 = 0

110 >> 1 = 11

S = 3

④ 11 & 1 = 1

11 ^ 1 = 10

S = 4

⑤ 10 & 1 = 0

10 >> 1 = 1

S = 5

⑥ 1 & 1 = 1

1 ^ 1 = 0

S = 6

⑦ 0 X

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