Your car starts at position 0 and speed +1 on an infinite number line. (Your car can go into negative positions.)

Your car drives automatically according to a sequence of instructions A (accelerate) and R (reverse).

When you get an instruction "A", your car does the following: position += speed, speed \*= 2.

When you get an instruction "R", your car does the following: if your speed is positive then speed = -1, otherwise speed = 1. (Your position stays the same.)

For example, after commands "AAR", your car goes to positions 0->1->3->3, and your speed goes to 1->2->4->-1.

Now for some target position, say the **length** of the shortest sequence of instructions to get there.

## Example 1:

#### Input:

target = 3

# Output: 2

## Explanation:

The shortest instruction sequence is "AA".

Your position goes from 0->1->3.

#### Example 2:

## Input:

target = 6

# Output: 5

## **Explanation:**

The shortest instruction sequence is "AAARA".

Your position goes from 0->1->3->7->6.

# Note:

• 1 <= target <= 10000.