# Bit-Manipulation

## video-22

Leetcode
-3133
Medium

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Something
Big Coming on 100K :)

Trey this channel to
see "Life behind the Scenes"

# Motivation

#

You don't have to be perfect;

just keep moving forward.

Small steps lead to big changes.

Every Effort Counts

#

## 3133. Minimum Array End

XOR, OR, AND.

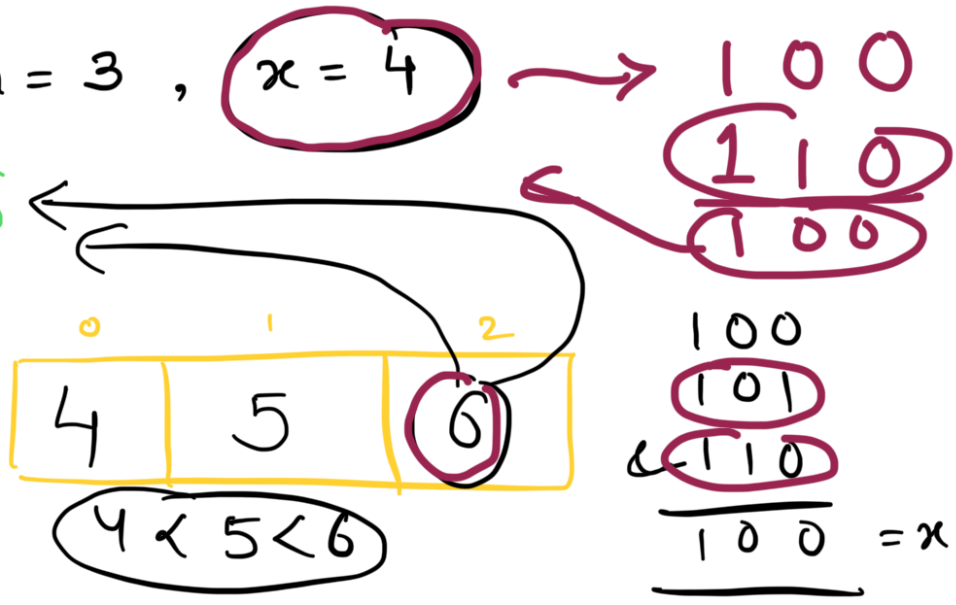
Medium | Topics | Companies | Hint

You are given two integers `n` and `x`. You have to construct an array of **positive** integers `nums` of size `n` where for every `0 <= i < n - 1`, `nums[i + 1]` is **greater than** `nums[i]`, and the result of the bitwise `AND` operation between all elements of `nums` is `x`.

Return the **minimum** possible value of `nums[n - 1]`.

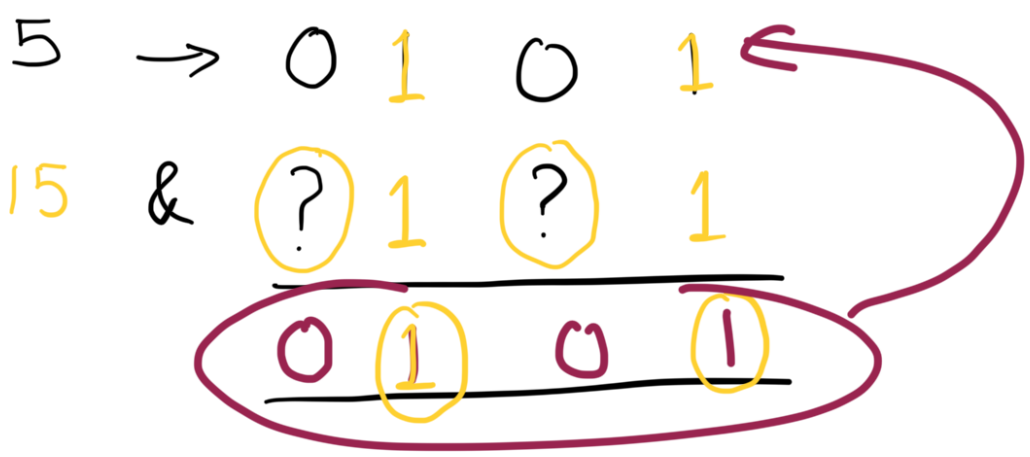
Example :- n = 3, x = 4

Output :- 6



# Thought Process

AND operation...




$n = 3, \quad x = 4$

$\{ \underline{4}, \underline{?}, \underline{?} \}$

$4 \rightarrow 1\ 0\ 0$

5, 6, 7, 8, 9

5 → 1 0 1

6 → 1 1 0

1 0 0 → x

n = 2, x = 7

{ 7 , 15 }

7 → 0 1 1 1

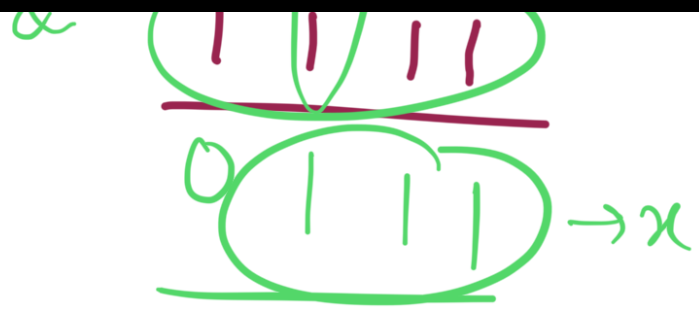
7 → 8 9, 10

8 → 1 0 0 0

OR → 1 1 1 1 → 15

0 1 1 1

&




$n = 4$ , $x = 37$

$\{37, \underset{\uparrow}{39}, \underset{\uparrow}{45}, 47\}$

38, 39, 40, 41, 42 . . .

37 → 1 0 0 1 0 1

38 → 1 0 0 1 1 0

OR

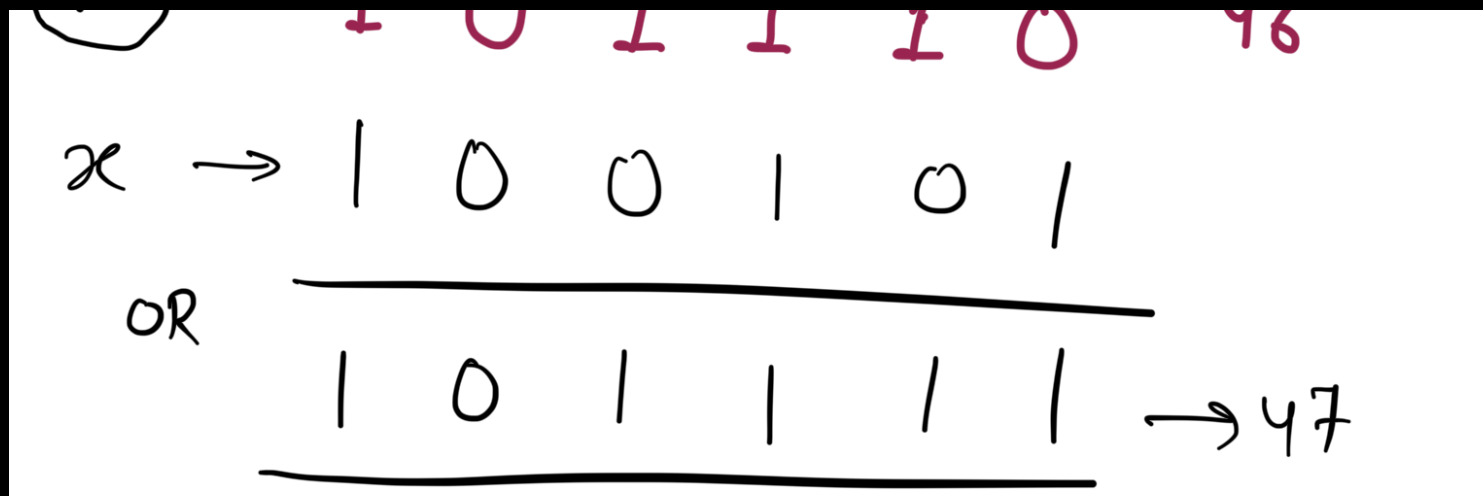
1 0 0 1 1 1 → 39

OR 1 0 1 0 0 0 → 40

1 0 1 1 0 1 → 45

45+1

45+1 → 1 0 1 1 . . .




Story to code:-

$n = 4$ , $x = 37$