**Next sparse binary number**

[math](http://www.practice.geeksforgeeks.org/tag-page.php?tag=math%20&isCmp=0)[Amazon](http://www.practice.geeksforgeeks.org/tag-page.php?tag=Amazon&isCmp=1)

Given an integer n in the input, find its next sparse binary number.A sparse binary number is a number whose binary representation does not contain any consecutive 1s.

**Input:**

The first line of input contains an integer T denoting the number of test cases. The first line of each test case is number 'N'

**Output:**

Print next Sparse binary number,if the input number is not sparse else print the number itself.  
  
**Constraints:**  
1 ≤ T ≤ 100  
1 ≤ n ≤ 100000

**Example:**

Input  
2  
3  
5

Output  
4  
5

\*\*For More Examples Use Expected Output\*\*

<http://www.practice.geeksforgeeks.org/problem-page.php?pid=391>

#include <iostream>

#include <stdio.h>

#include <set>

#include <map>

#include <vector>

using namespace std;

bool isSparse(int n) {

   std::vector<int> bin;

   int i=0;

   while(n > 0) {

      bin.push\_back(n%2);

      if(bin.size() > 1 && (bin[i] == 1 && bin[i-1] == 1)) {

          return false;

      }

      i++;

      n/=2;

    }

    return true;

}

int main() {

    // TODO code application logic here

    int t;

    scanf("%d", &t);

    while(t--) {

        int n;

        scanf("%d", &n);

        while(!isSparse(n)) {

            n++;

        }

        printf("%d**\n**", n);

    }

}