Challenge 4 - Missing numbers

Here at Tuenti we use integer numbers a lot. We store all of them (only non-negative integers, from 0 to 2^{31}-1) in a binary file inside a USB drive. Yesterday, while playing rollerball, we accidentally dropped it. Integers were shuffled around and we have lost 100 of them. We are really devastated. Help us find the missing ones!

Here you have a (7z) file with the current content of the USB drive, and just to be sure you are reading it correctly, the first number in the file is 2147459344.

Input

The first line contains the number of test cases, **T**, and **T** cases follow (each one in a different line). Each test case consists of one integer **N** (1 ≤ **N** ≤ 100), indicating that you must find the **Nth** missing integer in the file (in ascending order).

Output

The Nth missing number in the file, in a different line for each test case.

Example

Suppose that all numbers from 0 to 107 are in the file, and that 108 is the first integer missing in the file. Then, if you are asked to provide the 1st missing number, you will have to ouput 108.

Sample input

```
2
3
98
```

Sample output

```
9854
2147478824
```

Submit & test your code

To test and submit code we provide a set of tools to help you. Download contest tools if you haven't already done that. You will then be able to test and submit your solution to this challenge with the challenge token.

```
Challenge token: ZI6tLdlnF21-XikfQrwS
```

To test your program

```
./test_challenge ZI6tLdlnF21-XikfQrwS path/program
```

A nice output will tell you if your program got the right solution or not. You can try as many times as you need.

To submit your program to the challenge

```
./submit_challenge ZI6tLdlnF21-XikfQrwS path/source_pkg.tgz path/program
```

Note that you first need to solve the test phase before submitting the code. During the submit phase, in some problems, we might give your program harder questions, so try to make your program failsafe.

Important: In this phase, you must provide the source code used to solve the challenge and, if necessary, a brief explanation of how you solved it.

Remember **you can only submit once!** Once your solution is submitted you won't be able to amend it to fix issues or make it faster, so please be sure your solution is finished before submitting it.

If you have any doubts, please check the info section.

Go ahead

I'm done! :)

Once you have submitted your code, hit refresh and continue to next challenge.

I'm stuck! :(

Be sure you follow the Tuenti Engineering twitter for updates and possible hints during the contest.

If this challenge is too hard and you are blocked, you will be able to skip it after two hours. Note that **you won't be able to complete it later**, and you have a limited number of challenges to skip.

Finally, if you run out of skips but are still really stuck with one problem, you will be able to skip it after 24 hours.

Challenge status:

Test case	With errors
Solution submitted	Not done
Skip	Skip this challenge :((You have 4 skips)

Refresh status

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