

Find the Next Prime

Arup is obsessed with prime numbers. In fact, he's so obsessed, that all of his test questions are of the form, "What is the next smallest prime number greater than n ?" While you have fun doing the mental arithmetic, you've decided that it might be better if you use some of the coding skills Mr. Dencker and Dr. Lobo taught you to write a program to ace all of Arup's tests.

The Problem

Given a positive integer, n , determine the smallest number greater than n that is a prime number.

The Input

The first line of the input will have a single positive integer, c ($c \leq 10^5$), representing the number of input cases. The following c lines will each contain a single positive integer, n ($n \leq 10^6$), a value in one of Arup's test question.

The Output

For each input case, output a single integer on a line by itself, representing the smallest number greater than the input for that case that is a prime number.

Sample Input

10
1
2
3
4
5
6
7
8
9
10

Sample Output

2
3
5
5
7
7
11
11
11
11