Prime Again

In this problem, you have to find the nearest prime number smaller than N. (3 <= N <= 2^32)

Input

The first line contains an integer T specifying the number of test cases. (T <= 10000)

T lines follow, each line contains an integer N.

Output

For each test case, output the result on one line.

Example

Input:
3
5
10
17

Output:
3
7
13