Totient in permutation (easy)

In number theory, Euler's totient (or PHI function), is an arithmetic function that counts the number of positive integers less than or equal to a positive integer N that are relatively prime to this number N.

That is, if N is a positive integer, then PHI(N) is the number of integers K for which GCD(N, K) = 1 and $1 \leq K \leq N$. We denote GCD the Greatest Common Divisor. For example, we have PHI(9)=6.

Interestingly, PHI(87109)=79180, and it can be seen that 87109 is a permutation of 79180.

Input

The input begins with the number T of test cases in a single line.
In each of the next T lines there are an integer M.

Output

For each given M, you have to print on a single line the value of N, for which $1 < N < M$, PHI(N) is a permutation of N and the ratio N/PHI(N) produces a minimum. If there's several answers output the greatest, or if need, "No solution." without quotes.
Leading zeros are not allowed for integers greater than 0.

Example

Input:
3
22
222
2222

Output:
21
63
291

Explanations : For the first case, in the range]1..22[, the lonely number n for which phi(n) is in permutations(n) is 21, (we have phi(21)=12). So the answer is obviously 21.
For the second case, in the range]1..222[, there's two numbers n for which phi(n) is in permutations(n), we have phi(21)=12 and phi(63)=36. But as 63/36 is equal to 21/12, we're taking the greater : 63.
For the third case, in the range]1..2222[, there's four numbers n for witch phi(n) is in permutations(n), phi(21)=12, phi(63)=36, phi(291)=192 and phi(502)=250. Within those solutions 291/192 is the minimum, we output 291.

Constraints

$1 < T < 10^5$
$1 < M < 10^7$

Code size limit is 10kB ; less than 500B of python3 code can get AC under 2s.

After that you may try TIP2.
@Speed addicts : my C code ran in 0.02s, and my fastest python3.2 code ran in 1.21s, (0.90s in py2.7)

Edit 2017-02-11, after compiler updates. My old C code ends in 0.00s, my old Python code ends in 0.05s !!!