

6783 Least Common Multiple

Representing numbers in different bases can make certain problems much easier (it can also make the problem much harder). Here, we will be concerned with numbers in base 26. Let S be the set of all positive integers so that when they are represented in base 26, they only contain 0's and 1's. The first few elements of S (in base 10) are: 1, 26, 27, 676, 677, ...

You will be given three numbers, a , b , and c , and you will need to find the least common multiple of 2^a , 3^b and 5^c that is in S and is also larger than a given value x .

Input

Input consists of multiple test cases (no more than 600). Each test case contains four integers, on a line by themselves, in the order a , b , c , x ($0 \leq a < 50$, $0 \leq b \leq 3$, $0 \leq c \leq 2$, $0 \leq x < 2^{63}$).

Output

For each test case, output the smallest number that is in S , is a multiple of 2^a , 3^b and 5^c and is larger than x . Output the number in base 26. If there is no number that satisfies the criteria above, output 'No Solution' (without the quotes). See the sample output for the exact format.

Sample Input

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1 1 0 5
1 0 1 20
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Sample Output

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Case 1: 110
Case 2: 111110
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