Problem : What is your rank

Consider the 10 digits: 0,1,2,3,4,5,6,7,8,9.

There are 10! ( 10 factorial, or 1* 2 * 3 * ... 10) permutations that could be formed using these digits exactly once allowing leading 0 in a permutation. These permutations can be arranged in the increasing lexicographic order (using the collating sequence 0 < 1 < 2 < 3 < 4 < 5 < 6 < 7 < 8 < 9). For example, the first sequence in the ordering is 0123456789 and the next number is 0123456798. The last number is of course 9876543210. We will call the position of a permutation in the lexicographic order as the rank of that number. The rank of 0123456789 is 1 and that of 0123456798 is 2. The rank of 9876543210 is 10! = 3628800.

The input will consist of a positive integer T followed by T permutations of the ten digits. Write a program to determine the ranks for each of the T permutations, and compute the remainder when the T ranks are all multiplied and the result is divided by 23456.

Constraints

0 ≤ T ≤ 20

Example 1

Input:
3
9876543210
0123456789
0123456798

Output:
9696

Explanation:
The ranks for the given input permutations are 3628800, 1, and 2. The product of these ranks is 7257600, and the remainder when this is divided by 23456 is 9696. Hence the output is 9696.

Example 2

Input:
4
0123456798
0123456879
0123456897

0123456978

Output:
120

Explanation:
The ranks of the input permutations are 2, 3, 4, 5. The product of these ranks is 120, as is the remainder when this is divided by 23456. Hence the output is 120.