

Prime Permutations

Given two positive integers n and m , we call m a prime permutation of n , if m is prime and can be obtained by zero or more permutations of the digits of n . Permutations with leading zeros are invalid.

Input

Input starts with a positive integer $t < 10^4$ in a single line, then t lines follow. Each of the t lines contains one positive integer $n < 10^7$.

Output

For every n print the number of distinct prime permutations of n in a single line.

Example

Input:

2
13
110

Output:

2
1

Hint: If your solution times out, you may try the [tutorial version](#) with a weaker time limit.