

Permutations

Filename: perm

The Problem

Given the list of numbers 1, 2, 3, ..., n, we can list these permutations in numerical order. For example, with $n=3$, our list would be

1,2,3
1,3,2
2,1,3
2,3,1
3,1,2
3,2,1

The numerical order of a list is simply the number produced when we treat each number from 1 to n as a single digit. The corresponding numbers to the list above are 123, 132, 213, 231, 312, and 321. Given a value of n, the number of values we are permuting, the problem is to determine the permutation that corresponds to the k^{th} "smallest" value of all permutations. Thus, for $n=3$ and $k=4$, the corresponding permutation is 2,3,1.

The Input

The first line of the input is an integer indicating the total number of subsequent lines of input. Each following line will contain two integers, n followed by k. You are guaranteed that $1 \leq n \leq 12$ and $1 \leq k \leq n!$.

The Output

For each input case, list the permutation separated by commas on a line by itself. For the input $n=3$, $k=4$, the output would be:

2,3,1

Sample Input

2
10 1
4 24

Sample Output

1,2,3,4,5,6,7,8,9,10
4,3,2,1