

12335 Lexicographic Order

The alphabet of a certain alien language consists of n distinct symbols. The symbols are like the letters of English alphabet but their ordering is different. You want to know the original order of the symbols in that particular alphabet. You have a string consists of all the letters of that alphabet and you know that this is the k -th (1 based) lexicographic permutation of these symbols. You have to arrange these symbols in lexicographic order of that language.

Input

The first line of input will contain an integer T ($T \leq 5000$) which denotes the number of test cases.

Each of the following T lines contains a string s and an integer k . The string will be of length n ($1 \leq n \leq 20$) and will consist of lowercase letters only. All the letters in the string will be distinct. The value of k will be in the range ($1 \leq k \leq n!$).

Output

For each line of input output the case number and a string which contains the letters in lexicographic order in that language.

Note: The first input resembles the original order of English alphabet. Here are the lexicographic permutations

abcd	1	cabd	13
abdc	2	cadb	14
acbd	3	cbad	15
acdb	4	cbda	16
adbc	5	cdab	17
adcb	6	cdba	18
bacd	7	dabc	19
badc	8	dacb	20
bcad	9	dbac	21
bcda	10	dbca	22
bdac	11	dcab	23
bdca	12	dcba	24

Sample Input

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3
bdac 11
abcd 5
hjbrl 120
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Sample Output

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Case 1: abcd
Case 2: acdb
Case 3: lrbjh
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