J Just Some Permutations

Dexter considers a permutation of first **N** positive numbers (**1, 2, … N**) **beautiful** if all the absolute differences between **adjacent numbers** in the permutation are distinct.

So for N=4: {3, 2, 4, 1} is a **beautiful** permutation because the absolute differences are {1, 2, 3}. But {3, 1, 4, 2} is not **beautiful** since the absolute differences {2, 3, 2} are not distinct.

Given **N** and **K** find the lexicographically **K**-th smallest beautiful permutation of the first **N** positive numbers. A permutation of **N** numbers $\mathbf{A_1,A_2...A_n}$ is lexicographically smaller than another permutation $\mathbf{B_1, B_2, \ldots, B_n}$ if $A_i < B_i$ for some **i** and $\mathbf{A_j} = \mathbf{B_j}$ for all **j<i**.

Input

First line of the input contains an integer **T(<=1000**) which is the number of test cases. Each of the next **T** lines contain two space separated integers **N** (**1<N<20**) and **K**(**1<=K<=10^9**).

Output

For each test case output the case number and then **N** space separated integers which is the lexicographically **K**-th smallest beautiful permutation of first **N** positive numbers. If there are less than **K** beautiful permutations then output "-1". See sample output for exact formatting.

Sample Input	Sample Output
4 5 1 5 2 5 4 5 10	Case 1: 1 5 2 4 3 Case 2: 2 3 5 1 4 Case 3: 3 2 4 1 5 Case 4: -1

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