Distinguished Permutation

Given an array A of length n, we call it a **permutation** if it consists of n distinct integers from 1 to n in arbitrary order. For example, $[2, 3, 1, 5, 4]$ is a permutation, but $[1, 2, 2]$ is not a permutation (2 appears twice in the array), and $[1, 3, 4]$ is also not a permutation ($n = 3$ but there is 4 in the array).

For a permutation P, we define $F(P)$ as the number of contiguous subarrays of P that are permutations. For example, let's consider the permutation $P = (5, 3, 1, 4, 2)$, the following are all of its continuous sub-arrays that are permutations:

1. (1),
2. $(3, 1, 4, 2)$,
3. $(5, 3, 1, 4, 2)$.

Hence, $F(P) = 3$.

A permutation P of length n is called **distinguished** if $F(P)$ is the maximum amongst all permutations of length n.

You are given n and k. Consider all **distinguished** permutations of length n. Find the k-th lexicographically smallest permutation.

Note: A permutation a is lexicographically smaller than a permutation b of the same length if and only if: in the first position where a and b differ, the permutation a has a smaller element than the corresponding element in b.

Input

The first line contains a single integer t ($1 \le t \le 10^5$) – the number of test cases. t test cases follow, each consists of two integers n and k in a single line ($1 \le n \le 10^5, 1 \le k \le 10^{18}$).

It is guaranteed that:

- k does not exceed the number of distinguished permutations of length n with maximum value of F,
- the sum of n over all test cases does not exceed 10^5.

Output

For each test case, print a single line containing n integers – the k-th lexicographically smallest **distinguished** permutation.

Sample Input 1	Sample Output 1
1 4 2	2 1 3 4

Sample Explanation

With $n = 4$, below are the first few permutations, lexicographically sorted:

- $1, 2, 3, 4$ with $F = 4$,
- $1, 2, 4, 3$ with $F = 3$,
- $1, 3, 2, 4$ with $F = 3$,
- $1, 3, 4, 2$ with $F = 2$,
- $1, 4, 2, 3$ with $F = 2$,
- $1, 4, 3, 2$ with $F = 2$,
- $2, 1, 3, 4$ with $F = 4$,

It can be shown that the maximum value of $F(P)$ over all permutations of length $n = 4$ is 4. The second lexicographically smallest permutation with $F = 4$ is $2, 1, 3, 4$ as per the list above.