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K Distinct Array

Problem Code: **DISTK**

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An array is said to be **good** if all its elements are distinct, i.e. no two elements of the array are equal to each other.

You are given a positive integer N and an integer K such that $N \leq K \leq \binom{N+1}{2}$.

Construct an array A of length N that satisfies the following conditions

- A has **exactly** K good (contiguous) subarrays, and
- Every element of A is an integer from 1 to N (both inclusive).

If there are multiple such arrays, you can print **any** of them.

Note: It can be shown that for all inputs satisfying the given constraints, there is **always** a valid solution.

Input Format

- The first line contains an integer T , the number of testcases. The description of the T testcases follow.
- Each testcase consists of a single line with two space separated integers, N and K respectively.

Output Format

- For each testcase print N space separated integers, the elements of the constructed array.
- If there are multiple outputs, you can print **any** of them.
- Your output will be considered correct only if the following conditions are satisfied,
 - Every element of the array is between 1 and N , and
 - The array has exactly K good subarrays

Constraints

- $1 \leq T \leq 10^5$
- $1 \leq N \leq 10^5$
- $N \leq K \leq \binom{N+1}{2}$
- Sum of N over all testcases is atmost $3 \cdot 10^5$.

Sample Input 1

```
3
5 5
5 15
5 7
```

Sample Output 1

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DISTK | K DISTINCT ARRAYS



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q=DISTK)

```
1 1 1 1 1
1 2 3 4 5
1 2 2 1 1
```

Explanation

Test Case 1: $N = 5, K = 5$. All subarrays of length 1 are good, therefore every array of size N has at least N good subarrays. If all elements are equal then these will be the only good subarrays so the given array $\{1, 1, 1, 1, 1\}$ is a valid solution. Observe that under the constraints there are 5 different solutions (one for each value 1 through 5) and all of them will be considered correct.

Test Case 2: $N = 5, K = 15$. There are only $\binom{N+1}{2} = 15$ subarrays, including the array itself. Therefore the array itself must be good which leads us to the solution given above. Any permutation of $\{1, 2, 3, 4, 5\}$ is also a valid solution, thus there are $5! = 120$ different solutions to this case and all of them will be considered correct.

Test Case 3: $N = 5, K = 7$. The constructed array is $A = \{1, 2, 2, 1, 1\}$. You may verify that the only good subarrays of A , in addition to the 5 subarrays of length 1, are those shown below (subarrays are highlighted red).

- $\{1, 2, 2, 1, 1\}$
- $\{1, 2, 2, 1, 1\}$

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Problem level: Unavailable

Date Added: 7-02-2022

Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: CPP17, PYTH 3.6, JAVA, C, CPP14, PYTH, PYP3, CS2, ADA, PYPY, TEXT, PAS fpc, NODEJS, RUBY, PHP, GO, HASK, TCL, kotlin, PERL, SCALA, LUA, BASH, JS, rust, LISP sbcl, PAS gpc, BF, CLOJ, R, D, CAML, swift, FORT, ASM, FS, WSPC, LISP clisp, SQL, SCM guile, PERL6, ERL, CLPS, PRLG, SQLQ, ICK, NICE, ICON, COB, SCM chicken, PIKE, SCM qobi, ST, NEM

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