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E. Klever Permutation

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

You are given two integers n and k ($k \leq n$), where k is even.

A permutation of length n is an array consisting of n distinct integers from 1 to n in any order. For example, $[2, 3, 1, 5, 4]$ is a permutation, but $[1, 2, 2]$ is not a permutation (as 2 appears twice in the array) and $[0, 1, 2]$ is also not a permutation (as $n = 3$, but 3 is not present in the array).

Your task is to construct a k -level permutation of length n .

A permutation is called k -level if, among all the sums of continuous segments of length k (of which there are exactly $n - k + 1$), any two sums differ by no more than 1.

More formally, to determine if the permutation p is k -level, first construct an array s of length $n - k + 1$, where $s_i = \sum_{j=i}^{i+k-1} p_j$, i.e., the i -th element is equal to the sum of $p_i, p_{i+1}, \dots, p_{i+k-1}$.

A permutation is called k -level if $\max(s) - \min(s) \leq 1$.

Find **any** k -level permutation of length n .

Input

The first line of the input contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases. This is followed by the description of the test cases.

The first and only line of each test case contains two integers n and k ($2 \leq k \leq n \leq 2 \cdot 10^5$, k is even), where n is the length of the desired permutation.

It is guaranteed that the sum of n for all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output **any** k -level permutation of length n .

It is guaranteed that such a permutation always exists given the constraints.

Example

input	Copy
5	
2 2	
3 2	
10 4	
13 4	
7 4	
output	Copy
2 1	
1 3 2	
1 8 4 10 2 7 5 9 3 6	

Codeforces Round 923 (Div. 3)

Finished

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→ Problem tags

[constructive algorithms](#) [math](#)

[two pointers](#)

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4	10	1	13	5	9	2	12	6	8	3	11	7
1	6	3	7	2	5	4						

Note

In the second test case of the example:

- $p_1 + p_2 = 3 + 1 = 4$;
- $p_2 + p_3 = 1 + 2 = 3$.

The maximum among the sums is 4, and the minimum is 3.

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