IOITC 2019
Team Selection Test 2

Increasing Chains

You are given N integers $A_1, A_2, \ldots, A_N$, and an integer K. A subsequence of this array is of the form $S = (A_{i_1}, A_{i_2}, \ldots, A_{i_x})$, where $1 \leq i_1 < i_2 < \ldots < i_x \leq N$. You need to select some subsequences, say $S_1, S_2, \ldots, S_M$, such that the length of each subsequence is $\geq K$, the elements of every subsequence are in non-decreasing order, and no two of the subsequences interleave with each other.

In other words:
The subsequence $S_i = (A_{i_1}, A_{i_2}, \ldots, A_{i_x})$ can be selected only if $x \geq K$ and $A_{i_1} \leq A_{i_2} \leq \ldots \leq A_{i_x}$.
Two subsequences $S_i = (A_{i_1}, A_{i_2}, \ldots, A_{i_x})$, and $S_j = (A_{j_1}, A_{j_2}, \ldots, A_{j_y})$ can both be selected only if they are not interleaved. That is, $i_x < j_1$, or $j_y < i_1$.

You need to select the subsequences, so as to maximize the total number of selected elements from the array. That is, maximize the sum of lengths of all the selected subsequences. Output this maximum number possible.

Input

- The first line contains two space-separated integers - N and K.

- The next line contains N integers - $A_1, A_2, \ldots, A_N$.

Output

Output a single integer which should be the maximum number of elements which can be chosen.

Constraints

- $1 \leq N \leq 5000$

- $1 \leq K \leq N$

- $1 \leq A_i \leq 10^5$

Subtasks

- Subtask 1: 43%: $1 \leq N \leq 500$ and $1 \leq A_i \leq 500$

- Subtask 2: 57%: Original Constraints

Sample Input 1

```
4 2
1 4 8 2
```

Sample Output 1

```
3
```

Sample Input 2

```
3 3
1 1 2
```

Sample Output 2

```
3
```