Max's Anger Contest Series 1 P5 - Slacking Subsequences

Time limit: 4.0s **Memory limit:** 1G

Since Max is wasting his time in his List I Communication credit lecture, he decided to start taking subsequences of arrays instead!

Specifically, he has N integers, A_i, and wants to take a subsequence of length K, but to make his life even harder, his List I Communication credit professor adds a restriction: he must find the subsequence that has a length of K with the minimum sum of the absolute difference between consecutive terms.

That is, he must minimize $|B_1 - B_2| + |B_2 - B_3| + \cdots + |B_{K-1} - B_K|$, where B_i is the i^{th} element of his subsequence and $|A - B|$ denotes the absolute difference between A and B.

Can you find the minimum sum of absolute differences for every possible subsequence of length K?

Constraints

$2 \leq N \leq 50\,000$

$2 \leq K \leq \min(100, N)$

$1 \leq A_i \leq 50\,000$

Subtask 1 [40%]

$2 \leq N \leq 1\,000$

Subtask 2 [60%]

No additional constraints.

Input Specification

The first line will contain two integers, N and K, the array's length and the subsequence's length, respectively.

The second line will contain N integers, A_i, the elements of the array.

Output Specification

Output the minimum sum of absolute differences between consecutive elements for any subsequence of length K.

Sample Input 1

```
6 2
1 5 6 2 1 3
```

Sample Output 1

```
0
```

Explanation for Sample 1

It can be proven that the minimal sum is achieved with the subsequence $[A_1 = 1, A_5 = 1]$.

Sample Input 2

```
6 4
3 2 6 2 7 9
```

Sample Output 2

```
6
```

Explanation for Sample 2

It can be proven that the minimal sum is achieved with the subsequence $[A_1 = 3, A_2 = 2, A_4 = 2, A_5 = 7]$.