

Max Min

Problem

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Topics

Given a list of N integers, your task is to select K integers from the list such that its *unfairness* is minimized.

if $(x_1, x_2, x_3, \dots, x_k)$ are K numbers selected from the list N , the unfairness is defined as

$$\max(x_1, x_2, \dots, x_k) - \min(x_1, x_2, \dots, x_k)$$

where \max denotes the largest integer among the elements of K , and \min denotes the smallest integer among the elements of K .

Input Format

The first line contains an integer N .

The second line contains an integer K .

N lines follow. Each line contains an integer that belongs to the list N .

Note: Integers in the list N may not be unique.

Output Format

An integer that denotes the minimum possible value of *unfairness*.

Constraints

$$2 \leq N \leq 10^5$$

$$2 \leq K \leq N$$

$$0 \leq \text{integer in } N \leq 10^9$$

Sample Input #00

```
7
3
10
100
300
200
1000
20
30
```

Sample Output #00

```
20
```

Explanation #00

Here $K = 3$; selecting the 3 integers such that $K = 10, 20, 30$, unfairness equals

$$\max(10, 20, 30) - \min(10, 20, 30) = 30 - 10 = 20$$

Sample Input #01

```
10
4
```

```
1
2
3
4
10
20
30
40
100
200
```

Sample Output #01

```
3
```

Explanation #01

Here $K = 4$; selecting the 4 integers 1, 2, 3, 4, unfairness equals

```
max(1,2,3,4) - min(1,2,3,4) = 4 - 1 = 3
```

Sample Input #02

```
6
3
10
20
30
100
101
102
```

Sample Output #02

```
2
```

Explanation #02

Here $K = 3$; the 3 integers so that the difference between the maximum and the minimum is the smallest are 100, 101, 102, which means unfairness equals

```
max(100, 101, 102) - min(100, 101, 102) = 102 - 100 = 2
```

Related Topics

[Two Pointer Technique](#)

[Greedy Technique](#)

[Sorting](#)

Submissions: 28739

Max Score: 35

Difficulty: Moderate

[More](#)

```
1 import sys
2 import itertools
3
4 N = input()
5 K = input()
6 lists = [input() for _ in range(0,N)]
7 lists.sort()
8 min_val = lists[-1]
9
10 for i in range(len(lists)):
11     if i+K <= len(lists):
12         temp_min = lists[i]
13         temp_max = lists[i+K-1]
14         temp_diff = temp_max - temp_min
15         if temp_diff < min_val:
16             min_val = temp_diff
17
18 print min_val
```

Line: 10 Col: 16

 [Upload Code as File](#)

☐ Test against custom input

Run Code

Submit Code

Congrats, you solved this challenge!

✓ Test Case #0

✓ Test Case #3

✓ Test Case #6

✓ Test Case #9

✓ Test Case #12

✓ Test Case #15

✓ Test Case #1

✓ Test Case #4

✓ Test Case #7

✓ Test Case #10

✓ Test Case #13

✓ Test Case #16

✓ Test Case #2

✓ Test Case #5

✓ Test Case #8

✓ Test Case #11

✓ Test Case #14

Next Challenge

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