Max Min

by amititkgp

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

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

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

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
$2 \leq N \leq 10^5$
$2 \leq K \leq N$
$0 \leq integer\ in\ N\ \leq 10^9$

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: 27553
Max Score: 35
Difficulty: Moderate

More

Current Buffer (saved locally, editable) Java 8

```
1  import java.io.BufferedReader;
2  import java.io.IOException;
3  import java.io.InputStreamReader;
4  import java.util.Arrays;
5
6  // The part of the program involving reading from STDIN and writing to STDOUT has been provided by us.
7
8  public class Solution {
9
10    public static void main(String[] args) throws NumberFormatException, IOException {
11
12       BufferedReader in = new BufferedReader(new InputStreamReader(System.in));
13       int N = Integer.parseInt(in.readLine());
14       int K = Integer.parseInt(in.readLine());
15       int[] list = new int[N];
16
17       for(int i = 0; i < N; i ++)
18          list[i] = Integer.parseInt(in.readLine());
19
20       int unfairness = Integer.MAX_VALUE;
21
22       /*
23        * Write your code here, to process numPackets N, numKids K, and the packets of candies
24        * Compute the ideal value for unfairness over here
25       */
26
27       System.out.println(unfairness);
28    }
29 }
30
```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code