Max Min ★

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Problem Solving ★★★★

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You will be given a list of integers, arr, and a single integer k. You must create an array of length k from elements of arr such that its unfairness is minimized. Call that array arr'. Unfairness of an array is calculated as

$$max(arr') - min(arr')$$

Where:

- max denotes the largest integer in arr'.
- min denotes the smallest integer in arr'.

Example

$arr = [1, 4, 7, 2]$

$k = 2$

Pick any two elements, say $arr' = [4, 7]$.

$unfairness = max(4, 7) - min(4, 7) = 7 - 4 = 3$

Testing for all pairs, the solution $[1, 2]$ provides the minimum unfairness.

Note: Integers in arr may not be unique.

Function Description

Complete the maxMin function in the editor below.

maxMin has the following parameter(s):

- int k: the number of elements to select
- int arr[n]:: an array of integers

Returns

- int: the minimum possible unfairness

Input Format

The first line contains an integer n, the number of elements in array arr.

The second line contains an integer k.

Each of the next n lines contains an integer $arr[i]$ where $0 \leq i < n$.

Constraints

$2 \leq n \leq 10^5$

$2 \leq k \leq n$

$0 \leq arr[i] \leq 10^9$

Sample Input 0

```
7
3
10
100
300
200

1000
```

```
20
30
```

Sample Output 0

```
20
```

Explanation 0

Here $k = 3$; selecting the 3 integers $10, 20, 30$, unfairness equals

```
max(10,20,30) - min(10,20,30) = 30 - 10 = 20
```

Sample Input 1

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

Sample Output 1

```
3
```

Explanation 1

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 2

```
5
2
1
2
1
2
1
```

Sample Output 2

```
0
```

Explanation 2

Here $k = 2$. $arr' = [2, 2]$ or $arr' = [1, 1]$ give the minimum unfairness of 0.

Change Theme Language C#

```
using System.CodeDom.Compiler;
using System.Collections.Generic;
using System.Collections;
using System.ComponentModel;
using System.Diagnostics.CodeAnalysis;
using System.Globalization;
using System.IO;
using System.Linq;
using System.Reflection;
using System.Runtime.Serialization;
using System.Text.RegularExpressions;
using System.Text;
using System;

class Result
{

    /*
     * Complete the 'maxMin' function below.
     *
     * The function is expected to return an INTEGER.
     * The function accepts following parameters:
     *  1. INTEGER k
     *  2. INTEGER_ARRAY arr
     */

    public static int maxMin(int k, List<int> arr)
```

Line: 78 Col: 1

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