Practice > Interview Preparation Kit > Greedy Algorithms > Max Min

Max Min ☆

Problem   Submissions   Leaderboard   Discussions   Editorial   Topics

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 $subarr$. Unfairness of an array is calculated as

$$max(subarr) - min(subarr)$$

Where:
- max denotes the largest integer in $subarr$.
- min denotes the smallest integer in $subarr$.

As an example, consider the array $[1, 4, 7, 2]$ with a k of 2. Pick any two elements, test $subarr = [4, 7]$.
$unfairness = max(4, 7) - min(4, 7) = 7 - 4 = 3$
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. It must return an integer that denotes the minimum possible value of unfairness.

maxMin has the following parameter(s):

- k: an integer, the number of elements in the array to create
- arr: an array of integers .

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 $0 \le i < n$.

Constraints

$2 \le n \le 10^5$
$2 \le k \le n$
$0 \le arr[i] \le 10^9$

Output Format

An integer that denotes the minimum possible value of unfairness.

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 $k = 2$; $subarr = [2, 2]$ or $subarr = [1, 1]$ give the minimum unfairness of 0.

Author   amititkgp
Difficulty   Medium
Max Score   35
Submitted By   85647

NEED HELP?

📷 View discussions
📄 View editorial
🏆 View top submissions

RESOURCES

📖 Two Pointer Technique
📖 Greedy Technique
📖 Sorting

RATE THIS CHALLENGE

☆ ☆ ☆ ☆ ☆

MORE DETAILS

⬇ Download problem statement
⬇ Download sample test cases
✎ Suggest Edits

f 🐦 in