

# Angry Children



## Problem Statement

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  $K = 10, 20, 30$  candies. The unfairness is

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

## 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. The unfairness is

$$\max(1, 2, 3, 4) - \min(1, 2, 3, 4) = 4 - 1 = 3$$

### Sample Input #02

6  
3  
10  
20  
30  
100  
101  
102

### Sample Output #02

2

### Explanation #02

Here  $K = 3$ , 3 integers such that the difference between the maximum and the minimum is smallest is 100, 101, 102

$$\max(100, 101, 102) - \min(100, 101, 102) = 102 - 100 = 2$$