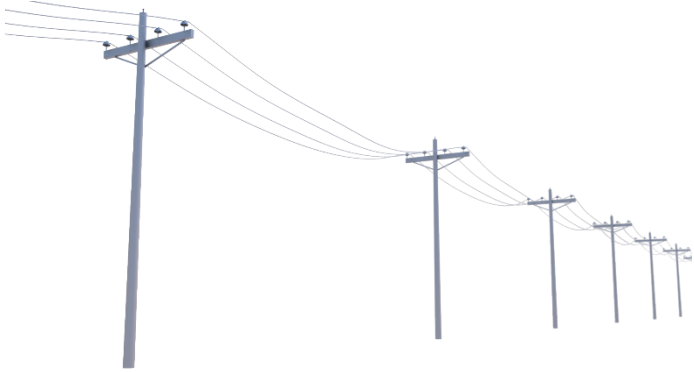
ECE30018 Problem Solving Studio, Fall 2023

C6. Electricity Poles

| Submission due: 1:00 PM, 27 Oct Fri

Electricity Poles



There are n electricity poles standing on a horizontal line transmitting electricity through an electric wire. Each pole is located at a unique point between 0 and 1,000,000,000, inclusively, on the horizontal line. The intervals between two adjacent points are the same.

The office of Energy want to select k poles among the total of n poles to install electricity amplifiers for reliable energy transmission. Considering threats of electromagnetic wave interference, the k poles must be selected such that the minimum distance between two selected poles must be as large as possible.

Write a program that finds the minimum distance between two poles of the k electricity poles that will be selected by the office of Energy.

Requirements

Input

- The first line from the standard input has two numbers n and k. The first number, n stands for the number of electricity poles where $2 \leq n \leq 100{,}000$. The other number, k represents the number of poles to install amplifiers for $2 \leq k \leq n \leq 100{,}000$.
- Thereafter, n lines follow, each of which contains one number that represents x_i, the location of an electricity pole for $1 \leq x_i \leq 1{,}000{,}000{,}000$. Note that these numbers are not sorted in any order.

Output

- Print out one number to the standard output within 0.5 second.

Test case examples

Input1

```
5  3
1
10
5
7
9
```

Output1

```
4
```

Input2

```
5  4
1
10
5
7
9
```

Output2

```
2
```

C6 Teams

Team No.	Members
601	최혜림, 소병찬
602	이신원, 이원빈
603	최정겸, 나보림
604	백건하, 강하림
605	유건민, 최소미
606	이준명, 전혜림
607	박세찬, 박민지
608	오인혁, 백하현