# 1 Stove

There is a stove in JOI-kun's room. Since JOI-kun gets used to the cold temperature, he does not need to turn on the stove when he is alone in his room. But, when there is a guest, he needs to turn on the stove.

One day, $N$ guests will visit JOI-kun. The $i$-th guest ($1 \leq i \leq N$) will arrive at time $T_i$, and leave at time $T_i + 1$. At most one guest visits JOI-kun at any time.

JOI-kun can turn on the stove or turn off the stove at any time. JOI-kun uses a match when he turns on the stove. JOI-kun has $K$ matches only. Hence he can turn on the stove at most $K$ times. In the beginning of the day, the stove is turned off.

When the stove is turned on, it needs fuel. Therefore, JOI-kun controls when he turns on or turns off the stove, and he wants to minimize the total operating time of the stove.

## Task

Given the data of the guests visiting JOI-kun and the number of matches JOI-kun has, write a program which calculates the minimum of the total operating time of the stove.

## Input

Read the following data from the standard input.

- The first line of input contains two space separated integers $N, K$. This means $N$ guests will visit JOI-kun, and JOI-kun has $K$ matches.
- The $i$-th line ($1 \leq i \leq N$) of the following $N$ lines contains an integer $T_i$. This means the $i$-th guest ($1 \leq i \leq N$) will arrive at time $T_i$, and leave at time $T_i + 1$.

## Output

Write one line to the standard output. The output should contain the minimum of the total operating time of the stove.

## Constraints

All input data satisfy the following conditions.

- $1 \leq N \leq 100\,000$.

- $1 \leq K \leq N$.
- $1 \leq T_i \leq 1\,000\,000\,000$ $(1 \leq i \leq N)$.
- $T_i < T_{i+1}$ $(1 \leq i \leq N - 1)$.

## Subtask

### Subtask 1 [20 points]

The following conditions are satisfied.

- $N \leq 20$.
- $1 \leq T_i \leq 20$ $(1 \leq i \leq N)$.

### Subtask 2 [30 points]

- $N \leq 5000$.

### Subtask 3 [50 points]

- There are no additional constraints.

## Sample Input and Output

| Sample Input 1 | Sample Output 1 |
|---|---|
| 3 2<br>1<br>3<br>6 | 4 |

In this sample input, three guests will visit JOI-kun. If he turns on and turns off the stove in the following way, then the stove is turned on when a guest is visiting, he turns on the stove twice, and the total operating time of the stove is $(4 - 1) + (7 - 6) = 4$.

- He turns on the stove at time 1 when the first guest comes.
- He turns off the stove at time 4 when the second guest leaves.
- He turns on the stove at time 6 when the third guest comes.
- He turns off the stove at time 7 when the third guest leaves.

Since the total operating time of the stove cannot be less than 4, output 4.

| Sample Input 2 | Sample Output 2 |
|---|---|
| 3 1<br>1<br>2<br>6 | 6 |

In this sample input, JOI-kun can turn on the stove only once. Therefore, he turns on the stove at time 1 when the first guest comes, and he turns off the stove at time 7 when the third guest leaves.

Note that the time when a guest leaves can be the same as the time when the next guest comes.

| Sample Input 3 | Sample Output 3 |
|---|---|
| 3 3<br>1<br>3<br>6 | 3 |

In this sample input, JOI-kun turns on the stove when each guest comes, and he turns off the stove when each guest leaves.

| Sample Input 4 | Sample Output 4 |
|---|---|
| 10 5<br>1<br>2<br>5<br>6<br>8<br>11<br>13<br>15<br>16<br>20 | 12 |