2_魔杖 (Wand)

(2 分/8 分)

時間限制: 1.5 seconds

記憶體限制: 512MB

題目敘述

在奧利凡德魔杖商店中，有 n 種不同的樹枝，第 i 種樹枝有個相容值 a_i，並且每種樹枝都有無限個。

一根魔杖由兩根樹枝所組成，並且這兩根樹枝可以是同一種，也可以是不同種。

魔杖會有個穩定值。一根由第 i 種和第 j 種的樹枝所製作而成的魔杖，其穩定值會是 $a_i \times a_j$。

太穩定不好、太不穩定也不好。根據研究，穩定值越接近 k 越好。

你，身為一個魔法學院的新生，現在正在奧利凡德魔杖商店內準備購買自己未來三年所使用的魔杖。

請問你能夠組成多好的魔杖；換言之，請你找到 $\min_{1 \le i,j \le n} |k - a_i \times a_j|$。

請注意，在奧利凡德魔杖商店中，樹枝是按照一種特殊方式來排序的。保證存在某個數字 p 滿足 $1 \le p \le n$，使得 $a_1 \le a_2 \le \cdots \le a_p$ 並且 $a_p \ge a_{p+1} \ge \cdots \ge a_n$。也就是說 $a[1 \ldots p]$ 是非嚴格遞增、而 $a[p \ldots n]$ 是非嚴格遞減的。

輸入格式

輸入的第一行包含兩個正整數 n, k，代表共有幾種不同的樹枝、還有最好的穩定值。

輸入的第二行包含 n 個非負整數 $a_1, a_2, \ldots, a_n$，其中 a_i 代表第 i 種樹枝的相容值。

保證存在某個數字 p 滿足 $1 \le p \le n$，使得$a[1 \ldots p]$ 是非嚴格遞增、而 $a[p \ldots n]$ 是非嚴格遞減的。

輸出格式

請輸出一個整數，代表 $\min_{1 \le i,j \le n} |k - a_i \times a_j|$。

資料範圍

- $1 \le n \le 10^6$。
- $0 \le k \le 10^{18}$。
- $0 \le a_i \le 10^9$ for $i = 1, 2, \ldots, n$。

子任務

- 子任務 1 滿足 $n \le 1000$。
- 子任務 2 無額外限制。

測試範例

輸入範例 1

```
5 5
1 2 3 2 1
```

輸出範例 1

```
1
```

輸入範例 2

```
5 4
1 2 3 2 1
```

輸出範例 2

```
0
```

輸入範例 3

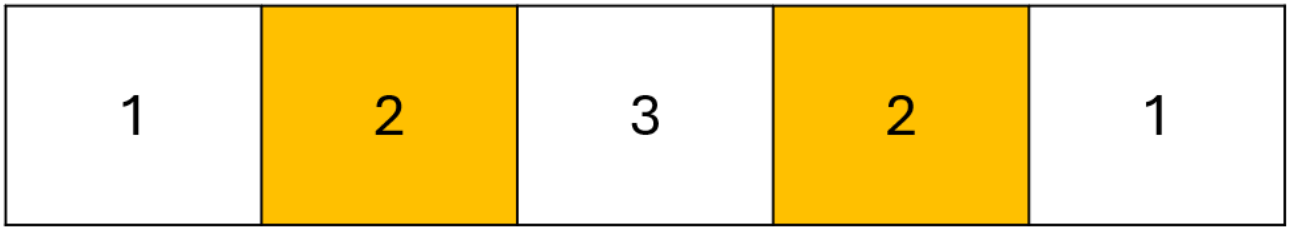
```
4 5
1 2 3 4
```

輸出範例 3

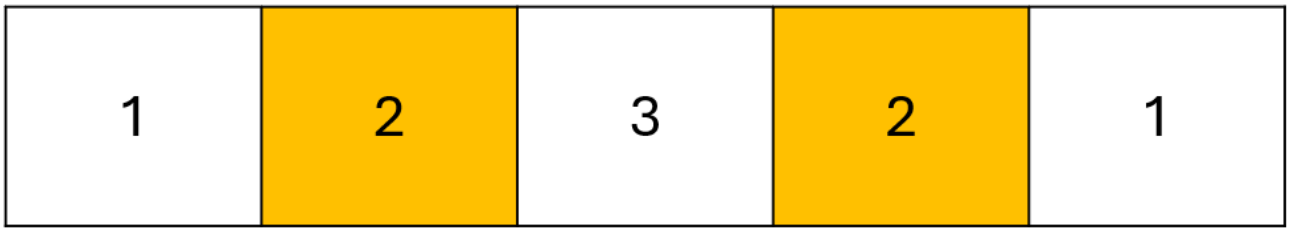
```
1
```

範例說明

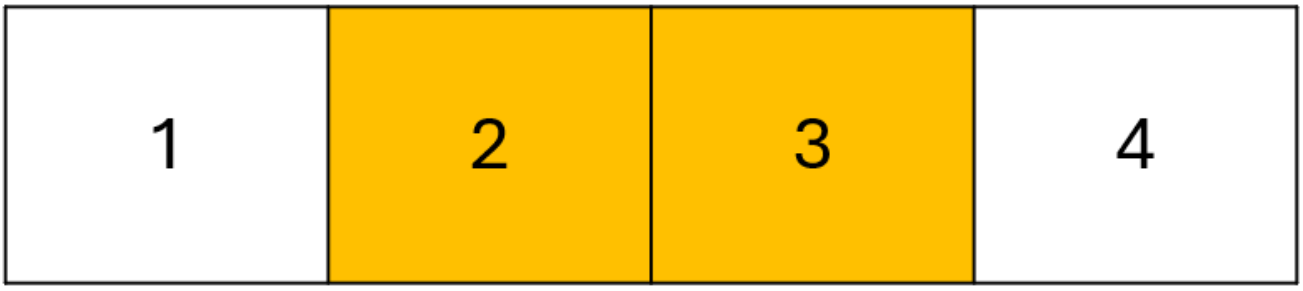
在範例 1 中，你可以使用第 2 種和第 4 種的樹枝組成一根穩定值為 $2 \times 2 = 4$ 的魔杖，$|k - 4| = 1$ 是最佳的。



在範例 2 中，你可以使用第 2 種和第 4 種的樹枝組成一根穩定值為 $2 \times 2 = 4$ 的魔杖，$|k - 4| = 0$ 是最佳的。



在範例 3 中，你可以使用第 2 種和第 3 種的樹枝組成一根穩定值為 $2 \times 3 = 6$ 的魔杖，$|k - 5| = 1$ 是最佳的。



2_Wand

(2 points/8 points)

Time Limit: 1.5 seconds

Memory Limit: 512 MB

Statement

In the Wand Emporium of Ollivander, there are n different types of branches. The i-th type of branch has a compatibility value a_i, and each type of branch has an infinite supply.

A wand is composed of two branches, which can be of the same type or different types.

Each wand has a stability value. The stability value of a wand made from the i-th and j-th types of branches is $a_i \times a_j$.

Too stable is not good, and too unstable is also not good. According to research, the closer the stability value is to k, the better.

You, as a new student at the School of Magic, are currently in Ollivander's Wand Emporium preparing to purchase wands for your next three years of use.

What is the best wand you can assemble? In other words, find $\min_{1 \le i,j \le n} |k - a_i \times a_j|$.

Please note that in Ollivander's Wand Emporium, branches are sorted in a special way. It is guaranteed that there exists a number p satisfying $1 \le p \le n$, such that $a_1 \le a_2 \le \cdots \le a_p$ and $a_p \ge a_{p+1} \ge \cdots \ge a_n$. In other words, $a[1 \ldots p]$ is non-descending, and $a[p \ldots n]$ is non-increasing.

Input Format

The first line of input contains two positive integers n and k, representing the number of different types of branches and the desired stability value.

The second line contains n non-negative integers $a_1, a_2, \ldots, a_n$, where a_i represents the compatibility value of the i-th type of branch.

It is guaranteed there exists a number p satisfying $1 \le p \le n$, such that $a[1 \ldots p]$ is non-descending, and $a[p \ldots n]$ is non-increasing.

Output Format

Output an integer, representing $\min_{1 \le i,j \le n} |k - a_i \times a_j|$.

Constraints

- $1 \le n \le \times 10^6$.
- $0 \le k \le 10^{18}$.
- $0 \le a_i \le 10^9$ for $i = 1, 2, \ldots, n$.

Subtasks

- Subtask 1 satisfies that $n \leq 1000$.
- Subtask 2 has no extra constraints.

Test Cases

Input 1

```
5 5
1 2 3 2 1
```

Output 1

```
1
```

Input 2

```
5 4
1 2 3 2 1
```

Output 2

```
0
```

Input 2

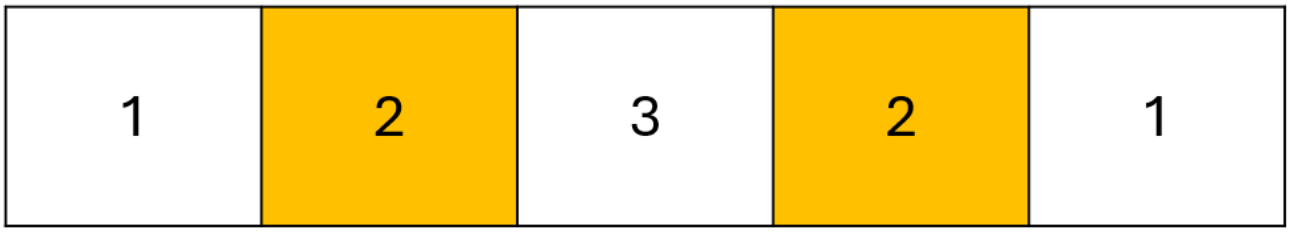
```
4 5
1 2 3 4
```

Output 2

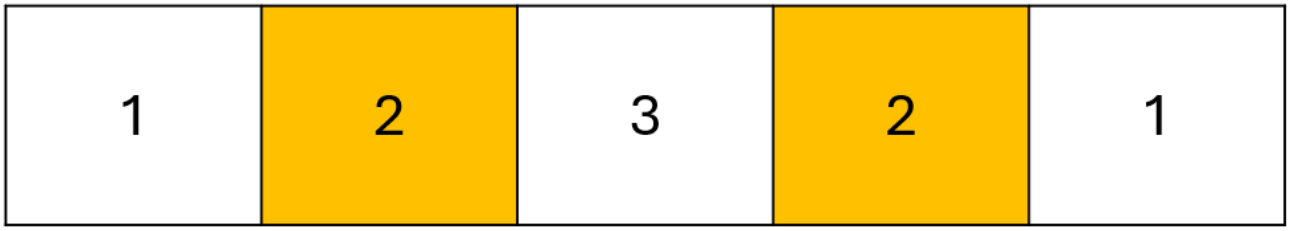
```
1
```

Illustrations

In Example 1, you can use the 2nd and 4th types of branches to make a wand with a stability value of $2 \times 2 = 4$, where $|k - 4| = 1$ is the best.



In Example 2, you can use the 2nd and 4th types of branches to make a wand with a stability value of $2 \times 2 = 4$, where $|k - 4| = 0$ is the best.



In Example 3, you can use the 2nd and 3rd types of branches to make a wand with a stability value of $2 \times 3 = 6$, where $|k - 5| = 1$ is the best.