

# Educational DP Contest AtCoder Z - Frog 3

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**Time limit:** 1.0s    **Memory limit:** 1G

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There are  $N$  stones, numbered  $1, 2, \dots, N$ . For each  $i$  ( $1 \leq i \leq N$ ), the height of Stone  $i$  is  $h_i$ . Here,  $h_1 < h_2 < \dots < h_N$  holds.

There is a frog who is initially at Stone 1. He will repeat the following action some number of times to reach Stone  $N$ :

- If the frog is currently on Stone  $i$ , jump to one of the following stones: Stone  $i + 1, i + 2, \dots, N$ . Here, a cost of  $(h_j - h_i)^2 + C$  is incurred, where  $j$  is the stone to land on.

Find the minimum possible total cost incurred before the frog reaches Stone  $N$ .

## Constraints

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- All values in input are integers.
- $2 \leq N \leq 2 \times 10^5$
- $1 \leq C \leq 10^{12}$
- $1 \leq h_1 < h_2 < \dots < h_N \leq 10^6$

## Input Specification

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The first line will contain two integers  $N, C$ .

The second line will contain  $N$  integers,  $h_i$ .

## Output Specification

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Print the minimum possible total cost incurred.

## Sample Input 1

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```
5 6
1 2 3 4 5
```

## Sample Output 1

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```
20
```

## Explanation For Sample 1

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If we follow the path  $1 \rightarrow 3 \rightarrow 5$ , the total cost incurred would be  $((3 - 1)^2 + 6) + ((5 - 3)^2 + 6) = 20$ .

## Sample Input 2

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```
2 1000000000000  
500000 1000000
```

## Sample Output 2

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```
1250000000000
```

## Explanation For Sample 2

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The answer may not fit into a 32-bit integer type.

## Sample Input 3

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```
8 5  
1 3 4 5 10 11 12 13
```

## Sample Output 3

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```
62
```

## Explanation For Sample 3

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If we follow the path  $1 \rightarrow 2 \rightarrow 4 \rightarrow 5 \rightarrow 8$ , the total cost incurred would be  $((3 - 1)^2 + 5) + ((5 - 3)^2 + 5) + ((10 - 5)^2 + 5) + ((13 - 10)^2 + 5) = 62$ .