



Winter Camp Contest 2023

Problem E

Exterior

Time limit: 1 second

Memory limit: 2048 megabytes

Problem Description

Shokuhou (食蜂) is a girl who lives in Academy City. The Academy City comprises n districts numbered $1, 2, \dots, n$. There are m bidirectional roads between the districts. The i -th road connects city u_i and v_i , and traversing it takes exactly c_i minutes. In addition, each district has a portal; the portal in the i -th city has power a_i . With these portals, one can travel from the i -th city to the j -th city in $a_i + a_j$ minutes for $i = 1, 2, \dots, n$ and $j = 1, 2, \dots, n$.

Shokuhou is currently at district 1, and her home is at district n . Since she learned she had just had a break-in at her house, she would like to return home immediately. She can go back home using any number of roads and portals. What is the minimum number of minutes she must spend to return home?

Input Format

The first line of the input contains two integers n, m . The second line contains n integers a_1, a_2, \dots, a_n .

m lines follow. The i -th line contains three integers u_i, v_i, c_i denoting the i -th road.

Output Format

Print the minimum number of minutes Shokuhou must spend to return home. It can be shown that Shokuhou can always return home using some number of roads and portals.

Technical Specification

- $2 \leq n \leq 10^5$
- $0 \leq m \leq \min(10^5, \frac{n(n-1)}{2})$
- $1 \leq a_i \leq 10^5$ for $i = 1, 2, \dots, n$
- $1 \leq u_i < v_i \leq n$ for $i = 1, 2, \dots, m$
- Each pair of (u_i, v_i) appears in the input at most once.
- $1 \leq c_i \leq 10^5$ for $i = 1, 2, \dots, m$



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Sample Input 1

```
4 4
6 2 1 5
1 2 1
2 3 6
1 3 8
3 4 2
```

Sample Output 1

```
6
```

Sample Input 2

```
5 4
12 23 34 45 56
1 2 1
2 3 1
3 4 1
4 5 1
```

Sample Output 2

```
4
```

Sample Input 3

```
6 7
8 5 1 7 8 6
2 3 1
2 5 1
3 5 4
2 6 3
4 5 17
3 4 10
5 6 2
```



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Sample Output 3

13
