

Hierarchy

time limit per test: 2 seconds
memory limit per test: 939.6 megabytes
input: standard input
output: standard output

points: 100 · problem code: heirarchy · author: jbroeksteeg

Nick's company employed n people. Now Nick needs to build a tree hierarchy of «supervisor-surbodinate» relations in the company (this is to say that each employee, except one, has exactly one supervisor). There are m applications written in the following form: «employee a_i is ready to become a supervisor of employee b_i at extra cost c_i ». The qualification q_j of each employee is known, and for each application the following is true: $q_{a_i} > q_{b_i}$.

Would you help Nick calculate the minimum cost of such a hierarchy, or find out that it is impossible to build it.

Input

The first input line contains integer n ($1 \leq n \leq 1000$) — amount of employees in the company. The following line contains n space-separated numbers q_j ($0 \leq q_j \leq 10^6$) — the employees' qualifications. The following line contains number m ($0 \leq m \leq 10000$) — amount of received applications. The following m lines contain the applications themselves, each of them in the form of three space-separated numbers: a_i , b_i and c_i ($1 \leq a_i, b_i \leq n$, $0 \leq c_i \leq 10^6$). Different applications can be similar, i.e. they can come from one and the same employee who offered to become a supervisor of the same person but at a different cost. For each application $q_{a_i} > q_{b_i}$.

Output

Output the only line — the minimum cost of building such a hierarchy, or -1 if it is impossible to build it.

Examples

Input

```
4
7 2 3 1
4
1 2 5
2 4 1
3 4 1
1 3 5
```

Output

```
11
```

Input

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

Output

```
-1
```

Note

In the first sample one of the possible ways for building a hierarchy is to take applications with indexes 1, 2 and 4, which give 11 as the minimum total cost. In the second sample it is impossible to build the required hierarchy, so the answer is -1.

This problem was taken from Codeforces problem 17B.