B. Hierarchy

time limit per test: 2 seconds
memory limit per test: 64 megabytes

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 ($1 \le n \le 1000$) — amount of employees in the company. The following line contains n space-separated numbers q_j ($0 \le q_j \le 10^6$)— the employees' qualifications. The following line contains number m ($0 \le m \le 10000$) — 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 ($1 \le a_i, b_i \le n$, $0 \le c_i \le 10^6$). 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 Copy

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

output Copy

```
11
```

input Copy

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

output Copy

```
-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

→ Attention

The package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, a solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then the value 800 ms will be displayed and used to determine the verdict.

to build the required hierarchy, so the answer is -1.

327245284	Jul/03/2025 16:52	Accepted

→ Problem tags

dfs and similar | dsu | greedy | shortest paths | *1500

No tag edit access

→ Contest materials

- Announcement
- Tutorial