Problem D. Farm

Input file: `standard input`
Output file: `standard output`

Tom, an old rancher who manages n farms, is planning several new roads to make his farms connected.

For this purpose, an architecture company provides m building plans, each of which is described by three integers a, b and c representing that it would cost c dollars to build a new road connecting the a-th and the b-th farms.

However, the final decision has to satisfy q more constraints. A constraint contains two integers u and v, which requires that Tom must choose at least one of the u-th and the v-th plans.

Because of a looming budget shortfall, Tom prefers to minimize the total cost.

Input

The first line contains two integers n ($1 \le n \le 10^5$) and m ($1 \le m \le 5 \times 10^5$), indicating the number of farms and the number of plans.

In the next m lines, the i-th line contains three integers a, b ($1 \le a, b \le n$) and c ($1 \le c \le 10^3$), which means that the cost of building a road that connects the a-th and the b-th farms via the i-th plan is c dollars.

The next line contains an integer q ($0 \le q \le 16$), indicating the number of constraints.

In the next q lines, each line contains two integers u and v ($1 \le u, v \le m$), indicating a constraint that Tom must choose at least one of the u-th and the v-th plans.

Output

If it is possible to connect all farms via building new roads, output an integer in a line representing the minimum total cost that Tom will pay, or otherwise output -1.

Example

standard input	standard output
4 6 1 1 2 2 4 3 1 1 4 2 4 4 3 2 4 1 3 4 1 1 2	11