

Problem A – Dual Core

As more and more computers are equipped with dual core CPU, J.D. Chan, the Chief Technology Officer of Accelerated Computing Machinery, decided to update their famous product - GGG.

The routine consists of N modules, and each of them should run in a certain core. The costs for all the routines to execute on two cores have been estimated. Let's define them as A_i and B_i . Meanwhile, M pairs of modules need to do some data-exchange. If they are running on the same core, then the cost of this action can be ignored. Otherwise, some extra cost is needed. You should arrange wisely to minimize the total cost.

Input

For each case, there are two integers in the first line of input data, N and M ($1 \leq N \leq 200$, $1 \leq M \leq 2000$)

The next N lines, each contains two integers, A_i and B_i .

In the following M lines, each contains three integers: a , b , w . The meaning is that if module a and module b don't execute on the same core, you should pay extra w dollars for the data-exchange between them.

Output

For each case, output only one integer, the minimum total cost.

Sample Input	Sample Output
3 1 1 10 2 10 10 3 2 3 1000 3 1 1 10 2 10 10 3 2 3 1000	13 13