

In circuit design, component placement is an important step in the design automation. Inferior placements may affect the performance and manufacturing cost.

You are given a PCB (Printed Circuit Board). It's a large green board. You can place components on either side of the PCB. However, cost of placing a component on both sides are not the same. You are given N components. For each component c_i , cost of placing it on the top layer is X_i and on the bottom layer is Y_i .

These components may interact with each other. If both the components are on the same side of the PCB, the interconnection cost is negligible. But, if they are on different sides, their interconnection is costly. For each such interconnection j , the cost will be Z_j .

Finally, some design issues restricts some components to be on the top side or bottom side. Now, find the minimum cost to place the components.

Input

First line contains a positive integer T ($T \leq 50$) that denotes the number of test cases.

Each test case starts with 2 integers N ($1 \leq N \leq 200$) and M ($0 \leq M \leq 100000$, $M \leq N*(N-1)/2$), the number of components and number of interconnections. This will be followed by N integers in a line, each between 1 and 10000000 (inclusive), where i -th of it describes the cost of placing the component on the top layer. The next line contains N more integers, each between 1 and 10000000 (inclusive), where i -th of it denotes the cost of placing it on the bottom layer. The next line contains N more integers, each will be either '0', '-1' or '+1', where

- -1 means i -th component can only be placed on the bottom
- +1 means i -th component can only be placed on the top
- 0 means the component can be placed on either side

Then there will be M lines, each containing three integers, p , q , and r ($1 \leq p, q \leq N$, $1 \leq r \leq 10000000$), denoting that, p and q -th component has to be interconnected and if they are on different layers, the cost of interconnection will be r . There will be at most one interconnection between any pair or components.

Output

For each test case, output the minimum cost to place the components.

Sample Input

```
5
4 0
5 6 7 8
8 7 6 5
0 0 0 0
4 2
5 6 7 8
8 7 6 5
0 0 0 0
1 3 10
2 4 10
4 3
5 6 7 8
8 7 6 5
0 0 0 0
1 3 10
2 4 10
2 3 1
4 3
5 6 7 8
30 31 32 33
0 0 0 0
1 3 10
2 4 10
2 3 1
4 3
5 6 7 8
8 7 6 5
-1 0 0 1
1 2 10
3 4 10
2 3 1
```

Sample Output

```
22
24
25
26
31
```