Walls
Problem ID: walls

Due to COVID-19, Quora decided to split the office space into a grid of $3 \times n$ cells and set up the walls between each cell to isolate employees as much as possible. Unfortunately, the walls ended up affecting the productivity significantly in a negative way. Once our employees are all vaccinated we want to break down the walls and connect all our employees again.

The cost to break each wall is different and we would like to minimize the cost to connect people. So, given the locations of m employees and cost of individual walls, find the minimum cost to connect employees again.

Input

Your program will receive input from standard input.

The first line contains two space-separated positive integers n and m, representing the number of columns in the grid and the number of employees, respectively.

3 lines follow. The i-th line of this set contains $n - 1$ integers $a_1, \ldots a_{n-1}$. a_j is the cost to break the vertical wall between the cells in columns j and $j + 1$ in the i-th row.

Then, 2 lines follow. The i-th line of this set contains n integers $b_1, \ldots b_n$. b_j is the cost to break the horizontal wall between rows i and $i + 1$ in the j-th column.

Finally, m lines follow. The i-th line of this set contains two integers r_i and c_i, representing the row and column of the i-th employee's cell.

Output

Your program should write to standard output.

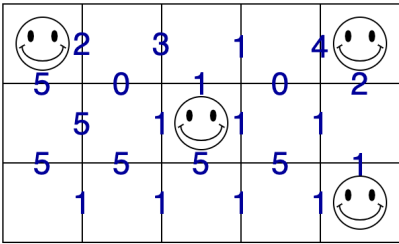Print exactly one line containing the minimum cost to connect all employees.

Constraints

- $n \leq 10^4$
- $1 \leq m \leq 3n$
- $0 \leq a_j \leq 10^6$ for all j.
- $0 \leq b_j \leq 10^6$ for all j.
- $1 \leq r_i \leq 3$ for all i.
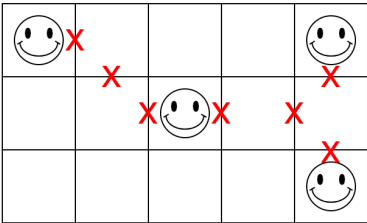- $1 \leq c_i \leq n$ for all i.

Subtasks

You will get points for each subtask when you pass all of the testcases of the subtask.

1. $n \leq 5$ (14 points)
2. $n \leq 20$ (13 points)
3. $n \leq 100$ (22 points)
4. No additional constraints (51 points)

Sample Explanation

This image illustrates the grid in the sample Input/Output.

This image illustrates the optimal walls to break for the sample Input/Output.

Sample Input 1	Sample Output 1
5 4 2 3 1 4 5 1 1 1 1 1 1 1 5 0 1 0 2 5 5 5 5 1 1 1 1 5 2 3 3 5	8