Another Assignment Problem

Assume that you are a manager and there are m types of worker (numbered from 1 to m) and n types of task (numbered from 1 to n). There are a(i) workers of type #i and b(j) postitions for task #j. C(i, j) is the cost of hiring a worker of type #i to do the task of type #j. Your job is to minimize the cost of hiring workers to fill all the positions given that the total number of workers is equal to the total number of positions.

Input

The first line of input contains the number of test cases nTest (1<= nTest <= 10). Each test case contains:

- The first line contains the number of worker types - m and number of task types - n.
- The second line contains m positive integers: a(1), a(2), ..., a(m).
- The third line contains n positive integers: b(1), b(2), ..., b(n).
- Each of the next m lines contains n integers describing matrix C(i, j).

Notes:

1 <= m, n <= 200;

1 <= a(i), b(i) <= 30000;

1 <= C(i, j) <= 10000.

Sum of a(i) equals to sum of b(j).

Output

For each test case write the minimum cost in a separate line (it will fit in a signed 32-bit integer).

Example

Input:
2
3 4
3 6 7
2 5 1 8
1 2 3 4
8 7 6 5
9 12 10 11
4 4
1 3 5 7
2 4 2 8
1 4 7 3
4 7 5 3
5 7 8 3
5 3 6 8

Output:
110
54