



HOME TOP CATALOG CONTESTS GYM PROBLEMSET GROUPS RATING EDU API CALENDAR HELP RAYAN 🛣

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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

C. Wonderful City

time limit per test: 2 seconds memory limit per test: 256 megabytes

You are the proud leader of a city in Ancient Berland. There are n^2 buildings arranged in a grid of n rows and n columns. The height of the building in row i and column j is $h_{i,j}$.

The city is *beautiful* if no two adjacent by side buildings have the same height. In other words, it must satisfy the following:

- There does not exist a position (i,j) $(1 \leq i \leq n, 1 \leq j \leq n-1)$ such that $h_{i,j} = h_{i,j+1}$.
- There does not exist a position (i,j) $(1 \le i \le n-1, 1 \le j \le n)$ such that $h_{i,j} = h_{i+1,j}$.

There are n workers at company A, and n workers at company B. Each worker can be hired at \max once.

It costs a_i coins to hire worker i at company A. After hiring, worker i will:

• Increase the heights of all buildings in row i by 1. In other words, increase $h_{i,1},h_{i,2},\ldots,h_{i,n}$ by 1.

It costs b_i coins to hire worker j at company B. After hiring, worker j will:

• Increase the heights of all buildings in column j by 1. In other words, increase $h_{1,j},h_{2,j},\ldots,h_{n,j}$ by 1.

Find the minimum number of coins needed to make the city beautiful, or report that it is impossible.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 100$). The description of the test cases follows.

The first line of each test case contains a single integer n ($2 \le n \le 1000$) — the size of the grid.

The i-th of the next n lines of each test case contains n integers $h_{i,1},h_{i,2},\ldots,h_{i,n}$ ($1\leq h_{i,j}\leq 10^9$) — the heights of the buildings in row i.

The next line of each test case contains n integers a_1, a_2, \ldots, a_n ($1 \le a_i \le 10^9$) — the costs of hiring the workers at company A.

The next line of each test case contains n integers b_1,b_2,\ldots,b_n ($1\leq b_j\leq 10^9$) — the costs of hiring the workers at company B.

It is guaranteed that the sum of n over all test cases does not exceed 1000.

Output

For each test case, output a single integer — the minimum number of coins needed, or -1 if it is impossible.

Example

input	Сору
4	
2	
1 2	
2 1	
100 100	
100 100	
4	

Neowise Labs Contest 1 (Codeforces Round 1018, Div. 1 + <u>Div. 2)</u>

Contest is running

00:33:57

Contestant



→ Submit?

Language: GNU G++23 14.2 (64 bit, ms ➤

Choose

Choose File No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Last submissions			
Submission	Time	Verdict	
316276953	Apr/19/2025 18:59	Pretests passed	

→ Score table		
	Score	
<u>Problem A</u>	330	
<u>Problem B</u>	495	
<u>Problem C</u>	990	
<u>Problem D</u>	1155	
<u>Problem E</u>	1320	
<u>Problem F</u>	1815	
<u>Problem G</u>	1815	
<u>Problem H</u>	2310	
Successful hack	100	
Unsuccessful hack	-50	
Unsuccessful submission	-50	
Resubmission	-50	

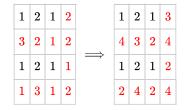
^{*} If you solve problem on 01:25 from the first attempt

```
1 2 1 2
3 2 1 2
1 2 1 1
1 3 1 2
1 2 3 4
5 6 7 8
3
1 2 2
2 2 1
2 1 1
100 100 100
100 100 100
8 7 2 8 4 8
7 7 9 7 1 1
8 3 1 1 8 5
6 8 3 1 1 4
1 4 5 1 9 6
7 1 1 6 8 2
11 23 20 79 30 15
15 83 73 57 34 63
output
                                                                                           Сору
0
14
-1
183
```

Note

For the first test case, we can see that the city is already beautiful. Thus, the answer is 0.

For the second test case, we can hire worker 2 from company A, worker 4 from company A, and worker 4 from company B:



The cost of hiring the workers is 2+4+8=14. This is the minimum possible cost.

For the third test case, no matter what we do, it is impossible to make the city beautiful. Thus, the answer is -1.

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