legions

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

** Synopsis **

“‘ According to the Republic of San Magnolia, their ongoing war against the Giadian Empire has no casualties—however, that is mere propaganda. While the silver-haired Alba of the Republic’s eighty-five sectors live safely behind protective walls, those of different appearances are interned in a secret eighty-sixth faction. Known within the military as the Eighty-Six, they are forced to fight against the Empire’s autonomous Legion under the command of the Republican "Handlers."

Vladilena Milizé is assigned to the Spearhead squadron to replace their previous Handler. Shunned by her peers for being a fellow Eighty-Six supporter, she continues to fight against their inhumane discrimination. Shinei Nouzen is the captain of the Spearhead squadron. Infamous for being the sole survivor of every squadron he’s been in, he insists on shouldering the names and wishes of his fallen comrades. When the fates of these young souls from two different worlds collide, will it ignite the spark that lights their path to salvation, or will they burn themselves in the flames of despair?

Shinei Nouzen

Vladilena Milizé

“‘

The legions has launched a huge offensive on the republic. While shin doesn’t care about himself much. He can not let the legions invade the Republic or else Lena will be in danger.

Shin will need to defeat legions divided into K groups.

Shin’s can defeat a group of legion per second, and it will damages him b_{ij} killing group j at the end of $i^{th} second$.

At the start of every second i, Shin will take c_{ij} damage for every alive group j.

Your job is to determine the minimum damage Shin has to take in order to defeat all legions.

Input

The first line contains one integer $K <= 20$ — Number of groups of legions.

The next K lines contains the matrix b of size $K \times K$.

The next K lines contains the matrix c of size $K \times K$.

Output

Print a single integer — Minimum damage Shin has to take to defeat every group of legions.

Scoring

50% of all test cases — $K <= 7$

100% of all test cases — $K <= 20$

Example

standard input	standard output
3 20 20 0 3 3 3 3 50 10 1 2 100 7 4 8 5 3 9	53

Note

For the example. The optimal ordering is as following —

At the start of first second, Shin take $1 + 7 + 5 = 13$ damages. At the end of first second, Shin defeat the third group of legions for 3 damages.

At the start of the next second, Shin take $2 + 4 = 6$ damages. At the end of the next second, Shin defeat the first group of legions for 20 damages.

At the start of last second, Shin take $8 = 8$ damages. At the end of last second, Shin defeat the second group of legions for 3 damages.

The total comes to $13 + 6 + 8 + 3 + 20 + 3$ damages