
Hamiltonian cycle of minimum cost

P42934_en

Given several directed graphs with n vertices, each one described with a matrix m of size $n \times n$ such that $m[i][j]$ is the cost of going from vertex i to vertex j , calculate the minimum cost of the Hamiltonian cycles of every graph. A Hamiltonian cycle is a path that visits each vertex exactly once, and that ends at the starting vertex.

Input

Input consists of the description of several graphs. Each one begins with a natural number $n \geq 2$, followed by the matrix $n \times n$ of costs (n lines, each with n natural numbers, with zeroes at the diagonal).

Output

Print the minimum cost of the Hamiltonian cycles of every graph.

Sample input

```
3
0 2 1
2 0 4
1 3 0
4
0 5 7 9
2 0 2 2
2 1 0 3
2 9 9 0
```

Sample output

```
6
12
```

Problem information

Author : Salvador Roura

Translator : Carlos Molina

Generation : 2024-05-02 17:27:03

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