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## Hamiltonian cycle of minimum cost

P42934\_en

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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

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Generation : 2013-09-02 14:48:16

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