

Problem F. Computing MDSST

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

In this problem, we will consider weighted undirected graphs where all edges have positive weights.

Let $D(G, i, j)$ be the length of the shortest path in graph G between vertex i and vertex j .

We are given a complete weighted undirected graph G which consists of n vertices numbered from 1 to n . Among the spanning trees of G , the MDSST (Minimum Distance Sum Spanning Tree) is such T for which the value $S(T) = \sum_{1 \leq i < j \leq n} D(T, i, j)$ is minimum. Your task is to find MDSST of G and print $S(T)$.

Input

The first line contains an integer n , the number of vertices in the graph ($2 \leq n \leq 15$). The i -th of the following $n - 1$ lines contains $n - i$ integers separated by spaces. The j -th integer of this the line is the length of the edge between vertex i and vertex $i + j$.

All the lengths are between 1 and 10^9 , inclusive.

Output

On the first line, print one integer: the value $S(T)$ for the MDSST you found.

Example

standard input	standard output
4 3 2 1 5 6 7	18