Cable Company

Time limit: 1 sec

One Internet Service Provider (ISP) would like to deploy its brand new fiber network over the country. It has **N** service centers (numbered from 0 to N-1) that should be connected to each other. To connect two service centers, a fiber optic cable must be deploy between these centers. When two service center are connected, we can transfer data between these two service centers. Moreover, we can relay our data via other service center as well. The only requirement for sending data between two service center is that there is a sequence of service centers such that every consecutive pair of service centers is connected by a fiber optic.

Obviously, the company want its network to be able to transfer data between any two pair of service centers. Given the cost of deploying a fiber optic cable between any pair of service center, find the minimal total cost that a company have to deploy the fiber optic such that transferring data between any pair of service centers is possible.

Input

- The first line of input contains the number of service center **N** (2 <= N <= 1,000).
- The next **N-1** lines describe the cost of deploying a fiber optic. Each line describes a cost of deploying for a fiber optic from one particular service center, starting from service center 0 to service center N-2. The format of the line that describe the cost of service center **i** is as follow.
    - For the service center numbered **i**, there is **N**-**i**-1 integers. The k^{th} integer (k is 0-based) describe the cost for the fiber optic connecting service center **i** to service center **k**. Each integer is non-negative integer not exceeding 1,000.

Output

The output must contain exactly one line giving the minimal total cost of deploying fiber optics that allow transferring of data between every service center.

Example

Input	Output
4 1 3 4 2 7 6	12
5 4 3 6 7 4 2 5 6 5 7	-1