Imperial Messengers

Requirements

Code should be ANSI Standard C, to allow for easy testing. Read input from standard in and write output to standard out. Please write the code entirely from scratch, without referencing any sources for code or algorithms (referencing a C manual for syntax is fine). Please keep track of the amount of time you spend on the solution and include that with your solution. Your coding style should reflect your average professional work, don't just hack together a solution so that you can say you finished it quickly. If you considered algorithms other than the one you wound up using, briefly describe them in your documentation. Please send back an executable file with your source code, for ease of testing.

Problem

The empire has a number of cities. For communicating important messages from the capitol to other cities, a network of messengers is going to be set up. Some number of messengers will be stationed in the capitol city. Each messenger will ride to one other city, where the message will be posted in the town square, and handed off to some number of new messengers, each of whom will ride of to a different city, repeating the process. The empire's unemployment rate is such that there are no limits placed upon the number of messengers in each city, the only goal is to get the message communicated throughout the empire as quickly as possible.

Input

The input will describe the routes between the n cities. All cities are reachable using some path from the capitol city. The first line of the input file will be n, the number of cities, such that $1 <= n <= 100$. The rest of the input defines an adjacency matrix, A. The adjacency matrix is square and of size $n \times n$. Each of its entries will be either an integer or the character x. The value of $A_{(i,j)}$ indicates the time required to travel from city i to city j. A value of x for $A_{(i,j)}$ indicates that a message cannot be sent directly from city i to city j.
Note that for a city to send a message to itself does not require a messenger, so $A_{(i,i)} = 0$ for $1 <= i <= n$. Also, you may assume that the adjacency matrix is undirected (messengers can travel in either direction in equal time), so that $A_{(i,j)} = A_{(j,i)}$. Thus only the entries on the (strictly) lower triangular portion of A will be supplied as input. The input to your program will be the lower triangular section of A. That is, the second line of input will contain one entry, $A_{(2,1)}$. The next line will contain two entries, $A_{(3,1)}$ and $A_{(3,2)}$, and so on.

Output

Your program should output the minimum time required before a message sent from the capitol (city #1) is known throughout the empire, i.e. the time it is received in the last city to get the message.

Sample Input

```
5
50
30 5
100 20 50
10 x x 10
```

Output for the Sample Input

```
35
```