Red Devil

PROBLEM

Red Devil, the Korean national soccer team supporters club will have a country-wide tour to N cities to celebrate the achievement in 2002 FIFA World Cup Korea/Japan.

Cities are represented by numbers 1, 2, …, N. The Red Devil's tour starts with city 1 and visit all N cities exactly once, after which it should return to city 1, the starting position. The travel distance between two cities I and J, denoted by $d(I,J)$ is known.

Note that the distance from city I to city J is symmetric to the distance from city J to city I, that is, $d(I,J) = d(J,I)$. For any three distinct cities I, J, K , it holds that $d(I,K) \leq d(I,J) + d(J,K)$. Furthermore it holds that $d(I,I)=0$ for any city I.

Given the distance between cities, you are to find a Red Devil's tour with the shortest possible length. You are given the input files describing the distances. **You must submit files describing the tours, not a program to find the tours.**

INPUT

You are given 4 problem instances in the text files named `red1.in` to `red4.in`. Each input file is organized as follows. The first line contains one integer: the number of cities, N, $5 \leq N \leq 50$. The following N lines represent the distance $d(I,J)$, where for each $d(I,J)$ we have $0 \leq d(I,J) \leq 50$.These N lines are organized in such a way that the K-th of these N lines contains N integers: the distance $d(K,1)$, $d(K,2)$, …, $d(K,N)$. This way, the input is organized in the following form:

N
$d(1,1)$ $d(1,2)$ … $d(1,N)$
$d(2,1)$ $d(2,2)$ … $d(2,N)$
…
$d(N,1)$ $d(N,2)$ … $d(N,N)$

OUTPUT

You are to submit 4 output files corresponding to the given input files. You do not need to submit your solution program source.

The first line contains the text
`#FILE red I`
, where integer I is the number of the respective input file. The second line contains N+1 integers, which represent the cities in the order in which they are visited in the tour of your solution.

EXAMPLE INPUTS AND OUTPUTS

Example1: red0.in

```
5
0 2 5 9 5
2 0 3 7 5
5 3 0 4 6
9 7 4 0 4
5 5 6 4 0
```

red0.out

```
#FILE red 0
1 3 2 5 4 1
```

SCORING

If the output is not a valid tour, your score is zero. Otherwise, your score is 5+ 20×DistanceInBestAnswer/DistanceInYourAnswer.

The score is rounded off to the first decimal place for each case. The total score is rounded off to the nearest integer.

Suppose that you submit the tour “1→3→2→5→4→1”. The length of your tour is 26. If the best of submitted solutions is a tour “1→2→3→4→5→1”, whose length is 18, your score becomes 5+20×18/26(= 18.846…), which will be rounded off to 18.8.