

# [PI032] - Triathlon

You're a triathlete, but recently the rules of the sport have changed in your city.

New modalities were introduced and the athletes are allowed to perform them in the order of their preference.

You're confident in your endurance and can keep a steady pace in all modalities, but there's one tricky part: **transitioning between modalities is chaotic** — you might need to change shoes, dry off, or put on a spacesuit!

You want to find the order of modalities that minimizes the total time spent switching between them.

## Task

You're given the **transition times** between each pair of modalities.

Find the **minimum total switching time** needed to complete all modalities, in any order, starting at any modality.

## Input

The first line of input contains an integer  $n$  ( $2 \leq n \leq 9$ ), the number of modalities.

Then follow  $n$  lines, each with  $n$  integers separated by spaces (basically a matrix).

The value at line  $i$  and column  $j$  is the time it takes to switch from modality  $i$  to modality  $j$ .

On this grid, the cost of swapping from a modality to itself will always be 0; all other values are between 1 and 100.

## Output

Print a single integer with the **minimum total transition time** required to complete all modalities once.

## Example 1

### Input

```
3
0 3 10
2 0 5
2 8 0
```

### Output

```
5
```

### Explanation

There are 6 possible orders of doing 3 modalities:

- 1 2 3 with time  $3 + 5 = 8$
- 1 3 2 with time  $10 + 8 = 18$
- 2 1 3 with time  $2 + 10 = 12$
- 2 3 1 with time  $5 + 2 = 7$
- 3 1 2 with time  $2 + 3 = 5$
- 3 2 1 with time  $8 + 2 = 10$

Therefore, the minimum time is 5.



# Example 2

## Input

2  
0 5  
10 0

## Output

5