

## Problem B: Sofa So Good

Sofia's Sofa Salon specializes in supplying sofas. Their manufacturing process has been couched in mystery until recently, when it was revealed that the creation of a sofa is just using the right frame for the right size of sofa. The rest was just upholstery magic.

When an order for a set of sofas comes in, the management team uses their knowledge of how quickly any particular worker can frame any given sofa to decide which worker will frame which sofa so as to minimize the total time spent on framing.

Management always ensures there are exactly enough workers on the job to handle the order being filled, and each worker can frame only one sofa per order (due to union safety laws and regulations).

Since the workers are paid for each hour they are working, management would like to minimize the total number of hours that the workers are on-site (given the framing assignment determined earlier and the fact that each worker leaves as soon as they are finished). Management is not prepared to solve such a deep-seated problem, so they have requested that you furnish a program to help them.

### Input

Each test case will start with a positive integer  $n = 50$  indicating both the number of sofas and the number of workers (no workers get to sit out). The following  $n$  lines each contain  $n$  positive integers; the  $i^{th}$  value on the  $j^{th}$  line indicates the time it takes the worker  $j$  to frame sofa  $i$  (workers and sofas are numbered starting at 1). All times given will be no greater than 1000. A line containing a single 0 will terminate the input.

### Output

For each test case, output the case number followed by  $n$  lines, one per worker (starting with worker 1). For each worker, list the sofa they framed. There will be exactly one optimal pairing of workers and couches for the framing. Use the format shown in the example.

### Sample Input

```
4
8 6 12 19
13 2 18 10
9 15 16 17
5 18 4 10
0
```

### Sample Output

```
Case 1:
Worker 1: 2
Worker 2: 4
Worker 3: 1
Worker 4: 3
```