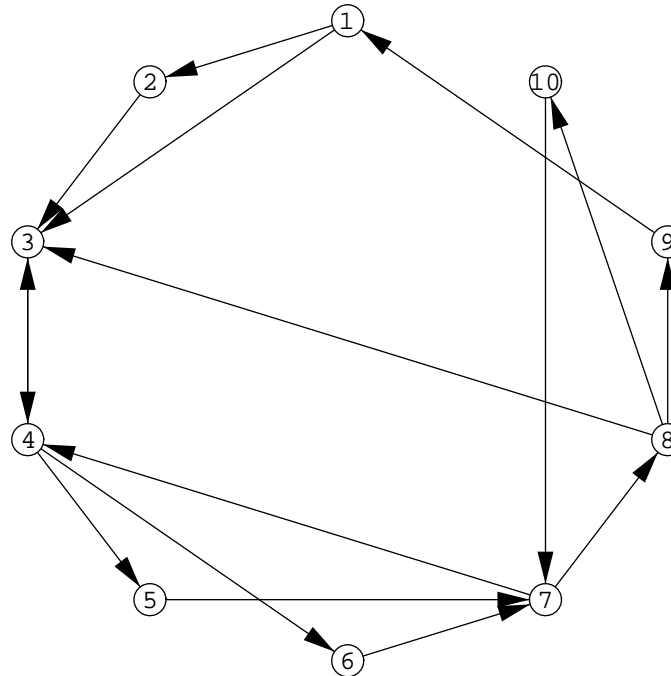


## 781 Optimisation

A company decides to simulate on computer the process of manufacturing its own goods. In order to do that, it makes the following observations:

1. The whole process can be splitted into several steps; between them there are some dependencies. This can be represented by a diagram (graph), which we suppose to be only one for all goods produced by company as in figure 1;



2. First step designates the start of manufacturing process; there is only one first step, denoted by the number 1;
3. There are not steps isolated or outside the process (every step is linked by a path with the first step);
4. Some steps are total dependants; so, we claim that the step  $i$  is total dependant of step  $j$  if every path in the fabrication process cannot arrive to  $i$  without was passing through  $j$ .

So, all steps are total dependants of step 1.

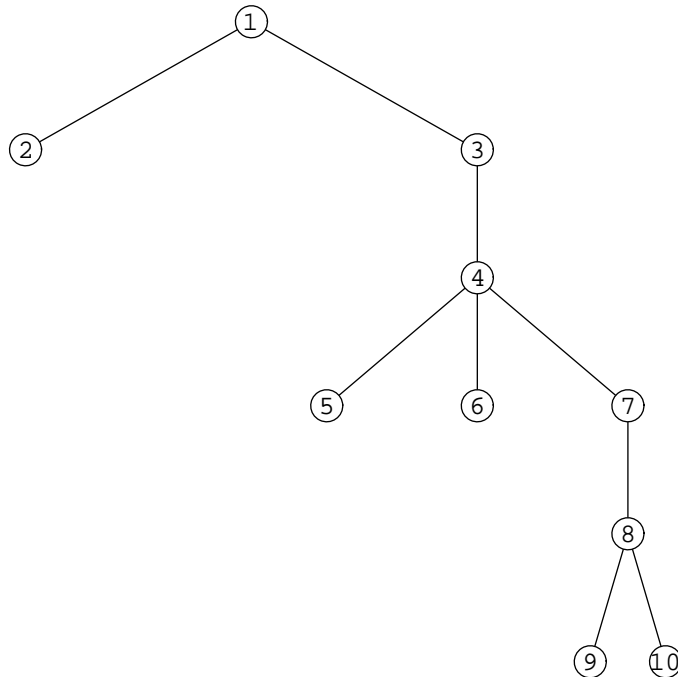
**Example:** In the process shown by the figure 1 the step 4 is total dependant of step 3, steps 5,6 and 7 are total dependants of 4 (hence of 3), but step 3 is not total dependant of step 2.

The Computing Center Dept. of company notes that whole manufacturing process is easier to be controlled if it would be structured by a tree, as follows:

- All steps of manufacturing process are nodes of the tree;

- Each node ensures total dependence of all its own descendants;

The tree associated to the diagram from figure 1 is shown in figure 2.



Your task is to write a program that builds this dependence tree.

## Input

The input file contains several input data sets. An input data set has the following format:

$n$  - number of steps of manufacturing process ( $2 \leq n \leq 99$ );

$a_{11}$	$a_{12}$	$\dots$	$a_{1n}$
$a_{21}$	$a_{22}$	$\dots$	$a_{2n}$
$\vdots$	$\vdots$	$\ddots$	$\vdots$
$a_{n1}$	$a_{n2}$	$\dots$	$a_{nn}$

where  $a_{ij} = 1$  if step  $j$  follows directly step  $i$  in the process diagram, otherwise  $a_{ij} = 0$ .

## Output

At output, the program must write  $n - 1$  lines for every input data set; each line has the format:

$i \ j$

with the meaning that node  $j$  is a direct descendant of node  $i$  in the tree. The pair  $(i_1 j_1)$  follows  $(i_2 j_2)$  if and only if  $(i_1 < i_2)$  or  $(i_1 = i_2 \text{ and } j_1 < j_2)$ .

**Sample Input**

```
10
0 1 1 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0 0 0
0 0 1 0 1 1 0 0 0 0
0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 1 0 0 0
0 0 0 1 0 0 0 1 0 0
0 0 1 0 0 0 0 0 1 1
1 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 1 0 0 0
```

**Sample Output**

```
1 2
1 3
3 4
4 5
4 6
4 7
7 8
8 9
8 10
```