Problem F - Timetabler

Description

Given a number of events with a fixed schedule, assign rooms to events such that the number of rooms needed is minimized. No room can be assigned to events that overlap in time. Assume that the number of rooms available is equal to the number of events. In addition, assume that the events and the rooms are numbered from 1 to n.

Input

Each test case starts with the number of events (*n*). The next *n* lines provide information about the events. The *i*-th line gives the starting and finishing times (as integers) of the *i*-th event.

Output

The output consists of *n+1* lines. Each of the first n lines should give the event number and the room number. There is no particular requirement for the ordering of the event-room assignments. In the last line, output the total number of rooms needed.

Example

Example input:

```
5
3 5
1 2
11 12
6 11
4 10
```

Example output:

```
2 1
1 1
5 2
4 1
3 1
2
```