3723   Knowledge Transfer

In recent years it has become very fashionable to buy widgets and the demand for widgets increased above all expectations. In fact, the supply cannot keep up with the demand: every widgeteer is busy building widgets all day. The Association for Widget Production realized the problem and decided that new widgeteers have to be trained. Training widgeteers is a long process: a beginner's course on widgeteering lasts n days with a 2-hour training session on each day. Due to the lack of qualified teachers, only two group of students will be admitted to the course. To accommodate the different lifestyles of the students, the training sessions of the two groups take place at different times of the day. Each student is available only for a certain period of time on each day. Therefore, the assignment of the students into groups and the scheduling of the training sessions should be done in such a way that every student can attend every session.

Input

The input contains several blocks of test cases. Each block begins with a line containing two integers: the number $1 \le d \le 50$ of days the training lasts and the number $1 \le n \le 8000$ of students. The next n lines describe when the students are available. Each line contains d time periods, describing when the given student can attend a training session on the d days. A time period is given by a start time and end time separated by a dash. The time periods for the different days are separated by spaces. For example, a line beginning with '8:00-19:30 16:45-20:00' means that on the first day the student is available only between 8:00 and 19:30, while on the second day the student is available only between 16:45 and 20:00. Therefore, on the second day, the student can participate in a 2-hour training session that starts at 18:00, but it cannot participate in it if it starts at 18:01.

The input is terminated by a block with $d = n = 0$.

Output

For each test case, you have to output a way of assigning the students into two groups and a scheduling of the training sessions. Each of the first n lines of the output should contain the integer 1 or 2, depending on which group the given student is assigned to. The next d lines describe the scheduling of the training sessions. Each line contains two starting times (separated by a space): the starting times of the two training session on the given day. (Recall that each training session lasts exactly 120 minutes; the two training sessions can overlap). The starting time should be formatted like this: 9:45. A session cannot start later than 22:00 (i.e., it will end on the same day). If it is not possible to find a schedule that satisfies the requirements, then output 'No solution.' (without quotes).

Sample Input

```
5 4
8:00-13:30 7:00-16:30 9:20-18:20 16:00-19:20 9:10-17:45
12:00-16:10 14:22-18:30 9:11-17:45 10:10-18:10 10:30-14:20
9:10-17:00 12:30-15:40 10:30-13:00 9:10-18:00 9:00-13:00
8:00-18:20 9:30-17:30 11:01-19:20 9:31-12:20 9:30-14:00
5 4
8:00-13:30 7:00-16:30 9:20-18:20 16:00-19:20 11:10-17:45
12:00-16:10 14:22-18:30 9:11-17:45 10:10-18:10 10:30-14:20
9:10-17:00 12:30-15:40 10:30-13:00 9:10-18:00 9:00-13:00
```

```
8:00-18:20 9:30-17:30 11:01-19:20 9:31-12:20 9:30-14:00
0 0
```

Sample Output

```
1
2
1
2
9:10 12:00
12:30 14:22
10:30 11:01
16:00 10:10
9:10 10:30
No solution.
```