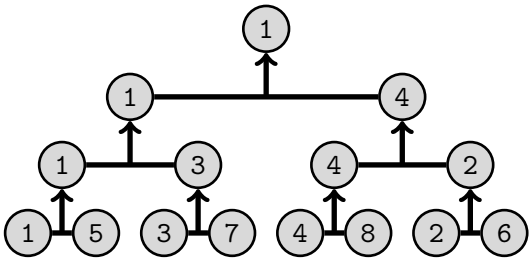
F - Foul Play

A European soccer tournament has n participating teams. In the first round, $n/2$ matches are played such that each team plays against one other team. After every round, only the winning teams advance to the next round. In the second round, $n/4$ matches are played such that each first-round winner plays against one other first-round winner. Eventually, only two teams are left to play a final match. The winner of the final match is the champion of the tournament.



The Dutch soccer team is probably not the best team in the world. However, they are still a pretty good team. They can easily win from at least half of the other teams. Moreover, for every team t that the Dutch cannot beat in a direct confrontation, there is another team t' that beats t, but is beaten by the Dutch team.

The Dutch coach wants to manipulate the tournament such that the Dutch team will become champion. He happens to know, for each pair of teams, which team would certainly win if a match was played between them.

Problem

For each two teams, you know beforehand which one would win if they played against each other. (Since this is a knock-out tournament, no ties will occur.) Furthermore, you know for sure that your favourite team can beat at least half of the other teams, and for every team t that your favourite team cannot beat, there is a team t' that beats t but is itself beaten by your favourite team.

Determine a tournament schedule such that your favourite team wins the tournament.

Input

For each test case, the input is as follows:

- One line containing the number of teams n, where n is a power of two and $2 \leq n \leq 1024$. Teams are numbered from 1 to n, where team 1 is your favourite team.
- n lines, each containing a string of n binary digits.
  The k-th digit on the j-th line is '1' if team j would certainly win from team k, otherwise it is '0'.

  A team cannot play against itself, therefore the j-th digit on the j-th line is '0'.

  If $j \neq k$, the k-th digit on the j-th line is different from the j-th digit on the k-th line.

Output

For each test case, print $n - 1$ lines of output, specifying a tournament schedule that ensures victory for team 1.

The first $n/2$ lines describe the first round of the tournament. The next $n/4$ lines describe the second round, if any, etc. The last line describes the final match.

Each line contains two integers x and y, indicating that team x plays a match against team y.

If there are multiple tournament schedules where team 1 wins, any one of those tournament schedules will be accepted as a correct answer.

Example

input	**output** (other answers may also be correct)
4 0110 0011 0000 1010 8 00111010 10101111 00010010 01000101 00110010 10101011 00010000 10101010	1 3 2 4 1 2 1 5 3 7 4 8 2 6 1 3 4 2 1 4