Problem F. Tournament

DreamGrid, the king of Gridland, is making a knight tournament. There are n knights, numbered from 1 to n, participating in the tournament. The rules of the tournament are listed as follows:

- The tournament consists of k rounds. Each round consists of several duels. Each duel happens between exactly two knights.
- Each knight must participate in exactly one duel during each round.
- For each pair of knights, there can be at most one duel between them during all the k rounds.
- Let $1 \le i, j \le k$, $i \ne j$, and $1 \le a, b, c, d \le n$, a, b, c, d be four distinct integers. If
  - Knight a fights against knight b during round i, and
  - Knight c fights against knight d during round i, and
  - Knight a fights against knight c during round j,

  then knight b must fight against knight d during round j.

As DreamGrid's general, you are asked to write a program to arrange all the duels in all the k rounds, so that the resulting arrangement satisfies the rules above.

Input

There are multiple test cases. The first line of the input is an integer T, indicating the number of test cases. For each test case:

The first and only line contains two integers n and k ($1 \le n, k \le 1000$), indicating the number of knights participating in the tournament and the number of rounds.

It's guaranteed that neither the sum of n nor the sum of k in all test cases will exceed 5000.

Output

For each test case:

- If it's possible to make a valid arrangement, output k lines. On the i-th line, output n integers $c_{i,1}, c_{i,2}, \ldots, c_{i,n}$ separated by one space, indicating that in the i-th round, knight j will fight against knight $c_{i,j}$ for all $1 \le j \le n$.

  If there are multiple valid answers, output the lexicographically smallest answer.

  Consider two answers A and B, let's denote $a_{i,j}$ as the j-th integer on the i-th line in answer A, and $b_{i,j}$ as the j-th integer on the i-th line in answer B. Answer A is lexicographically smaller than answer B, if there exists two integers p ($1 \le p \le k$) and q ($1 \le q \le n$), such that
  - for all $1 \le i < p$ and $1 \le j \le n$, $a_{i,j} = b_{i,j}$, and
  - for all $1 \le j < q$, $a_{p,j} = b_{p,j}$, and finally $a_{p,q} < b_{p,q}$.
- If it's impossible to make a valid arrangement, output "Impossible" (without quotes) in one line.

Please, DO NOT output extra spaces at the end of each line, or your answer may be considered incorrect!

Example

standard input	standard output
2 3 1 4 3	Impossible 2 1 4 3 3 4 1 2 4 3 2 1