Aim High

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

You will play a game on a 2-dimensional plane. Initially, at each lattice point (x, y) where $-100 \leq x \leq 100$ and $-100 \leq y \leq 0$, one piece is placed.

You can perform the following operation zero or more times:

- Choose two points (a, b) and (c, d) where $|a-c|+|b-d|=1$. Move one piece from (a, b) by rotating it 90 degrees clockwise or counterclockwise around (c, d), and remove one piece from (c, d).

Your goal is to perform operations such that, after all operations, there is at least one piece at a point with a y-coordinate of at least N. Determine whether it is possible to achieve the goal, and if so, construct a sequence of operations.

You are given T test cases. Solve each test case accordingly.

Constraints

- $1 \leq T \leq 6$
- $1 \leq N \leq 6$

Input

The input is given in the following format from standard input:

T

case_1

case_2

$\vdots$

case_T

Here, case_i denotes the i-th test case. Each test case is given in the following format:

N

Output

For each of the T test cases, output the results in the given order, separated by newlines.

For each test case, if it is impossible to achieve the goal, output '-1'. Otherwise, first output the number of operations K, followed by K lines describing the operations. For the i-th operation, when moving a piece from (a_i, b_i) by rotating it 90 degrees around (c_i, d_i) to (e_i, f_i), output as follows:

K

$a_1\ b_1\ c_1\ d_1\ e_1\ f_1$

$a_2\ b_2\ c_2\ d_2\ e_2\ f_2$

$\vdots$

$a_K\ b_K\ c_K\ d_K\ e_K\ f_K$

Example

standard input	standard output
1 1	1 1 0 0 0 0 1

Note

In the first operation, a piece at $(1, 0)$ is rotated 90 degrees clockwise around $(0, 0)$ and placed at $(0, 1)$.

This operation allows placing a piece at the point $(0, 1)$, where the y-coordinate is at least 1, thus achieving the goal.