



B. Make It Permutation

time limit per test: 1 second
 memory limit per test: 256 megabytes

There is a matrix A of size $n \times n$ where $A_{i,j} = j$ for all $1 \leq i, j \leq n$.

In one operation, you can select a row and reverse any subarray* in it.

Find a sequence of at most $2n$ operations such that every column will contain a permutation[†] of length n .

It can be proven that the construction is always possible. If there are multiple solutions, output any of them.

*An array a is a subarray of an array b if a can be obtained from b by deleting zero or more elements from the beginning and zero or more elements from the end.

†A permutation of length n is an array consisting of n distinct integers from 1 to n in arbitrary order. For example, $[2, 3, 1, 5, 4]$ is a permutation, but $[1, 2, 2]$ is not a permutation (2 appears twice in the array), and $[1, 3, 4]$ is also not a permutation ($n = 3$ but there is 4 in the array).

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 100$). The description of the test cases follows.

The first line of each test case contains one integer n ($3 \leq n \leq 5000$) — denoting the number of rows and columns in the matrix.

It is guaranteed that the sum of n over all test cases does not exceed 5000.

Output

For each test case, on the first line, print an integer k ($0 \leq k \leq 2n$), the number of operations you wish to perform. On the next lines, you should print the operations.

To print an operation, use the format " $i \ l \ r$ " ($1 \leq l \leq r \leq n$ and $1 \leq i \leq n$) which reverses the subarray $A_{i,l}, A_{i,l+1}, \dots, A_{i,r}$.

Example

input	Copy
2	
3	
4	
output	Copy
4	
2 1 3	
2 2 3	
3 1 2	
3 2 3	
5	
2 1 4	
3 1 3	
3 2 4	
4 3 4	
4 1 2	

Note

In the first test case, the following operations are a valid solution:

Codeforces Round 1030 (Div. 2)

Finished

Practice



→ Virtual participation

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Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++23 14.2 (64 bit, ms)

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
324247242	Jun/13/2025 15:23	Accepted
324247125	Jun/13/2025 15:22	Wrong answer on test 1
324246684	Jun/13/2025 15:18	Wrong answer on test 1
324061086	Jun/12/2025 17:45	Wrong answer on pretest 1

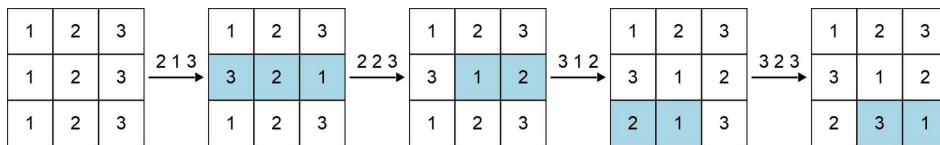
→ Problem tags

constructive algorithms

No tag edit access

→ Contest materials

- Announcement (en)



- Tutorial (en) ✕

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