B. Invention of Saruca (invention)

Time limit: 3.0 seconds
Memory limit: 256 MiB

During the Golden Age of Mathematics, in the grand madrasas of Khwarizm, two bright scholars, Saruca and Kamil, spent their days unraveling the mysteries of algebra and numbers. Saruca, possessing a genius for engineering, has recently invented a magnificent, gear-driven analytical machine capable of balancing complex mathematical equations. However, before revealing its inner workings, Saruca decides to measure his close friend Kamil's intellectual depth. He challenges Kamil with a profound puzzle.

The trial begins with Saruca whispering his favorite number, N.

Kamil is initially required to forge an array a consisting of $2N$ elements (representing ancient numerical weights). For this array, the condition $1 \leq a_i \leq 10^9$ must hold, and every element in the array must be strictly distinct.

Afterward, he must divide these elements into 2 disjoint sets exactly K times. Let's call this operation a "Partition". In each Partition, every element must go to exactly one of the 2 sets. This means if the number of elements in the first set is x and the number of elements in the second set is y, the equation $x + y = 2N$ must be satisfied.

Every Partition must satisfy the following delicate rules of balance:

- If the number of elements in the first set is x, the condition $2 \leq x \leq N$ must be satisfied.
- The number of elements in the first set (x) must be strictly different for every distinct Partition.
- The sum of the elements in the first set must be exactly equal to the sum of the elements in the second set, keeping the machine's scales in perfect harmony.
- Across the two sets, there must be a total of $2N$ elements, and each one of them must be distinct.

Saruca's brass machine first takes the $2N$-element array from Kamil. If the elements do not satisfy the required conditions, the gears jam, and Kamil immediately obtains 0 points.

Next, the machine evaluates the number of Partitions ($K > 0$) that Kamil is able to produce. Each Partition is fed into the machine in the following format:

- On the first line, the number of elements in the first set: x.
- Then, on the same first line, x more integers: the elements going into the first set.
- On the second line, the number of elements in the second set: y.
- Then, on the same second line, y more integers: the elements going into the second set.

If a mistake is made in the format, or if any printed output fails to satisfy the Partition conditions, the machine returns 0 points. If Kamil provides the output correctly, he earns points based on the size of K. If $K = N - 1$, he demonstrates true mastery and earns full points for that test.

Kamil is requesting your help. Please help your friend.

Input

A single line containing Saruca's favorite number N.

Output

Print your answer in the following format:

- On the first line, print $2N$ integers: the array you initially generated and will use for the Partitions.
- On the second line, print K: the number of Partitions you are able to produce for the given test.
- Then, for each of the K Partitions, print two lines:
  - On the first line, print x (the number of elements in the first set) followed by x integers (the elements in the first set).
  - On the second line, print y (the number of elements in the second set) followed by y integers (the elements in the second set).

Keep in mind that if you produce an output that does not satisfy the conditions given in the problem, you will receive 0 points. If there are multiple valid ways to construct the array and partitions, you may output any of them.

Constraints

- $1 \leq N \leq 1000$
- $1 \leq K \leq N - 1$
- $1 \leq a_i \leq 10^9$
- $x + y = 2N$
- $a_i \neq a_j$ if $i \neq j$

Scoring

- **Subtask 1 (10 points):** $N = 2$
- **Subtask 2 (10 points):** $N = 5$
- **Subtask 3 (10 points):** $N = 8$
- **Subtask 4 (10 points):** $N = 32$
- **Subtask 5 (10 points):** $N = 37$
- **Subtask 6 (10 points):** $N = 73$
- **Subtask 7 (10 points):** $N = 100$
- **Subtask 8 (10 points):** $N = 377$
- **Subtask 9 (10 points):** $N = 730$
- **Subtask 10 (10 points):** $N = 1000$

Remember that you will receive the full points allocated for a test only when you produce an output such that $K = N - 1$. The score you receive will decrease linearly according to K. Specifically, the score you get for a test is calculated according to the following formula:

$$\max\left(0, 10 - \left(\frac{10}{N-1}\right) \times (N - 1 - K)\right)$$

Examples

standard input	standard output
3	5 2 4 3 1 7 1 2 7 4 4 1 3 2 5

Explanation

Example 1: The output provided above will not receive full points. In order to earn full points for $N = 3$, both the Partition where the first set has 2 elements and the Partition where the first set has 3 elements must be printed at the same time (meaning $K = N - 1 = 2$ for this test). Nevertheless, it will receive partial points based on the scoring formula.

(Note: The $N = 3$ case is only for demonstrative purposes and is not present in the actual tests. You can check the valid N values in the Scoring section above.)