

## Problem H. Number of Cycles

Input file: *standard input*  
 Output file: *standard output*  
 Time limit: 2 seconds  
 Memory limit: 512 mebibytes

Jaehyun likes computational geometry. Here is Jaehyun's question: "We are given  $n$  segments on the Cartesian plane. Count the number of simple cycles in the generated graph."

Formally, a set of  $n$  segments  $S = \{s_1, s_2, \dots, s_n\}$  generates the following graph  $G = (V, E)$ .

For a point  $v$  of the plane,  $v \in V$  if  $v$  is one of the endpoints of the segments or  $v$  is an intersection of two or more segments.

For two distinct vertices  $u$  and  $v$ ,  $(u, v) \in E$  if there is a segment  $s_i \in S$  containing vertices  $u$  and  $v$ , and there is no vertex on  $s_i$  between  $u$  and  $v$ .

A simple cycle is a cycle with no repeated vertices or edges.

Zigui tried to solve Jaehyun's problem, and he found it is possible to make various answers with just a few segments.

For given  $N$ , find a set of segments such that the number of simple cycles in the graph generated by these segments is  $N$ .

### Input

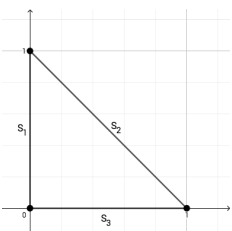
The first line contains an integer  $N$  ( $1 \leq N \leq 1000$ ).

### Output

The first line of the output must contain an integer  $K$ : the number of segments ( $1 \leq K \leq 12$ ).

Each of the next  $K$  lines must contain four integers  $x_1, y_1, x_2, y_2$  denoting a segment with endpoints  $(x_1, y_1)$  and  $(x_2, y_2)$  ( $-10^9 \leq x_1, y_1, x_2, y_2 \leq 10^9, (x_1, y_1) \neq (x_2, y_2)$ ).

### Examples

standard input	standard output	Notes
1	3 0 0 0 1 1 0 0 1 1 0 0 0	
3	4 -5 -5 5 5 -5 5 5 -5 -5 -1 5 -1 0 -5 0 5	