

## E. Phone Company

*Limits: 1 sec., 512 MiB*

A mobile phone company offers the following promotion: each new customer may choose exactly  $k$  other phone numbers and all calls between the customer and any of the  $k$  chosen contacts are free (in both directions).

A group of  $n$  students (numbered from 1 to  $n$ ) wants to take advantage of this promotion. Each student  $i$  must choose exactly  $k$  distinct contacts from the set  $\{1, 2, \dots, n\} \setminus \{i\}$ .

We say that two students  $i$  and  $j$  can talk for free if at least one of the following holds:

- $i$  has chosen  $j$  as one of the free contacts, or
- $j$  has chosen  $i$  as one of the free contacts.

The students want to choose their free contacts so that any student can talk to any other student for free, i.e., for every pair  $(i, j)$  with  $1 \leq i < j \leq n$ , students  $i$  and  $j$  can talk for free.

For a given  $k$ , your task is to:

- determine the maximum possible number  $n$  of students for which such a configuration is possible,
- construct one valid configuration of chosen contacts for this maximum  $n$ .

## Input

The input consists of a single integer  $k$ .

## Output

On the first line, output a single integer  $n$  – the maximum number of students for which it is possible to choose the free contacts so that any two students can talk to each other for free.

On the next  $n$  lines, output the  $k$  free contacts chosen by each student: on line  $i+1$  (for  $1 \leq i \leq n$ ), output  $k$  distinct integers  $a_{i,1}, a_{i,2}, \dots, a_{i,k}$ . Each  $a_{i,j}$  must satisfy  $1 \leq a_{i,j} \leq n$  and  $a_{i,j} \neq i$ . These lines indicate that student  $i$  has chosen the students  $a_{i,1}, a_{i,2}, \dots, a_{i,k}$  as their free contacts.

If there are several valid answers, print any of them.

## Constraints

$$1 \leq k \leq 1000.$$

## Samples

Input ( <i>stdin</i> )	Output ( <i>stdout</i> )
2	5 2 5 3 4 1 5 1 3 2 4

## Notes

In the example,  $k = 2$  and the maximum number of students for which it is possible to choose the free contacts so that any two students can talk to each other for free is  $n = 5$ . For each pair of distinct students, at least one of them has chosen the other, so any two can talk for free.