Section No.	01	Section Name	Coding for Product Development Companies
Q Paper No.	04	Topic Name	Arrays
Total Marks	30	Time Limit	90 minutes

Q.1) Spirals

Write a program to print 1-n^2 in a spiral in a spiral order in a square matrix.

Input:

First line has an integer N.

Output:

Print the Square matrix

Constraints

1 <= N <= 16

Example

Input:

4

Output:

1 2 3 4

12 13 14 5

11 16 15 6

10 9 8 7

Q.2) The Power Problem

My little brother, now 8, started coding. He was interested in powers, as he loves being powerful.
To keep it easy for him, I ask him to raise 2 to the power of some number N, which I give.
He was too little to know numbers more than 10 digits, so I ask him to tell me the last 10 digits of the number 2^N.

He comes running to you for help

He gives you the number N.

Tell him the last significant 10 digits of 2^N, 000000004 should be told as 4

Input:
First line has an integer N.

Output:
Print the last 10 digits of 2^N

Constraints
1 <= N <= 100

Examples

Input:
10

Output:
1024

Explanation:
2^10 = 1024

Q.3) Rotate the matrix

Given A NxN matrix, you are required to rotate the matrix by 90 degrees right

So :

```
1 2 3 4          9 6 9 1
9 8 5 6    –>    2 5 8 2
6 5 3 7          6 3 5 3
9 2 6 8          8 7 6 4
```

A rotate like this happens.

Input Format

First line contains N, the size of the grid
Then N^2 numbers giving the value of the row and column.

Constraints

1<= N <= 100
1<= ai <= 100

Output Format

The matrix after rotation

Sample Input

```
3
1 2 3
4 5 6
7 8 9
```

Sample output

```
7 4 1
8 5 2
9 6 3
```