

## OLIMPIADA DE INFORMATICĂ ÎN ECHIPE – ETAPA NAȚIONALĂ

martie 2023

### Squirrel

Input file:            standard input  
Output file:        standard output  
Time limit:         1 second  
Memory limit:      1024 megabytes

A squirrel discovered a deposit of peanuts. The deposit has a weirder shape, as it is made of 3 rows of rooms, each of them having 3 rooms. The deposit has in total 9 rooms situated on the 3 x 3 grid. We know the number of peanuts present in each of the 9 rooms from the matrix.

As the squirrel doesn't like to see too many peanuts in a room or too few peanuts in another room, it will proceed as follows: from day 1, the squirrel will take all the rooms in which a maximal number of peanuts exists and moves exactly one peanut to every adjacent room.

The squirrel is now asking you the following question:

"How many peanuts will there be in each room after  $n$  days?"

We need to answer to  $t$  such questions the squirrel will give to us.

### Input

The first line of the input contains  $t$ , representing the number of tests we will need to solve ( $1 \leq t \leq 100$ ).

Each testcase will contain 4 lines.

The first line of the test will contain  $n$  ( $1 \leq n \leq 10^{18}$ ), the number of days corresponding to each step.

The following 3 lines of the test will contain the grid, each of the lines having 3 columns, representing the initial values of the matrix ( $10 \leq a_{ij} \leq 10^{18}$ ).

For tests worth 14 points, ( $1 \leq n \leq 100, 10 \leq a_{i,j} \leq 1000$ ).

For tests worth 7 more points, ( $1 \leq n \leq 10^5$ ).

For tests worth 5 more points, ( $10 \leq a_{i,j} \leq 15$ ).

For tests worth 14 more points, ( $10 \leq a_{i,j} \leq 10^4$ ).

### Output

Each test will have the 3 x 3 grid corresponding to the answer for that particular test case.

## Example

standard input	standard output
4	16 17 14
2	14 13 16
15 14 18	13 16 15
16 15 13	13 13 13
11 18 14	12 13 15
3	15 13 13
11 14 13	12 14 14
13 12 15	14 14 11
14 16 12	13 12 14
4	12 12 13
16 12 14	11 14 11
13 14 12	13 13 11
11 14 12	
1	
11 12 13	
14 13 11	
12 13 11	