Circle Summation

There are n children, numbered $1, 2, \ldots, n$, sitting around a circle in a clockwise manner. The ith child has a piece of paper with the number a_i written on it. They play the following game:

- In the 1st round, the child numbered i increases his number by the sum of the numbers of his neighbors.
- In the 2nd round, the child next in clockwise order increases his number by the sum of the numbers of his neighbors.
- In the 3rd round, the child next in clockwise order increases his number by the sum of the numbers of his neighbors.
- And so on.

The game ends after m rounds have been played.

For every i, find the numbers that the children end up with if the game starts with child i playing the first round. Since the numbers can be large, output them modulo $10^9 + 7$.

Input Format

The first line contains t, the number of test cases. t cases follow.

The first line of each test case contains two space-separated integers n and m. The next line contains n integers, the ith of which is a_i.

Constraints

- $1 \leq t \leq 15$
- $3 \leq n \leq 50$
- $1 \leq m \leq 10^9$
- $1 \leq a_i \leq 10^9$

Output Format

For each test case, print n lines, each having n integers. The jth integer on the ith line contains the number that the jth child ends up with if the game starts with child i playing the first round.

Print a blank line after each test case *except the last one*.

Since the numbers can be large, output them modulo $10^9 + 7$.

Sample Input 0

```
2
5 1
10 20 30 40 50
3 4
1 2 1
```

Sample Output 0

```
80 20 30 40 50
10 60 30 40 50
10 20 90 40 50
10 20 30 120 50
10 20 30 40 100
```

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23 7 12
11 21 6
7 13 24
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