6184 One-Dimensional Cellular Automaton

There is a one-dimensional cellular automaton consisting of N cells. Cells are numbered from 0 to $N-1$.

Each cell has a state represented as a non-negative integer less than M. The states of cells evolve through discrete time steps. We denote the state of the i-th cell at time t as $S(i,t)$. The state at time $t+1$ is defined by the equation

$$S(i,t+1) = (A \times S(i-1,t) + B \times S(i,t) + C \times S(i+1,t)) \bmod M, \quad (1)$$

where A, B and C are non-negative integer constants. For $i < 0$ or $N \leq i$, we define $S(i,t) = 0$.

Given an automaton definition and initial states of cells, your mission is to write a program that computes the states of the cells at a specified time T.

Input

The input is a sequence of datasets. Each dataset is formatted as follows.

N M A B C T
$S(0,0)$ $S(1,0)$ ... $S(N-1,0)$

The first line of a dataset consists of six integers, namely N, M, A, B, C and T. N is the number of cells. M is the modulus in the equation (1). A, B and C are coefficients in the equation (1). Finally, T is the time for which you should compute the states.

You may assume that $0 < N \leq 50$, $0 < M \leq 1000$, $0 \leq A, B, C < M$ and $0 \leq T \leq 10^9$.

The second line consists of N integers, each of which is non-negative and less than M. They represent the states of the cells at time zero.

A line containing six zeros indicates the end of the input.

Output

For each dataset, output a line that contains the states of the cells at time T. The format of the output is as follows.

$S(0,T)$ $S(1,T)$ ... $S(N-1,T)$

Each state must be represented as an integer and the integers must be separated by a space.

Sample Input

```
5 4 1 3 2 0
0 1 2 0 1
5 7 1 3 2 1
0 1 2 0 1
5 13 1 3 2 11
0 1 2 0 1
5 5 2 0 1 100
0 1 2 0 1
6 6 0 2 3 1000
0 1 2 0 1 4
```

```
20 1000 0 2 3 1000000000
0 1 2 0 1 0 1 2 0 1 0 1 2 0 1 0 1 2 0 1
30 2 1 0 1 1000000000
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
30 2 1 1 1 1000000000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
30 5 2 3 1 1000000000
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0
```

Sample Output

```
0 1 2 0 1
2 0 0 4 3
2 12 10 9 11
3 0 4 2 1
0 4 2 0 4 4
0 376 752 0 376 0 376 752 0 376 0 376 752 0 376 0 376 752 0 376
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0
1 1 3 2 2 2 3 3 1 4 3 1 2 3 0 4 3 3 0 4 2 2 2 2 1 1 2 1 3 0
```