

Maggu and Weird things

Maggu is a weird guy. Whenever he gets bored, he starts playing weird games. As he is an odd boy, he likes to play only with arrays of even length n . Maggu cannot play with large numbers, so he will do all the operations modulo $10^9 + 7$.

He likes performing "weird operations" on the array very much. A Weird Operation#1 on an array `seq[]` is defined as follows:

```
tempSeq[n] ; //is a temporary array
for (i = 0; i < n; i++) {
    int cnt = 0;
    for (cnt = 0; cnt < k; cnt++) {
        int j = (i + cnt) % n;
        if (cnt % 2 == 0) tempSeq[i] += seq[j];
        else tempSeq[i] -= seq[j];
    }
}
for (int i = 0; i < n; i++) seq[i] = tempSeq[i];
```

Weird operation#2 is even more cooler than this. In this operation, he swaps the adjacent entries of the array.

Pseudo code is as follows:

```
for (int i = 0; i < n; i += 2) swap (seq[i], seq[i + 1]);
```

A "Super Weird operation" is applying weird operation #1 followed by weird operation #2 on the array `seq[]`. He wants to apply this operation m times and desires to know the final contents of the `seq`.

He is bored of playing this game, So he asks you to find out the final content of the `seq`.

Input

First line contains number of test cases: T ($1 \leq T \leq 100$).

For each test case, first line contains three space separated n, k, m ($1 \leq n \leq 50, 1 \leq k \leq n, 1 \leq m \leq 10^9$). n is always even.

The next line contains n space separated integers `seq[i]`(starting from 0), $-10^9 \leq seq[i] \leq 10^9$.

Output

For each test case, output n space separated integers where i th element represents `seq[i]` after m "Super Weird Operations".

Example

Input:

```
1
4 3 1
```

2 4 -3 5

Output:

12 1000000002 7 1000000001