

Greeting Card

Problem ID: greetingcard
Time limit: 1 second

In a certain village, N households form circle. Initially, household i 's happiness level is A_i ($0 \leq i < N$). In the morning, each household will write their greeting cards to others but order them to only arrive at the recipients after work hour. After work, everyone is burnt out and their happiness level depends solely on the greeting card they receive. Therefore, their happiness level at the end of the day will be the sum of happiness level of the senders whom they receive from at the time the cards were written.

On day 0, each household write for their adjacent households only. On each following days, they double the distance which they send the card to. More specifically, on day t , household i will write to household $(i + 2^t) \% N$ and $(i - 2^t \% N + N) \% N$. One household may write for the same household twice on the same day.

Given an integer K , calculate everyone's happiness level after 2^K days (the end of day $2^K - 1$).

Input

The first line of input contains 2 integers N and K ($2 \leq N \leq 10^5$, $0 \leq K \leq 10^9$), the number of test cases.

The following line contains N integers A_i ($1 \leq A_i \leq 10^9$).

Output

Output one line contain N integers, represent the happiness level of the households (modulo $10^9 + 7$) after K days respectively.

Sample Input 1

```
3 0
1 2 3
```

Sample Output 1

```
5 4 3
```

Sample Input 2

```
3 1
1 2 3
```

Sample Output 2

```
7 8 9
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