

6716 Family of Recurrences

Suppose we have recurrences of the following form, characterized by three parameters m , δ , f where $m > 0$ and $\delta_i \in \{0, 1\} \forall i \in \{0, 1, \dots, m-1\}$.

$$s_n = \begin{cases} f_n & \text{if } 0 \leq n < m \\ \sum_{i=0}^{m-1} \delta_i s_{n-m+i} & \text{if } m \leq n \end{cases}$$

Given m , n , δ , f , compute s_n modulo $10^9 + 7$.

Input

First line of input contains a positive integer T , then T test cases follow. For each test case, first line contains positive integer m and non-negative integer n separated by a single space. Second line contains m integers of f (f_0 to f_{m-1}) each between -10^9 and 10^9 inclusive, separated by single space. Third line contains m numbers of δ (δ_0 to δ_{m-1}) each either '0' or '1', separated by single space. Maximum value of m is 100 and maximum value of n is 10^9 .

Output

For each test case, output should contain a single number s_n modulo $10^9 + 7$ followed by a newline.

Sample Input

```
2
2 100
1 1
1 1
3 10
1 1 1
1 1 1
```

Sample Output

```
782204094
193
```