Problem C: Sum of Divisors

Filename: *sumdiv*

Time limit: *2 seconds*

There are two things Arup likes: divisors and adding things. So, it's no surprise that he's decided to pose this problem to you:

Given the prime factorization of an integer, determine the **sum** of all of its divisors.

Since the number he might give you is big, please just report the sum modulo 10^9+7.

The Problem

Given the prime factorization of an integer, determine its sum of divisors, modulo 10^9+7.

The Input

The first line of input will contain a single positive integer, $\boldsymbol{c}$ ($1 \leq \boldsymbol{c} \leq 25$), representing the number of input cases to process. Each of the input cases follow.

The first line of each input case is a single integer, $\boldsymbol{k}$ ($1 \leq \boldsymbol{k} \leq 10$), where $\boldsymbol{k}$ represents the number of unique prime factors of the input integer for the case.

The following line contains $2\boldsymbol{k}$ space-separated integers: $p_1, e_1, p_2, e_2, \ldots, p_k, e_k$, representing that integer expressed is $(p_1)^{e1}(p_2)^{e2} \ldots (p_k)^{ek}$.

It is guaranteed that $p_i < p_{i+1}$ for all $1 \leq i \leq \boldsymbol{k} - 1$, $\boldsymbol{p_k} < 10^9$ and that each p_i ($1 \leq i \leq \boldsymbol{k}$) is a prime number. Furthermore, $1 \leq \boldsymbol{e_i} \leq 10^5$ for all $1 \leq i \leq \boldsymbol{k}$.

The Output

For each test case, on a line by itself, output the sum of divisors of the input integer modulo 10^9+7.

Sample Input

```
2
2
2 2 3 1
3
2 5 41 6 101 3
```

Sample Output

```
28
121832668
```