Chimichangas

Being tired of shooting his huge upcoming movie, Deadpool has decided to take a short break and open a restaurant in Canada. Deadpool is also the chef and he can only cook one type of food: chimichangas. For those of you who don't know what chimichangas are (shame on you!), think of a fried burrito.

Deadpool can cook **N unique** types of chimichangas, each of them having a precise number of calories (Deadpool doesn't make mistakes). All the chimichangas have at most **C** calories.

The restaurant has become very popular. Today there are **Q** clients in line and Deadpool wants to impress them.

Each client eats a **K-course** meal (**K** dishes), follows a very strict diet and knows exactly how many calories they are supposed to eat. Client **i** eats exactly **meal$_i$** calories. Each client would like to know in how many ways they can achieve the amount of calories their diet requires by eating exactly **K** chimichangas (not necessarily of distinct types).

Task

Given the calorie contents of **N** types of chimichangas **(calorie$_1$, calorie$_2$, …, calorie$_N$),** as well as the number of courses **K,** you must answer **Q** questions, one for every client's calorie requirement.

Input data

The input file **chimichangas.in** has the format:

line 1:	**N K**
line 2:	**calorie$_1$ calorie$_2$ ... calorie$_N$**
line 3:	**Q**
line 4 ... **Q** + 3:	**meal$_1$**
	meal$_2$
	...
	meal$_Q$

Output data

The output file **chimichangas.out** must contain **Q** lines. Each line must contain a single number, the answer to the corresponding question. Because the answer can be big, you are asked to compute it modulo **2999**.

Limits and constraints

- $1 \leq \mathbf{calorie_i} \leq \mathbf{C}$ for $1 \leq \mathbf{i} \leq \mathbf{N}$
- $0 \leq \mathbf{meal_i} \leq \mathbf{W}$ for $1 \leq \mathbf{i} \leq \mathbf{Q}$
- $1 \leq \mathbf{C} \times \mathbf{K} \leq 100,000$
- $1 \leq \mathbf{N} \leq \mathbf{C}$
- $0 \leq \mathbf{W} \leq 1,000,000,000$
- $1 \leq \mathbf{Q} \leq 200,000$
- Deadpool has an **infinite amount** of each type of chimichanga.
- The **order** in which each client eats matters (e.g. $(1 + 2)$ is different from $(2 + 1)$)
- **No** two types of chimichanga have the same number of calories.
- The answers must be printed **modulo 2999**.
- Time limit: 0.35 seconds
- Memory limit: 64 MB

Subtasks

Subtask	Percent of points	Additional input constraints
1	20	$\mathbf{N} \leq 100$, $\mathbf{K} \leq 10$, $\mathbf{W} \leq 2,000$ and $\mathbf{C} \leq 500$
2	5	$\mathbf{K} = 2$, $\mathbf{W} \leq 60,000$ and $\mathbf{Q} \leq 100$
3	25	$\mathbf{C} \times \mathbf{K} \leq 10,000$ and $\mathbf{W} \leq 50,000$
4	20	$\mathbf{C} \times \mathbf{K} \leq 30,000$
5	30	none

Example

chimichangas.in	chimichangas.out	Explanation
3 4 1 2 5 3 5 4 8	4 1 5	There are 4 ways to eat 5 calories: $(1 + 1 + 1 + 2)$, $(1 + 1 + 2 + 1)$, $(1 + 2 + 1 + 1)$, $(2 + 1 + 1 + 1)$. There is 1 way to eat 4 calories: $(1 + 1 + 1 + 1)$. There are 5 ways to eat 8 calories: $(1 + 1 + 1 + 5)$, $(1 + 1 + 5 + 1)$, $(1 + 5 + 1 + 1)$, $(5 + 1 + 1 + 1)$, $(2 + 2 + 2 + 2)$.