

Tarang and number of routes

Finally , all the theory and lab exams of current semester are over and Tarang is going home. At the last night before going home , he has a doubt in his mind. There are n stations between the campus and his home and he can go from i th station to $(i + 1)$ th station by a_i roads ($1 \leq i < n$). Here 1st station is same as campus and last(n)th station is same as home. Tarang wants to know the total number of routes through which he can go his home. So he asks the question to his friend Sanjeev. Sanjeev is not in mood of giving any answers , so he sends Tarang to you. Can you give the answer to Tarang's question ? Since the answer may be very large , you have to print the answer modulo $(10^{12} + 39)$.

Input

First line contains t (no. of test cases to follow). First line of each test case contains n (no. of stations between campus and home). Next line contains $(n - 1)$ space separated integers (i th integer a_i denotes the number of roads between i th and $(i + 1)$ th station).

Output

Print t lines containing the answer modulo $(10^{12} + 39)$.

Constraints

$$1 \leq t \leq 10$$

$$2 \leq n \leq 20$$

$$1 \leq a_i \leq 10^{18}$$

Example

Input:

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1
4
3 5 2
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Output:

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30
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Explanation

Let 4 stations are A,B,C,D. There are 3 roads from A to B , 5 roads from B to C and 2 roads from C to D.

so total number of routes = $3 * 5 * 2 = 30$.