

Problem J. Subsequence Sum Queries

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 256 mebibytes

You have an array a containing n integers and an integer m . You also have q queries to answer. The i -th query is described as a pair of integers (l_i, r_i) . Your task is to calculate the number of such subsequences $a_{j_1}, a_{j_2}, \dots, a_{j_k}$ that $l_i \leq j_1 < j_2 < \dots < j_k \leq r_i$ and $(a_{j_1} + a_{j_2} + \dots + a_{j_k}) \bmod m = 0$. In other words, you need to calculate the number of subsequences of subarray $[a_{l_i}, a_{l_i+1}, \dots, a_{r_i}]$ such that the sum of elements in each subsequence is divisible by m .

Input

The first line contains two integers n and m : the number of elements in a and the modulo ($1 \leq n \leq 2 \cdot 10^5$, $1 \leq m \leq 20$).

The second line contains n integers a_i : the elements of array a ($0 \leq a_i \leq 10^9$).

The third line contains one integer q : the number of queries ($1 \leq q \leq 2 \cdot 10^5$).

Then q lines follow. The i -th of these lines contains two integers l_i and r_i that describe the i -th query ($1 \leq l_i \leq r_i \leq n$).

Output

Print q lines. The i -th of them must contain the answer for the i -th query. Queries are indexed in the order they are given in the input. Since the answers can be very large, print them modulo $10^9 + 7$.

Example

standard input	standard output
4 3	2
5 1 3 2	4
4	6
1 2	4
1 3	
1 4	
2 4	