# Sum of subsequences

Given an positive integer n and a sequence  $a_1 \dots a_n$ . There are q queries. Each query has one of two formats:

- Format 0 I r k: you need to output the k-th smallest positive integer that can't be partition into a sum of any subsequence of  $a_1 \dots a_r$ .
- Format 1 I r x: you need to output the numbers of ways to partition x into a sum of a subsequence of a<sub>1</sub> ... a<sub>r</sub> (or the numbers of subsequence that sum of all its elements equal to x) (modulo 2<sup>32</sup>).

### Input

- First line: two positive n and q  $(1 \le n \le 100, 1 \le q \le 10000)$
- Second line: n positive  $a_1...a_n (0 \le a_i \le 100)$
- Next q lines: each line denotes a query with one of two format listed above  $(1 \le l \le r \le n, 1 \le k \le 10^9, 0 \le x \le 10^9)$

# Output

• q lines: the i-th line is the answer of i-th query.

## Sample

Input:

#### Output:

3

1

2