The Matrix

Time Limit: 2.0s **Memory Limit:** 64M

Neo is looking into The Matrix. From The Matrix, he pulls out a series of numbers. In order to defeat the robot overlords he makes a bet:
If Neo can multiply sets of these numbers faster than the robot overlords, they must release everyone held in The Matrix.

Input Specification

The first line of input contains n $(1 \leq n \leq 10^6)$.
The next line contains n space separated integers n_i $(1 \leq n_i \leq 8)$.
The next line contains q $(1 \leq q \leq 10^6)$ representing the number of sets Neo must multiply.
The next q lines each contain two space separated integers, q_1, q_2 $(1 \leq q_1 \leq q_2 \leq n)$ indicating that Neo must multiply all numbers in the range $[q_1, q_2]$.

Output Specification

Output q lines each containing the product resulting from multiplying all numbers in each range. The product will always fit in a 64 bit signed integer.
Solutions in Java are encouraged to use fast input reading.

Sample Input

```
5
2 3 2 4 2
3
1 3
2 5
2 2
```

Sample Output

```
12
48
3
```