Cumulative Sum Query

William Macfarlane wants to look at an array.

You are given a list of **N** numbers and **Q** queries. Each query is specified by two numbers *i* and *j*; the answer to each query is the sum of every number between the range [i, j] (inclusive).

Note: the query ranges are specified using 0-based indexing.

Input

The first line contains **N**, the number of integers in our list (**N <= 100,000**). The next line holds **N** numbers that are guaranteed to fit inside an integer. Following the list is a number **Q** (**Q <= 10,000**). The next **Q** lines each contain two numbers **i** and **j** which specify a query you must answer (**0 <= i, j <= N-1**).

Output

For each query, output the answer to that query on its own line in the order the queries were made.

Example

Input:
3
1 4 1
3
1 1
1 2
0 2

Output:
4
5
6