Can you answer these queries I

You are given a sequence A[1], A[2], ..., A[N] . (|A[i]| ≤ 15007 , 1 ≤ N ≤ 50000). A query is defined as follows:

Query(x,y) = Max { a[i]+a[i+1]+...+a[j] ; x ≤ i ≤ j ≤ y }.

Given M queries, your program must output the results of these queries.

Input

- The first line of the input file contains the integer N.
- In the second line, N numbers follow.
- The third line contains the integer M.
- M lines follow, where line i contains 2 numbers xi and yi.

Output

Your program should output the results of the M queries, one query per line.

Example

Input:
```
3
-1 2 3
1
1 2
```

Output:
```
2
```