星星樹 - Star Trees

(10分)

時間限制：1 秒

記憶體限制：512 MB

問題敘述

聖誕節就快要到了！小 T、小 O、小 J 跟小 E 一起，來到了傳說中人擠人的新北耶誕城。

一走出車站，除了擁擠的人潮，就是一排掛滿星星的聖誕樹了！每棵樹上都掛了許多星星，好奇的小 E 想知道，對於每一個 i，從左邊數來的前 i 棵樹上，總共有多少星星。

當他好不容易算完以後，小 T 問他：那你知道，第 l 棵樹到第 r 棵樹中間，總共有多少星星嗎？

正當小 E 要重新開始數的時候，聰明的小 O 跳了出來，看著小 E 剛剛的計算過程，直接講出了答案！小 T 一連問了幾百次，小 O 都能馬上回答出來。

你知道，小 O 是怎麼做到的嗎？請先幫小 E 算出他的問題的答案，再試著模仿小 O，快速回答小 T 的問題吧！

輸入格式

輸入第一行有一個整數 N，代表總共有 N 棵聖誕樹。

第二行有 N 個整數 a_i ，代表從左到右第 i 棵樹上的星星數量。

第三行有一個整數 Q，代表小 T 問了幾個問題。

第 4 到 $Q+3$ 行，每行有兩個整數 l, r，代表小 T 想要知道第 l 棵樹到第 r 棵樹中間(含 l, r)，共有幾顆星星。

輸出格式

第一行請輸出 N 個整數，第 i 個數代表從左邊數來的前 i 棵樹上，總共有多少星星。

第 2 到 $Q+1$ 行，每行請輸出一個整數，代表對小 T 問題的回答。

資料範圍

$1 \leq N, Q \leq 500000$

$1 \leq a_i \leq 100$

$1 \leq l \leq r \leq N$

資料範例

輸入範例 1

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

輸出範例 1

```
3 7 12 14
7
12
```

輸入範例 2

```
3
3 10 7
2
1 3
3 3
```

輸出範例 2

```
3 13 20
20
7
```

輸入範例 3

```
6
99 99 99 99 99 99
4
1 1
3 4
5 6
1 6
```

輸出範例 3

```
99 198 297 396 495 594
99
198
198
594
```

範例說明

範例輸入 1 中，從左邊數來的前 $1, 2, 3, 4$ 棵樹上的星星總和分別為 $3, 7, 12, 14$ 顆。

第 3 到第 4 棵樹間共有 7 顆星星。

第 1 到第 3 棵樹間共有 12 顆星星。

範例輸入 2 中，從左邊數來的前 $1, 2, 3$ 棵樹上的星星總和分別為 $3, 13, 20$ 顆。

第 1 到第 3 棵樹間共有 20 顆星星。

第 3 到第 3 棵樹間共有 7 顆星星。

範例輸入 3 中，從左邊數來的前 $1, 2, 3, 4, 5, 6$ 棵樹上的星星總和分別為 $99, 198, 297, 396, 495, 594$ 顆。

第 1 到第 1 棵樹間共有 99 顆星星。

第 3 到第 4 棵樹間共有 198 顆星星。

第 5 到第 6 棵樹間共有 198 顆星星。

第 1 到第 6 棵樹間共有 594 顆星星。

Star Trees

(10 points)

Time Limit：1 second

Memory Limit：512 MB

Description

Christmas is almost here! Thomas, Omelet, Joy and Eden came to the Christmas City.

As soon as you walk out of the train station, in addition to the crowded crowd, there is a row of Christmas trees full of stars! There are many stars on each tree, and curious Eden wants to know, for each i, how many stars are on the first i trees starting from the left.

When he finally finished the calculation, Thomas asked him: Do you know how many stars there are in total between the l tree and the r tree?

Just when Eden was about to start counting again, the clever Omelet jumped out, looked at the calculation process that Eden had just done, and gave the answer directly! Thomas asked hundreds of times in a row, and Omelet could answer immediately.

Do you know how Omelet did it? Please help Eden figure out the answer to his question first, then try to imitate Omelet to quickly answer Thomas' question!

Input Format

The first line of input has an integer N, representing a total of N Christmas trees.

The second line has N integers a_i representing the number of stars in the i th tree from left to right.

The third line has an integer Q, which means that Thomas asked Q questions.

From line 4 to line $Q+3$, each line has two integers l, r, representing that Thomas wants to know how many stars are there between l th tree and r th tree (including l, r).

Output Format

Output N integers on the first line, the i th number represents the total number of stars on the first i trees starting from the left.

For each line from line 2 to line $Q+1$, output an integer representing the answer to Thomas's question.

Constraints

$1 \leq N, Q \leq 500000$

$1 \leq a_i \leq 100$

$1 \leq l \leq r \leq N$

Data Examples

Input Example 1

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

Output Example 1

```
3 7 12 14
7
12
```

Input Example 2

```
3
3 10 7
2
1 3
3 3
```

Output Example 2

```
3 13 20
20
7
```

Input Example 3

```
6
99 99 99 99 99 99
4
1 1
3 4
5 6
1 6
```

Output Example 3

```
99 198 297 396 495 594
99
198
198
594
```

Example Explanation

In input example 1, the total number of stars on the first $1, 2, 3, 4$ trees starting from the left is $3, 7, 12, 14$ respectively.

There are 7 stars between trees 3 to 4.

There are 12 stars between trees 1 to 3.

In input example 2, the total number of stars on the first $1, 2, 3$ trees from the left is $3, 13, and 20$, respectively.

There are 20 stars between trees 1 to 3.

There are 7 stars between trees 3 to 3.

In input example 3, the total number of stars on the first $1, 2, 3, 4, 5, 6$ trees from the left is $99, 198, 297, 396, 495, 594$ respectively.

There are 99 stars between trees 1 to 1.

There are 198 stars between trees 3 to 4.

There are 198 stars between trees 5 to 6.

There are 594 stars between trees 1 to 6.