# Maximum Sum

You are given a sequence A[1], A[2], ..., A[N] ( $0 \le A[i] \le 10^8$ , $2 \le N \le 10^5$ ). There are two types of operations and they are defined as follows:

**Update:**

This will be indicated in the input by a 'U' followed by space and then two integers i and x.

**U i x**, $1 \le i \le N$, and x, $0 \le x \le 10^8$.

This operation sets the value of A[i] to x.

**Query:**

This will be indicated in the input by a 'Q' followed by a single space and then two integers i and j.

**Q x y**, $1 \le x < y \le N$.

You must find i and j such that $x \le i, j \le y$ and i != j, such that the sum A[i]+A[j] is maximized. Print the sum A[i]+A[j].

## Input

The first line of input consists of an integer **N** representing the length of the sequence. Next line consists of N space separated integers A[i]. Next line contains an integer **Q**, $Q \le 10^5$, representing the number of operations. Next Q lines contain the operations.

## Output

Output the maximum sum mentioned above, in a separate line, for each Query.

## Example

**Input:**
5
1 2 3 4 5
6
Q 2 4
Q 2 5
U 1 6
Q 1 5
U 1 7
Q 1 5

**Output:**
7
9
11
12

**Warning: large Input/Output data, be careful with certain languages**