

SPOJ Problem Set (main)

3693. Maximum Sum

Problem code: KGSS

You are given a sequence $A[1], A[2], \dots, A[N]$ ($0 \leq A[i] \leq 10^8$, $2 \leq N \leq 10^5$). 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, $1 \leq i \leq N$, and x , $0 \leq x \leq 10^8$.

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, $1 \leq x < y \leq N$.

You must find i and j such that $x \leq i$, $j \leq y$ and $i \neq j$, 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 , $Q \leq 10^5$, 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

Added by: u.swarnaprakash
Date: 2009-01-10
Time limit: 2s-4s
Source limit:50000B
Languages: All
Resource: Kurukshetra 09 OPC