

# Can you answer these queries VII

Given a tree with  $N$  ( $N \leq 100000$ ) nodes. Each node has a integer value  $x_i$  ( $|x_i| \leq 10000$ ).

You have to apply  $Q$  ( $Q \leq 100000$ ) operations:

1.  $1\ a\ b$ : answer the maximum contiguous sum (maybe empty, will always larger than or equal to 0) from the path  $a \rightarrow b$  (inclusive).
2.  $2\ a\ b\ c$ : change all value in the path  $a \rightarrow b$  (inclusive) to  $c$ . ( $|c| \leq 10000$ )

## Input

first line consists one integer  $N$ .

next line consists  $N$  integer  $x_i$ .

next  $N-1$  line, each consists two integer  $u, v$ , means that node  $u$  and node  $v$  are connected

next line consists 1 integer  $Q$ .

next  $Q$  line:  $1\ a\ b$  or  $2\ a\ b\ c$ .

## Output

For each query, output one line the maximum contiguous sum.

## Example

**Input:**

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

**Output:**

```
5
9
```