

Query on a tree

You are given a tree (an acyclic undirected connected graph) with **N** nodes, and edges numbered 1, 2, 3...**N**-1.

We will ask you to perform some instructions of the following form:

- **CHANGE i ti** : change the cost of the i-th edge to ti
or
- **QUERY a b** : ask for the maximum edge cost on the path from node a to node b

Input

The first line of input contains an integer **t**, the number of test cases ($t \leq 20$). t test cases follow.

For each test case:

- In the first line there is an integer **N** ($N \leq 10000$),
- In the next **N**-1 lines, the i-th line describes the i-th edge: a line with three integers **a b c** denotes an edge between **a, b** of cost **c** ($c \leq 1000000$),
- The next lines contain instructions "**CHANGE i ti**" or "**QUERY a b**",
- The end of each test case is signified by the string "**DONE**".

There is one blank line between successive tests.

Output

For each "**QUERY**" operation, write one integer representing its result.

Example

Input:

```
1  
  
3  
1 2 1  
2 3 2  
QUERY 1 2  
CHANGE 1 3  
QUERY 1 2  
DONE
```

Output:

```
1  
3
```