4082 - Traffic Jam

Asia - Changchun - 2007/2008

The kingdom of Tripbansai has an unusual traffic system. The city locations in the kingdom can be described as a grid and all the roads connect neighboring cities. This rectangular grid has 2 rows and C columns where every point represents a city. So there are $2 * C$ cities and $3 * C - 2$ roads in this system.

Sometimes two adjacent cities become disconnected because of traffic jam, and sometimes the traffic problem has been solved so that a road can be usedd again. We can assume that every road is closed at first.

Ministry of Communications will give some instructions to you. Your task is to implement a program as a traffic response information system.

Each instruction appears as a single line in one ofthe formats below:

`Close` $r1$ $c1$ $r2$ $c2$	Close the road connecting the adjacent cities located on ($r1$, $c1$) and ($r2$, $c2$) .
`Open` $r1$ $c1$ $r2$ $c2$	Open the road connecting the adjacent cities located on ($r1$, $c1$) and ($r2$, $c2$) .
`Ask` $r1$ $c1$ $r2$ $c2$	Reply with `Y` if there exists a way from the city on ($r1$, $c1$) to the city on ($r2$, $c2$) ; reply with `N` if there doesn't.
`Exit`	No more requests are forthcoming. The problem should exit.

Input

The first line ofthe input contains a single integer T ($1 \leq T \leq 11$) , representing the number of test cases that follow.

The first line of each test case consists of a single integer C ($1 \leq C \leq 100000$) , which is the number of columns.

There are some lines following, each for an instruction. Each test case ends with an instruction ``Exit". There are no more than 100000 instructions in each test case. All the roads are closed initially, and each case is an independent problem.

Output

For each instruction ``Ask $r1$ $c1$ $r2$ $c2$ ", display a line containing ``Y" or ``N".

Sample Input

```
3
2
Open 1 1 1 2
Open 1 2 2 2
Ask 1 1 2 2
Ask 2 1 2 2
Exit
```

```
3
Open 1 1 1 2
Ask 1 1 1 2
Close 1 1 1 2
Ask 1 1 1 2
Exit
2
Open 1 1 1 2
Open 1 2 2 2
Open 2 1 2 2
Ask 1 1 2 1
Exit
```

Sample Output

```
Y
N
Y
N
Y
```

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