

4082 Traffic Jam

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 used 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 of the formats below:

Close $r_1 c_1 r_2 c_2$ Close the road connecting the adjacent cities located on (r_1, c_1) and (r_2, c_2) .
Open $r_1 c_1 r_2 c_2$ Open the road connecting the adjacent cities located on (r_1, c_1) and (r_2, c_2) .
Ask $r_1 c_1 r_2 c_2$ Reply with 'Y' if there exists a way from the city on (r_1, c_1) to the city on (r_2, c_2) ; reply with 'N' if there doesn't.
Exit No more requests are forthcoming. The problem should exit.

Input

The first line of the 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 $r_1 c_1 r_2 c_2$ ', 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
```