

# Task: Wires and Switches

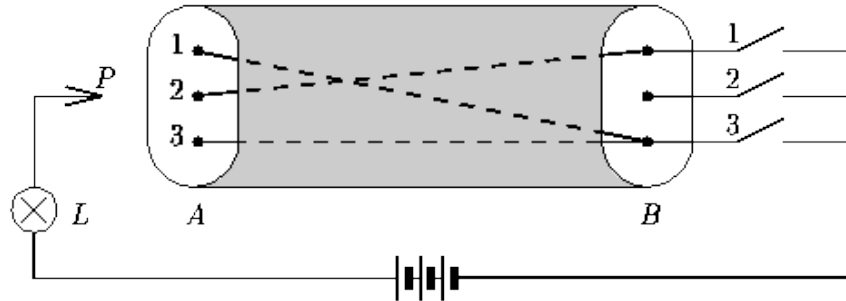


Figure 1: Cable with three wires and three switches

In Figure 1, a cable with three wires connects side *A* to side *B*. On side *A*, the three wires are labeled 1, 2, and 3. On side *B*, wires 1 and 3 are connected to switch 3, and wire 2 is connected to switch 1.

In general, the cable contains  $m$  wires ( $1 \leq m \leq 90$ ), labeled 1 through  $m$  on side *A*, and there are  $m$  switches on side *B*, labeled 1 through  $m$ . Each wire is connected to exactly one of the switches. Each switch can be connected to zero or more wires.

## Measurements

Your program has to determine how the wires are connected to the switches by doing some measurements. Each switch can be made either conducting or non-conducting. Initially all switches are non-conducting. A wire can be tested on side *A* with probe *P*: Lamp *L* will light up if and only if the sensed wire is connected to a conducting switch.

Your program begins by reading one line with the number  $m$  from *standard input*. It then can give three kinds of commands by writing a line to *standard output*. Each command starts with a single uppercase letter: **T** (Test a wire), **C** (Change a switch), and **D** (Done). Command **T** is followed by a wire label, **C** by a switch label, and **D** by a list whose  $i$ -th element is the label of the switch to which wire  $i$  is connected.

After commands **T** and **C**, your program should read one line from *standard input*.

Command **T** returns **Y** (Yes) when the wire's switch is conducting (the lamp lights up), otherwise it returns **N** (No).

Command **C** returns **Y** if the new switch state is conducting, and **N** otherwise. The effect of command **C** is to change the state of the switch (if it was conducting then it will be non-conducting afterwards and vice versa); the result is returned just for feedback.

Your program may give commands **T** and **C** mixed in any order. Finally, it gives command **D** and terminates. Your program should give no more than nine hundred (900) commands in total.

## Example

Figure 2 presents an example conversation involving 8 commands relating to Figure 1.

Standard Output	Standard Input
	3
C 3	Y
T 1	Y
T 2	N
T 3	Y
C 3	N
C 2	Y
T 2	N
D 3 1 3	

Figure 2: Example conversation