



PRACTICE

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## Shopee Programming Contest #2

Jul 25, 2020, 02:00 PM CST - Jul 25, 2020, 05:15 PM CST

INSTRUCTIONS

PROBLEMS

SUBMISSIONS

LEADERBOARD

ANALYTICS

JUDGE

Problems / Connectivity

### Connectivity

Max. score: 20

This problem is no longer available for practice. Apology for any inconvenience!

In Shopee Data Center, there are many switches and some of the switches are interconnected to form a network. Sometimes, we add a new connection to the network and if we find that there is some issue, we may remove the last added connections. You will need to solve a similar problem.

You are given an empty network with  $N$  switches (numbered 1 to  $N$ ) and no connections between switches. You will also face  $Q$  scenarios in chronological order. Each scenario can be any of the following:

**PUSH  $u\ v$**  : You have to add a new connection between switches  $u$  and  $v$ . ( $u \neq v$ ,  $1 \leq u, v \leq N$ ). Note that there can be multiple connections between the same pair of switches.

**POP** : From all the connections currently present in the network, remove the one that was added most recently. There will be at least one connection in the network when this scenario is given.

Also, after performing the operation in each scenario, print the number of connected components formed by the switches in this network.

### Input

The first line of test case begins with integer  $Q$  ( $1 \leq Q \leq 5 \cdot 10^5$ ) and  $N$  ( $1 \leq N \leq 5 \cdot 10^5$ ) indicating the number of scenarios and number of switches in the network. Next,  $Q$  lines will each contain a scenario as described above.

### Output

For each query, you will need to print the answer in a separate line.

SAMPLE INPUT	SAMPLE OUTPUT
12 5	4
PUSH 1 2	3
PUSH 2 3	2
PUSH 1 4	3
POP	3
PUSH 1 3	2
PUSH 4 5	1
PUSH 1 4	2
POP	3
POP	3
POP	4
POP	5
POP	

Time Limit: 1.0 sec(s) for each input file.

Memory Limit: 128 MB

Source Limit: 1024 KB

Marking Scheme: Score is assigned when all the testcases pass.

Allowed Languages: Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, R(RScript), Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic

### CODE EDITOR

Save Python 3.8 (python 3.8.2) [icon] [icon]

```
1 def solver():
2     Q, N = [int(i) for i in input().split()]
3     components = []
4     history_stack = []
5
6     for i in range(N):
7         components.append([i])
8
9     history_stack.append(components.copy())
10    for i in range(Q):
11        query = input().split()
12        if query[0] == "PUSH":
13            switch_one = int(query[1]) - 1
14            switch_two = int(query[2]) - 1
15            index_s_one = -1
16            index_s_two = -1
17            for idx, component in enumerate(components):
18                if switch_one in component:
19                    index_s_one = idx
20                if switch_two in component:
21                    index_s_two = idx
22            if index_s_one != index_s_two:
23                component_one = components.pop(index_s_one)
24                component_two = components.pop(index_s_two - 1) if index_s_one < index_s_two else
25                components.pop(index_s_two)
26                merged_component = component_one + component_two
```

1:1 vscode

☒ Provide custom input

COMPILE & TEST SUBMIT

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