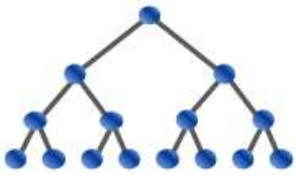
USA Computing Olympiad



USACO 2017 JANUARY CONTEST, BRONZE
PROBLEM 2. HOOF, PAPER, SCISSORS

Return to Problem List

Contest has ended.

Submitted; Results below show the outcome for each judge test case

1	2	3	4	5	6	7	8	9	10
* 28.4mb 132ms	* 27.8mb 141ms	* 26.9mb 140ms	* 28.1mb 137ms	* 25.4mb 140ms	* 28.2mb 127ms	* 27.5mb 137ms	* 28.5mb 142ms	* 27.5mb 133ms	* 24.6mb 127ms

English (en)

You have probably heard of the game "Rock, Paper, Scissors". The cows like to play a similar game they call "Hoof, Paper, Scissors".

The rules of "Hoof, Paper, Scissors" are simple. Two cows play against each-other. They both count to three and then each simultaneously makes a gesture that represents either a hoof, a piece of paper, or a pair of scissors. Hoof beats scissors (since a hoof can smash a pair of scissors), scissors beats paper (since scissors can cut paper), and paper beats hoof (since the hoof can get a papercut). For example, if the first cow makes a "hoof" gesture and the second a "paper" gesture, then the second cow wins. Of course, it is also possible to tie, if both cows make the same gesture.

Farmer John watches in fascination as two of his cows play a series of N games of "Hoof, Paper, Scissors" ($1 \leq N \leq 100$). Unfortunately, while he can see that the cows are making three distinct types of gestures, he can't tell which one represents "hoof", which one represents "paper" and which one represents "scissors" (to Farmer John's untrained eye, they all seem to be variations on "hoof"...)

Not knowing the meaning of the three gestures, Farmer John assigns them numbers 1, 2, and 3. Perhaps gesture 1 stands for "hoof", or maybe it stands for "paper"; the meaning is not clear to him. Given the gestures made by both cows over all N games, please help Farmer John determine the maximum possible number of games the first cow could have possibly won, given an appropriate mapping between numbers and their respective gestures.

INPUT FORMAT (file hps.in):

The first line of the input file contains N.

Each of the remaining N lines contain two integers (each 1, 2, or 3), describing a game from Farmer John's perspective.

OUTPUT FORMAT (file hps.out):

Print the maximum number of games the first of the two cows could possibly have won.

SAMPLE INPUT:

```
5
1 2
2 2
1 3
1 1
3 2
```

SAMPLE OUTPUT:

```
2
```

One solution (of several) for this sample case is to have 1 represent "scissors", 2 represent "hoof", and 3 represent "paper". This assignment gives 2 victories to the first cow ("1 3" and "3 2"). No other assignment leads to more victories.

Problem credits: Brian Dean

Language: C

Source File: Choose File No file chosen

Submit Solution

Note: Many issues (e.g., uninitialized variables, out-of-bounds memory access) can cause a program to product different output when run multiple times; if your program behaves in a manner inconsistent with the official contest results, you should probably look for one of these issues. Timing can also differ slightly from run to run, so it is possible for a program timing out in the official results to occasionally run just under the time limit in analysis mode, and vice versa. Note also that we have recently changed grading servers, and since our new servers run at different speeds from the servers used during older contests, timing results for older contest problems may be slightly off until we manage to re-calibrate everything properly.