# Problem D: Rock-Paper-Scissors Tournament

Rock-Paper-Scissors is game for two players, A and B, who each choose, independently of the other, one of *rock, paper,* or *scissors*. A player chosing *paper* wins over a player chosing *rock*; a player chosing *scissors* wins over a player chosing *paper*; a player chosing *rock* wins over a player chosing *scissors*. A player chosing the same thing as the other player neither wins nor loses.

A tournament has been organized in which each of *n* players plays *k* rock-scissors-paper games with each of the other players - *k*n*(n-1)/2* games in total. Your job is to compute the *win average* for each player, defined as *w / (w + l)* where *w* is the number of games won, and *l* is the number of games lost, by the player.

Input consists of several test cases. The first line of input for each case contains *1 ≤ n ≤ 100 1 ≤ k ≤ 100* as defined above. For each game, a line follows containing $p_1$, $m_1$, $p_2$, $m_2$. $1 \le p_1 \le n$ and $1 \le p_2 \le n$ are distinct integers identifying two players; $m_1$ and $m_2$ are their respective moves ("rock", "scissors", or "paper"). A line containing 0 follows the last test case.

Output one line each for player 1, player 2, and so on, through player *n*, giving the player's win average rounded to three decimal places. If the win average is undefined, output "-". Output an empty line between cases.

## Sample Input

```
2 4
1 rock 2 paper
1 scissors 2 paper
1 rock 2 rock
2 rock 1 scissors
2 1
1 rock 2 paper
0
```

## Output for Sample Input

```
0.333
0.667

0.000
1.000
```

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