

16 Carcassone

5 points

Introduction

Carcassone is a turn-style board game for several players (Game of the year in 2001). The game board is a medieval landscape built by the players as the game progresses. The game starts with a single terrain tile face up and all the others shuffled face down for the players to draw from. Those tiles can have one or more of these different features: city, cloister, fields and roads. On each turn a player draws a new terrain tile and places it adjacent to tiles that are already facing up. The new tile must be placed in a way that extends features on the tiles it touches: roads must be connected to roads, fields to fields, and cities to cities.

During the players' turns, cities, cloisters, and roads (but not fields) are scored. Cities and roads are scored when they are completed (i.e. contain no unfinished edges from which they may be expanded), and cloisters are scored when they are surrounded by eight tiles. At the end of the game, when there are no tiles remaining, all incomplete features are also scored but using different rules.

Some HP co-workers are such big fans that keep playing this lovely game despite they are over 30, but they became so lazy for the math that they need your help to count all the points. To ease this task, only the most basic scoring rules will be considered. The next table represents the points scored for each feature while there are still remaining tiles in game, as well at the end of the game when no tiles remains:

Feature	Scored when completed during players' turns (Main scoring rules)	Scored at the end of the game (Final rules)
City	2 points per tile	1 point per tile
Road	1 points per tile	1 point per tile
Cloister	9 points (it can only score when completely surrounded)	1 point for the cloister + 1 point for each of the surrounding tiles
Field	(Not scored)	3 points for each completed city bordering the field

Input

The input is divided into 3 parts as follows:

1 – The first line of the input data contains a number N with the amount of players.

2 – The following lines represent the main game phase where the features are being completed during the players' turns. These lines are composed by the player number that got the feature, the feature type, and only in case the feature is city or road, the number of tiles to calculate the proper points. In this phase we will be applied the main scoring rules.

At the end of players' turns, when there are no tiles remaining, all the incomplete features are scored. This final phase is indicated with a colon ":" symbol in a new line.

3 - The following lines represent the game's final phase. Now the non-completed features and also the fields gained by players can be scored. These lines contain, as those above, a similar structure, but in this case the cloisters have a third parameter that indicates the surrounding tiles and the third parameter of the fields indicates the amount of bordering cities. Now the final scoring rules are applied instead.

And finally the "." symbol indicates the end of input data lines.

Let's see an example with an explanation:



Input example	Explanation
4	4 players.
1 city 4	Player 1 completes a city with 4 tiles.
2 cloister	Player 2 completes a cloister. <i>No tiles number are needed in this case.</i>
3 road 3	Player 3 completes a road with 3 tiles.
:	<i>End of players' turns. From now on, final counting rules.</i>
1 field 2	Player 1 has a field with 2 completed cities bordering.
3 road 6	Player 3 has a non-completed road with 6.
4 cloister 1	Player 4 non-surrounded cloister with only 1 tile beside it.
.	<i>The dot indicates the end of the input data</i>

Output

The final score of each player, ordered by player number.

Player[1] -> 14

Player[2] -> 9

Player[3] -> 9

Player[4] -> 2

