

## Coding Challenge Reward System

Implement a system for calculating rewards based on recommendations of customers.

### Concept

A company is planning a way to reward customers for inviting their friends. They're planning a reward system that will give a customer points for each confirmed invitation they played a part into. The definition of a confirmed invitation is one where an invited person accepts their contract. Inviters also should be rewarded when someone they have invited invites more people.

The inviter gets  $(1/2)^k$  points for each confirmed invitation, where  $k$  is the level of the invitation: level 0 (people directly invited) yields 1 point, level 1 (people invited by someone invited by the original customer) gives  $1/2$  points, level 2 invitations (people invited by someone on level 1) awards  $1/4$  points and so on. Only the first invitation counts: multiple invites sent to the same person don't produce any further points, even if they come from different inviters and only the first invitation counts.

So the input of

```
2018-06-12 09:41 A recommends B
2018-06-14 09:41 B accepts
2018-06-16 09:41 B recommends C
2018-06-17 09:41 C accepts
2018-06-19 09:41 C recommends D
2018-06-23 09:41 B recommends D
2018-06-25 09:41 D accepts
```

would calculate as:

- A receives 1 Point from the recommendation of B,  $\frac{1}{2}$  Point from the recommendation of C by B and another  $\frac{1}{4}$  Point by the recommendation of D by C. A gets a total score of 1.75 Points.
- B receives 1 Point from the recommendation of C and  $\frac{1}{2}$  Point from the recommendation of D by C. B receives no Points from the recommendation of D because D was invited by C before. B gets a total score of 1.5 Points.
- C receives 1 Point from the recommendation of D. C gets a total score of 1 Point.

### Task

- Implement the solution using Ruby.
- Briefly document the decisions you've taken in the process and why you've chosen so.
- Test your implementation against the data provided.
- Provide a simple Webservice accepting a file with input data and returning a set of scores for the contained customers. (Example: { "A": 1.75, "B": 1.5, "C": 1 })

### General Remarks:

- Have a Readme file describing how to run the project
- Provide us with a private git repo containing your solution (Gitlab and Bitbucket provide private repos for free) including a meaningful history
- Proper handling of edge case will give bonus points

**We are looking forward to discussing the result with you!**

