

# Referral App

## The Problem

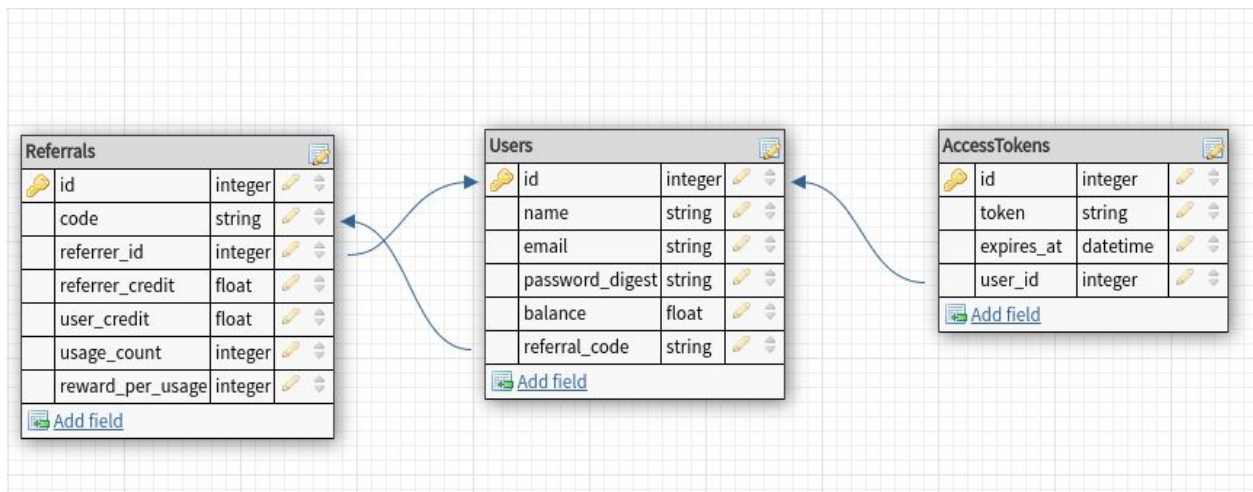
The company wants to implement a customer referral program, in order to acquire new paying customers. Here are the product requirements that we are given:

- An existing user can create a referral to invite people, via a shareable sign-up link that contains a unique code
- When 5 people sign up using that referral, the inviter gets \$10.
- When somebody signs up referencing a referral, that person gets \$10 on signup. Signups that do not reference referrals do not get any credit.
- Multiple inviters may invite the same person. Only one inviter can earn credit for a particular user signup. An inviter only gets credit when somebody they invited signs up; they do not get credit if they invite somebody who already has an account.

## Use Cases

- Alice, an existing user, creates a referral. She gets a link that has a unique code in it. She emails that link to 5 of her friends.
- Bob, one of Alice's friends, clicks on the link. He goes through the signup process to create a new account. Once he has created his account, he sees that he has \$10 in credit.
- Four more people follow the same process as Bob, clicking on the link Alice sent them. They all get \$10 in credit. Once the fifth person has signed up, Alice sees that she has \$10 in credit.
- Jeffrey signs up using a link that does not contain a unique referral code. After he creates a new account, he has \$0 in credit.

## Tables Design



### 1. Users model

The users table is used to store user information in the system such as:

- "id" a unique identifier.
- "name" a user's name.
- "email" a unique user's emails.
- "Password\_digest" an encrypt user's password.
- "balance" is user current amount, and it is 0 by default.
- "referral\_code" is an optional field. However, when create new user and this field contain value, It will validate value. If it is a valid code and referral is found, we will get set user "balance" with "user\_credit" of that referral. We also increase the referral "usage\_count" by 1.

### 2. AccessTokens model

The AccessToken table used to save the token where user will to access on any action with require an authorization. We use AccessToken table instead of other encryption such as JWT because it allows the user to use to fully manage their token. Ex: they can delete any token or all for its expire date.

The AccessToken table has:

- "id": a unique identifier.
- "token": a unique token for passing to client.
- "expeires\_at": a datetime when token no longer valid.
- "user\_id" : a user where the token belong to.

### 3. Referrals model

The referrals table is the core table of this system. This table allows existed user to create a code and share it to their friends and earn some credit as reward. Base on problem and use case above, it should need only two fields(referrer\_id, code) for this table is enough. However, we add few more fields in order to make it more dynamic for any possible cases. Ex:

- A case where credit amount for referrer and user might different.
- A case for specific user who can get more credit than other
- A case for number of new signs up is changed

Here all field in the table and its functionality:

- "id": a unique identifier.
- "Code": a unique code where a referrer(user) use it to invite their friend.
- "referrer\_id": a referent to user who create the field.
- "referrer\_credit": a credit amount which will increase to a referrer(user) balance when condition are meet which is "usage\_count % reward\_per\_usage == 0".
- "user\_credit": a credit amount which will increase to a user(new sign up user) balance when the user is sign up with the code.
- "Usage\_count": a number for keep tracking new signup using this code. This value should increase by whenever the new user is signup with the code.
- "reward\_per\_usage": a number to determine how will "referrer\_credit" is give to referrer(user).

### Tools for API documentation

Swagger is used to create an API documentation.

### Q&A

Q1: Can a user create many referral codes?

A1: This is a design decision. I could see good solutions that allow for a single referral code, or for many referral codes.

Q2: Does referral code have expired date?

A2: This, as well, is a design decision. It doesn't seem necessary to fulfill the requirements though.

Q3: Can a referral code is use more 5? If yes, when 10 new user register from a referral code, will inviter get \$10 or \$20?

A3: A referral code can be used more than 5 times. A referrer gets rewarded \$10 for every 5 referrals.

Q4: After a new sign-up user with the code, then he deletes his account. Will we still count as 1 or reset to 0 for registered user via code?

A4: This is a great question! I think we'd still want to count the referral, even if the user deletes their account.

Q5: Can referral code use when user sign up only? If no, can an exist user who does not use any referral code when register add a code and get \$10 credit?

A5: Yes, a referral code can only be used on sign-up.