CS194 Project Proposal

**Description**

We are building an iOS application that serves as a coupon marketplace. Almost everyone receives coupons and personal presale codes through email, mail, or other means that they never utilize. However, others may put these coupons to good use. On our platform, people can exchange coupons and personal presale codes for credits, which they can use to obtain other coupons for sale on the platform.

Users who sign up to our app begin with 50 credits. On the buyer's side, the users can filter through existing for-sale coupons and codes in the app by type (retail, music festival, restaurants), expiration date, cost, discount type (percentage off, amount off), and potentially others as well. If they find a coupon that they want, they can purchase this coupon using their credits. Buyers can accumulate more coupons by selling their own coupons on the app, or by purchasing more credits using real money.

On the seller's side, the user can post a coupon or personal presale code for sale in exchange for credits. The user sets the price in credits, the category, type, and other details, and either takes a picture of the coupon or manually type in the discount code. The seller does not receive the credits unless the coupon is actually sold (and this incentivizes prices to stay reasonable).

Lastly, we will build in a rating system for sellers. To prevent fraud or fake codes, each time a transaction occurs the buyer has to rate the users for whether the coupon worked or not. If the coupon does not work and the seller has a history of providing fake coupons, he or she will get kicked off the system. Each time a fake coupon is reported, that buyer gets back all the credits that he or she spent on that coupon after investigation.

**Need**

Companies like to reward their loyal customers and performers like to support their loyal fans. One way they do this is by giving out personal discount or coupon codes to people who subscribe to their email lists, such as a code for 30% off any item at J.Crew. Another example is people who subscribe to The Weeknd's email list receiving personal presale codes to his concerts. Often times for these popular artists, their concert tickets are sold out almost immediately after they go on sale to the general public and so for someone who wants to get his or her hands on a ticket, having a personal presale code is very valuable.

In this example, let us assume that I am a The Weeknd fan and I just learned that presale tickets go on sale tomorrow. I, however, am not signed up on his email list for whatever reason (perhaps I do not wish to receive emails every week from him) and thus did not receive a personal presale code. Not all of his fans will necessarily want to or be able to go to the concert and so their personal presale codes become unused. Our app aims to take these personal codes from people who derive no value from them into the hands of those who would opportunistically find them valuable. In the case of clothing companies, they send out emails quite often so many people choose not to sign up for their email

lists. They would rather not deal with the influx of emails, even if it means not receiving these coupon codes. When it comes to shopping time, they find themselves wishing they had one of these codes, which they could get from our app.

**Potential Audience**

This app can be used by anyone looking to save some money through couponing or obtain early access to events or products (from presale codes). There are websites that aggregate free coupons, such as RetailMeNot, which is a company with a ~$440m market cap, but sometimes companies release personal coupon codes instead of a public coupon and these personal codes cannot be found on websites such as RetailMeNot. People sometimes do share coupons for free out of the goodness of their heart (such as on niche forums), so we feel that if we create a market for trading and selling coupons, then more people will participate because they can get value out of their unused coupons beyond simply giving them out for free.

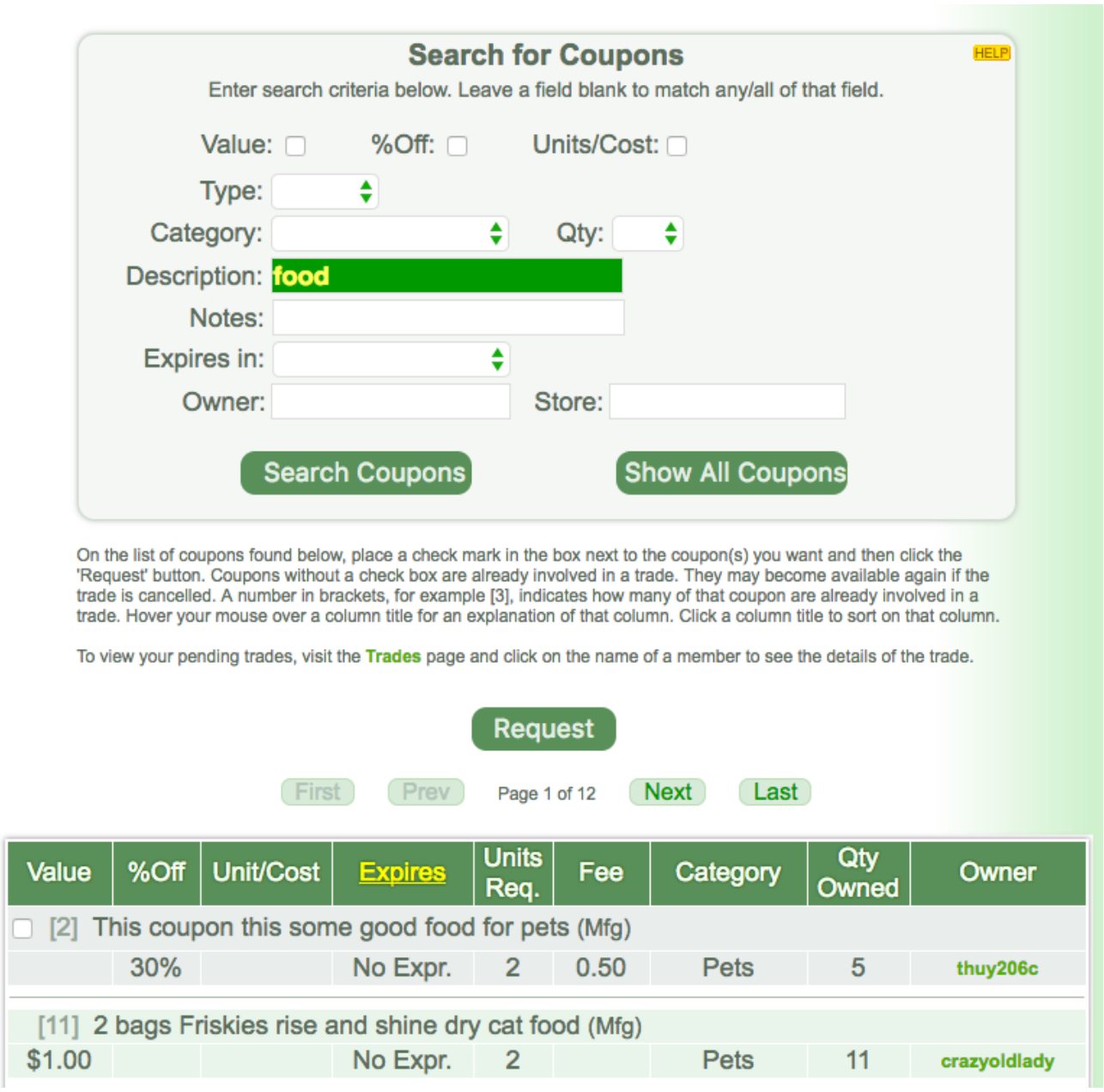
Since the audience is anyone who wants to shop or get access to limited codes, we expect no specific technical abilities from the audience. We plan to design the app to be as easy and seamless to use as possible.

**Competing Products**

Coupon trading and sharing occurs primarily on forums. There are a variety of different websites out there in the market already:

- http://www.afullcup.com/forums/index.php
- https://www.fatwallet.com/forums/online-coupon-trading
- http://www.weusecoupons.com/upload/
- http://www.couponstradingzone.com/

The site most similar to our approach would be Coupon Trading Zone, as it focuses on facilitating trades between users. The other sites are used mostly to share coupons in ads. Below is a screenshot of the search function from Coupon Trading Zone.




This is a good search functionality, but the site does not look aesthetically pleasing and using it is also not a great user experience. The website has very few users, and appears that it is no longer maintained.

There is also a coupon trading app called TradeCoupon that looks like what we are trying to make: https://itunes.apple.com/us/app/tradecoupon/id1080687285?mt=8

Nobody seems to use the app, as there are no valid coupons listed, and much of the functionality has not been implemented. The app is also confusing to use, as there is no information explaining how purchasing and listing works. It does have some functionality

and features that we are planning on implementing: users, profiles, authentication via third party accounts, search, advanced search, reviews, and more.

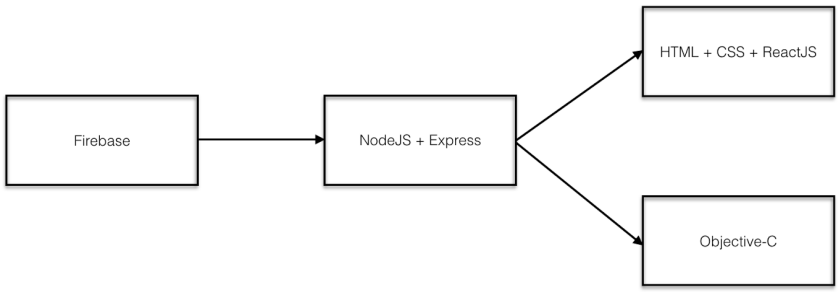
**Technical Design**
At a high level, our app will support the following functions:

- Buyers: search with filters (name, expiration date, value, etc.), a review system, ability to purchase coupons, purchase history
- Sellers: creating a new item for sale, selling history

To store user accounts and data, we will use a Firebase database with NodeJS + Express on the server-side. This will be hosted on Amazon AWS and will communicate to the iOS app via network calls on the iOS end. To create user accounts, we will use the Facebook API for linking Facebook user accounts and accounts of the users of our app. We also considered using CoreData as a native database, but it does not work for our use case because the data needs to be consistent across all users and CoreData only stores locally on the iPhone. Another advantage to using a hosted NodeJS + Express server as part of our stack is that, given time, we can build this product as a cross-platform application. It makes sense to have this coupon marketplace also available on Android and potentially Web as well.

On the iOS side, we will be writing this app in Objective-C using many of the libraries provided by Apple. We will be using UIKit, CoreAnimation, and CoreGraphics for the front-end and will be writing the scenes using code without storyboard since this allows for more flexibility when placing views onto the screen. We will potentially need to use the Photos iOS framework for uploading photos of coupons on the seller side. As an extension, we may use the NotificationCenter framework to create notification center widgets for the app. Finally, we will use the AFNetworking library to send HTML requests and receive HTML responses.

Given time, we will also build an accompanying website that uses the same server-side NodeJS + Express code, with javascript, ReactJS, HTML, and CSS on the front-end.



**Resource Requirements**
Our main required resource is web server hosting, for which we plan to use Amazon AWS. We would like to use Firebase for our database, which is also a paid service. However, we are open to using a free alternative, such as Heroku + Postgres, if we decide on a more economical approach.

Some team members will also be ramping up a bit on some new technologies, so we may look for some tutorials or books to help speed up that process. It will take some time for everyone to get up to speed.

**Potential Approaches**
We brainstormed three ways (including the approach detailed here) of solving the problem of getting coupon and personal presale codes from the hands of people who derive no value from them to people who will find them valuable.

For our first alternative approach, we proposed an app that facilitated swapping coupons directly from peer to peer. There currently exists communities that engage in swaps with niche items such as fragrances and coupons. The technology that supports these are arguably outdated. Most of the interactions are on forums, which have poor readability and are in a difficult formats to search through. Consequently, we considered making a platform that revamped the swapping process, making a nice UI and helping people easily find good matches to swap with. However, we concluded that swapping is inherently difficult. It is really hard to find two people who are selling what the other person wants. This is a big reason why currency exists. Thus, we decided not to go with this approach.

Our second alternative approach is an auction system involving fiat money instead of our discretized credits, much like eBay but for coupon/presale codes. One drawback to this method is that it does not incentivize people from letting go of coupons they would not use anyway. By establishing a norm that all codes have a price, we introduce market forces to discount codes. We believed that people would not feel comfortable with the idea of paying for coupons, as there is some inherent discomfort with the idea of paying to save money. In our proposed approach, we solve this issue by abstracting away money. We give out credits for people who share their coupons and people can claim codes with their credits. We allow the option of people buying credits, but we do not require this. Consequently, people would not feel like they are paying for discount codes and we incentivize users to share their unused codes.

**Assessment of Risks**
We are primarily concerned about two main risks: security and fraud, though we hope to be able to mitigate both effectively.

From a security perspective, there are a few different concerns. The first is that credit balances will be tied to accounts. Anyone with access to a certain account will thus be able to spend all of the credits currently stored in that account. We will require users to register and log in with their Facebook accounts using Facebook's API in order to protect

against attackers gaining unauthorized access to account balances. We could also consider requiring re-authentication before the completion of certain high-risk actions, like making a purchase. Separately, we also plan to provide an option for users to purchase additional credits. Credit card information, along with any other information that allows users to make online purchases, is obviously very sensitive. The safest option for us would likely be to utilize a secure external service, like Stripe, to handle the payment processing for these transactions and avoid having to build tons of payment infrastructure ourselves, which would likely be less secure.

The largest threat to our product itself is fraud. We will not be performing any sort of external validation of the coupon codes being posted by users ourselves, so we need to make sure there is some mechanism that incentivizes users to post only legitimate coupon codes and to not attempt to spend codes they have "sold" on our site once they have been disclosed to the buyer. We plan to accomplish our goal by implementing a user rating system. Namely, after each successful transaction, the purchaser of the coupon will have a chance to confirm that they used the coupon code successfully. Each seller's feedback percentage will be public (and show up on the coupons they post), so buyers will be able to avoid sellers with bad feedback. Alternatively, we could simply implement a policy where users with too much bad feedback simply get kicked out. We also need to make sure buyers are giving honest feedback, and we need to motivate them to leave feedback. Thus, we will provide some reward (in credits) for buyers who leave feedback. Additionally, we will flag users who leave a suspicious amount of negative feedback (relative to the site as a whole) for follow-up investigation, because they could also be potential fraudsters. Users who have used credits to purchase coupons that did not work will get their credits back.

Another risk, which we are less concerned about, could be pushback from retailers. It is unclear what form this would take, but they would likely be unhappy about our redistribution of coupons away from the "loyal" customers to whom they were issues, because it makes the loyalty rewards less exclusive. This is not likely to become much of a problem in the near future though; we would have to gain quite a bit of traction before any companies took too much notice.

**Next Steps**

To proceed with our project, we need to build a backend API server that connects with a database. The database would store the coupon code data and user data.