Proposal for On-Campus Meal Swipe Exchange

Submitted To: Kimberly Miller
Submitted By: WIll Wettersten
Date Of Submission: 12/1/2012

Abstract:

The following proposal outlines an electronic system for buying and selling meal swipes at Case Western. A meal swipe is a commodity that can be used to enter a campus dining hall exactly once, and guarantees unlimited all-you-can-eat food for the user. Currently, students who live on campus are forced to purchase an excess of meal swipes, while students living off campus are not allowed to purchase meal swipes at all. The proposed system would allow these two groups to buy and sell their meal swipes, and insodoing eliminate the long aggrieved trend of meal swipes going unused and expiring.

This proposal requests funding for the author, Will Wettersten, to build the electronic meal swipe exchange. The proposal first offers a more detailed description, then goes on to present a detailed literature review of relevant materials, then presents a budget and proposed timeframe.

Description/Literature Review:

The project being proposed is the implementation of a free marketplace in which members of the Case Community may buy and sell "Meal Swipes", which grant them one-time entries to campus dining halls. Currently students are forced by the University to purchase large quantities of meal swipes all at once at the beginning of the semester as part of a larger "meal plan". These meal swipes are apportioned to the student on a weekly basis, at a rate of either 17 or 19 meal swipes per week, depending on the plan selected by the student. Due to time constraints on students, it is typical for a student to only eat once or twice a day in one massive, all-you-can-eat feast. Not only is this a bad deal financially, it has been shown to deteriorate the student's health [1]. This leaves meal swipes unspent at the end of the week, which simply expire.

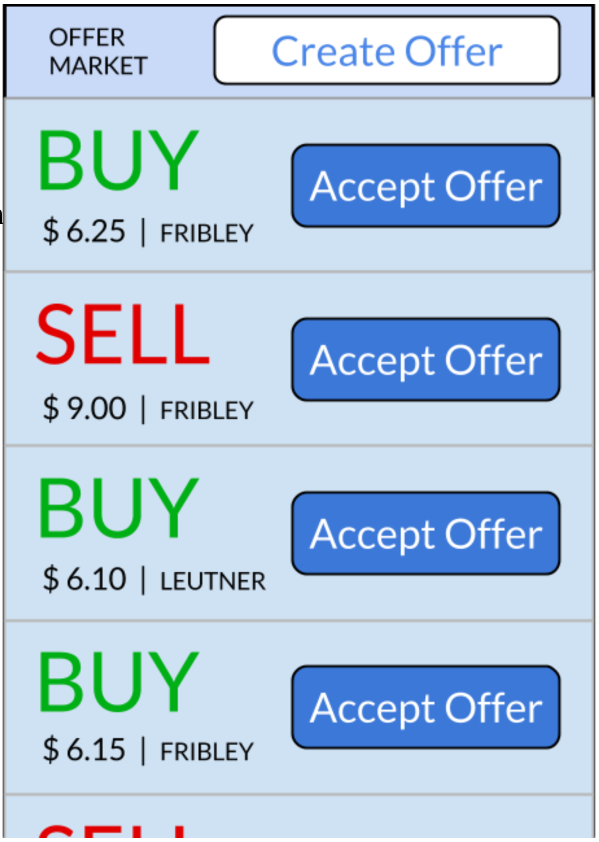
At present there is no established way for students to buy and sell these excess meal swipes, so they are in essence being written off a loss. It is possible to perform what is called a "guest swipe", whereby one student can "swipe" another person into a dining hall using their own meal swipes. In this way, meal swipes can be given to other people. This rarely happens, though, because without an organized means to coordinate such actions, students who are not on the meal plan usually stay away from the dining halls.

The implementation of a marketplace for buying and selling these meal swipes will fill this organizational void. It will consist of smartphone client apps for Android and iOS devices that will communicate over the internet with a server that will coordinate offers to buy and sell meal swipes. Students will be able to download the app for free, and will be able to add offers to buy and sell, or accept offers listed by others. The application will not in any way handle payment, but instead provide a way for students to coordinate a transaction which they will then carry out in person or however they wish. This modeled after eBay and other establish eCommerce entities [2].

Despite current discontentment students *are* allowed to swipe each other into dining halls. In effect, this allows for meal swipes to be given from one student to another, so there could presumably be a sale of a meal swipe from one student to another. At present, however, there is no organized mechanism by which a student can advertise such a transaction. The electronic exchange being proposed would create that organized mechanism. In other words, it would be a market for students with extra meal swipes to sell to students without enough meal swipes.

The electronic exchange will consist primarily of two components: a client application and a server application. The client application will be a smartphone application, implemented across the iOS and Android platforms, which will serve as a graphical interface for users. When a user first downloads and installs the application, they will be prompted to sign in, as seen in the figure on page 2. It is important to note in this figure that there is no way to create a new account. This is not an oversight. The client application will rely on Case Western's public authentication api. In other words, users will sign in to the application the same way they sign into blackboard or SIS. This limits usage of the application to Case affiliates. Once the user is signed in, they will see the list page shown in the figure on this page. This page is the only page of the application aside from the sign in page. There are no other pages. Please note the elegance of this approach. On the one page, users will see existing offers as well as a button to create an offer. Existing offers will show up as either buy offers (meaning the user has the option of *selling* to whoever made the buy offer) or sell offers (meaning the user has the option of *buying* from whoever made the offer). There will no doubt be some confusion surrounding this as users start out, but it is the way that all professional commodity exchanges work and will therefore be pursued.

When a user clicks the "Create Offer" button, a dialog box will appear where they will see a form to create their offer. The fields to create a new offer will be "price", which is the price of the offer, "location", which tells which dining hall the offer is for, "secret message", which is a message that a taker of the offer will see once they have taken the offer, and "buy or sell", which simply determines if the offer is a buy offer or a sell offer. The subtle importance of the secret message is that it is not publicly available. The only person who will see the message is the one who accepts the offer. An example message would be something like "Meet Cynthia behind Leutner 555-1145". When a user clicks on the "Accept Offer" button of a particular offer, a dialog box will appear with this secret message, and the offer will disappear from the offer list. Please note that this application does not handle the monetary transaction itself. Instead, it leaves students to organize and facilitate the transaction in



person with cash or whatever means available.

The server application is relatively simple, and will function by accepting requests from clients and keeping track of data. The lowest layer of the server will be a MySQL database. On top of that will be a simple nodeJS http server. The node server will accept http requests, interact with the database, and then provide http responses to the clients. For instance, all of the buy and sell offers shown in the figure on this page will be stored in an "offers" table in this database. When a user creates a new offer, an http request will be sent to the server, and the node http server will insert a row into the offers table of the mysql database. Queries will work the same way, with the server accepting requests and offering responses with the relevant data.

Project Schedule:

Phase 1: Design User Interface

Phase 1 will involve a lot of user experience thought. We will begin by asking people how they would go about using an application like this. User-oriented studies to determine design is common in the mobile application industry [3]. From there we would determine which user interface components would need to be the most prominent. After we have determined that, we will proceed to producing mock up sketches of the user interface of the application. These mock ups will include images showing how login, navigation, and browsing of offers will work. This is a typical workflow for developing mobile applications [4].

Phase 2: Implement Client and Server

Phase 2 will involve a lot of coding and implementation work. We will take the mockups produced in phase 1 and write code that renders them onto a smartphone. We will then code up this user interface to make ajax requests to a server application over the internet. The server will then be written in javascript using node.js and MySQL. This pairing is used effectively in other medium-volume applications [5]. The implementation of the server side may go beyond javascript coding and actually involve indexing of the MySQL database itself. MySQL is known to require index customization to scale well out of the box [6]. After all of these components have been written, we will test them together.

Phase 3: Publish Application to Public

Phase 3 will involve listing the client applications for free download on the android and apple app stores. We will then most flyers outside of dining halls instructing students on how to download and use the application. Equally important, though, will be social marketing. Recent studies show that young people build greater associations through social marketing than other types of marketing because they see products in the context of their friend groups, a process called *social bookmarking* [7].

Personal Qualifications:

I have extensive experience in the realm of mobile app development. In the past four years I have seen two full scale multi-platform mobile application through to market, including the social networking application "Joynme", which has gained a following in Spain. I have worked at many established companies, ranging from hedge funds to billion dollar software giants. Additionally, I have specific experience in the realms of MySQL and nodeJS, the two main technologies in this project. I am proficient to the point where it is hard to think of things that I am unable to build. An application like this presents no challenge whatsoever.

Audience Involvement:

The audience for this project will be the entire Case Western community. Anybody with Case login credentials will be able to buy and sell meal swipes on the system. Therefore, their participation is key. A system like this lives or dies by its users. In other words, if nobody is using the system to buy and sell, then there will be nothing for sale and so new users will be deterred from joining. Therefore the audience will need to download and use the application.

The audience, in turn, will benefit because they will get to buy and sell their extra meal swipes. This will alleviate the need for off campus students and faculty to carry lunches around, and will also help on-campus students get money for their extra meal swipes at the end of each week, when they normally expire.

Budget:

The budget is relatively small. Server hosting will cost $10 per month from Amazon. I plan on hosting the project for one year, and then assessing whether or not it is worth it to extend the hosting another year. My labor will be billed at $50 per hour, which is about what I am paid at my job at Zendesk, so I think it is fair. I estimate that the project will take about 20 hours of work to complete. A complete list of budget line items is provided below:

Server Hosting	$120 for 1 year
Labor	$1000 for 20 hours

Total……………………………………………………………..**$1120**

Concluding Remarks:

Unlike other proposals you will read, this one will succeed. While other may promise to unlock breathtaking new troves of information, this proposal, modest in scope and price tag, will be completed in a weekend, and will be available to thousands. In a billion-dollar university, talk of a thousand dollars here or there garners little attention, but I can assure you that this application will be noticed, written about, debated, and, above all, used.

References

[1] Levitsky, D. A., Halbmaier, C. A., & Mrdjenovic, G. (2004). The freshman weight gain: a model for the study of the epidemic of obesity. *International Journal of Obesity*, *28*(11), 1435-1442.

[2] Raisch, W., & Foreword By-Gartner, G. (2000). *The eMarketplace: Strategies for success in B2B eCommerce*. McGraw-Hill Professional.

[3] Jason Morris, *Android User Interface Development: Beginner's Guide*, Birmingham, UK, Packt Publishing Ltd.

[4] Gerhard Leitner *et al.*, "iPad/iPhone Human Interface Design," in *6th Symposium of the Workgroup Human-Computer Interaction and Usability Engineering*, Klagenfurt, Austria, Springer Berlin Heidelberg

[5] Tilkov, S., & Vinoski, S. (2010). Node. js: Using JavaScript to build high-performance network programs. *Internet Computing, IEEE*, *14*(6), 80-83.

[6] DuBois, P. (2008). *MySQL*. Pearson Education.

[7] Packer, R. (2011). Social Media Marketing. *The Art of Conversational Sales. WSI*.