Software Engineering CSC 648/848
Section 01

SFSU Congre-Gators Market
Team 04

Ihsan Taha (ihsan@mail.sfsu.edu)
Prateek Gupta
Darel Ogbonna
Shane Cota
Kevin Chu
Mark Tompong

Milestone 2
15th, March 2017

History Table

Initial Draft of Milestone 1	**02/27/2017**	**V1.0**
First Revision & Freeze Draft of Milestone 1	**02/28/2017**	**V1.1**
Initial Draft of Milestone 2	**03/13/2017**	**V2.0**
First Revision & Freeze Draft of Milestone 2	**03/15/2017**	**V2.1**

1) Executive Summary

"SFSU Congre-Gators Market" is a buy/sell web application exclusively for SFSU students that is beneficial, convenient, and of great value to the SFSU community. Users can create item listings on the website to sell various types of items including books, electronics, furniture, and more that are of interest to students. The application consists of two general types of users: non-registered and registered. Both of these users can browse the website for compelling items, and the latter can purchase items posted by other registered users or sell items of their own. Registered users Shall be able to contact each other through messaging provided by our web application while transactions take place outside of the application after an agreement. Moreover, the website shall have at least one admin whose job shall be to monitor postings and messages to ensure a safe and legitimate environment.

The SFSU Congre-Gator's Market offers students our unique Convenient Meetup feature. This allows students to input their busy schedules as part of their profile. Congre-Gator's Market will compare schedules when contact is initiated between buyers and sellers, and provide appointment options. This alleviates buyers and sellers at Congre-Gator's Market the of hassle of coordinating often hectic schedules. Between courses that meet at different times on different days of the week, midterms and work, this unique feature will be of substantial value to the student who often struggles to coordinate that one last appointment! Furthermore, there is no hassle waiting on a shipment since all members are also students. Hence, they are local to the area and can meet on campus. There is also the implicit security that comes with each buyer or seller being a verified SFSU student, and having a common meeting ground at the SFSU campus or nearby. All members being students also means registered users are not unfamiliar to the faculty and staff which makes it difficult for engagement in misconduct as no student should want to sully their reputation amongst their peers and instructors. Finally, students can find products relevant to their needs by finding items posted from other students who took similar courses.

We are Team 4 of CSC 648-848 Section 1 - Software Engineering at SFSU, Spring 2017. Our mission is to experience the real world and what it means to build a startup company by developing a fully functional buy/sell web application that is also promotable as a legitimate product. Not only do we desire to create a great application, but we do so as a team that appreciates the open-mindedness of its members and uses real world techniques like Agile and Continuous Software Development.

2) Use Cases

Non-registered User: Jane is in the market for a new laptop after her old laptop, which she owned for several years, recently crashed mid-semester. As a student, a new laptop costs more than Jane can afford, so she is looking for a used laptop. Jane has heard about the student web-service that links students who want to sell items, including electronics. She visits the website and navigates to the electronic section and, with the use of filters, quickly finds an **item listing** with the item she is looking for at an affordable price. Jane decides to contact the seller, but since she is a **non-registered user,** she is only allowed to browse and cannot purchase (or post) items for sale. Jane is therefore prompted to register and verify her status as an SFSU student. She happily complied with the registration request and became a **registered user**. Her status as a registered user allows her to view the seller's contact information. Jane then contacted the seller and agreed to purchase the laptop.

Registered User (Buyer/Seller): Joe is a senior student at SFSU who lives on campus. He is planning on graduating this semester and wants to sell his dorm room furniture. However, Joe is still quite busy finishing his school work. Therefore, he needs an ideal way to offload his furniture to a fellow student while also allowing Joe to coordinate payments and move his items efficiently. Joe is already a **registered user** (since he bought his dorm furniture through the website when he was an incoming freshman) and thus has the freedom to log onto the website and post his furniture for sale. Joe creates a new **item listing** on the website for each of the furniture items he wishes to sell. He then waits for another **registered user**, who is interested in his items, to contact him to arrange a purchase. Fortunately, Joe finds a customer interested in his item listing. They agree to meet up on campus where both parties can make a quick and safe transaction.

Administrator: Jack, the IT guy, has been receiving complaints from several sellers about misconduct from a particular **registered user.** Apparently, the user has been sending **messages** which bluff interest in an item but result in non-payment or perpetual negotiations between the two parties. This user has accrued enough complaints from other registered users that Jack the IT guy confirms the issue by investigating the history of messages. Jack flags the offending user and warns him/her that further misconduct will result in a ban from the web service.

Convenient Meetup: Jill is a freshman and is very busy between classes and getting her new life in order on campus. In fact, her class schedule is not only occupied, but it is also hectic, with different courses at different times each day of the week. But she'd like to buy some new furniture! As a **registered user** at Congre-Gators Market, she decides to use the site's **Convenient Meetup** feature which lists **appointment options** with any contacted sellers by

comparing a user input **buyer schedule** and **seller schedule**. This feature spares Jill the headache of setting up an appointment on her own.

3) Data Definitions

1. **Non-registered User (nonreg_user):**
    - 1.1. Can browse on the website
    - 1.2. Can filter items on the website
    - 1.3. Can register on the website
    - 1.4. Can use features 1.1, 1.2, 1.3 without registration/login

2. **Registered User (reg_user):**
    - 2.1. Can do anything a non-registered user can do
    - 2.2. Can login on the website
    - 2.3. Can purchase items for sale
        - 2.3.1. Can contact seller
    - 2.4. Can post items for sale
        - 2.4.1. Can edit item listing
            - 2.4.1.1. Can edit name, category, price, date, photo(s) and description
            - 2.4.1.2. Can remove posting
            - 2.4.1.3. Can view posting
    - 2.5. Can contact other registered users
    - 2.6. Can use Meetup for convenience
    - 2.7. Can view notifications
    - 2.8. Can edit profile
        - 2.8.1. Can edit username, password, major, photo and biography
    - 2.9. Can report misconduct to admin

3. **Administrator (admin):**
    - 3.1. Can do anything a registered user can do
    - 3.2. Needs to login/register
    - 3.3. Can monitor messages
    - 3.4. Can remove items posted for sale
    - 3.5. Can contact registered users
    - 3.6. Can ban registered users

4. **Item Listing (item_listing):**
    - 4.1. Item Name
    - 4.2. Price

4.3. Description
4.4. Date
4.5. Seller
4.6. Photos (up to five)

5. Message (message):

5.1. Thread
5.2. To (Recipient)
5.3. From (Sender)
5.4. Date/Time
5.5. Organized under Notifications page
5.6. Reference to Item Listing

6. Convenient Meetup (meetup)

6.1. Buyer schedule
6.2. Seller schedule
6.3. Appointment options
6.4. OR just a date and time both members can agree upon in the message thread and a confirm button for admin in case of any misconduct

4) List of Functional Specs

Priority 1

1. **Non-registered/registered user**
    - 1.1. Shall be able to browse the website for available items for sale.
        - 1.1.1. Listings shall be paginated.
        - 1.1.2. Shall be able to view carousel of photo's uploaded by seller.
    - 1.2. Shall be able to filter the items via drop down menus:
        - 1.2.1. By 'Category.'
        - 1.2.2. By 'Price.'
        - 1.2.3. By 'Date of item's listing.'
    - 1.3. Shall be able to register on the website to buy or sell items via registration form.
        - 1.3.1. The registration form shall require a unique username, a password, and an SFSU email.
2. **Registered user**
    - 2.1. Shall be able to login to the website.
    - 2.2. Shall be able to post an item for sale.
        - 2.2.1. Shall be able to update his/her item for sale.
        - 2.2.2. Shall be able to remove his/her item for sale.
    - 2.3. Shall be able to view the items that were posted by him/her for sale.
    - 2.4. Shall be able to message another registered user to initiate a transaction.
        - 2.4.1. Messages shall be updated "live" in a thread with the latest message at the bottom.
    - 2.5. Shall be able to edit their profile.
3. **Administrator**
    - 3.1. Shall be able to remove an item listing.
    - 3.2. Shall be able to warn registered users of misconduct.
        - 3.2.1. The admin Shall be able to to penalize said users by banning them from the website ultimately.
    - 3.3. Shall be able to remove photos.

Priority 2

1. **Registered user**
    - 1.1. Shall be able to view their notifications on Notifications page.
        - 1.1.1. Accessed via toolbar after registered user logs in the website.
        - 1.1.2. Organized according to buyer-seller.
            - 1.1.2.1. Shall be able to have several transactions lumped into a single conversation.

1.2. Shall be able to change their password.
1.3. Shall be able to accrue item listings in the shopping cart.
    1.3.1. Lists seller and price.
    1.3.2. Gives the option to message seller with the Meetup button.
    1.3.3. Shall be able to remove an item.
1.4. Shall be able to lookup search history.
1.5. Messages between buyers and sellers Shall be able to be conducted in a popup window.
    1.5.1. Accessed via notifications page or when a user clicks on 'Buy' option for an item listing.

Priority 3

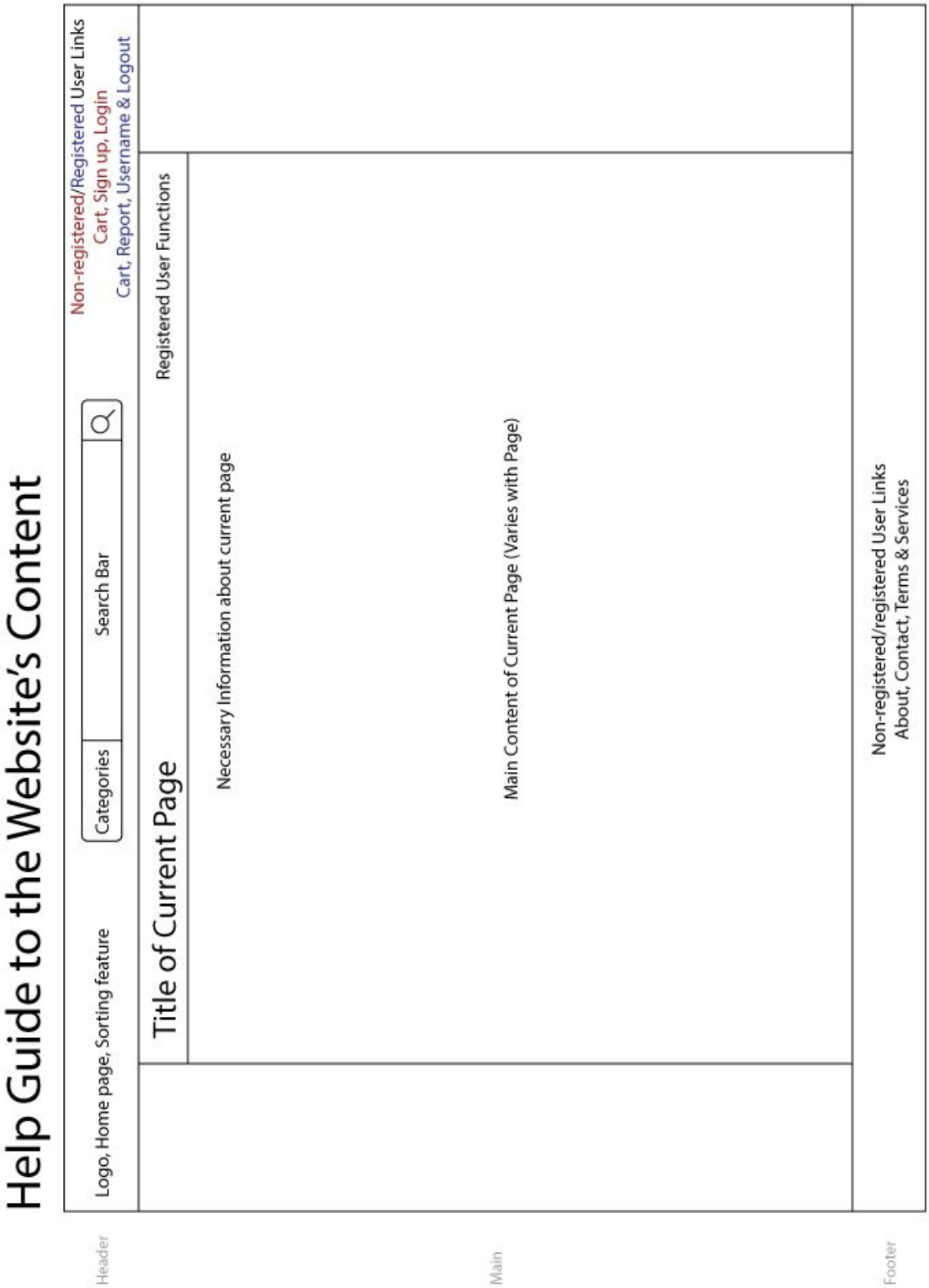
1. Registered user

1.1. Shall be alerted to unread notifications.
    1.1.1. A sum representing the number of unread notifications will appear in the toolbar next to the Notifications link.
1.2. Registered users shall be able to switch the color of their UI.
1.3. Shall be able to organize item postings in wishlist to be added later to shopping cart.
1.4. Shall be able to use Convenient Meetup.
    1.4.1. Organizes appointment options between buyers and sellers via user input schedule.
1.5. Shall be able to block messages from unwanted (registered) users.
1.6. Shall have a related item category when selecting items

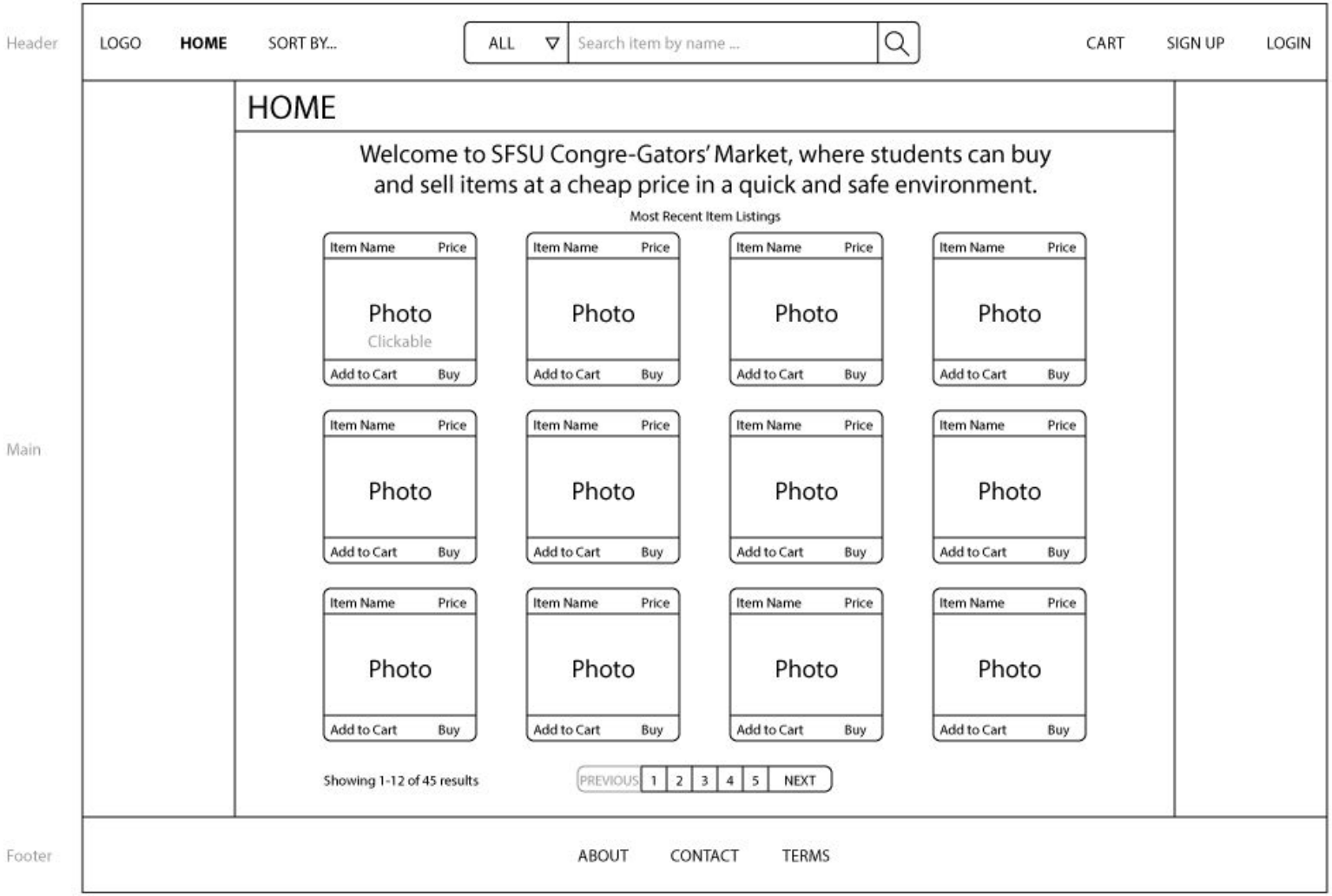
5) List of Non-Functional Specs

1. The application shall be developed using the LAMP stack provided by the class CTO.
2. The application shall be developed using an approved PHP Framework from the class CTO.
3. The application shall be developed using GUI technologies.
4. The application shall be hosted and deployed on Amazon Web Services provided by the Class CTO.
5. The application shall be optimized for standard desktop/laptop browsers.
6. The application shall render correctly on the two latest versions of at least three major browsers such as Mozilla, Safari, and Chrome.
7. The application shall have responsive UI code so it can be adequately rendered on mobile devices, but no mobile native app is to be deployed.
8. Data shall be stored in the MySQL database on the class server in the team's account.
9. The application shall be served from the team's account.
10. Privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.
11. No more than 50 concurrent users shall be accessing the application at any time.
12. The language used shall be English.
13. The application shall be very easy to use and intuitive. No prior training shall be required to use the website.
14. Google Analytics shall be added.
15. Messaging between users shall be done only by class approved methods to avoid issues of security with e-mail services.
16. Pay functionality shall not be implemented on the website.
17. Site security shall be applied according to best practices.
18. Modern SE processes and practices shall be used including collaborative and continuous SW development.
19. The website shall prominently display the following text on all pages "SFSU Software Engineering Project, Spring 2017. For Demonstration Only."
20. The team shall use Github to maintain the website codebase.

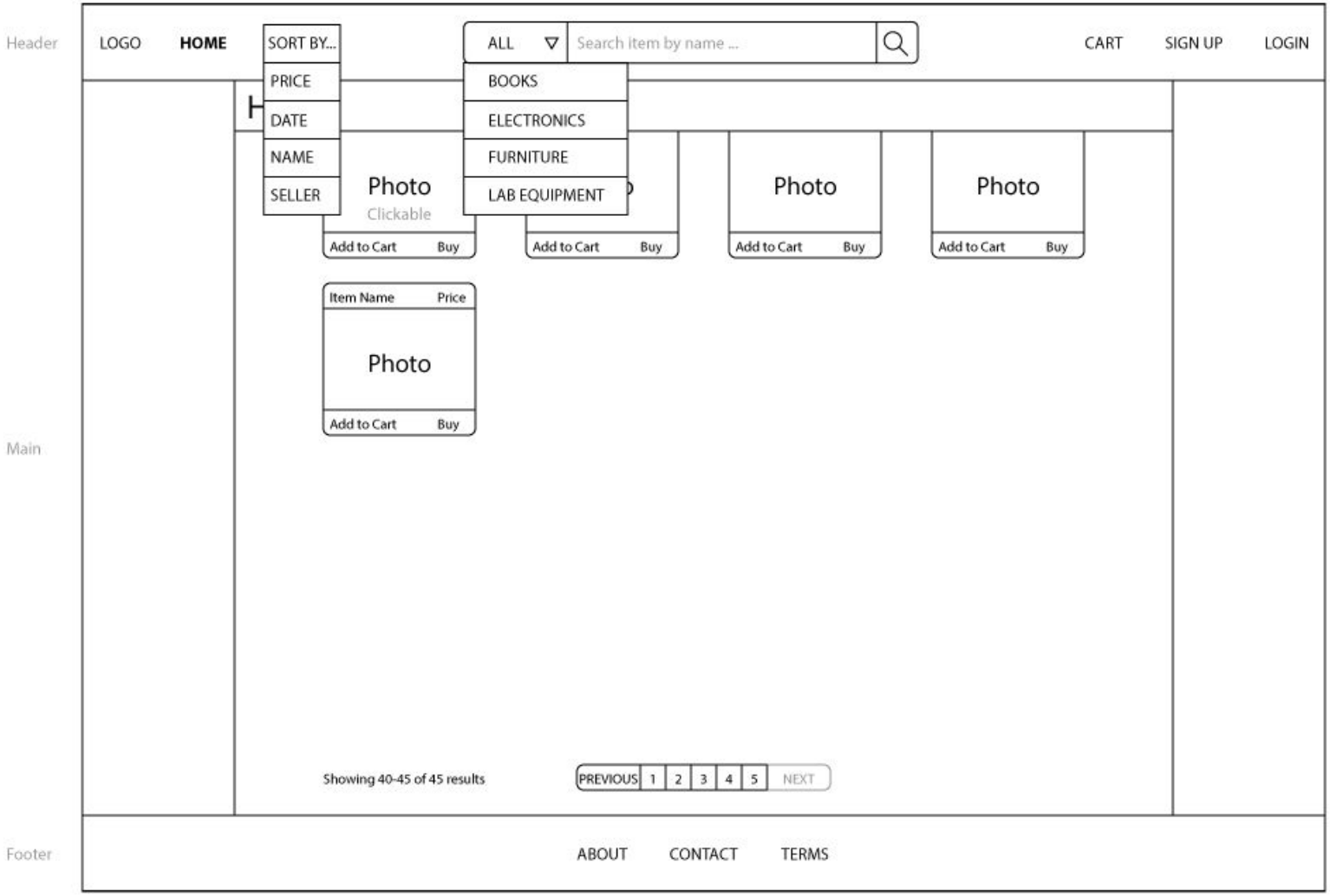
6) Mockups


Help Guide to the Website's Content
Header
Logo, Home page, Sorting feature
Categories
Search Bar
Non-registered/Registered User Links
Cart, Sign up, Login
Cart, Report, Username & Logout
Main
Title of Current Page
Registered User Functions
Necessary Information about current page
Main Content of Current Page (Varies with Page)
Footer
Non-registered/registered User Links
About, Contact, Terms & Services

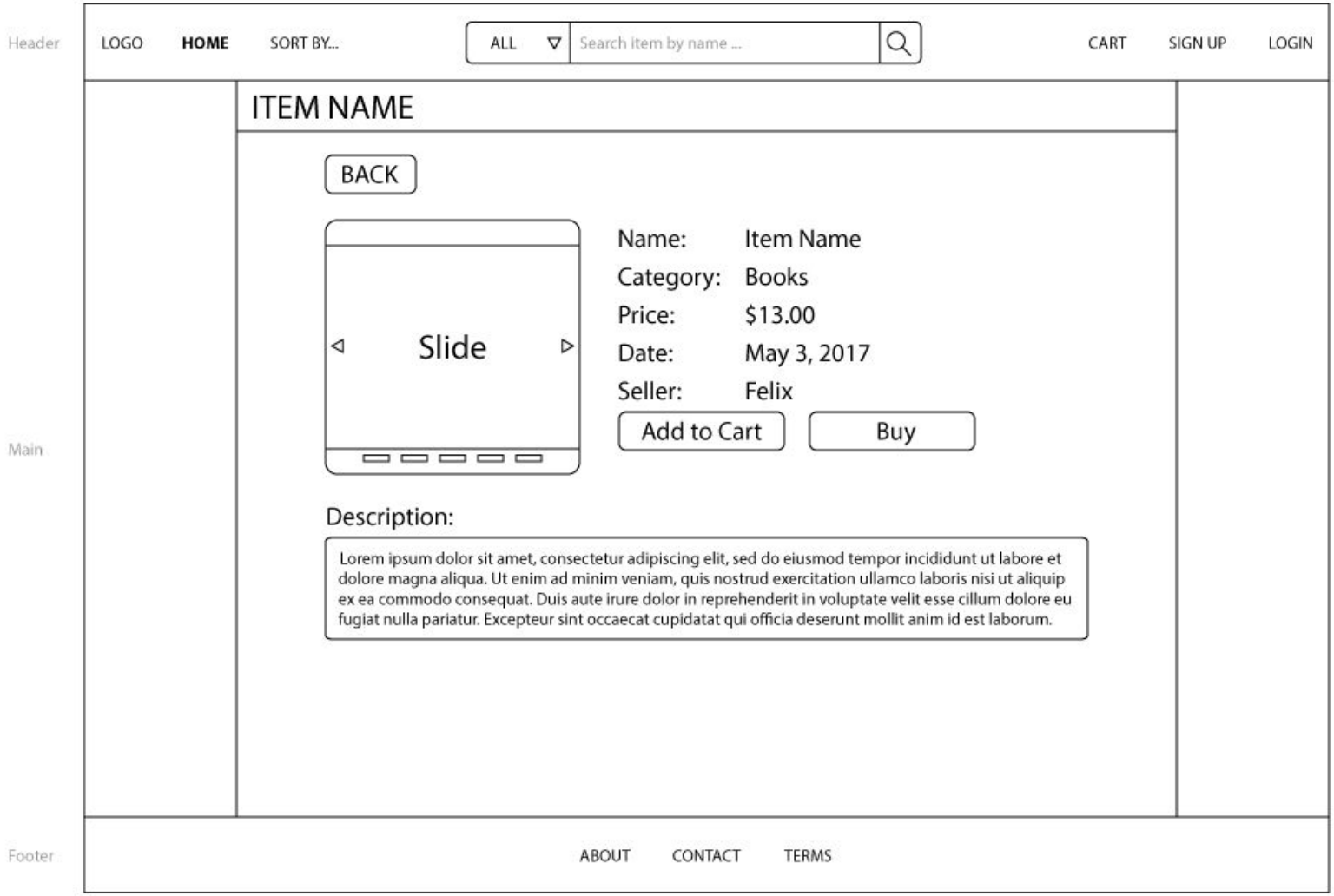
Home Page


Header
LOGO
HOME
SORT BY...
ALL
Search item by name ...
CART
SIGN UP
LOGIN
Main
HOME
Welcome to SFSU Congre-Gators' Market, where students can buy and sell items at a cheap price in a quick and safe environment.
Most Recent Item Listings
Item Name
Price
Photo
Clickable
Add to Cart
Buy
Showing 1-12 of 45 results
PREVIOUS
1
2
3
4
5
NEXT
Footer
ABOUT
CONTACT
TERMS

Home Page - Drop Downs

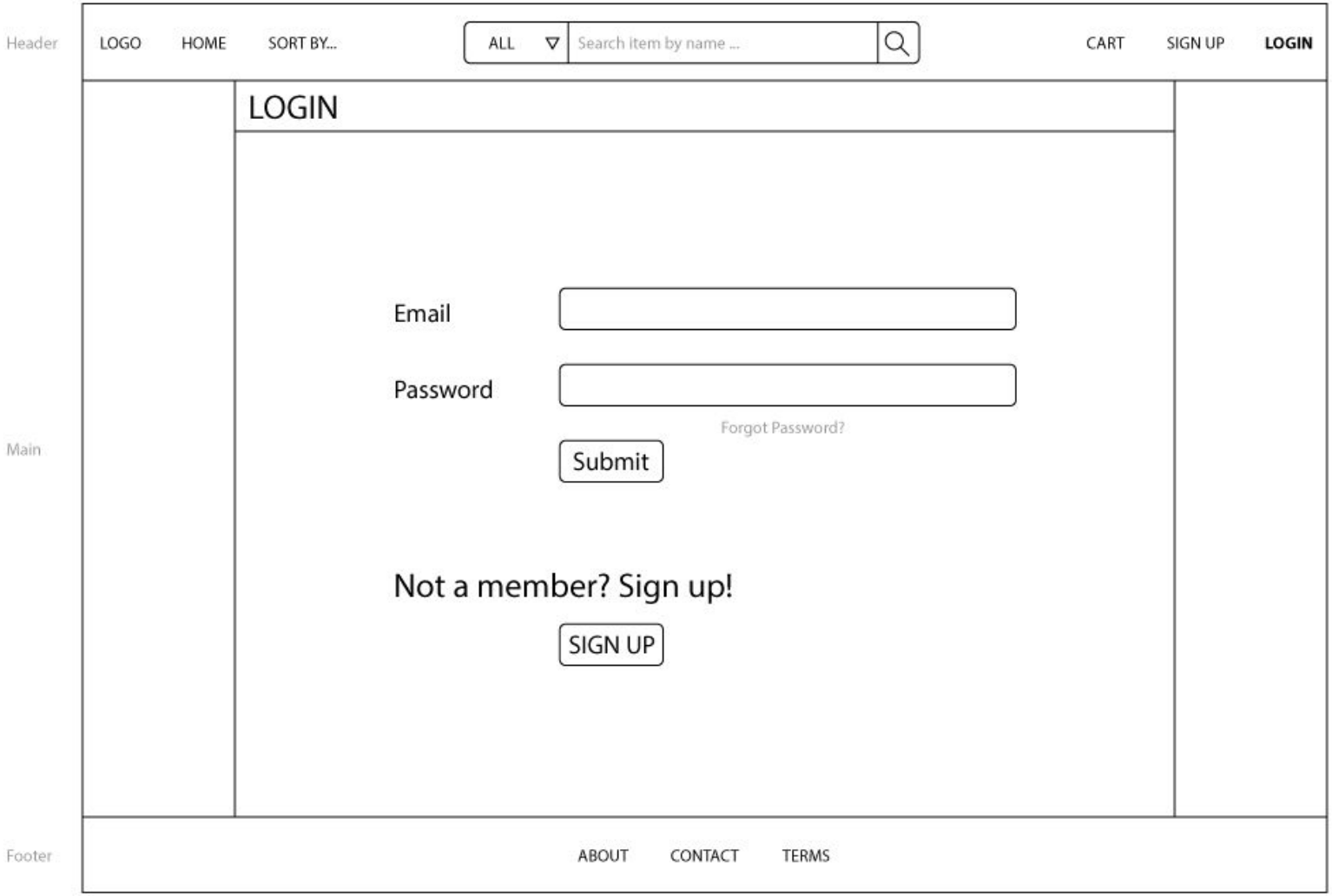


Item Page


Header
LOGO
HOME
SORT BY...
ALL
Search item by name ...
CART
SIGN UP
LOGIN
ITEM NAME
BACK
Slide
Name: Item Name
Category: Books
Price: $13.00
Date: May 3, 2017
Seller: Felix
Add to Cart
Buy
Main
Description:
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat qui officia deserunt mollit anim id est laborum.
Footer
ABOUT
CONTACT
TERMS

Item Page - Send Initial Message Notification to Buy Item

Login Page

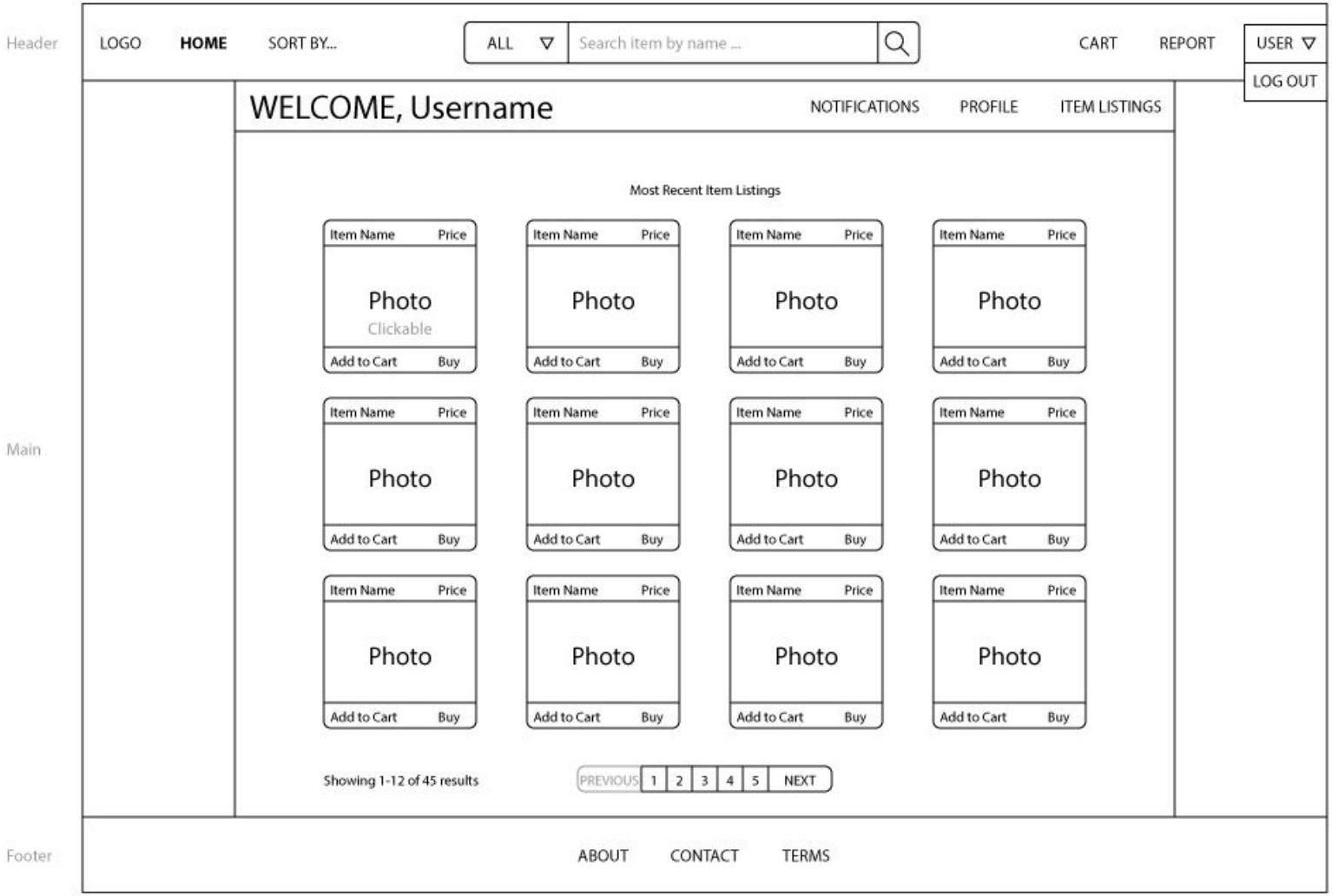


Comment: The Forgot Password shall not be implementated to avoid using email services with the Amazon cloud

Sign Up Page

Header
LOGO
HOME
SORT BY...
ALL
Search item by name ...
CART
SIGN UP
LOGIN
Main
SIGN UP!
Must be an SFSU email
Email
Must contain at least 8 characters, 1 alphabet and 1 number
Username
Must contain at least 8 characters, 1 alphabet and 1 number
Password
Captcha
What is 5 x 3 ?
Optional
Major
SELECT
I have read the Terms & Services and agree
I Agree
Submit
Footer
ABOUT
CONTACT
TERMS

Home Page - Registred User



Item Listings Page

Header

LOGO HOME SORT BY... ALL ▽ Search item by name ... CART REPORT USER ▽

Main

YOUR ITEM LISTINGS

NOTIFICATIONS PROFILE **ITEM LISTINGS**

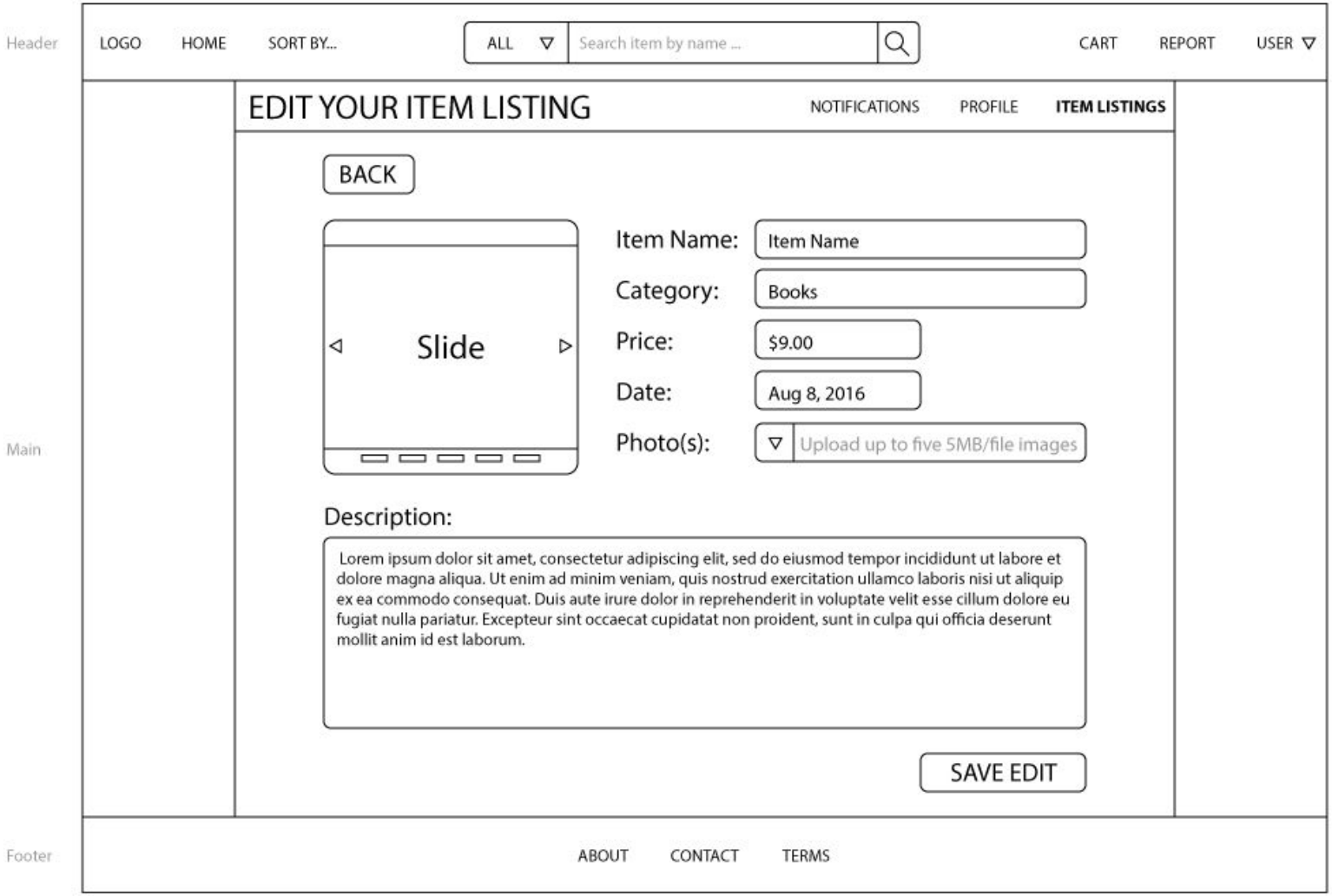
ADD ITEM

Item Name	Category	Price	Date	Update Listing	
Item Name	Books	$9.00	Aug 8, 2016	Edit	Remove
Item Name	Furniture	$16.45	Feb 7, 2017	Edit	Remove

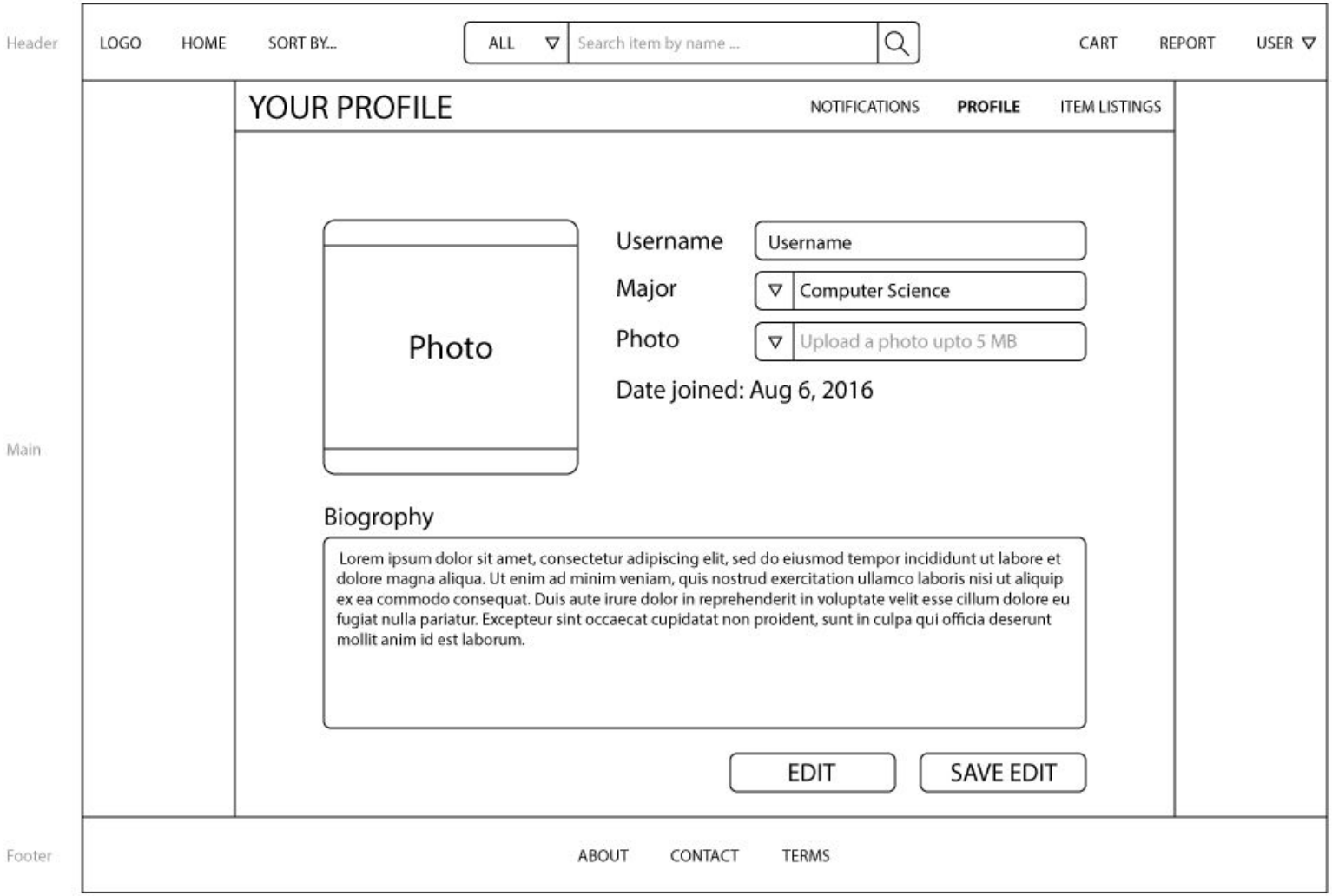
Footer

ABOUT CONTACT TERMS

Add or Edit Item Listings Page

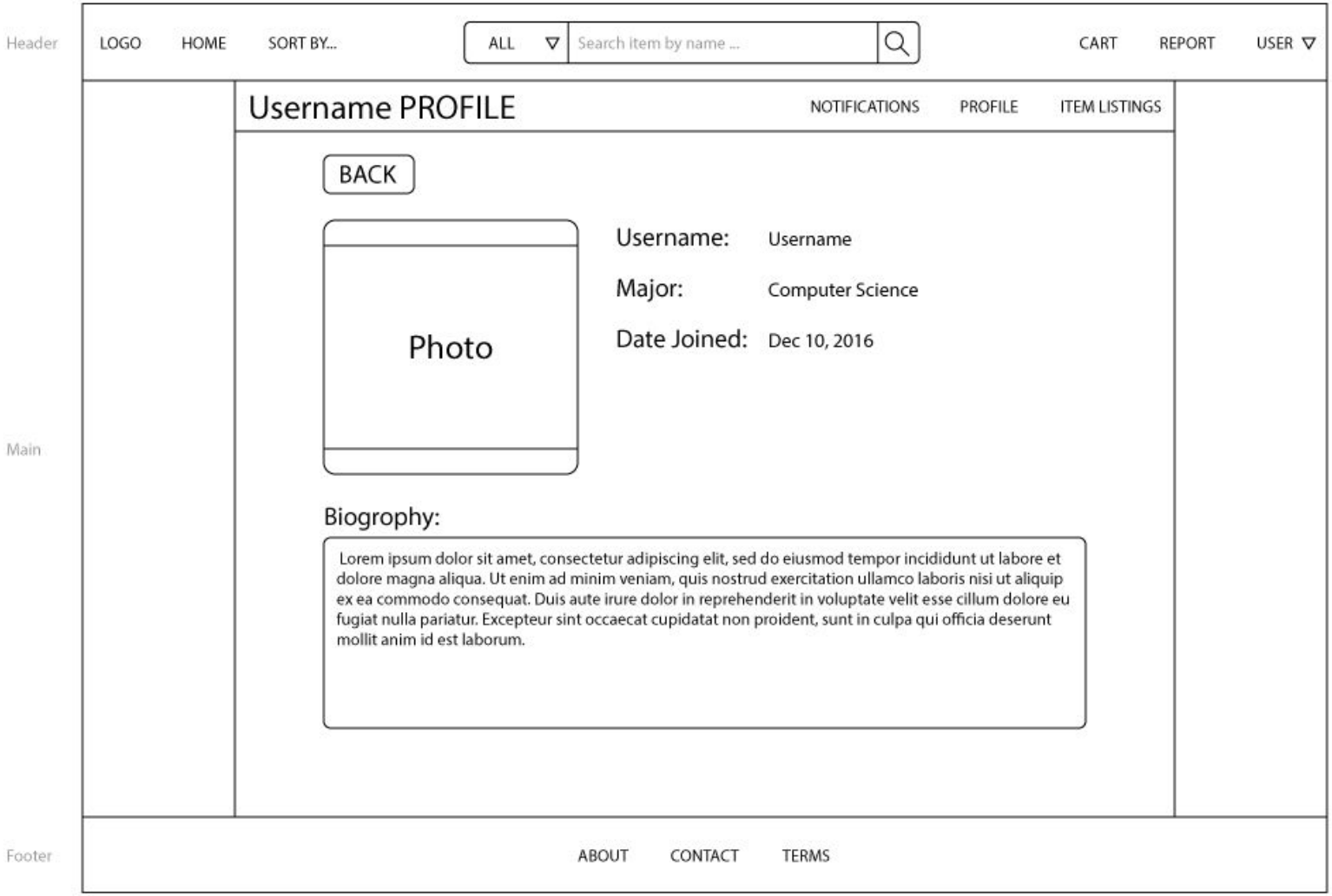


Editable Profile Page



Comment: Username cannot be changed

Viewable Profile Page



Cart Page - Priority 2

Header

LOGO HOME SORT BY... ALL Search item by name ... CART SIGN UP LOGIN

Main

YOUR SHOPPING CART

Total Items: 3

Item Name	Category	Price	Date	Contact Seller	
Item Name	Books	$5.35	Nov 1, 2016	Buy	Remove
Item Name	Books	$9.00	Aug 8, 2016	Buy	Remove
Item Name	Furniture	$16.45	Feb 7, 2017	Buy	Remove

Footer

ABOUT CONTACT TERMS

7) Competitive Analysis

Registered users can post multiple images for each product to enhance the advertising quality of their product. Messaging is also available directly through the website for faster communication. The website admins can monitor these messages for any misconduct to promote a safe environment for users.

Competitive Analysis Graph of Features

	Our Application	sellstudentstuff	Craigslist	student2student
Search	+	+	++	+
Filters	+	+	+	-
Uploading Photos	+	+	+	+
Delivery Cost And Time	++	-	-	-
Variation in Items offered	+	-	+	-
No Service charge	+	+	-	+
Messaging	+	-	-	-
Convenient Meetup	++	-	-	-

Legend: Feature exists +, Superior feature ++, Feature does not exist -

When students purchase products online, a common issue is the delivery time to receive their desired product. For example, books are typically expensive to buy and slow to deliver. Paying for quick delivery adds even more onto the total cost. Unlike our competitors, with SFSU Congre-Gator's Market, students can meet on campus as quickly as the same day or whenever their schedules permit! Meeting in-person allows buyers to inspect the product before paying, and there are no delivery costs for either party. Also, the Convenient Meetup feature takes the hassle of coordinating schedules out of the hands of the student by comparing user input schedules between buyers and sellers. It's one more way to make life easier for the student at Congre-Gator's Market!

8) High Level Architecture

1. **01-LAMP Stack:** (SF-SUSE Server Information)
    - 1.1. Host: Amazon Cloud
    - 1.2. OS: Ubuntu Server, Version: 16.04
    - 1.3. MySQL Version: 5.7
    - 1.4. PHP Version: 7.0.13
    - 1.5. OpenSSH Version: 7.2
    - 1.6. Git Version: 2.7.4
    - 1.7. Python: 2.7
    - 1.8. Ruby: 2.3.1
    - 1.9. nodejs: 4.2.6
    - 1.10. npm: 3.5.2
    - 1.11. Less: 481
    - 1.12. Sass: 3.4.23

2. **PHP Framework:**
    - 2.1. CodeIgniter: Version 3.1.3

3. **GUI Technologies:**
    - 3.1. Javascript: Version 1.8
    - 3.2. jQuery: Version 3.1.1
    - 3.3. Bootstrap: Version 4.0.0-alpha.6
    - 3.4. CSS 3
    - 3.5. Font Awesome (Glyphicons) Version 4.7.0

4. **Major Browsers:**
    - 4.1. Mozilla Firefox: Version 51.0, 51.0.1 (64-bit)
    - 4.2. Safari: Version 9.1.3, 9.0.2,
    - 4.3. Google Chrome: Version 56.0.2924.87 (64-bit)

5. **Team's account where website will be served:**
    - 5.1. http://www.sfsuse.com/~sp17g04

6. **Team's application of choice where website contributions will be made:**
    - 6.1. Github

9) Database Design

reg_user		
Field Name	**Type**	**Constraints**
user_id	INT	AUTO INCREMENT, PRIMARY KEY, NOT NULL.
name	VARCHAR	NOT NULL
sfsu_email	VARCHAR	NOT NULL, UNIQUE
mobile	INT(10)	NOT NULL, UNIQUE
password	VARCHAR	NOT NULL
biography	VARCHAR	NULL
major_id	INT	FOREIGN KEY(majors.major_id)
status	VARCHAR	"ACTIVE","BLOCKED"
registration_date	DATE	CURRENT_TIMESTAMP
username	VARCHAR	UNIQUE, NOT NULL

reg_user_pic		
Field Name	**Type**	**Constraints**
user_id	INT	NOT NULL, FOREIGN KEY(reg_user.user_id)
pic	BLOB/VARCHAR	NULL
thumbnail	BLOB/VARCHAR	NULL

reg_user_notification		
Field Name	**Type**	**Constraints**
id	INT	AUTO INCREMENT, PRIMARY KEY, NOT NULL.
sender_id	INT	FOREIGN KEY(reg_user.user_id)
receiver_id	INT	FOREIGN KEY(reg_user.user_id)
message	VARCHAR	NOT NULL
date	DATE	CURRENT_TIMESTAMP
listing_id	INT	FOREIGN KEY(item_listing.listing_id)
status	VARCHAR	"UNSEEN","SEEN"

sfsu_major		
Field Name	**Type**	**Constraints**
major_id	INT	AUTO INCREMENT, PRIMARY KEY, NOT NULL.
major_name	VARCHAR	NOT NULL, UNIQUE
date_created	DATE	CURRENT_TIMESTAMP

item_category		
Field Name	**Type**	**Constraints**
category_id	INT	AUTO INCREMENT, PRIMARY KEY, NOT NULL.
category_nam	VARCHAR	NOT NULL, UNIQUE
date_created	DATE	CURRENT_TIMESTAMP

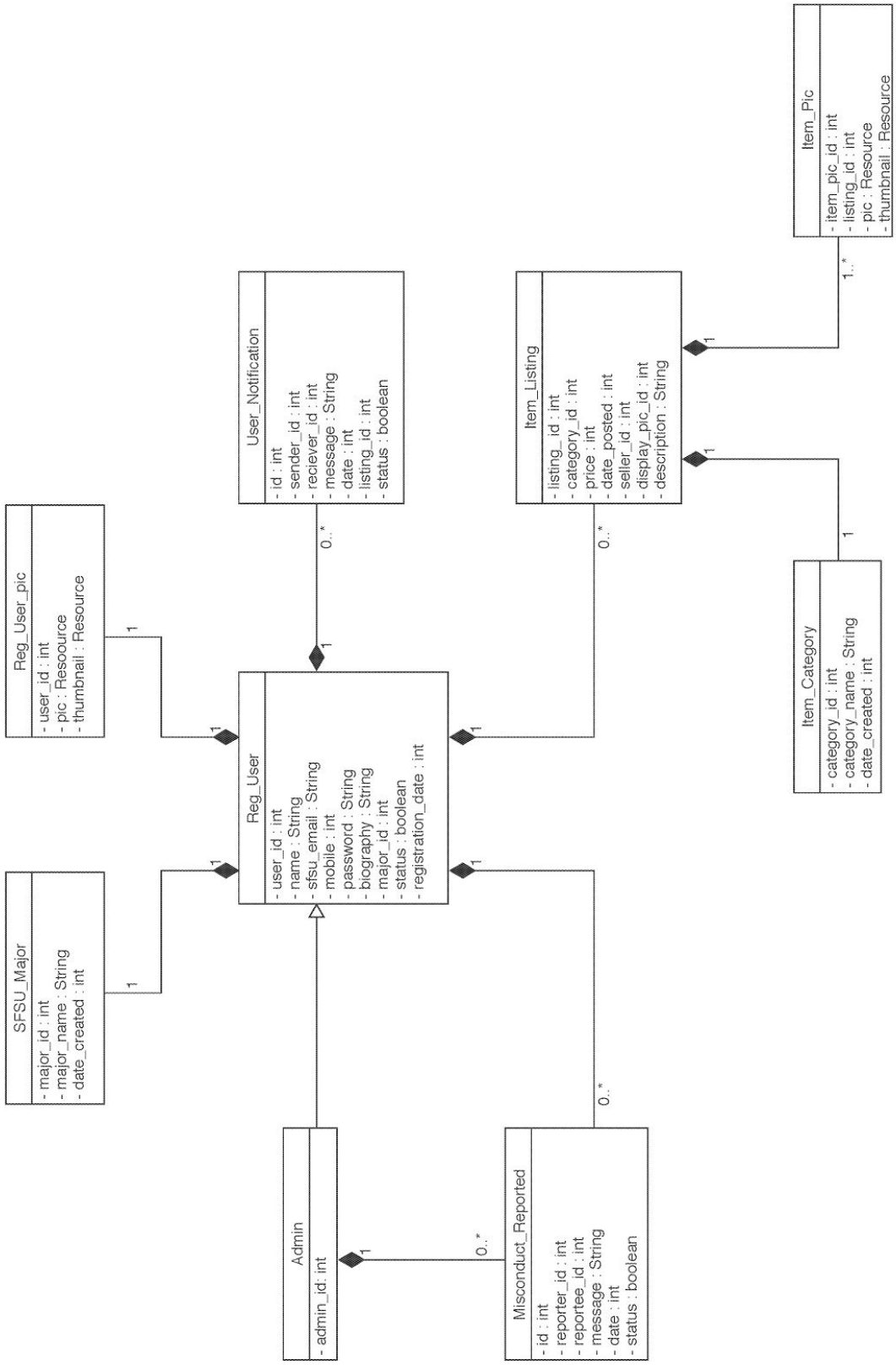
item_listing		
Field Name	**Type**	**Constraints**
listing_id	INT	AUTO INCREMENT, PRIMARY KEY, NOT NULL.
category_id	INT	FOREIGN KEY(item_category.category_id)
price	INT	>=0 and <10000.
date_posted	DATE	CURRENT_TIMESTAMP
seller_id	INT	FOREIGN KEY(reg_user.user_id)
display_pic_id	INT	FOREIGN KEY(item_pics.pic_id)
title	VARCHAR	NOT NULL
description	VARCHAR	NULL

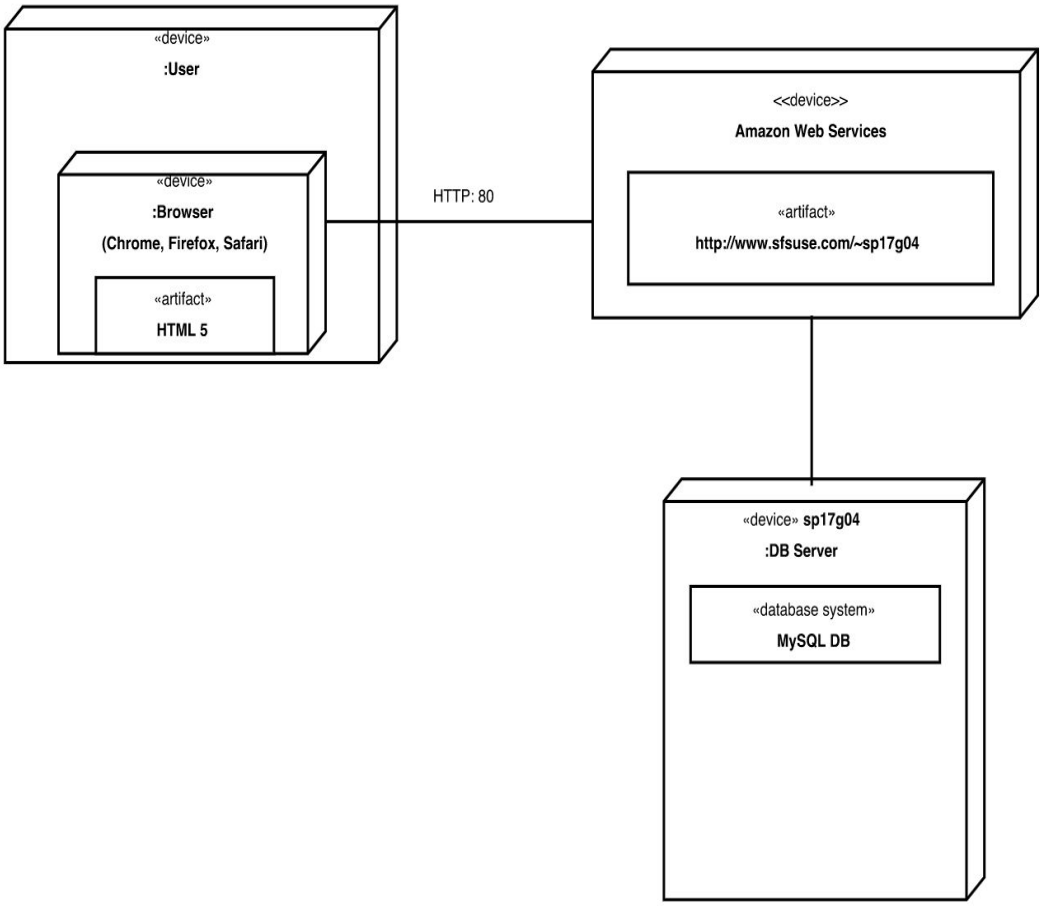
item_pics		
Field Name	**Type**	**Constraints**
item_pic_id	INT	AUTO INCREMENT, PRIMARY KEY, NOT NULL.
listing_id	INT	FOREIGN KEY(item_listing.listing_id)
pic	BLOB/VARCHAR	NOT NULL
thumbnail	BLOB/VARCHAR	NOT NULL

9.1) Search Strategy

Non-registered/registered user can be able to search through item listings in the search bar. When the search query is sent to the system, it will go through the **item_listing** table and do LIKE %query% on the title field, if no result comes up then it will do LIKE %query% on description field. If results are available, then they will be displayed to the user. If no matching result is found then a message will be shown to the user, and all available item listings will be displayed.

10) UML Diagrams (Class and Deployment)




«device»
:User
«device»
:Browser
(Chrome, Firefox, Safari)
«artifact»
HTML 5
HTTP: 80
<<device>>
Amazon Web Services
«artifact»
http://www.sfsuse.com/~sp17g04
«device» sp17g04
:DB Server
«database system»
MySQL DB

11) Key Risks

Varying Levels of Competency

On the tools we are using, some of the team members will have had more experience than others, most notably with our PHP framework and Github. The team will mitigate discrepancies with honest evaluations of skill levels and delegation of the workload. While we must meet deadlines, we must also avoid heaping too much work on a few individuals as well as denying others opportunities to learn.

Legal

The software team will mitigate legal issues with due diligence. Lawyers are expensive, and the scope of our project is relatively small. If we've correctly identified key risks, this seems possible. When in doubt, we can hire a lawyer. Additionally, we shall implement a strictly worded terms-of-service agreement. What follows is a list of specific legal key risks:

- **Intellectual Property**
  - Software features shall not infringe upon intellectual property. The imminent danger is with Convenient Meetup.
- **Advertising: False Claims and Third Party Terms of Service**
  - We need to be sure we don't make false claims. For example, Convenient Meetup compares user schedules. We don't provide a venue for users to meet. Furthermore, we need to be sure that we do not infringe upon the terms and conditions of any third party sites we might like to use for advertising such as Facebook and other popular social media platforms.
- **Defamation**
  - We claim to offer superior services than competitors in some respects. If a third party promotes these claims, they should be made carefully so as not to be construed as defamation.
- **Privacy**
  - Users will register with private information. We need to be sure we are in compliance with privacy protection laws.
- **Copyrighted Images: Us and Our Users**
  - Copyrighted images could get us in trouble. For example, the SFSU logo is copyrighted. While the software team should find it relatively easy to avoid the use of copyrighted images in our UI, a right of users is that they have the freedom to upload their pictures. The terms of service should outline we accept no responsibility for images uploaded by our users.

12) Team

Ihsan Taha:

1. CEO of the team.
2. Designing UI (Bootstrap) for the project.
3. Github curator.
4. Back-end developer.

Prateek Gupta:

1. CTO of the team.
2. Database design and development.
3. Back-end developer.

Darel Ogbonna:

1. Documentation.
2. Database management and maintenance.
3. Back-end Developer.

Shane Cota:

1. Documentation.
2. Back-end Developer.

Kevin Chu:

1. Front-end developer.
2. Back-end developer.

Mark Tompong:

1. Front-end developer.
2. Back-end developer.

13) Checklist

- Team decided on basic means of communications: DONE
- Team found a time slot to meet outside of the class: DONE
- CTO chosen and working out well so far: DONE
- Github master chosen: DONE
- Team ready and able to use the chosen framework: DONE
- Skills of each team member defined and known to all: DONE
- Team lead ensured that all team members read the final M2 and agree/understand it before submission: DONE