

Merchandising Society Club's Online Platform Software Design Document Team: HDD

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Table of Content

1. Introduction	3
1.1 Product Description	3
1.2 Scope	4
1.3 Users	4
1.4 User Feedback	4
1.5 Existing Alternatives	4
1.6 Definitions	5
1.7 References	5
2. Requirements	5
2.1 Functional Requirements	5
2.2 Use Case Diagram	6
2.3 Use Cases	7
2.3.1: Use Case - Learn More About MSC	7
2.3.2: Use Case - Find Out What Products MSC Has to Offer	7
2.3.3: Use Case - Sign up for MSC Mailing List	7
2.3.4: Use Case - Unsubscribe From MSC Mailing List	7
2.3.5: Use Case - Apply to Join MSC	8
2.3.6 Use Case - Make a General Inquiry	8
2.3.7: Use Case - Update Main Carousel Banner Images and Texts	8
2.3.8: Use Case - Update Merchandise	8
2.3.9: Use Case - Update Subscription Emails Through Mail Management System	9
2.3.10 Use Case - Checking Web Usage Analysis Page	9
2.3.11 Use Case - Purchases an Item	9
2.4 Non-Functional Requirements	10
3. System Architecture	11
3.1 Overview	11
3.2 UML Class Diagrams	12
3.3 UML Sequence Diagrams	13
3.4 Deployment	15
3.5 Code Conventions	15
4. Schedule	15
5. Contributions	16

1. Introduction

1.1 Product Description

The Merchandising Society Club (MSC) makes Fashion Institute of Technology (FIT) and Stony Brook University merchandise. Their goal is to not only produce merchandise for students and faculties but also to showcase and sell their products that are crafted after extensive research on fashion trends and sales planning.

Thus, to display their products for sale, MSC runs its own physical Retail Revolution Store at FIT, and they are currently in need of expanding their collection online. Particularly during the COVID 19 crisis, customers cannot regularly access the offline retail store. Thus, having an online means of accessing MSC is a massive benefit for them.

Note that MSC values showcasing its merchandise (i.e., gallery-like) as much as selling their products to their customers. Hence, our solution is to create an online platform that offers a middle ground of a gallery and an online store where customers can experience the store and visually experience the products before making any purchases. Several main sections will be included on the website:

1. MSC About Page - This page delineates the purpose and the motives of the club. The MSC logo and its motto, "By Students, For Students." will be displayed at the top as the main heading. The page shows anecdotes and blogs about what MSC is doing for the community or how MSC has impacted the community. The retail store location, open/close times, and contact information are provided at the bottom of the page.
 - a. MSC admins can edit text description and main banner on the page.
2. Mailing Subscriptions - Users will be able to sign-up/cancel free email subscriptions. Subscribed users will receive emails when there are new products, store discounts, or announcements regarding the store or the club. MSC may also offer discount coupons to the subscribers to promote sales and subscription count.
 - a. MSC admins will be able to manage the email list and send out emails without requiring additional developer support.
3. Showcase Merchandise - Products will be showcased as images or a 3D view - users can scroll left and right to see an item's 360-degree views. Users will be able to select and view different variations of the wearable products (e.g., colors & fit) and put them into a shopping cart before ordering the product. Once an order is placed, the system will send out an email notification to the store manager who will ready the pick-up items.
 - a. MSC admins will be able to add, edit, and remove products. In the case of 3D view of the products, it will be in the form of multiple image uploads for a single product. The 3D aspect relies more on the admins to curate quality photos than the functionality itself.
 - b. There will not be any payment systems on the website, mostly due to strict Korean business tax laws. However, there may be links to external stores such as Naver Store or Interpark Store, where MSC products could be bought.
 - c. The admins will also see a visual graph or tables of how many products are sold, clicked, and in-stock in a defined time (e.g., weekly, monthly).
4. Virtual Showroom - Users will be able to scroll through, zoom in/out of the store showroom virtually on the website. This feature will allow users to view merchandise under the lights, purposefully set by the fashion designers. Additionally, the users will be able to experience a shopping atmosphere without actually visiting the store.
5. Team Page - This page will introduce the members with leadership positions in MSC and describe the activities that MSC is involved in. Users will be able to sign up for the club on

this page. In addition, the club members' profiles and their contact information can be found at the bottom of the page.

1.2 Scope

This product will be made specifically to MSC's needs; it is not designed to be configured by other clubs or organizations. The website will show off general information about MSC and its merchandise without a payment system incorporated into the shopping. Regarding administrative functions, the admins of MSC can update product information, update information about their team members, manage a mailing list, and view user tracking logs. The online store is implemented as a website; hence, it will run on any device that supports a web-browser (excluding Internet Explorer).

1.3 Users

The intended groups of users of the product are SUNY Korea students and faculties. Nigh everyone attending SUNY Korea is comfortable with browsing websites.

1.4 User Feedback

We will be receiving user feedback at every point in the development process. Once the User Interface (UI) design is ready, we will demonstrate the prototype to the stakeholders. Then, we will interview a few students who have never heard about MSC to get some feedback. We will be working very closely with the MSC President to ensure that each function is developed as expected. We have already held meetings to have questions answered and get a more precise understanding of what the President envisions. We have learned that the President wants to show off everything that their offline platform has to offer in various methods.

1.5 Existing Alternatives

There is currently no existing alternative for an online platform for the MSC. Nevertheless, some of their functions were inspired by other sites. Which includes:

- Digital Catalog: [Ordre](#) - Inspired by the 360 degrees view of a product. This feature allows users to be more interactive with the product and have a closer look into the product of their preferred viewing angle. Having this feature for each product in MSC Collections will allow a true gallery-like experience for the users.
- Digital Styling: [Looklet](#) - Inspired by how the website displays its collections in a gallery-like manner, unlike other online shopping platforms. Gallery-like designs focus more on professional and clean layouts of the products. MSC website needs such well-organized layouts.
- Online Showroom: [BrandLab Fashion](#) - Inspired by its VR showroom feature. It allows users to easily explore around the showroom and be interactive with the products information and the atmosphere of the shop.

1.6 Definitions

Usage	Meaning
MSC	Merchandising Society Club
FIT	Fashion Institute of Technology
SUNY	State University of New York
IEEE	Institute of Electrical and Electronics Engineers
UI	User Interface
Users	Customers using the website

1.7 References

1. IEEE Std 1233, 1998 Edition, IEEE Guide for Developing System Requirements Specifications.
2. R. McKenna, "The Course Generator™ Software Requirements Specification," Debugging Enterprises™
3. R. McKenna, "Regio Vinco™ Software Requirements Specification," Debugging Enterprises™
4. R. McKenna, "The ePortfolio Generator Software Requirements Specification," Debugging Enterprises™
5. Ordre: <https://www.ordre.com/en>
6. Looklet: <https://www.looklet.com/>
7. Brandlab Fashion (Virtual Showroom): <https://www.brandlabfashion.com/vr-showrooms>

2. Requirements

2.1 Functional Requirements

*Stretch goals are marked with ***

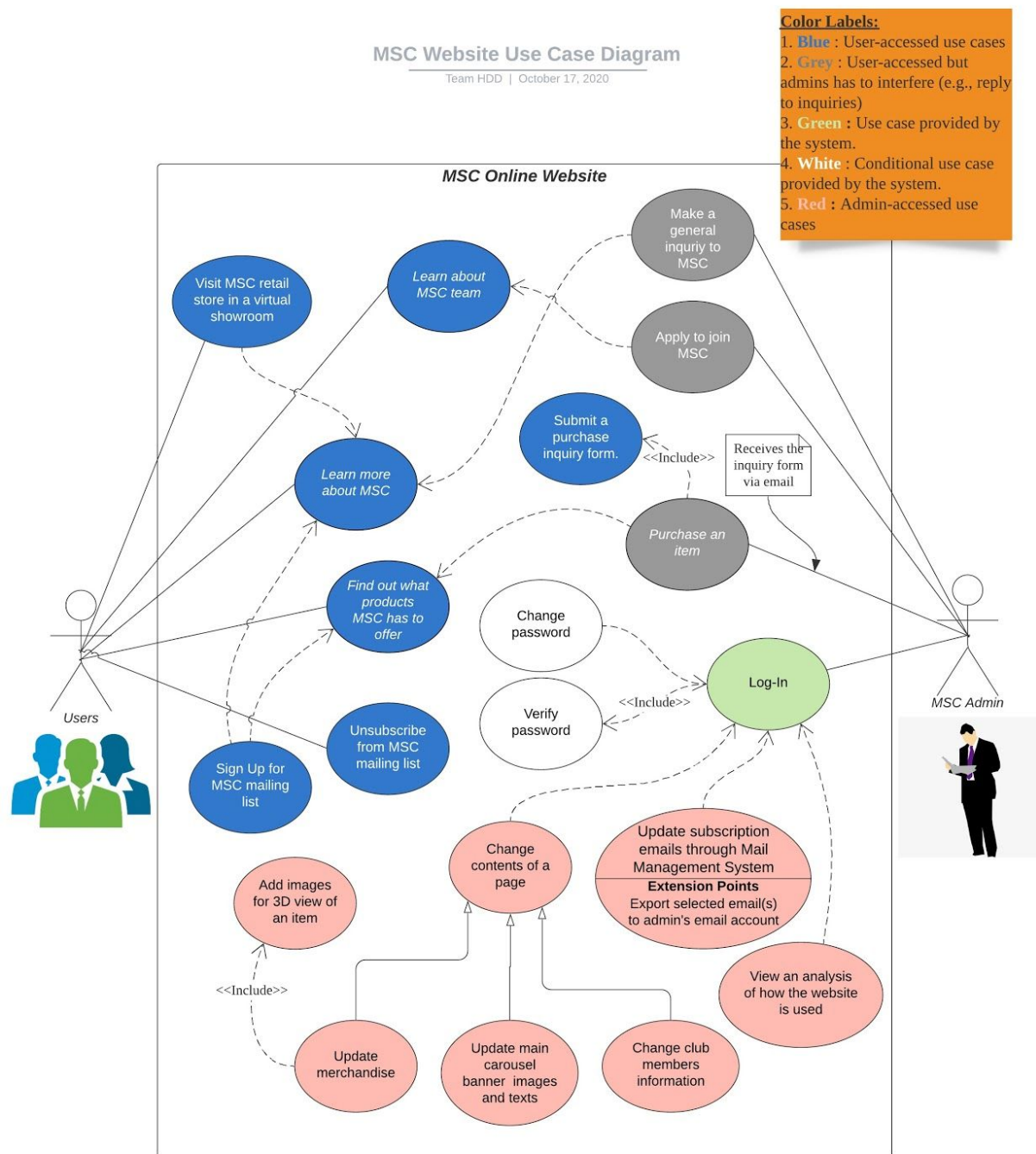
Users can:

1. Read about what MSC is and the activities MSC is involved in.
2. View MSC club members and club leaders.
3. View MSC products in a variety of methods.
 - a. Digital Catalog Method - 360 degrees rotation view of the merchandise.
 - b. ** Digital Styling Method - Mix and Match Clothes
4. ** Take a tour of the Retail Revolution Store Virtual Showroom.
5. Sign up for the MSC mailing subscription list.
6. Sign up to be a part of MSC.
7. Make a general inquiry to MSC.
8. Visit MSC's social media page via links provided on the website.
9. Submit a purchase request form of merchandise they like; it will automatically send an email to MSC. The club members will then prepare the item(s) and contact the user directly to discuss how the payment can be made (via bank transfer or cash). Purchased item(s) will be picked up from the retail store.
10. Users will be able to search for a product in MSC's collections from a search bar.

MSC administrators can:

1. Add, edit, or delete the contents displayed on the website (e.g., banners, club members, collections, etc).
2. Analyze the website usage log - the site will show what items are viewed the most, how many users subscribed, how many users visited the website today, etc.
3. Manage the mailing lists by adding or deleting subscribed email addresses.
4. ** Create, update, and delete other admin accounts with specific permissions.
5. ** Export data (how many items sold, revenue made, etc.) into an EXCEL sheet or other platform.

2.2 Use Case Diagram



2.3 Use Cases

2.3.1: Use Case - Learn More About MSC

Use Case	Learn more about MSC
Primary Actor	Users
Priority	Expected
Scenario	1. Users start on the home page. 2. Users click on the “About Us” tab. 3. Users are redirected to the “About Us” page 4. Users read about MSC.
Extensions	3a. Users click on the “Our Team” tab. 3b. Users read about the members in the leadership role.

2.3.2: Use Case - Find Out What Products MSC Has to Offer

Use Case	Find out what products MSC has to offer
Primary Actor	Users
Priority	Essential
Scenario	1. Users start on the home page 2. Users click on the “Collections” tab. 3. Users are redirected to the “Collections” page 4. Users are presented with filtering options: apparel, assorted goods, etc. 5. Users select one of the options. 6. Users scrolls through the list of available products. 7. Users select a product and get redirected to a detailed product page.
Extensions	8. If available, users can view the product in different methods (e.g., Digital Catalog method). 9. Users can search for a specific item in a search bar

2.3.3: Use Case - Sign up for MSC Mailing List

Use Case	Sign up for MSC mailing list
Primary Actor	Users
Priority	Expected
Scenario	1. Users start on the home page. 2. Users scroll down to the footer of the page. 3. Users find the section for signing up for the mailing list. 4. Users type in their email. 5. Users click on the apply button.
Extensions	6. Users receive a success email immediately after the application.

2.3.4: Use Case - Unsubscribe From MSC Mailing List

Use Case	Unsubscribe from MSC mailing list
Primary Actor	Users
Priority	Expected
Precondition	The user has already signed up for the MSC mailing list and has already received at least the confirmation email.
Scenario	1. Users start on their email from MSC. 2. Users click on the “unsubscribe” button. 3. Users are redirected to the auto unsubscribe page. 4. Users are automatically unsubscribed.

Extensions	5. Users can optionally fill out a short survey on why they unsubscribed from the mailing list.
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2.3.5: Use Case - Apply to Join MSC

Use Case	Apply to join MSC
Primary Actor	Users
Priority	Nice to have
Scenario	<ol style="list-style-type: none"> 1. Users starts on the home page 2. Users click on the “Our Team” tab. 3. Users are redirected to the “Our Team” page 4. Users find the section for applications. 5. Users click on the “apply” button and get redirected to an application form (e.g., google survey).
Extensions	5a. Users click, fill out the form directly on the site and then apply.

2.3.6 Use Case - Make a General Inquiry

Use Case	Make a General Inquiry to MSC
Primary Actor	Users
Priority	Expected
Scenario	<ol style="list-style-type: none"> 1. Users explore the products and collections on the website. 2. Users get interested in a product.
Extensions	<ol style="list-style-type: none"> 3a.1 Users try to find a way to contact MSC directly. 3a.2 Users click on the “About Us” tab. 3a.3 Users are redirected to the “About Us” page. 3a.4 Users make an inquiry in the contact section. 3b.1 Users click on their social media and contact information icon next to the product. 3b.2 Users click the “Make a General Inquiry” button. 3c.1 Inquiry modal appears 3c.2 Users fill out the inquiry form regarding the product.

2.3.7: Use Case - Update Main Carousel Banner Images and Texts

Use Case	Update main carousel banner images and texts
Primary Actor	MSC Admin
Priority	Expected
Scenario	<ol style="list-style-type: none"> 1. Admin starts on the admin login page. 2. Admin logs in. 3. Admin is redirected to the admin dashboard. 4. Admin navigates to the main carousel banner editing page. (Redirected to the page) 5. Admin adds, edits, or removes banner images and texts.

2.3.8: Use Case - Update Merchandise

Use Case	Update merchandise
Primary Actor	MSC Admin
Priority	Expected
Scenario	<ol style="list-style-type: none"> 1. Admin starts on the admin login page. 2. Admin logs in. 3. Admin is redirected to the admin dashboard.

	4. Admin navigates to the merchandise editing page. (Redirect to Collections Edit page) 5. Admin selects ‘add merchandise’–modal appears 6. Admins selects the type of showcase they would like to add. (Digital Styling, Digital Showcase, etc). 7. Admin enters in the data for the merchandise. (e.g., images for a 3D view of the product) 8. Admin submits the new data.
Extensions	5a.1 Admin finds the item to edit. 5a.2 Admin selects ‘edit merchandise’ button–modal appears 5a.3 Admin enters in the updated data for the merchandise. 5a.4 Admin presses ‘Submit’ button to save the new data. 5b.1 Admin finds the item to delete. 5b.2 Admin selects ‘delete merchandise’ button–alert appears. 5b.3 Admin confirms the deletion.

2.3.9: Use Case - Update Subscription Emails Through Mail Management System

Use Case	Update subscription emails through Mail Management System
Primary Actor	MSC Admin
Priority	Essential
Scenario	1. Admin starts on the admin login page. 2. Admin logs in. 3. Admin is redirected to the admin dashboard. 4. Admin navigates to the email management page. (Redirect to Manage Subscriptions page) 5. Admin adds or deletes an email from the given list. 7. Admin presses save.
Extensions	8 Admin exports selected email(s) to admin’s email account.

2.3.10 Use Case - Checking Web Usage Analysis Page

Use Case	View an analysis of how the website is used
Primary Actor	MSC Admin
Priority	In between expected and nice to have
Scenario	1. Admin starts on the admin login page. 2. Admin logs in. 3. Admin is redirected to the admin dashboard. 4. Admin navigates to the Usage Analysis page. (Redirect to Web Usage Analysis page) 5. Admin selects daily, weekly, or monthly options. 6. According to the option chosen, the admins can see items in an orderly fashion that were viewed most and sold most. The admins can also see how many users subscribed and the busiest time users access the site.
Extensions	7. There will be another page where displays users’ IP, time of access, and the pages viewed. (i.e., tracking logs) 8. Displays data in a nice bar graph.

2.3.11 Use Case - Purchases an Item

Use Case	Purchase an item
Primary Actor	Users & MSC Admin
Priority	Expected

Scenario	1. <i>Extension to Step 6 from 2.3.2</i> 2. Users click “Fill out Purchase Inquiry.” 4. A modal appears to which users can fill out general information about the purchase: size, color, amount, and contact info. 5. Users fill the information and clicks submit. 6. MSC admin receives an email with the general information. 7. MSC admin prepares the item and contacts the user that the item is ready for pick up. 8. The users visit the MSC retail store or meet an MSC member to pick up an item. He or she pays via bank transfer or cash.
Extensions	9. Purchase can be done on external platforms (e.g., Naver online market); Link to it will be provided.

2.4 Non-Functional Requirements

1. The site should be available in both Korean and English.
2. Users will be able to fully access the website via Google Chrome, Firefox, and Safari. Users accessing from the Internet Explorer browser may not fully experience the functionalities of the website.
3. Any submission from the users (e.g., general inquiry, club application) will automatically notify MSC admins via email.
4. Admin pages will be accessed via logging in with their admin accounts.
5. MSC admins can make changes to banners, text contents, and images.
6. Whenever MSC admins make changes to the contents from admin pages, the user-side website will be updated automatically.
7. The admins will be able to change the admin’s login password, even when the password is forgotten.
8. Usage log is visible in a formatted data in a table or a graph.
9. The website will have a consistent color theme (hex-value: 030303, D5D5D5, 5C5C5C, EA7229) and format.
10. There can be no unhandled exceptions from incorrect user input.

3. System Architecture

3.1 Overview

Area	Technology	Reasoning
Frontend	React.js (Version 16.14.0)	Easy to reuse components that appear multiple times on the website. There are many libraries that can be used in React.
	JSX	React uses JSX which allows html-like code in React.
	CSS	Design for better user interactions and layouts of pages
	HTML	A web browser renders documents created in this format. Creates structured documents by denoting structural semantics for text.
	Bootstrap Material-UI Ant Design	CSS Framework used within React.js to provide a professional website design
	React-Rotation	The library within React.js that allows 360-degree view of an image that provides interactive product view for users.
	Pannellum-React	The library used to render interactive VR of a 360 panorama image.
Backend	Django 3	Easy to learn and removes the need to tinker with the database itself.
	Django Rest Framework	Third party extension to create RESTful API.
	Django Heroku	Third party extension to host on Heroku.
	Django Cors Headers	To solve cors header issues.
	Python 3	Django uses python as it's programming language.
	PostgreSQL 13	A django heroku server easily supports a postgres backend. There is no particular reason that postgres was chosen over mysql.
	Django Pyodbc	Third party extension to connect Django with postgres.
	Model-View-Serializer	A serializer is used instead of a controller, since django will be used to create an API instead of editing the frontend.

3.2 UML Class Diagrams

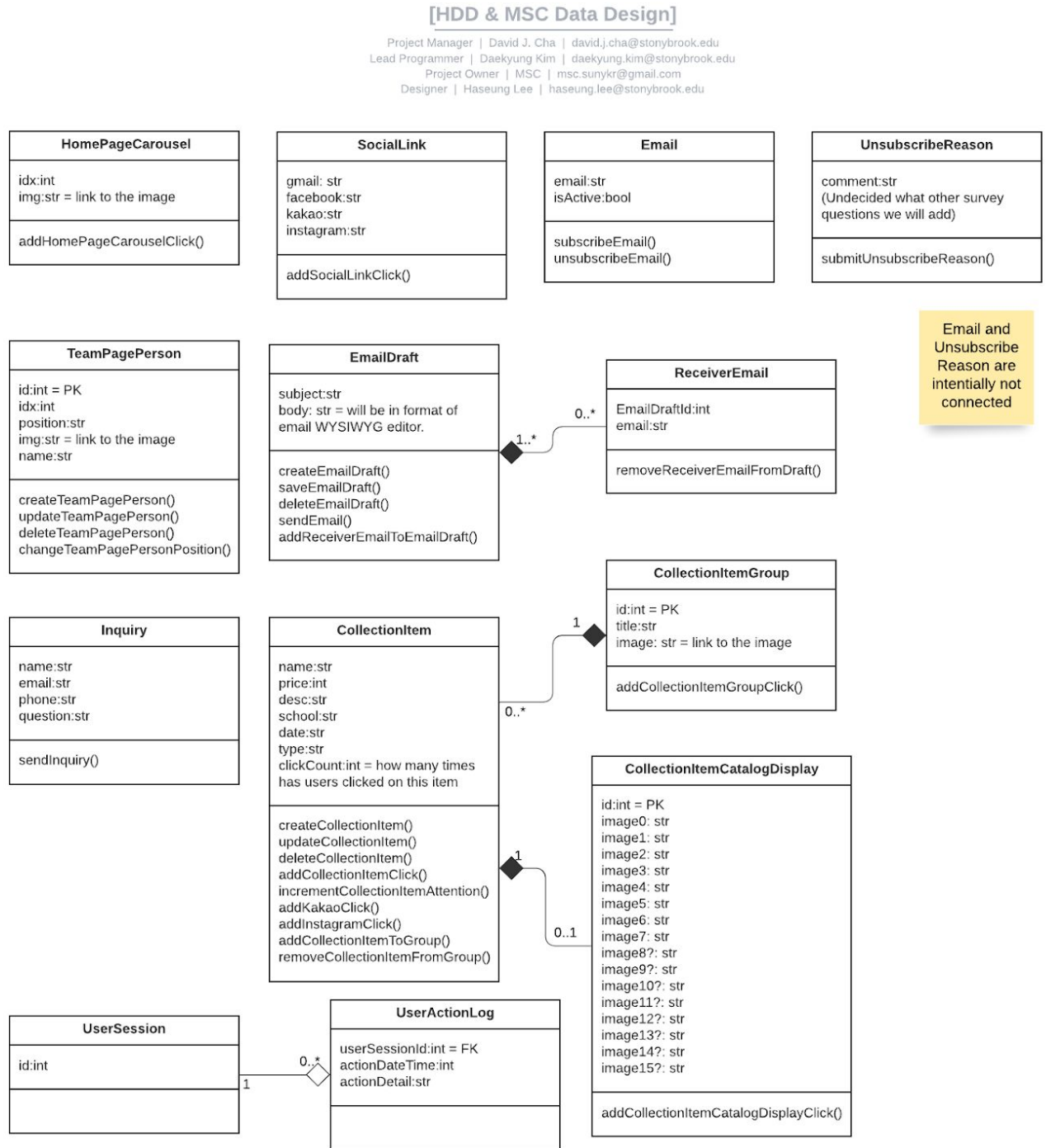


Figure 2. UML Class Diagram

3.3 UML Sequence Diagrams

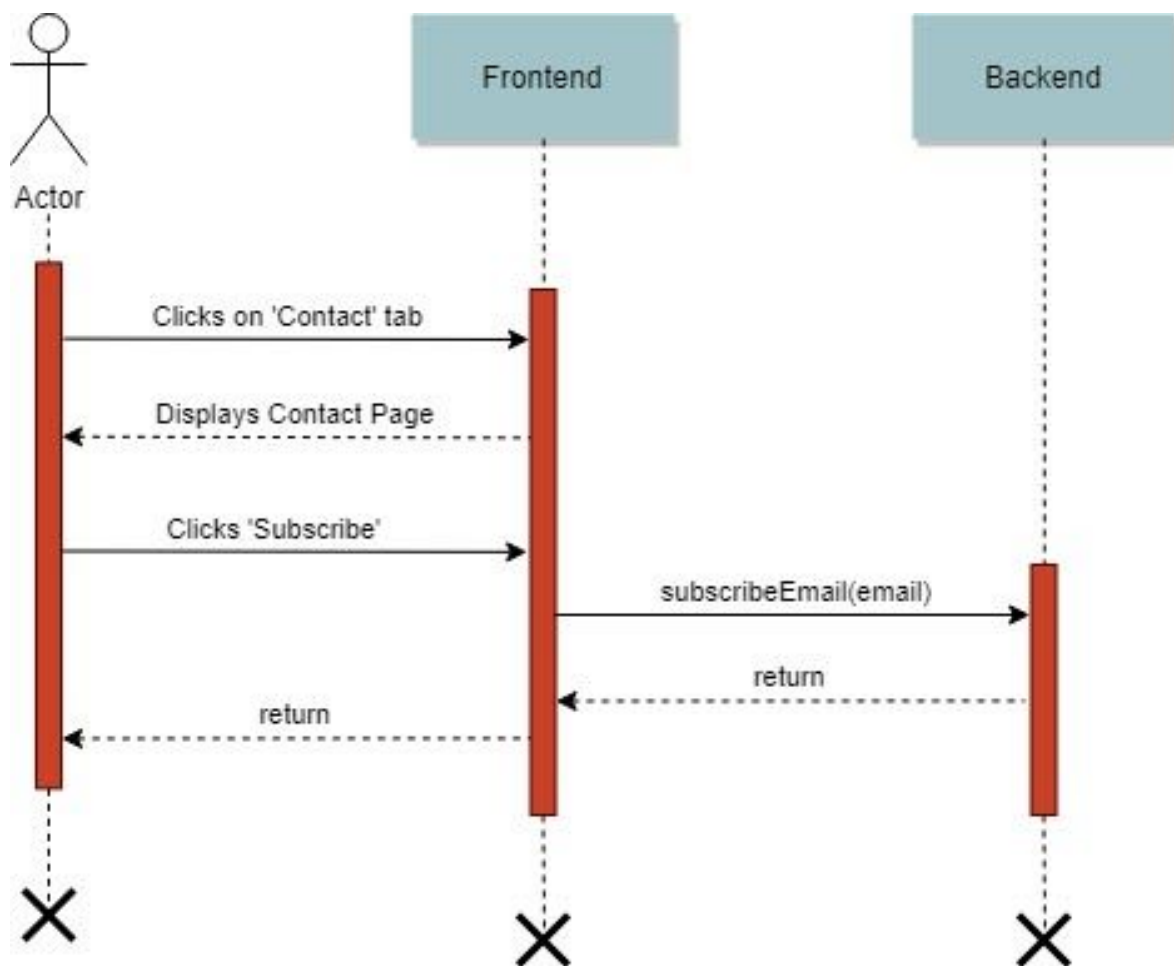


Figure 3. UML Sequence Diagram: Subscribing to MSC Mailing List

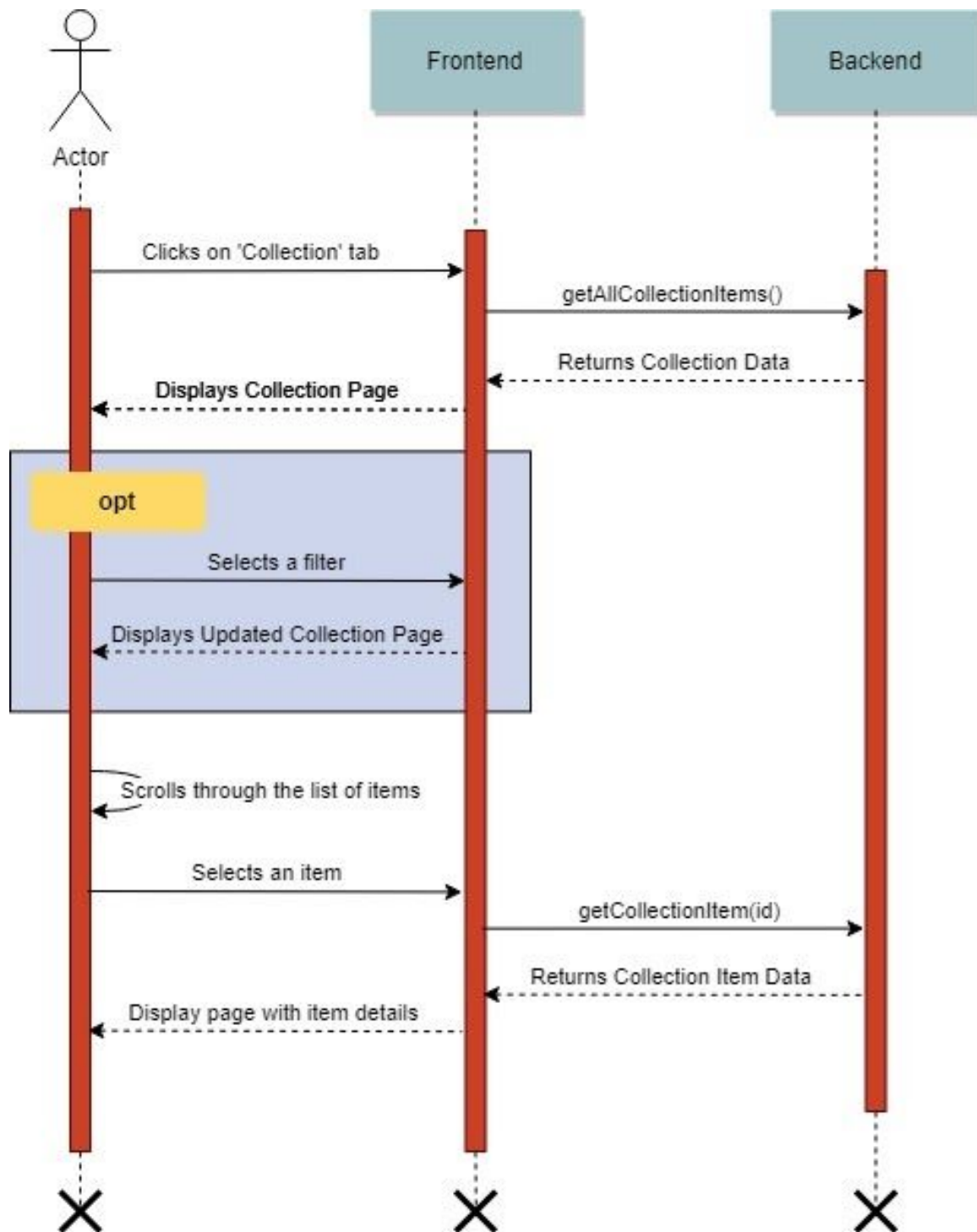


Figure 4. UML Sequence Diagram: Find Out What Products MSC Has To Offer

3.4 Deployment

The frontend is being deployed using Firebase. Currently it is being deployed at the following link: <https://merchandising-society.web.app/>

The backend will be deployed using Heroku. Currently the backend is being deployed at the following link: <https://sunnyk-mvc-backend.herokuapp.com/>. The database will also be hosted in the same Heroku Server with the Heroku Postgres add-on.

3.5 Code Conventions

For any HTML and CSS code, Google Style Guide will be used. Note that HTML is automatically generated by the React.js framework. The detail for the style can be found [here](#).

For any javascript code, Google Javascript Style Guide will be used. The detail for the style can be found [here](#).

For any python code, the standard python convention, PEP 8, will be used as described in the python site. The details for PEP 8 can be found [here](#). Either Pylint or pep8 will be used to check for adherence.

4. Schedule

*Note that for Milestone 2 and above, a detailed schedule is yet to be determined as instructions are not given. (i.e., this schedule is tentative)

* The project is managed via Trello. To visit the board, click this [link](#).

Date	Milestone	Assigned To	Task
October 16	1	Haseung Lee	[API] Create the excel document that will have the list of API and details.
October 19	1	Everyone	[Frontend] Manage Subscribers section (Admin) done - <i>David</i> [Frontend] Search Bar in Collections page done - <i>Daekyung</i> [Backend] Start CRUD API for Subscribers section - <i>Haseung</i>
October 21	1	Haseung Lee	[Backend] Create the models for the data. [API] Add CRUD API for the models
October 23	1	Everyone	[Frontend] Web Analysis Section (Admin) done - <i>David</i> [Frontend] Products page will be done - <i>Daekyung</i> [Backend] Implement CRUD API - <i>Haseung</i> [API] Start creating more complicated API calls as well - <i>Haseung</i>
October 26	1	Everyone	[Frontend] Our Team & About Us page (Admin) will be done - <i>David</i> [Frontend] Check if users page and admin pages work

			accordingly - <i>Daekyung</i> [Backend] Should be in the process of implementing the rest of the api - <i>Haseung</i> [API] Completed excel document with all required API - <i>Haseung</i>
October 30	2	Everyone	[Frontend] Should be complete - <i>David & Daekyung</i> [Backend] Should be complete - <i>Haseung</i>
Nov 2	2	Everyone	Bugs fixed on the sections each worked on.
Nov 5	3	MSC	Receive feedback from the product owner.
Nov 7	3	Everyone	Each person finds a beta tester and receive feedbacks
Nov 11	3	Everyone	Bugs fixed, if found.
Nov 12	3	TBD	Present on the beta release
Nov 23	4	Everyone	Make changes based on the feedback received. (Details yet to be determined)
Nov 24	4	Everyone	Project finalized and published.

5. Contributions

Member	Work Produced
David J. Cha	Participated in meetings. Setup workflow and kept track team progress and due dates through Trello. Contributed equally to creating the Software Design Document.
Daekyung Kim	Participated in meetings. Contributed equally to creating the Software Design Document.
MSC	Participated in meetings. Provided feedback on mid-fidelity prototype.
Haseung Lee	Participated in meetings. Contributed equally to creating the Software Design Document.