COLORETTE COMPANY

Color Me This

Requirements Analysis and Design

Version 1.0

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Prepared for
Capstone Project I
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COMP 3059 – Capstone Project I

Software Requirements Analysis and Design Assignment

This assignment is an overview to gather the software needs with requirements analysis and help to proceed with the design.

The requirements analysis helps to break down functional and nonfunctional requirements to a basic design view to provide a clear system development process framework. It involves various entities, including business, stakeholders and technology requirements.

The design is the activity following requirements specification and before programming. Software design usually involves problem solving and planning a software solution.

To work on this assignment you could use the references and a sample template given below. The sample template can be customised to suit the nature of your project.

Table of Contents

1.0 Introduction

This document describes the Software Requirements Specifications(SRS) for ColorMeThis: e-commerce web application specially designed for makeup users that would want to find the perfect makeup shade. This document scrutinizes the detailed requirements. It must be accomplished before ColorMeThis gets delivered to the user.

1.1 Purpose

This document is to delineate a detailed description of Color Me This or CMT. This document aims to provide the detailed overview of our system, its parameters, and goals. It describes the project's functionality, and features of the web application, the web interface through which a user can access by using a secure personal account, and the entities that must guarantee satisfaction for the security constraints. This document is intended for both the user and the project development team. Throughout the description of the software system, the language, terminology or any acronyms used should be explained and remained consistent. In this document, "Color Me This" will sometimes be referred to as "the color recognition system" or "this web application".

1.2 Scope

The software system will be developed is called Color Recognition System or CRS. This application will be designed to ask a user to upload an image to help them with finding a right cosmetic shade. This system will be available for any user who is interested in makeup. In order to maximize the accuracy of the result, it will suggest a range of shades the user could choose from. After one has chosen a shade within the range, the result will come up with a tailored result, which is by suggesting recommended cosmetic products from the database. Then the user choose a product based on one's preference and budget. Each product will have a page with product description, how to use, ingredients and cruelty-free cosmetics label for the products that are have not tested on animals. After choosing the product, the user may add the product to favourites and or to the shopping cart and proceed to checkout.

The CMT will allow any user to create an account. During the process of uploading an image, the user have the option to become a member of the CMT. User has a permit to access to browse, search, select, add products to favorites or add products to a shopping cart. After checking out products in the shopping cart, the stock will be decremented from the inventory the CMT database

system maintains. Administrators manage the inventory with create, read, update, delete (CRUD) functionality for cosmetic products in the system. While users may manage their favourites and cart also with CRUD. CMT provides an automated email when sending an order. Once it is processed, the order confirmation, ETA, receipt, and tracking number of the parcel. For administrators, a notification will be received once products are low in stock.

The CMT will have constraints for the checkout. The checkout system has a credit card validation page to validate credit cards but it does not have full credit card processing capabilities. Though there will be no actual order of cosmetic products and order completion, the summary of order confirmation and tracking number will be provided. User information such as password, order history, user's mode of payment and past activity will be highly encrypted.

1.3 Definitions, acronyms, and abbreviations

CMT	Color Me This
CRS	Color Recognition System
Checkout	A process at which an product gets purchased by a user
CRUD	Create, Read, Update, Delete
Inventory	A quantity of products held in stock available for purchase by the user
Reorder	The process administrators should manually do when the automated email says to order new stock of an product
ETA	Estimated time of arrival
XRef	A field in the use case that corresponds to the functional requirements and vice versa.

1.4 References

Blossom, A., Gebhard, D., Emelander, S., & Meyer, R. (n.d). Book E-Commerce System. Retrieved on November 2, 2018 from http://www.cse.msu.edu/~chengb/RE-491/Papers/SRS-BECS-2007.pdf

Güçlükol, A., Paçacı, A., Taze, M., & Arslanhan, S. (n.d). Software Requirement Specification for Web Based Integrated Development Environment. Retrieved November 2, 2018 from http://user.ceng.metu.edu.tr/~e1679216/documents/SRS.pdf

Lister, J. (n.d). Logical and Physical Database Requirements. Retrieved on October 31, 2018 from https://smallbusiness.chron.com/logical-physical-database-requirements-34025.html

Goldsmith, R. (n.d). Using a Nonfunctional Requirements Template. Retrieved on October 26, 2018 from https://searchsoftwarequality.techtarget.com/tip/Using-a-nonfunctional-requirements-template-plus-examples

Spacey, J. (2017) 19 Examples of Non-Functional Requirements. Retrieved on November 3, 2018 from https://simplicable.com/new/non-functional-requirements

Dizparada. (n.d.). How a Good UI becomes a good UX. Retrieved on November 1, 2018 from https://medium.com/swlh/how-a-good-ui-becomes-a-good-ux-aa7e08a75cd

2.0 System Overview

The System Overview section introduces the system context and design.

2.1 Project Perspective

CMT is a web retailer application that is self-contained which is intended for people interested in makeup. Users are able to browse products with descriptions and prices, and add products to the cart. In order to use the full functionality of the CMT service, a user is required to create an account and whenever a user registers, the data that was inputted by the user will be created in the database that will be used by the user to login.

For registered users, they will have the functionality to upload a picture that they would like to find a matching shade with CRS. The color recognition system only works with foundation, lipstick, and eyeshadow products. Users are may choose from the color swatches to find a shade that matches their makeup without uploading a picture. After using the service, they may purchase the product and or just add to their favourites that they can always modify.

2.2 System Context

The System Context describes the resulting software within the business case, including strategic issues in which the system is involved or which it specifically addresses.

It has been a problem for makeup consumers to find the right shade that they want without going to an actual store and trying the makeup individually but with CRS, it is possible. Color recognition system is a feature that allows user to find a matching shade of their uploaded file from the database. CMT has a color palette feature where users can select a specific color and the application gives them products with the closest shade that can help user choose effectively.

2.3 General Constraints

- Implements centralized database management system
- Web application only
- CRS will only be for foundation, lipstick, eyeshadow
- CMT only has three brands on their website
- The sales price is the retail price

2.4 Assumptions and Dependencies

Client:
It is assumed that the user could register, sign in, and use the CRS properly, and would be guaranteed with a secure session when purchasing and signing out with an Internet connection. It is also assumed that the web application could be navigated on any web browsers.

Provider:
It is assumed that the CMT will be working properly on a web server and CMT database system with an Internet connection.

Assumptions and Dependencies:

- The administrator cannot be a user.
- The administrator's username and password may be hard coded.
- CMT is going to use a web development platform in building the website
- CMT cater users from Canada only
- CRS is implemented using Python
- CRS is working and matches the desired shade by the user

3.0 Functional Requirements

This section describes specific features of the software project. If desired, some requirements may be specified in the use-case format and listed in the Use Cases Section.

3.1.1 Login

Use Case Name	Login
XRef	Section 3.2.1.1, Login, Section 3.2.2.1, Login
Trigger	The administrator or user tries to use the web application
Precondition	The web application should be running properly with an Internet condition.
Basic Path	**For administrator** 1. The administrator chooses to edit the web application. 2. The hard coded administrator

	credentials are entered. 3. The administrator clicks login button to proceed. 4. The main page is redirected to the administrator page. **For user** 1. The user prompts to login or is asked during the process of image upload. 2. The user enters an username and a password and click login. 3. The user has access to use the web application.
Alternative Paths	None
Postcondition	The main page is redirected to the other page.
Exception Paths	The login error might occur. (e.g. username invalid, password invalid)
Other	Username should be an email address.

3.1.2 Logout

Use Case Name	Logout
XRef	Section 3.1.1.2, Logout, Section 3.2.2.2, Logout
Trigger	The administrator or user attempts to logout or The user is inactive for a given amount of time
Precondition	The administrator or user should be logged in.
Basic Path	**For general use** 1. The administrator or user clicks the logout button. 2. The administrator is logged out

	and the page redirects to the main page.
Alternative Paths	**For the inactive user** 1. The user is inactive for certain amount of time. 2. The user gets logged out automatically. 3. The main page is being shown.
Postcondition	The main page will appear.
Exception Paths	None
Other	None

3.1.3 Browse Product

Use Case Name	Browse Product
XRef	Section 3.2.1.3, Browse Product, Section 3.2.2.6, Add Product to Favourites, Section 3.2.2.7, Add Product to Shopping Cart
Trigger	The administrator or user clicks Product on the top navigation bar.
Precondition	None
Basic Path	1. The administrator or user clicks product on the top navigation bar. 2. The administrator or user then clicks the desired category they want to browse. 3. A page with a list of products with a drop-down filter to narrow down the result. 4. When a product is clicked, description, how to use, ingredients and the cruelty free label if it is a vegan product.

Alternative Paths	**Alternative Path 1:** 1. The user attempts to upload a image of their skin tone. 2. The user gets to see a suggested list of product after they choose a shade from a range of shades. 3. The user clicks a product to see the product's description and how to use. 4. The user may *add product to shopping cart* or *add product to favorites.* **Alternative Path 2:** 1. The administrator or user looks up by entering the keyword on the search bar. 2. The result will appear with an applicable drop-down filter. 3. The administrator or user may *browse product*. 4. The user may *add product to shopping cart* or *add product to favorites.*
Postcondition	Product page will appear.
Exception Paths	The administrator or user may click to go to the another page at any time.
Other	None

3.1.4 Search Product

Use Case Name	Search Product
XRef	Section 3.2.2.4, Search Product, Section 3.2.1.3, Browse Product, Section 3.2.2.6, Add Product to Favourites, Section 3.2.2.7, Add Product to Shopping Cart

Trigger	The user inputs a text on the search bar.
Precondition	None
Basic Path	1. The administrator or user enters a keyword on the search bar and click search. 2. The result will appear with an applicable drop-down filter. 3. The administrator or user may *browse product*. 4. The user may *add product to shopping cart* or *add product to favorites.*
Alternative Paths	None
Postcondition	Product page will appear with the results.
Exception Paths	The administrator or user may abandon this option at any time.
Other	None

3.1.5 Send Email

Use Case Name	Send Email
XRef	Section 3.2.1.6, Send Email, Required for Section 3.2.2.8, Checkout
Trigger	**For the administrator:** ● The administrator is notified by an automated email when a product in the inventory is running low on stock. **For the user:** ● An order confirmation email is sent to the user for the successfully purchased product(s). ● After the trigger #2, an email

	with the tracking number is sent to the user when the product is being shipped.
Precondition	**For the administrator:** ● An item should be low on stock. **For the user:** ● A user must purchase a product successfully.
Basic Path	**For the administrator:** ● The administrator is notified by an automated email when a product in the inventory is running low on stock ● The administrator orders new stock of the product. ● The stock quantity increments by the amount of the product ordered. **For the user:** ● An order confirmation email will be sent to the user for the successfully purchased product(s). ● The user may keep the email as a proof of payment. ● After the trigger #2, an email with the tracking number will be sent to the user when the product is being shipped. ● The user goes to a shipping company website and track a parcel by the given tracking number.
Alternative Paths	None
Postcondition	The email is sent.
Exception Paths	None
Other	The email is always sent with a message “Please don’t reply to this

	email. This email address is not monitored”.

3.1.6 Register

Use Case Name	Register
XRef	Section 3.2.2.5, Register, Section 3.2.2.1, Login
Trigger	The user clicks on the register button.
Precondition	None
Basic Path	The user clicks “Not A Member?” from the login page.
Alternative Paths	1. The user attempts to upload an image and the login page will appear as the result page is only shown for the members of CMT. 2. The user clicks Register button and enter the required information including username, first name, last name, address, password and confirm password. 3. If the password and confirm password match and if all the information is entered properly, the registration redirects to the main page. If not, the registration page reappears with an error message.
Postcondition	The user may login by entering the correct username and password.
Exception Paths	None
Other	The user is required to enter all the required information.

3.1.7 Add Product to Favourites

Use Case Name	Add Product to Favourites
XRef	Section 3.2.2.6, Add Product to Favourites, Section 3.2.2.7, Add Product to Shopping Cart, Section 3.2.2.4, Search Product, Section 3.2.1.3, Browse Product
Trigger	The user clicks the add to favourite button.
Precondition	The user should be logged in.
Basic Path	1. After *Search Product* and/or *Browse Product*, The user selects the products and click “Add to Favorites”. 2. The user can see their favorite page by clicking the favorites button on the my account page.
Alternative Paths	The products from the favorite page could be moved to the shopping cart by clicking the “Add to Shopping Cart” button.
Postcondition	The products selected are added to favorites.
Exception Paths	None
Other	The products on the favorites pages can be deleted by the user any time.

3.1.8 Add Product to Shopping Cart

Use Case Name	Add Product to Shopping Cart
XRef	Section 3.2.2.7, Add Product to Shopping Cart, Section 3.2.2.6, Add to Favourites, Section 3.2.2.4, Search Product, Section 3.2.1.3, Browse Product, Section 3.2.2.8, Checkout
Trigger	The user clicks the add to shopping cart button.

Precondition	The products are added to the shopping cart.
Basic Path	1. After *Search Product* and/or *Browse Product*, The user selects the products and click “Add to Shopping Cart”. 2. The user can see their shopping cart page by clicking the cart button on the top navigation bar. 3. The user may proceed to checkout.
Alternative Paths	The user may move a product from favourites to the shopping cart to purchase the product.
Postcondition	The products selected are added to the shopping cart.
Exception Paths	It cannot be added to the cart if the product is out of stock
Other	None

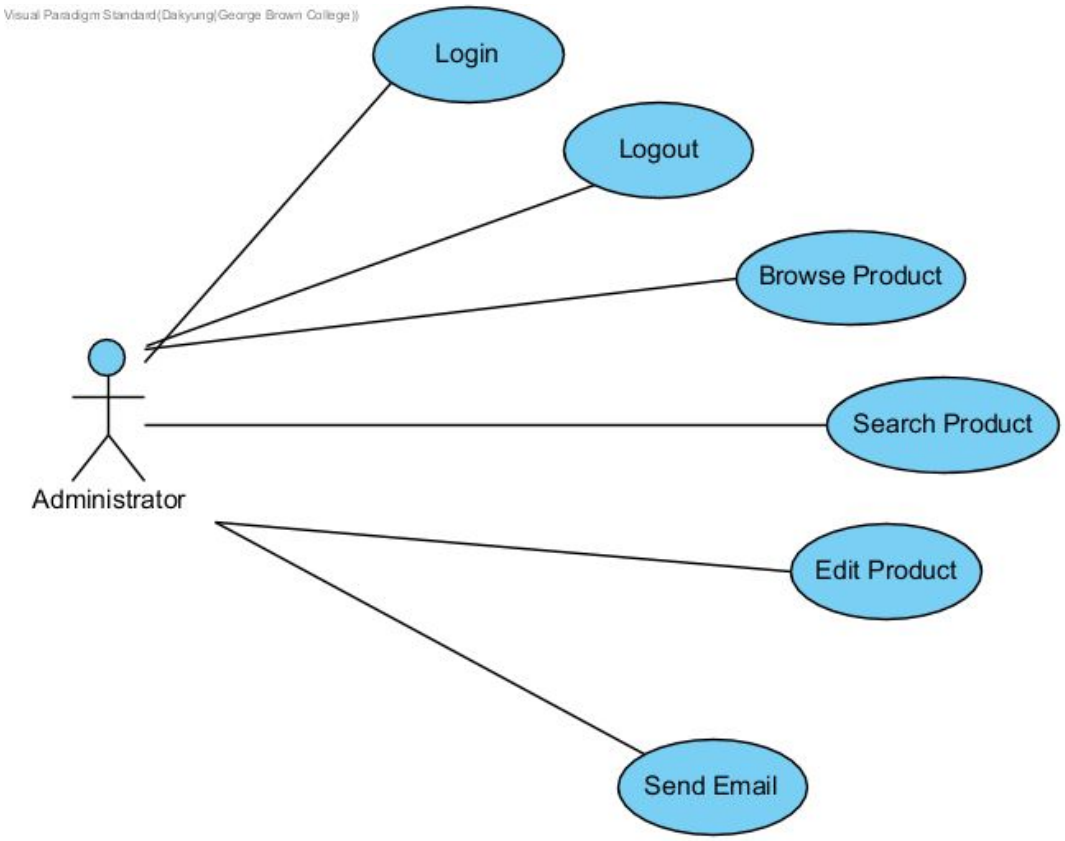
3.1.9 Checkout

Use Case Name	Checkout
XRef	Section 3.2.2.8, Checkout, Section 3.2.2.7, Add Product to Shopping Cart, Section 3.2.1.6, Send Email
Trigger	The user clicks on the proceed to checkout on the shopping cart page.
Precondition	The user should be logged in and should have products on the shopping cart.
Basic Path	1. The user clicks checkout button. 2. The address page will show up for shipping. 3. The user enters their address

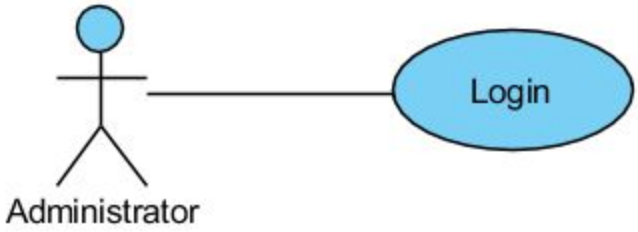
	and click submit. 4. The credit card validation page will show up and the user enters their credit card information. 5. When the payment is successful, the user will get an order confirmation email.
Alternative Paths	None
Postcondition	The user will get an automated order confirmation email.
Exception Paths	None
Other	The email is always sent with a message “Please don’t reply to this email. This email address is not monitored”.

3.2 Use Cases

3.2.1 Administrator Use Cases



Use Case 3.2.1.1: Login
Diagram:



Brief Description:
The administrator would be asked to login to manage the CMT's database system and the web server.
Initial Step-By-Step Description:

1. The administrator enters the hard coded username and password and click login.
2. The web application redirects to the administrator page.

Use Case 3.2.1.2: Logout

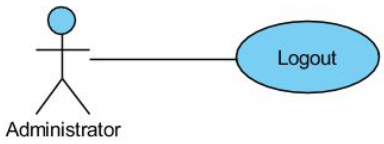
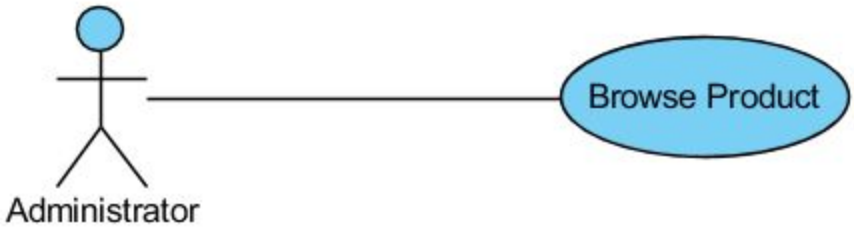


Diagram:
Brief Description:
The administrator would like to logout after the work is done.
Initial Step-By-Step Description:

1. The administrator or user clicks logout button.
2. The administrator or user is logged out and the web application redirects to the main page.

Use Case 3.2.1.3: Browse Product

Diagram:



Brief Description:
Lists of cosmetic products that are available to browse by both administrator and user.
Initial Step-By-Step Description:

1. The administrator clicks product on the top navigation bar.
2. The administrator then clicks the desired category they want to browse.
3. A page with a list of products with a drop-down filter to narrow down the result.

Use Case 3.2.1.4: Search Product

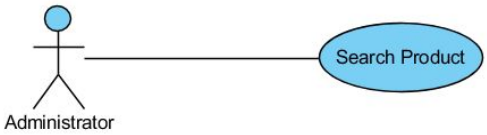


Diagram:
Brief Description:
All products from CMT can be searched by both administrator and user.
Initial Step-By-Step Description:

1. The administrator or user enters a keyword on the search bar.
2. Then the administrator or user clicks search and relevant products will be shown.

Use Case 3.2.1.5: Edit Product

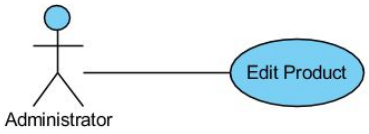


Diagram:
Brief Description:
The administrator could update and/or delete and/or add products on the CMT web application.
Initial Step-By-Step Description:

1. On the administrator page, the administrator clicks Create, Update, or Delete button to edit products.
2. The administrator clicks save at the bottom of the page to save the change.
3. Then the administrator goes back to the the product page or any desired pages to check if the change has been made successfully.

Use Case 3.2.1.6: Send Email

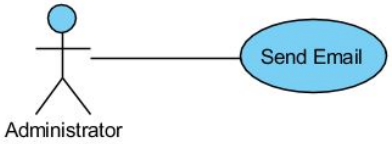
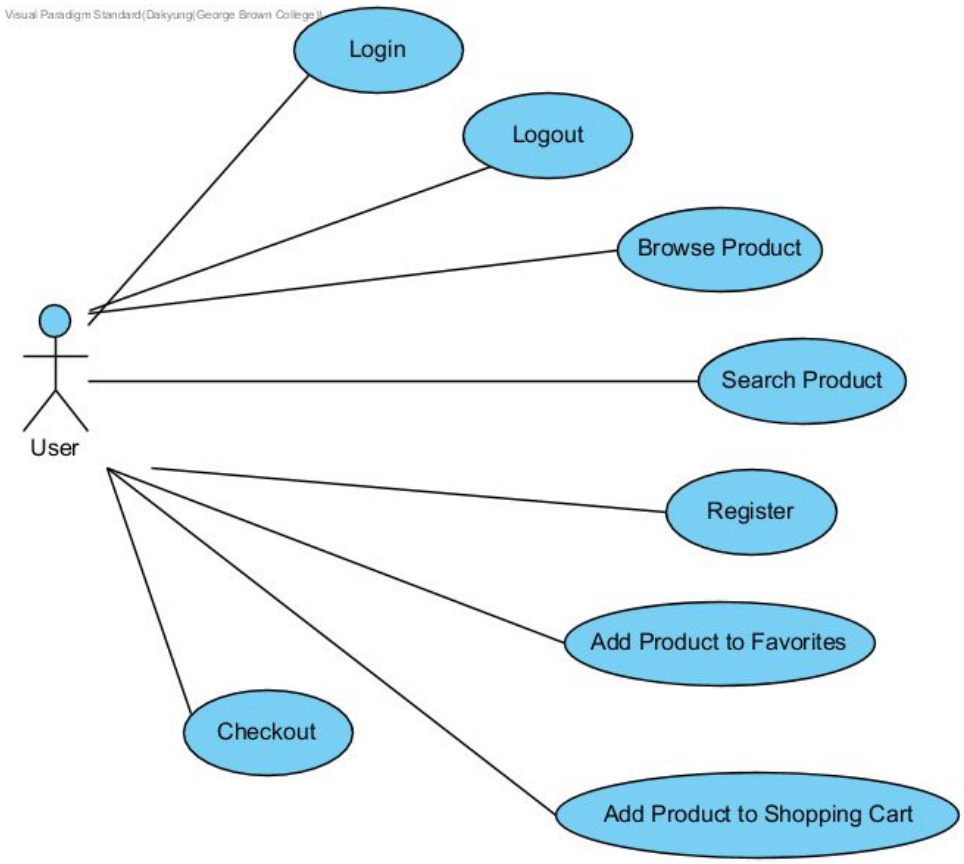


Diagram:
Brief Description:
The automated email functionality is called by certain situations when an email needs to be sent to the user or administrator.
Initial Step-By-Step Description:
The automated email functionality is called in following situations:

- The order confirmation email is sent when the user successfully purchases a product.
- An email with a tracking number is sent to the user when the shipping is on process.
- A notification email is sent to the administrator when an product is running low on stock.

3.2.2 User Use Cases



Use Case 3.2.2.1: Login

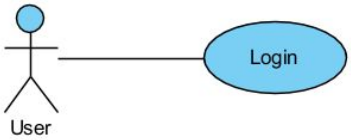


Diagram:
Brief Description:
The user will be asked to enter their username and password during the process of image upload and click login button in order to proceed.
Initial Step-By-Step Description:

1. The user chooses to sign in or is asked to sign in during the process of image upload.
2. The user enters their username and password and click login to proceed.

Use Case 3.2.2.2: Logout

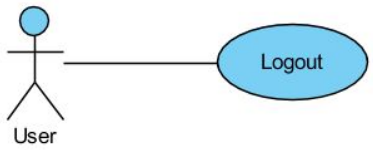


Diagram:
Brief Description:
The user will be automatically logout when they are inactive for a certain amount of time. The user also have an option to logout.
Initial Step-By-Step Description:

1. The user is inactive for a certain amount of time or the user chooses to logout. For the latter, the user should click logout button.
2. The user is logged out and the main page will appear.

Use Case 3.2.2.3: Browse Product

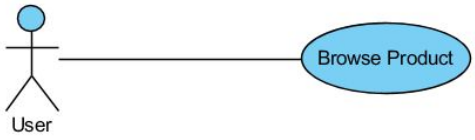


Diagram:
Brief Description:
Lists of cosmetic products that are available to browse by both administrator and user.
Initial Step-By-Step Description:

1. The user clicks product on the top navigation bar.
2. The user then clicks the desired category they want to browse.
3. A page with a list of products with a drop-down filter to narrow down the result.

Use Case 3.2.2.4: Search Product

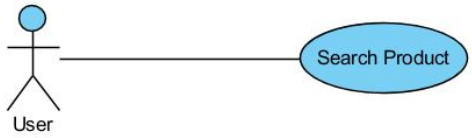


Diagram:
Brief Description:

All products from CMT can be searched by both administrator and user.

Initial Step-By-Step Description:

1. The administrator or user enters a keyword on the search bar.
2. Then the administrator or user clicks search and relevant products will be shown.

Use Case 3.2.2.5: Register

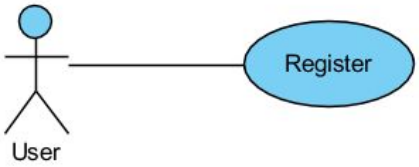


Diagram:

Brief Description:

Users can be registered as member of CMT by providing basic information.

Initial Step-By-Step Description:

1. The user clicks sign up page.
2. The user fills the information such as first and last name, address, phone number, username and password and etc.

Use Case 3.2.2.6: Add Product to Favorites

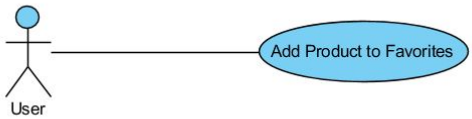


Diagram:

Brief Description:

Users are able to choose products to favorite pages for the check out or simply want to save their products.

Initial Step-By-Step Description:

1. The user clicks specific product.
2. The user clicks favorite button to save to his/her own page.

Use Case 3.2.2.7: Add Product to Shopping Cart

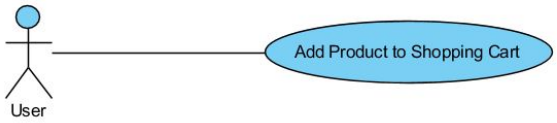


Diagram:

Brief Description:

Users are able to see cart page once they are successfully log in.

Initial Step-By-Step Description:

1. Once the user is successfully log in, he/she sees the cart button on the main page.
2. When the user clicks the specific product, the user is able to add the product to his/her own cart.
3. The user is able to add products to cart except sold out products.

Use Case 3.2.2.8: Checkout

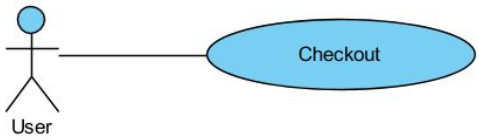


Diagram:

Brief Description:

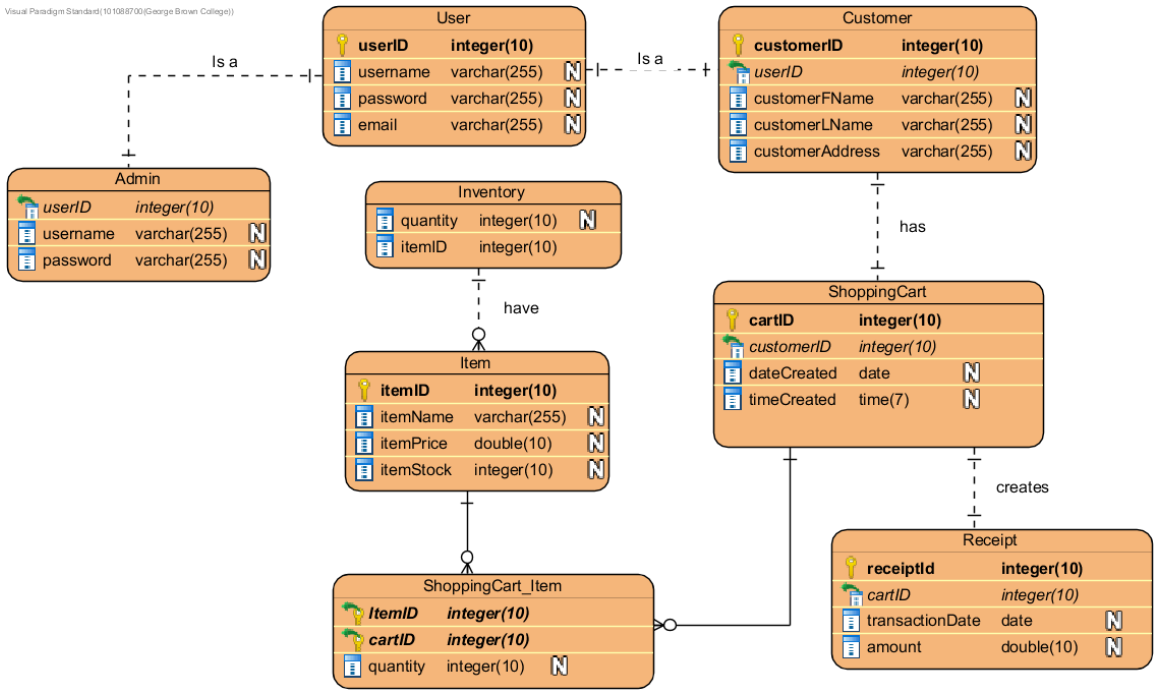
Users purchase the products from the cart by using credit card.

Initial Step-By-Step Description:

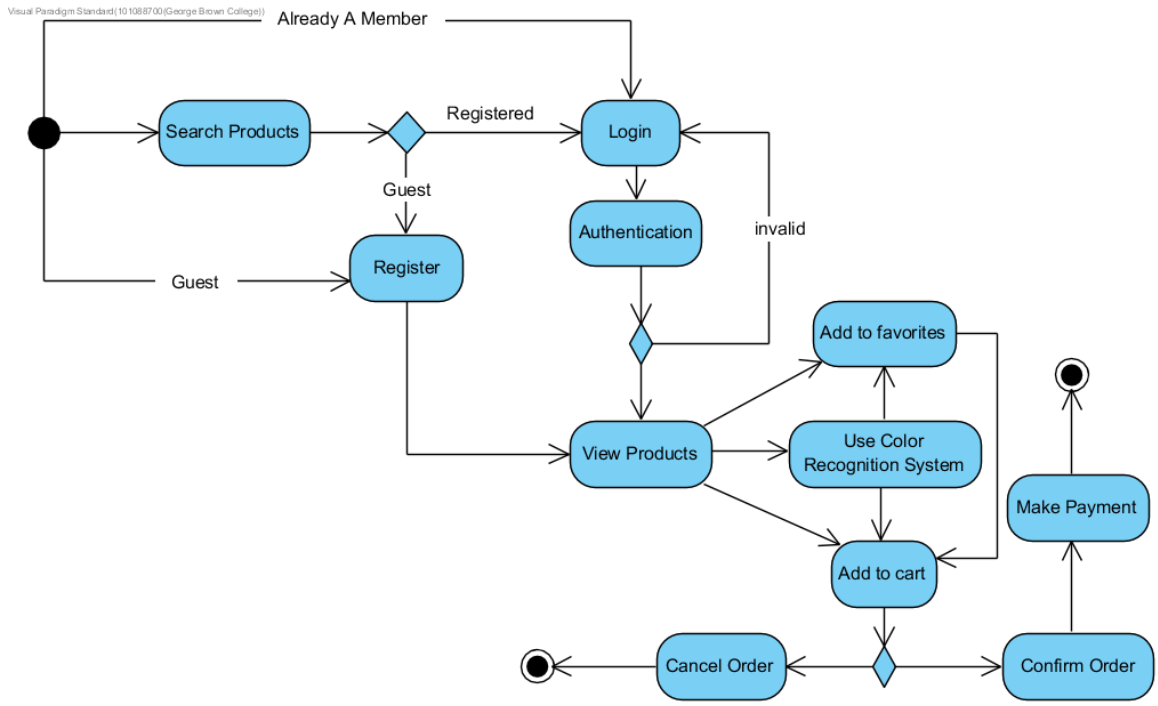
1. Once the user select product, he/she is able to fill information of billing address, shipping address.
2. The user fills the information of credit card.
3. Once the credit card is validated, the confirmation page will be provided, otherwise the error message will appear.

3.3 Data Modelling and Analysis

- Normalized Data Model Diagram

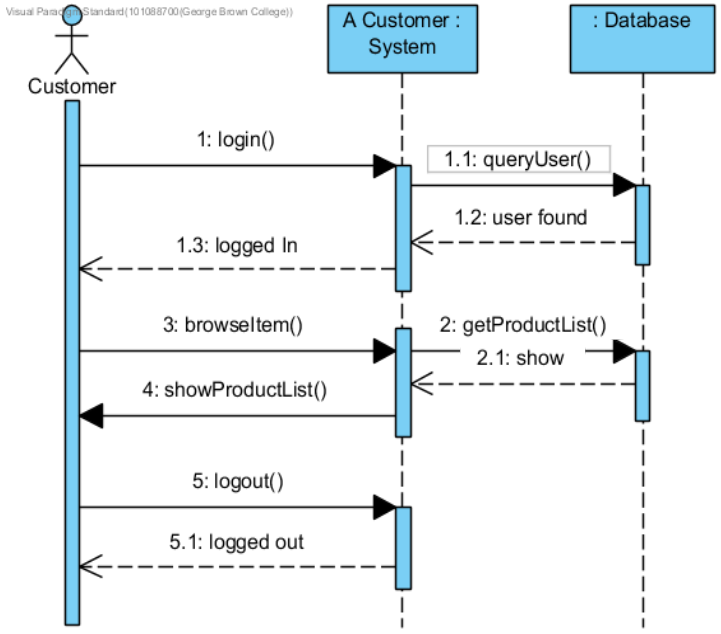


- Activity Diagrams

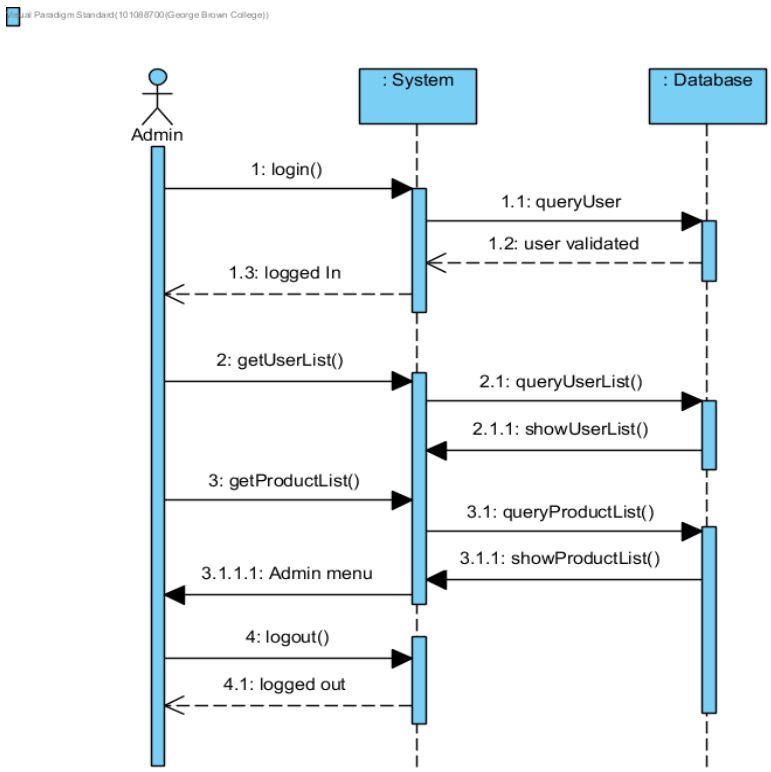


- Sequence Diagrams

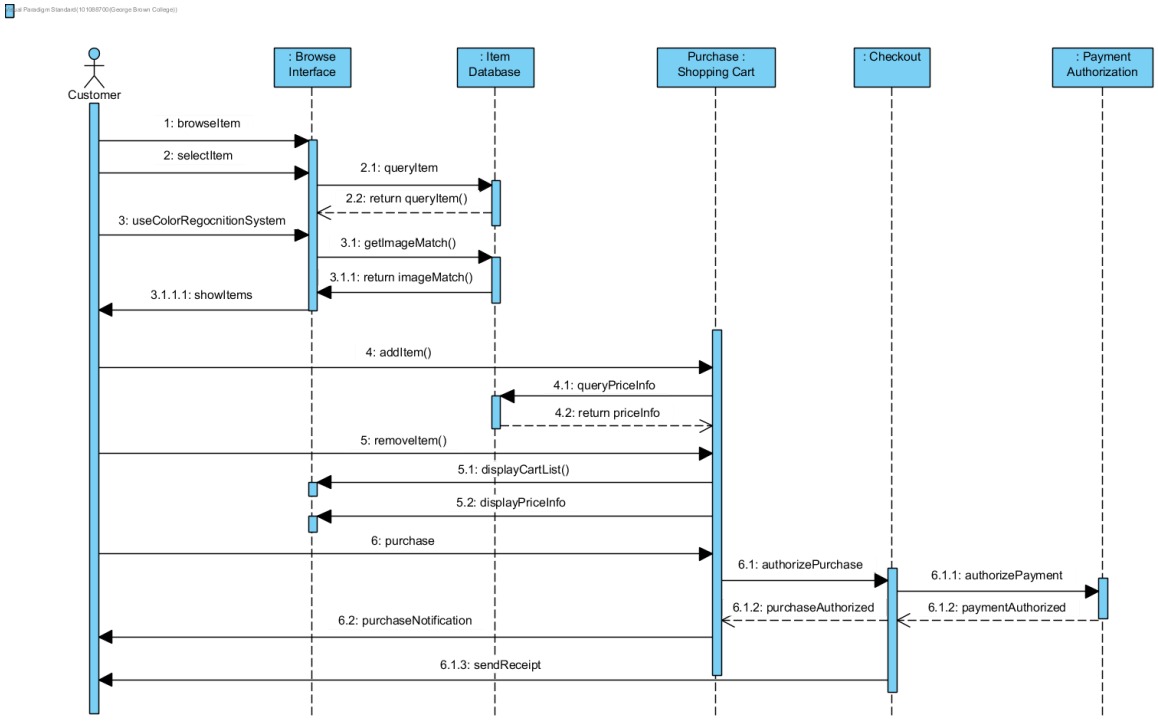
  - Customer Login Sequence Diagram



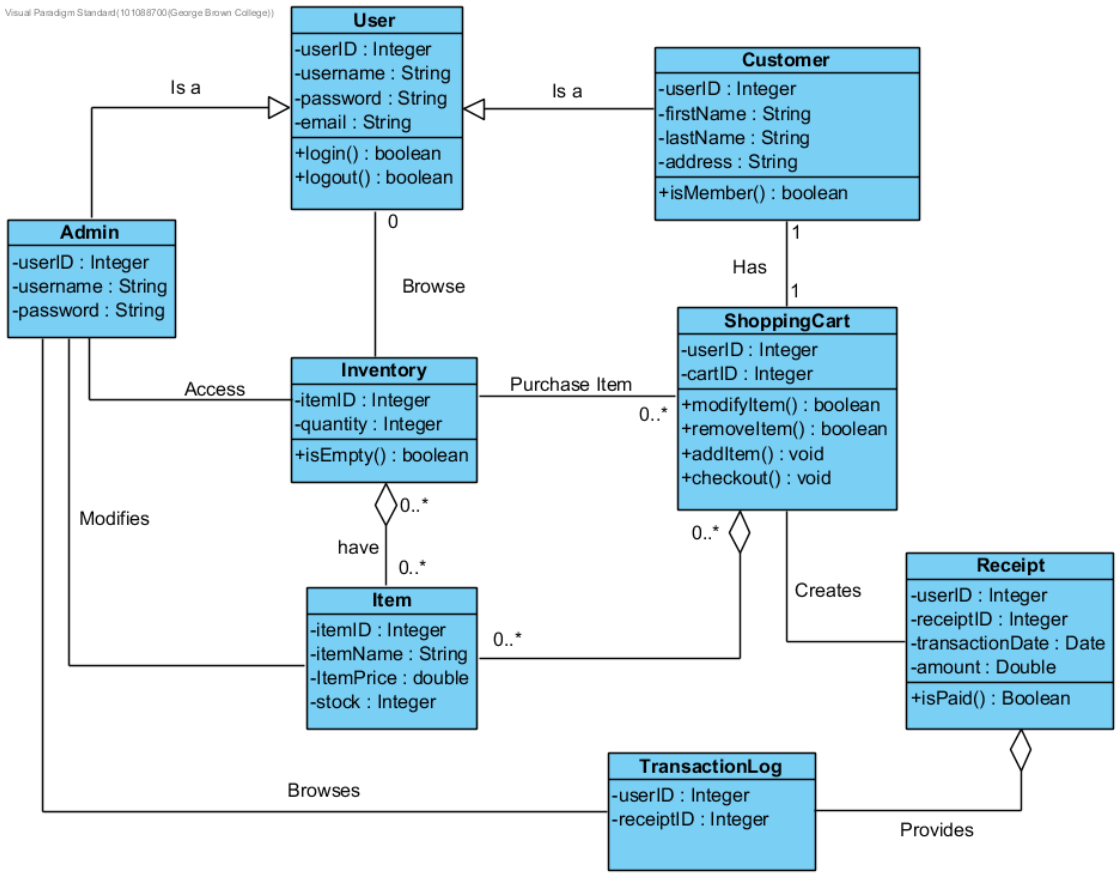
  - Admin Login Sequence Diagram



o Customer Purchase Sequence Diagram

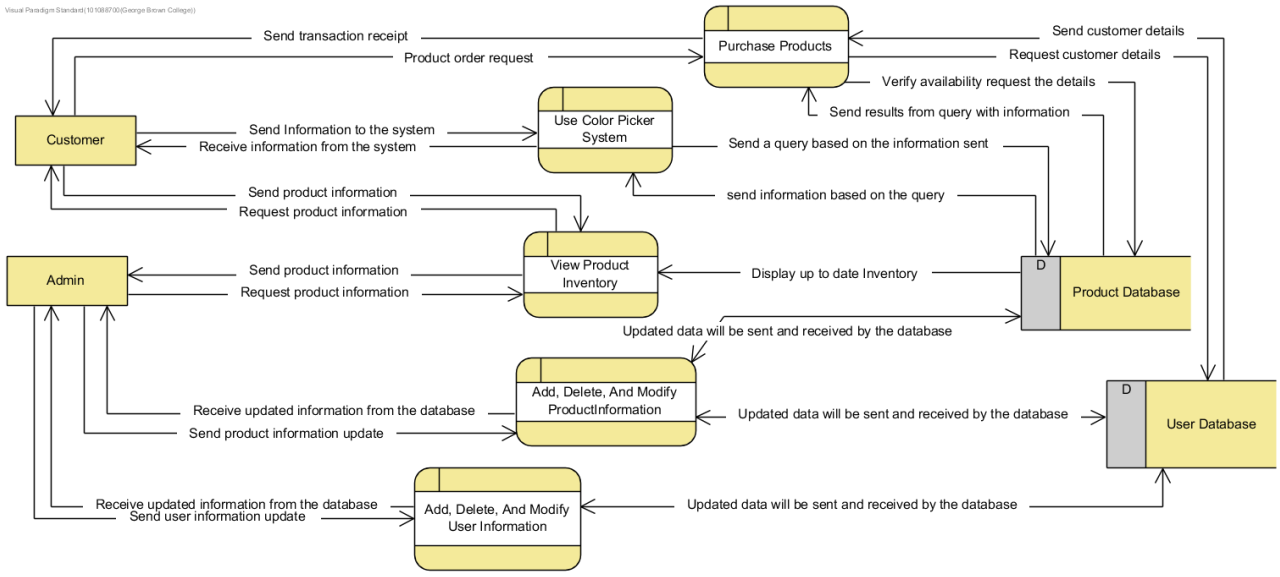


- UML Class Diagram



3.4 Process Modelling

- Data Flow Diagram



4.0 Non-Functional Requirements

4.1 Performance Requirements

The overall performance of CMT is expected to provide accurate result depends on images uploaded by customers. The meaning of accurate result in this case is to perform matching the closest shades between customer's image and image from the database. The response time will be moderate to determine customer's image and suggestion will be provided after the judgment.

4.2 Reliability Requirements

Our team will organize database for variety shades and products. Once CMT team successfully develops color recognition features and purchase option, the reliability of the program will be stable to provide services to all customers. CMT team is expected to see minor failure of recognizing shades other than major failure, which is not detecting shades at all. CMT team will keep tracking and testing codes and additionally receive advice from senior developers.

4.3 Usability Requirements

Providing the best user experience to all customers will be challenging to designers. The two major rules will be applied. First, in order to maximize usability, the interface should be simple and easy. Second, the whole interface tries to minimize the user effort to complete a task. CMT service is mainly focused in recognizing shades and suggesting the right products to all customers. The interface should be easy to upload image and provide simple, but accurate result of it.

4.4 Maintainability Requirements

Once CMT web application is completely established, the development team will constantly check major/minor errors. The team will provide three different types of companies that carry foundations, lipsticks and eye shadows and etc. Further business plans will be discussed such as adding and updating more products for customers.

5.0 Logical Database Requirements

To provide the best performance of the product, organizing database system is one of the most important key features that need to be done thoroughly. Since CMT is an e-commerce cosmetic web application that serves customers who would like to choose the right shades without wasting time and money. CMT will be focusing on collecting variety of shades from three different cosmetic companies. Various data will create accurate outcomes and fulfill customers' need and it will lead to stable and successful business in the current competitive market.

Since the major feature of CMT is color recognitions, all images will be saved as PNG format. User information and checkout system will be highly encrypted as well as administrative competence. All other data will be saved as text. The CMT database storage capacity will be kept in small. The CMT developers will limit the size of images from users to reduce minor crash and runtime. The data of products from three companies will hold most of storage. Retention of data will be easier as long as CMT team keep updating and retouching system to provide better service. Lastly, CMT team is currently working on resolving copyright issue with cosmetic companies. Designers and developers will provide the best service within a legal framework.

6.0 Approval

The signatures below indicate their approval of the contents of this document.

Project Role	Name	Signature	Date
Project Leader	Erika Kathleen Gilo	EKG	Nov. 5, 2018
System Designer	Dakyung Lee	Dakyung L	Nov. 5, 2018
Back-end Developer	Jamaeca Navarrete	JN	Nov. 5, 2018
Front-end Developer	Minji Kim	MJK	Nov. 5, 2018