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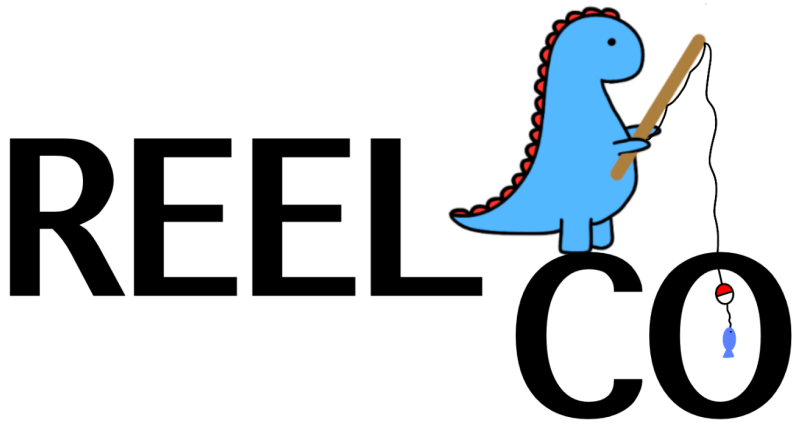
REEL COLOSET
Software Architecture Document

Version <1.3>



Revision History

Date	Version	Description	Author
<10/18/2022>	<1.0>	First Draft	Claire Thompson, Olivia Romig, Ron Heminway, Libby Miller, Elise Lovell, Emmy Richardson
<10/20/2022>	<1.1>	Continuing First Draft	Claire Thompson, Olivia Romig, Ron Heminway, Libby Miller, Elise Lovell, Emmy Richardson
<10/21/2022>	<1.2>	Finishing First Draft	Olivia Romig, Ron Heminway, Elise Lovell, Emmy Richardson, Claire Thompson
<10/21/2022>	<1.3>	Minor formatting fixes	Libby Miller

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Figures

Software Architecture Document

1. Introduction

1.1 Purpose

This document details an architectural overview of the system, using a number of different architectural views to depict different aspects of the system. It will describe the different architectural decisions that have been made regarding the system.

1.2 Scope

This Software Architecture Document provides an architectural overview of the REEL COLOSET (RC). RC allows consumers to create an account, input their city, and input the clothing items in their closet. Then RC will generate a daily outfit based on the weather of the city the consumer's account has inputted. This product is helpful for minimizing time selecting outfits as well as providing insightful advice for creating more functional outfits.

1.3 Definitions, Acronyms, and Abbreviations

See Glossary, which is the upedu_gloss_10-02.pdf document.

1.4 References

1. REEL COLOSET - Glossary
2. REEL COLOSET - Use Case Specification
3. REEL COLOSET - Supplementary Specification

1.5 Overview

The Software Architecture Document covers the different views of the architecture design as well as the basic design principles and ideas.

2. Architectural Representation

This document presents the architecture as a series of views; use case view, process view, deployment view, and implementation view. These views are presented with Unified Modeling Language (UML).

3. Architectural Goals and Constraints

The REEL COLOSET System to be developed will be a web application tool. It consists in three major components: A web browser (or client), a web application server, and a database server.

All components must be able to execute through Modern Web Browsers such as Chrome 106, Mozilla Firefox 106, Safari 14, and Microsoft Edge 105.

The server and the Database components should be located on the same host.

4. Use-Case View

The Use Case View is important input to the selection of the set of scenarios and/or use cases that are the focus of an iteration. It describes the set of scenarios and/or use cases that represent some significant, central functionality. It also describes the set of scenarios and/or use cases that have a substantial architectural coverage (that exercise many architectural elements) or that stress or illustrate a specific, delicate point of the architecture.

Refer to Use-Case Specifications document for more information - upedu_ucspec.pdf

4.1 Use-Case Realizations

Refer Use Case Realization document – upedu_ucrea.pdf

5. Logical View

This section describes the architecturally significant parts of the design model, such as its decomposition into subsystems and packages. And for each significant package, its decomposition into classes and class utilities.

5.1 Overview

This subsection describes the overall decomposition of the design model in terms of its package hierarchy and layers.

5.2 Architecturally Significant Design Packages

5.2.1 Design Model: Packages Diagram

The design model represents the structure and organizations of the RC system. Packages and corresponding classes are presented with a brief description

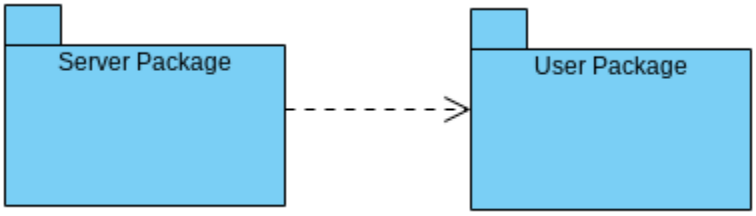

Figure 1: Design Model Package

5.2.2 Package Description

Server	
Description :	The main system package. All client queries are managed by this package.
Corresponding Classes :	RC Server
Relations :	Main RCS package. Dependant of: User
Sub-packages :	Users

User	
Description :	All information and methods regarding users are contained within this package.
Corresponding Classes:	Article Closet

	DailyOutfit Laundry User Weather
Relations:	Is a sub package of the main package Server.
Sub-packages :	None

5.2.3 Design Model: Class Diagram

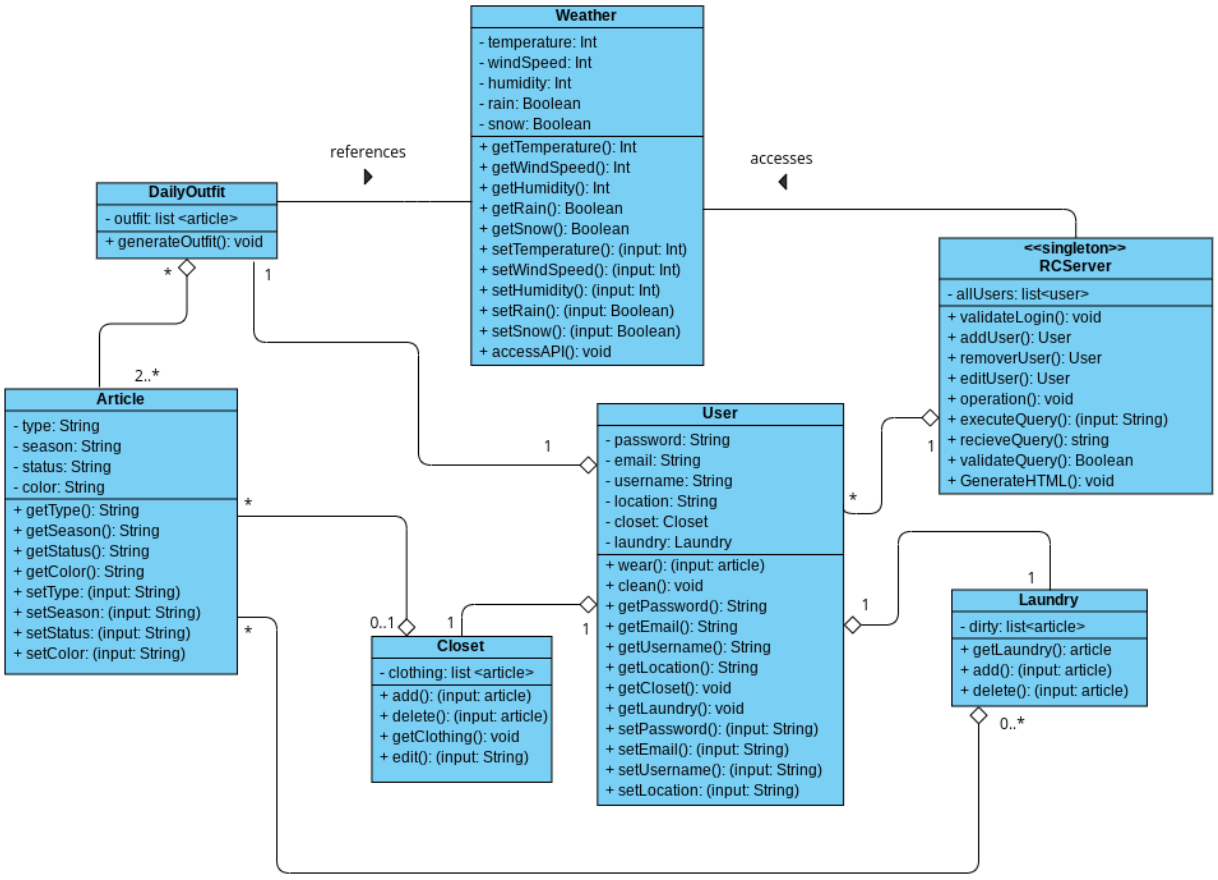

Figure 2: Class Model Diagram

5.2.4 Design Classes Description

Property	**Description**
Name	User
Description	Represents the User entity.
Responsibilities	Maintain and update all private User information.

Property	Description
	Update location of items in Closet and Laundry.
Relations	Aggregation to RCServer. The RCServer has 0 or more users. Aggregation with DailyOutfit, Closet, and Laundry. A user has 1 daily outfit, 1 closet, and 1 laundry basket.
Methods	wear(): Places a specific article of clothing into the laundry clean(): Gets all articles of clothing out of the laundry getPassword(): Retrieves password from server getEmail(): Retrieves password from server getUsername(): Retrieves username from server getLocation(): Retrieves location from server getCloset(): Retrieves list of articles in closet from server getLaundry(): Retrieves list of articles in closet from server setPassword(): Sets new password setEmail(): Sets new email setUsername(): Sets new username setLocation(): Sets new location
Attributes	password: The private variable for the user's password email: The private variable for the user's email username: The private variable for the user's username location: The private variable for the user's password closet: The public list of articles the user has in their closet laundry: The public list of articles the user has in their laundry
Special Requirements	None

Property	Description
Name	Closet
Description	Represents a Closet entity that will contain all Articles of clothing belonging to the User.
Responsibilities	Maintain the list of Articles in the Closet.
Relations	Aggregation to User. A Closet belongs to one user.
Methods	add(): Adds a new article of clothing into the Closet. delete(): Deletes an article of clothing from the Closet. getClothing(): Gets an article of clothing from the Closet. edit(): Edits an article of clothing in the Closet.
Attributes	clothing: The list of articles of clothing in the Closet.
Special	None

Requirements	

Property	**Description**
Name	Laundry
Description	Represents a Laundry entity and contains all Articles entities that have been worn.
Responsibilities	Maintain the list of Articles in the Laundry.
Relations	Aggregation to User. Each Laundry belongs to one user.
Methods	getLaundry(): Gets an article of clothing from the laundry. add(): Adds a new article of clothing into laundry. delete(): Deletes an article of clothing from laundry.
Attributes	laundry: The list of articles of clothing in laundry.
Special Requirements	None

Property	**Description**
Name	Weather
Description	Represents and keeps track of the current weather status.
Responsibilities	Interact with the weather API. Maintain accurate and current weather information.
Relations	Association with DailyOutfit and RCServer. Weather is referenced by DailyOutfit and Weather is accessed by RCServer.
Methods	getTemperature(): Returns the temperature getWindSpeed(): Returns the wind speed. getHumidity(): Returns the humidity getRain(): Returns whether it is raining or not. getSnow(): Returns whether it is snowing or not. setTemperature(): Modifies the temperature. setWindSpeed(): Modifies the wind speed. setHumidity(): Modifies the humidity. setRain(): Modifies the status of rain. setSnow(): Modifies the status of snow. accessAPI(): Sends a fetch request to the weather API and sets all attributes according to the data received.
Attributes	temperature: The temperature at the location of the user.

	windSpeed: The wind speed at the location of the user. humidity: The humidity at the location of the user. rain: The status of rain at the location of the user. snow: The status of snow at the location of the user.
Special Requirements	None

Property	**Description**
Name	RCServer
Description	Handels all interactions with the database.
Responsibilities	Maintain an updated list of users. Process and receive all queries from client to server and database.
Relations	Aggregation with User. A User interacts with one RCServer. Association with Weather. RCServer accesses Weather.
Methods	validateLogin(): Validates the login information of the user addUser(): Adds a user into the system removeUser(): Removes a user from the system editUser(): Modifies the information of a user operation(): executeQuery(): Executes a query receiveQuery(): Receives a query validateQuery(): GenerateHTML():
Attributes	allUsers: List of all users
Special Requirements	None

Property	**Description**
Name	Article
Description	Represents an article of clothing.
Responsibilities	Model an article entity and update the status of the Article.
Relations	Aggregation to DailyOutfit. DailyOutfit has 2 or more Articles. Aggregation to Closet. Closet has 0 or more Articles. Aggregation to Laundry. Laundry has 0 or more Articles.
Methods	getType(): Returns the type of clothing

	getSeason(): Returns the season of the article getStatus(): Returns the laundry status of the article of clothing getColor(): Returns the color of the article of clothing setType(): Modifies the type of clothing setSeason(): Modifies the season setStatus(): Modifies the laundry status of the article of clothing setColor(): Modifies the color of the article of clothing
Attributes	type: The type of clothing season: The season the item is worn in status: The current laundry status of the article of clothing, whether it is in the Laundry or Closet color: The color of the article of clothing
Special Requirements	None

Property	**Description**
Name	Daily Outfit
Description	Represents the daily outfit that will be recommended to the user.
Responsibilities	Create the daily generated outfit. Model the daily outfit entity. Interact with the weather API.
Relations	References the Weather. Aggregation to User. The User has 1 DailyOutfit.
Methods	generateOutfit(): Creates a randomly generated outfit
Attributes	outfit: A list of Articles making up the generated outfit
Special Requirements	None

6. Interface Description

The interface will be a website with buttons that the user can click on to navigate to different functions of the website. There is a button for logging in/logging out, create account, edit account, laundry list, closet list, and daily outfit. Once clicked the expected functionality will occur for the user. There will also be spaces for when clicked on the laundry list, closet list, and daily outfit will be presented on the webpage.

7. Size and Performance

The architecture for our system supports requirements for sizing and timing by using a client-server architecture. The user will access the system through an internet browser, and therefore minimal memory requirements will be needed from the client.

8. Quality

The software architecture supports the quality requirements, as stipulated in the Software Requirements Specification and Supplementary Specification.

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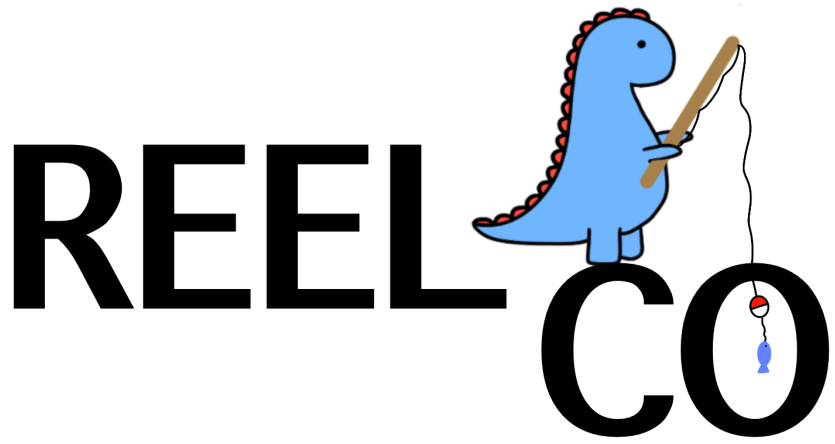
REEL COLOSET
Use-Case-Realization Specification

Version <1.3>



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Figures

Use-Case-Realization Specification

1. Introduction

The Use-Case Realization Specification includes the purpose, scope, definitions, acronyms, abbreviations, references, and overview of this Use-Case Realization Specification.

1.1 Purpose

This document provides a comprehensive overview of the system, using a number of different diagrams for representing the system functions.

1.2 Scope

This Use-Case-Realization Specification provides an overview of the REEL COLOSET (RC) use cases. RC allows consumers to create an account, input their city, and input the clothing items in their closet. Then RC will generate a daily outfit based on the weather of the city the consumer's account has inputted. This product is helpful for minimizing time selecting outfits as well as providing insightful advice for creating more functional outfits.

1.3 Definitions, Acronyms, and Abbreviations

See Glossary, which is the upedu_gloss_10-02.pdf document.

1.4 References

1. REEL COLOSET - Glossary
2. REEL COLOSET - Use Case Specification
3. REEL COLOSET - Supplementary Specification

1.5 Overview

The sections of the Use-Case Realization document describe use cases in terms of their flow of events, participant objects and corresponding diagrams.

2. USE CASE <Create Account>

2.1 Brief Description

Allows a new user to create an account for their own REEL COLOSET.

2.2 Flow of Events - Design

Upon navigating to the REEL COLOSET website the user can create an account.

2.3 Interaction Diagrams

- The user navigates to create an account on the website
- The user then inputs their email and creates a password which is stored in the database

2.3.1 Sequence Diagrams

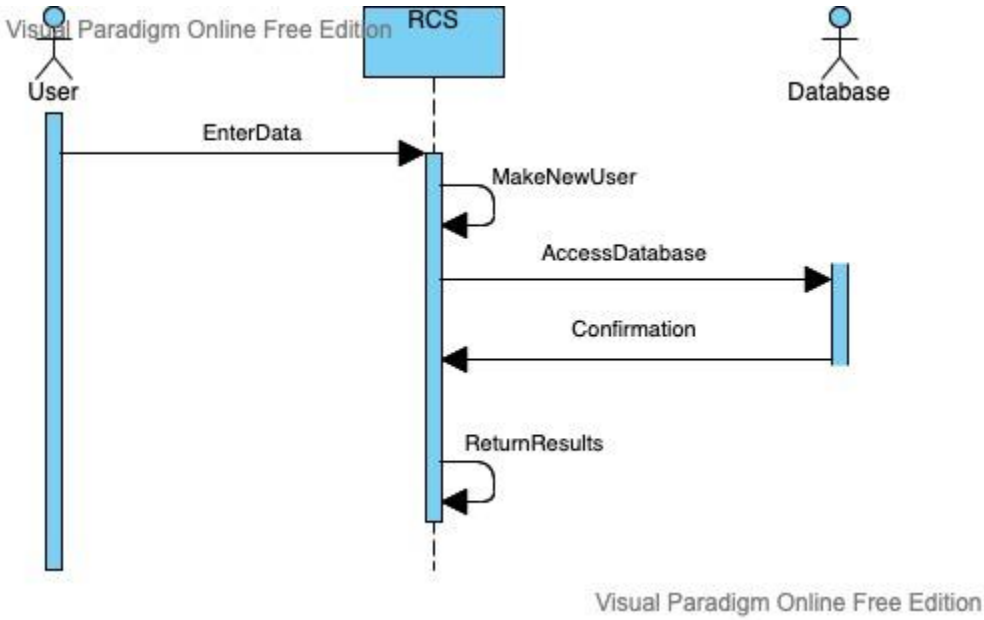

Figure 1: Sequence Diagram: Create Account

2.3.2 Participating objects

Object	Description
REEL COLOSET SYSTEM (RCS)	This object will make a new user, send a request to access the database, and return the results of account creation.

2.4 Class Diagrams

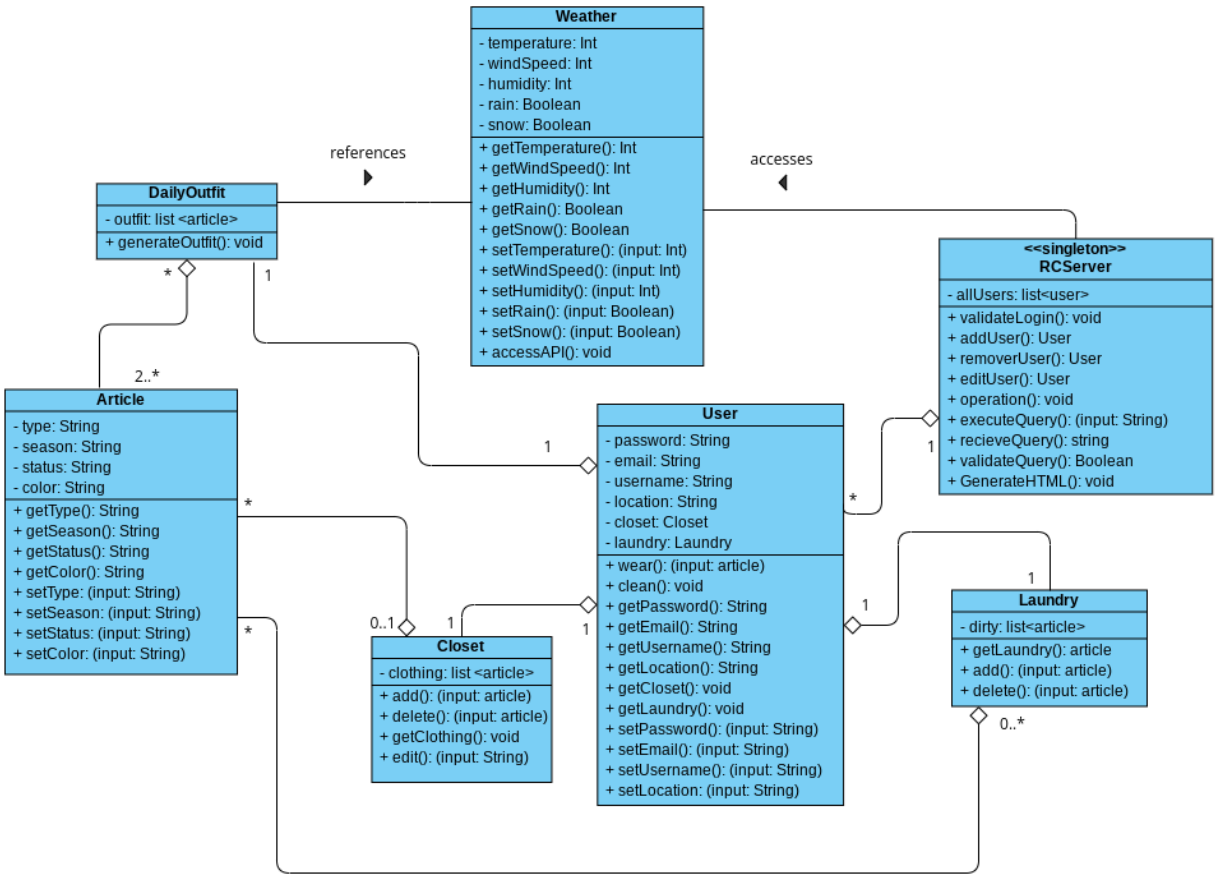

Figure 2: REEL COLOSET Class Diagram

2.5 Object Diagram

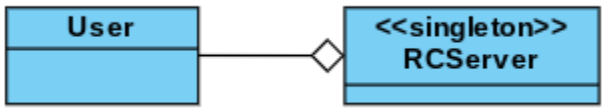

Figure 3: Object Diagram: Create Account

2.6 Derived Requirements

A derived requirement is security of the accounts once they are created. Reliability and availability of being able to access your account when the user wants to regardless of the time of day.

3. USE CASE <Daily Outfit>

3.1 Brief Description

The daily outfit is generated utilizing the weather API and the closet data stored on the database management system.

3.2 Flow of Events - Design

The daily outfit is created by the REEL COLOSET System (RCS). The RCS fetches the weather data from the API and then uses the weather data to retrieve the appropriate clothing lists from the closet database. After receiving the clothing lists the RCS generates an outfit and then displays the outfit page.

3.3 Interaction Diagrams

- The RCS sends a fetch for the weather data from the API
- Then using the weather data the RCS requests appropriate clothing lists from the database
- Then using the clothing lists the outfit is generated
- Then the RCS displays the outfit on the webpage

3.3.1 Sequence Diagrams

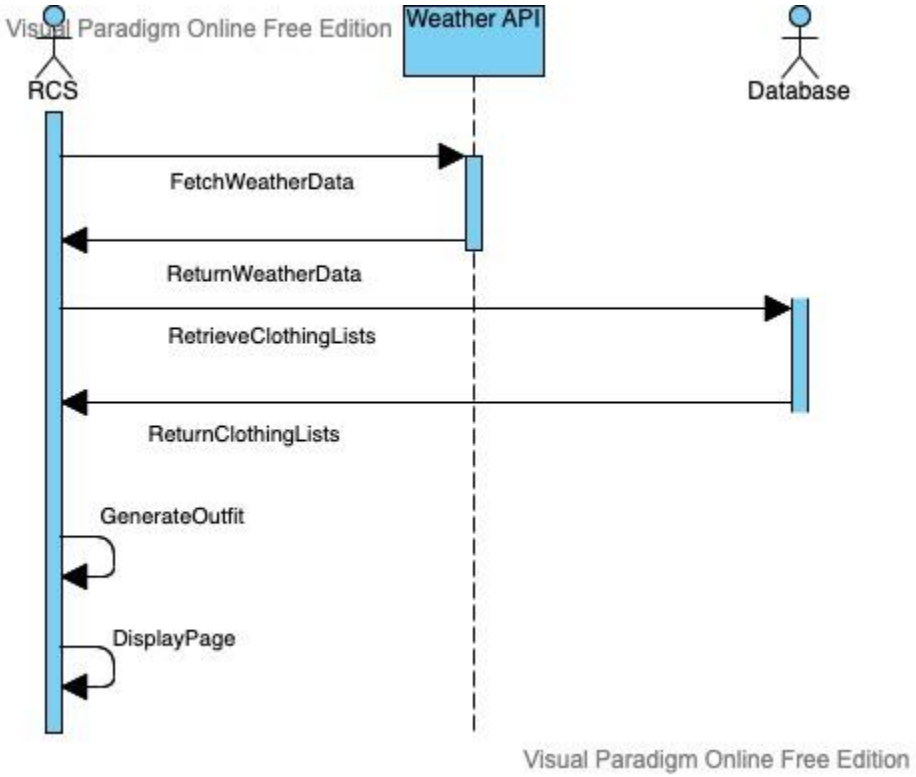

Figure 4: Sequence Diagram: Daily Outfit

3.3.2 Participating objects

Object	Description

RCS	This object fetches the weather data, retrieves clothing lists, generate outfit, and displays outfit page.
Weather API	This object returns the weather data.

3.4 Class Diagrams

See Figure 2

3.5 Object Diagram

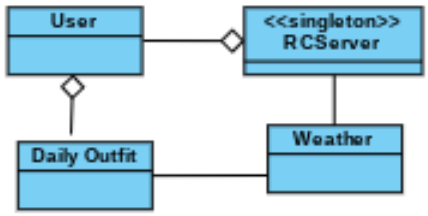

Figure 5: Object Diagram: Daily Outfit

3.6 Derived Requirements

Performance of being able to access your daily outfit when the user wants it and not having to wait for it to be created.

4. USE CASE <Laundry>

4.1 Brief Description

The consumer's laundry is tracked in the database based on what clothes they wear each day.

4.2 Flow of Events - Design

The laundry is a list in the database of articles of clothing, the RCS system can retrieve the laundry and display the laundry list to the user.

4.3 Interaction Diagrams

- The user clicks on the laundry tab to see their laundry
- The RCS retrieves the laundry list from the database
- The RCS displays on the webpage for the user to see their laundry list

4.3.1 Sequence Diagrams

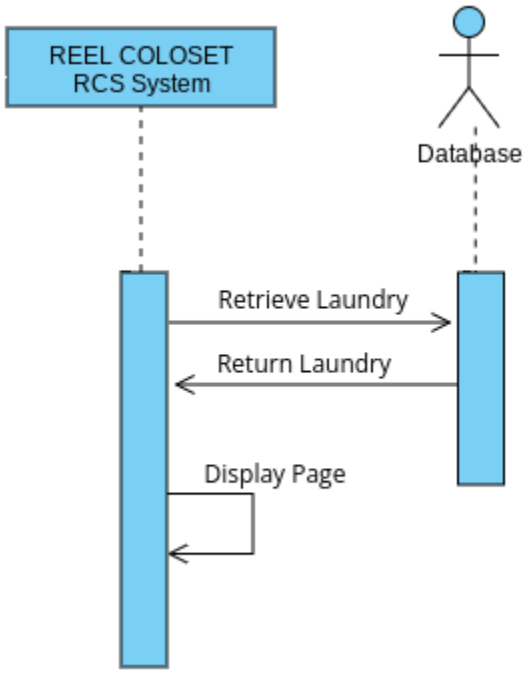

Figure 6: Sequence Diagram: Laundry

4.3.2 Participating objects

Object	Description
RCS	This object retrieves the list of laundry and displays the returned result.

4.4 Class Diagrams

See Figure 2

4.5 Object Diagram

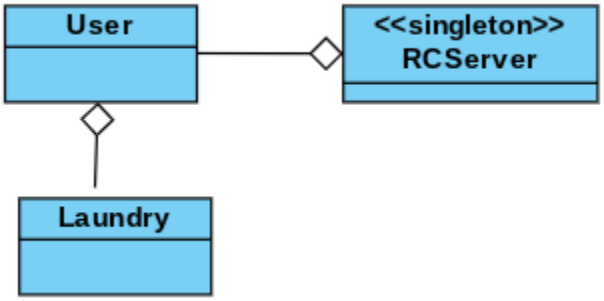

Figure 7: Object Diagram: Laundry

4.6 Derived Requirements

Scalability of being able to have the storage in the database for the laundry list.

5. USE CASE <Edit Profile>

5.1 Brief Description

This function lets the consumer edit the city they want clothing recommendations for as well as edit the originally stated profile information.

5.2 Flow of Events - Design

The consumer selects the edit profile section on the application and changes their previous inputs for location and general profile information, such as username and password.

5.3 Interaction Diagrams

- The user interacts with the edit profile tab
- The user chooses the information they would like to edit
- The user edits the information which is then changed in the database

5.3.1 Sequence Diagrams

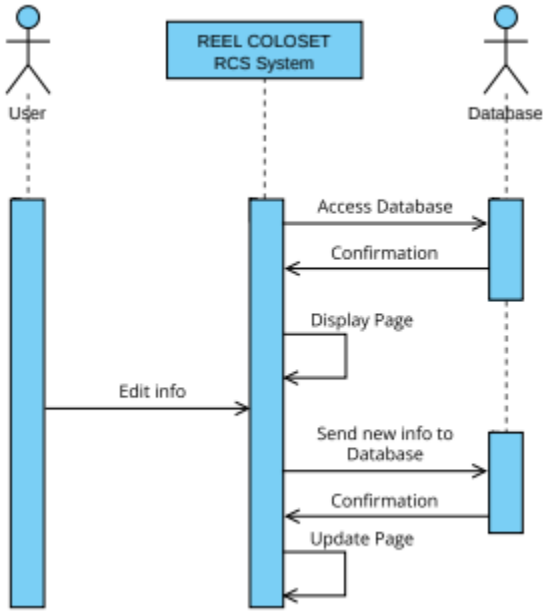

Figure 8: Sequence Diagram: Edit Profile

5.3.2 Participating objects

Object	Description
RCS	This object will access the database, receive confirmation from the database, display the profile, send new information to the database, and update the page with the edited profile.

5.4 Class Diagrams

See Figure 2

5.5 Object Diagram

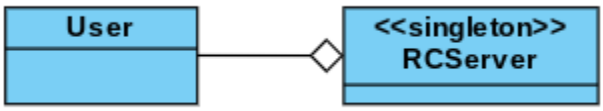

Figure 9: Object Diagram: Edit Profile

5.6 Derived Requirements

The derived requirements are the security of the accounts and the edited/updated information, and the performance of updating the account that the user can use right after editing their profile.

6. USE CASE <Closet>

6.1 Brief Description

The consumer can input the items in their closet for the daily outfit to pick from items in their actual closet.

6.2 Flow of Events - Design

The closet stores lists of clothing in the database, the RCS retrieves the closet from the database, and then displays the closet.

6.3 Interaction Diagrams

- The user can request to see the list of their closet
- The RCS retrieves the closet list
- Then the RCS displays the closet for the user to see on the webpage

6.3.1 Sequence Diagrams

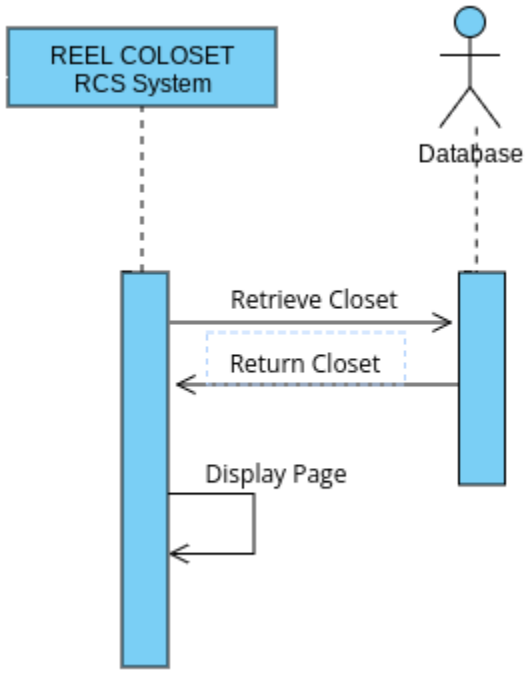

Figure 10: Sequence Diagram: Closet

6.3.2 Participating objects

Object	Description
RCS	This object retrieves the list of clothing in the closet and displays the returned result.

6.4 Class Diagrams

See Figure 2

6.5 Object Diagram

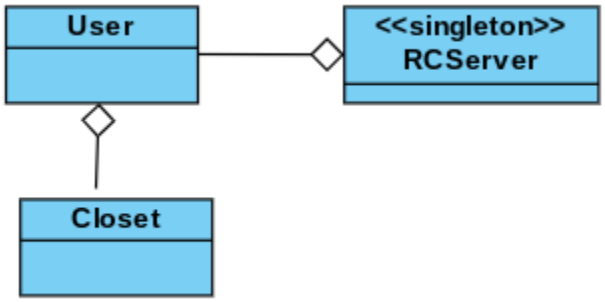

Figure 11: Object Diagram: Closet

6.6 Derived Requirements

The scalability of the closet to include however many clothes is in the user's closet and not running out of space. The usability, reliability, and availability of being able to access the closet and add/delete clothes in a timely and reasonable manner.

7. USE CASE <Login/Logout>

7.1 Brief Description

Login/Logout facilitates the consumer to execute their desired event when leaving or entering their account through the login/logout system.

7.2 Flow of Events - Design

The user provides their username and password and submits the form. Data is validated and login process is activated. The user exits the application by using the appropriate End Session button. Query is validated and logout process is activated.

7.3 Interaction Diagrams

- The RC sends the query to the login/logout system for validation
- The login/logout system returns the status of being logged in or logged out

7.3.1 Sequence Diagrams

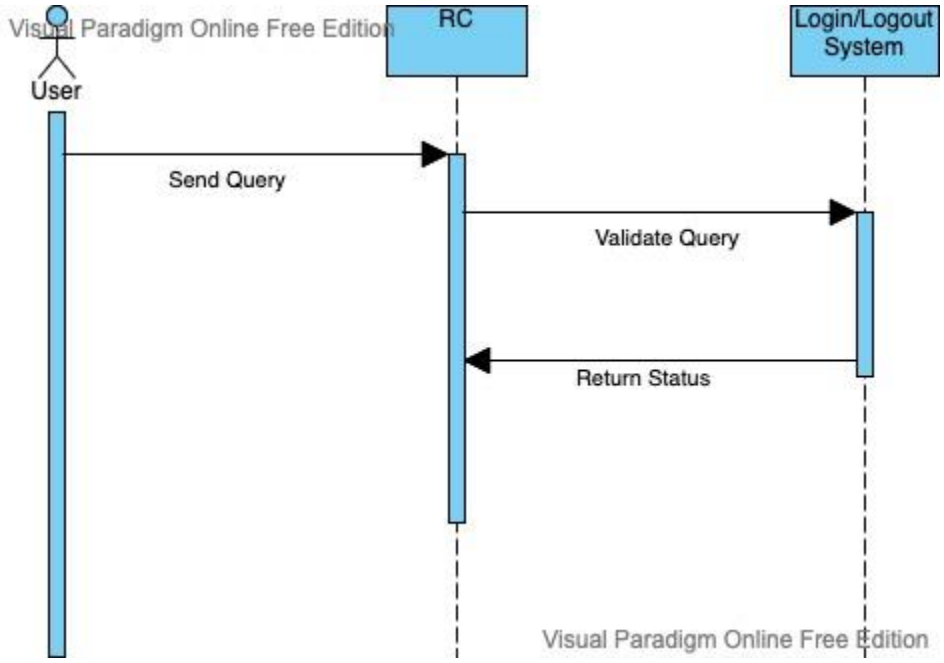

Figure 12: Sequence Diagram: Login/Logout

7.3.2 Participating objects

Object	Description
Login Logout System	Handles the execution of logging in and logging out in reference to the database.
REEL COLOSET (RC)	The user sends the query to the RC system and it accepts the return status.

7.4 Class Diagrams

See Figure 2

7.5 Object Diagram

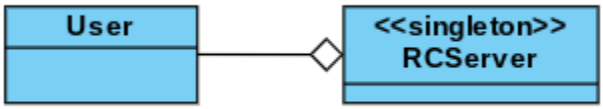

Figure 13: Object Diagram: Login/Logout

7.6 Derived Requirements

Having the security of the accounts so that the user can safely log in and log out when they want to. Also having the program be available in order to log in and log out when they wish.

8. USE CASE <Login>

8.1 Brief Description

Allows all consumers to access their RC accounts where their closet, laundry, and profile information are kept. Consumers will be prompted to enter their username and password to access their account and if successful will be able to interact with the website.

8.2 Flow of Events - Design

The user enters their username and password and submits the form. Data is validated and login process is

activated.

8.3 Interaction Diagrams

- The user will navigate to the login section of the webpage
- The user will input their email and password
- The RCS will validate and execute the query
- Then the database sends the confirmation to the RCS system
- Then the RCS will load the user's profile if the query is successful

8.3.1 Sequence Diagrams

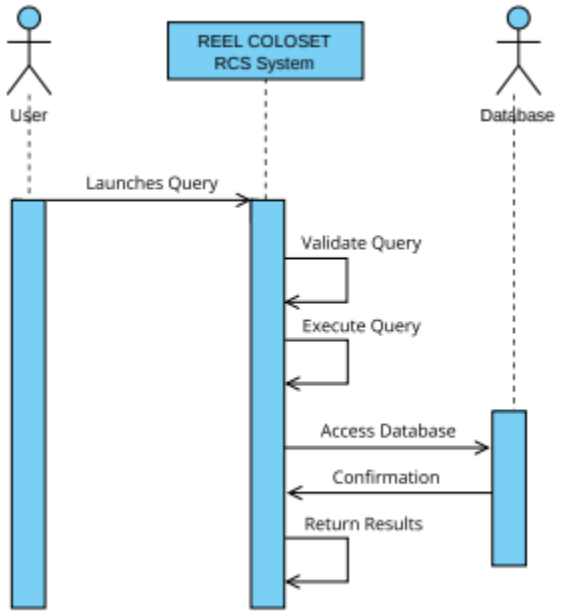

Figure 14: Sequence Diagram: Login

8.3.2 Participating objects

Object	Description
REEL	This object represents the system that the user

COLOSET System (RCS)	interacts with and also interacts with the database.

8.4 Class Diagram

See Figure 2

8.5 Object Diagram

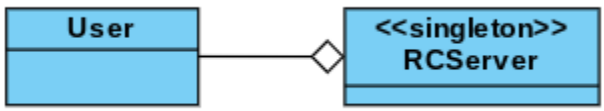

Figure 15: Object Diagram: Login

8.6 Derived Requirements

The performance and reliability of the program need to be high enough so that the user can log in quickly and not have to wait long for their account to load.

9. USE CASE <Logout>

9.1 Brief Description

Allows the consumer to end their session with the website.

9.2 Flow of Events - Design

The user exits the application by clicking the logout button. The query is validated and the logout process is activated.

9.3 Interaction Diagrams

- The user clicks the tab to logout
- The query is sent to the RCS and is validated and executed
- Then the RCS sends out for confirmation from the database
- Then the result of being logged out is returned

9.3.1 Sequence Diagrams

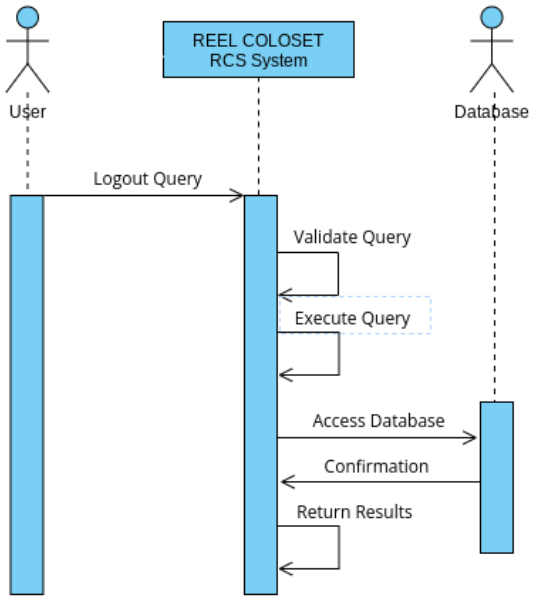

Figure 16: Sequence Diagram: Logout

9.3.2 Participating objects

Object	Description
REEL COLOSET System (RCS)	This object represents the system that the user interacts with and also interacts with the database.

9.4 Class Diagram

See Figure 2

9.5 Object Diagram

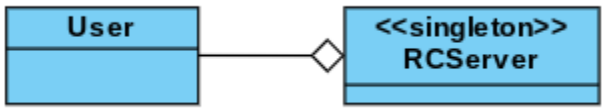

Figure 17: Object Diagram: Logout

9.6 Derived Requirements

A derived requirement is being able to log out of a user account securely. Another non-functional requirement would be needing the program to be reliable and available to log out of an account anytime the user wants to.