Ryan Emmons

C868 Software Development Capstone

Design Document

September 1, 2022

Table of Contents

Section 1- Overview

The software being developed is a standalone desktop application, that will allow users to record paint colors and details about the paint product, so that they may reference the information in the future when they decide to repaint areas in their house. It will also use this information to report on the most popular colors across all other users, and it will use this information to display the most recent colors used by other users. The users will primarily be adult homeowners, but long-term renters can find useful ways to use this software as well. Success will be defined by the following criteria: users can easily install the software, users can record their paint information, users can edit this information, and they can also delete this information. All information must be persisted, and be reliably looked up in the future.

Section 2 - User Stories

User stories are fictional examples of real-world users to demonstrate how or why a user may want to install and use this software (Ahmed 2022). The following are examples of user stories for this software.

"As a homeowner, I moved a picture and need to touch up the paint where the nail in the wall was, but I've thrown away the can and can't remember what color it was."

"I need to pick a color for my bedroom, but I want to know what colors people are using recently."

"As a renter, I want to save this paint color, so that I can use it again in my next apartment."

"As a homeowner, my dog chewed my baseboard trim, and I will check the database to see what I used in that area."

"I need to pick a color for my living room, but I don't know what's popular."

"As a homeowner, I saved the information about our siding paint, so it will be easy to paint the addition to my house."

Section 3 - Functional Requirements

There are many functional requirements for this software. These are the features and behaviors that this software should do and support (Ahmed 2022). This software will be developed using the Java programming language on the MacOS operating system. It will be developed using IntelilJ IDEA. The user interface will be developed and designed using FXML and Scenebuilder, and implemented into the software using JavaFX. It must have a main database, hosted on the internet, for all users to interact with. As a result, this software requires the internet to operate, as there is no option for saving locally. The database technology used will be PostgreSQL, the database will be administered with PgAdmin4, and will be hosted on Amazon Web Services which offers automatic backups and restoration.

Users must be able to create a new user account, log in with that account, and administer that account by changing their password if they wish. They must be able to insert their paint information into the database, and they must be able to modify or delete it at will. Entering color information will be achieved by the use of a form on the main screen. The user's specific information regarding where the color was used will be displayed only for their use. Only the color name will be used for information displayed to other users. This allows some user privacy while providing useful information to other users. Users must also be able to edit or remove any or all of their information by using appropriately labeled buttons on the main screen. The user
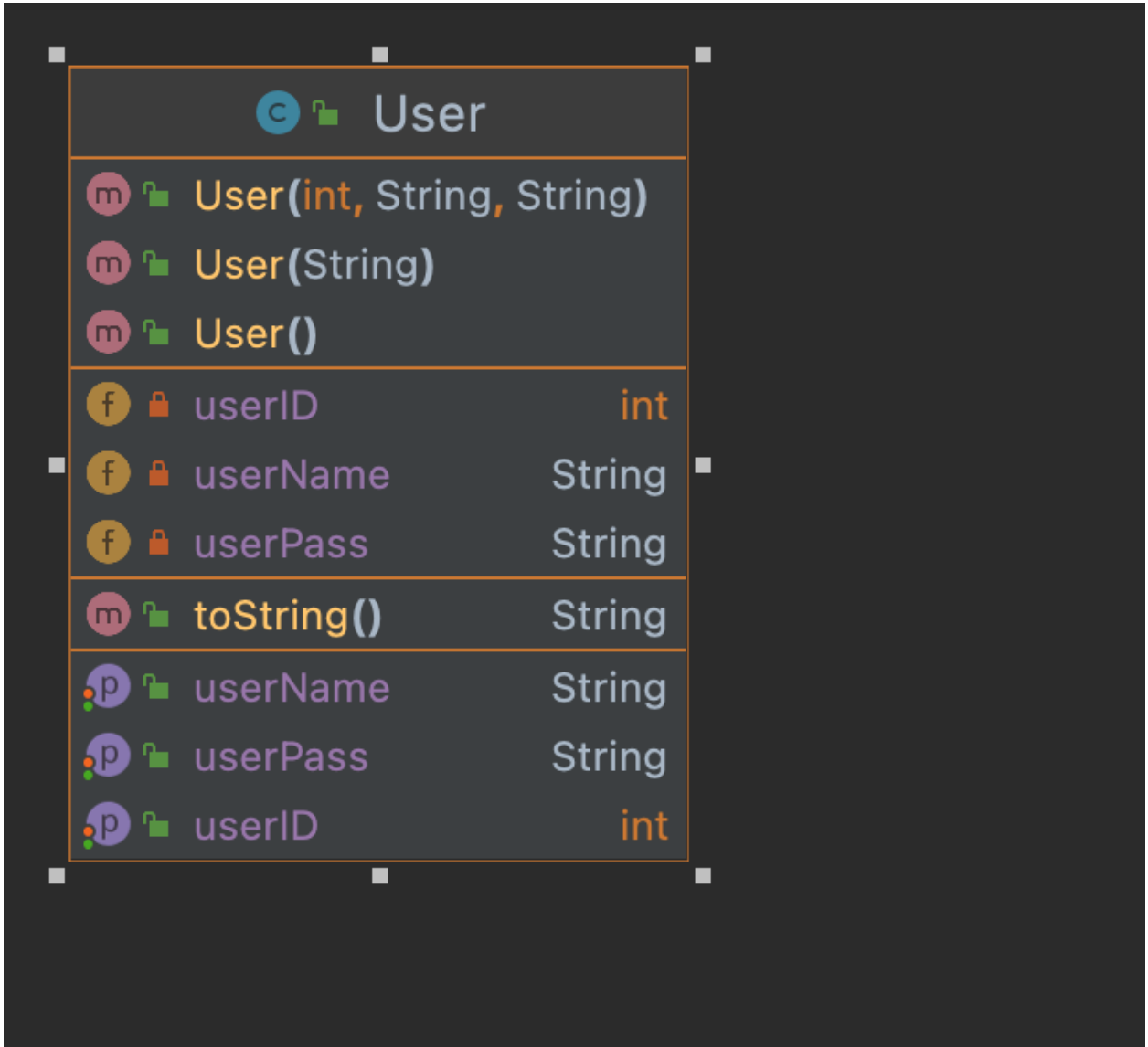
must be alerted before removing any information, as this cannot be undone. Users must also be able to log out and return to the main screen, or completely exit the program.

The software will generate two different reports for the user. It will show the most recently used colors by all users on one report. The other will show all of the most popular colors and the number of times it was used. The user must be able to search for colors on the Most Popular Colors report page to see information about specific colors. To achieve this, the search term and database entries will all be converted to lowercase so that the user does not need to match the capitalization of the entered colors.
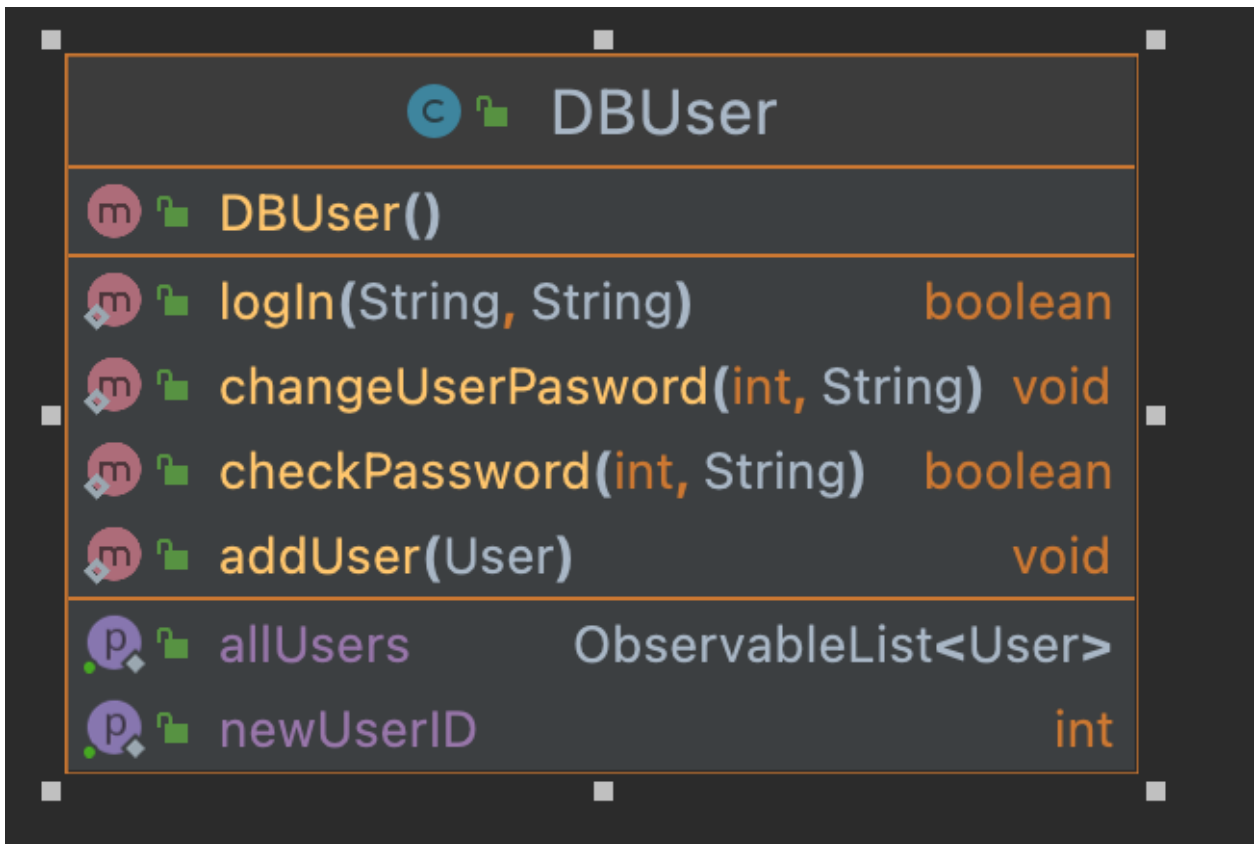
Validation checks must be performed on information used in this software. First, user names must be unique. Before a new user is entered into the system, the database must be queried for user names already in the system. The requested new user name will be checked against the query results to ensure it is not already in use error messages will alert the user if it is already in use. As an extra prevention, the database will refuse any duplicate entries. The requested password must also pass a validation check. The password must be entered twice and both must match.
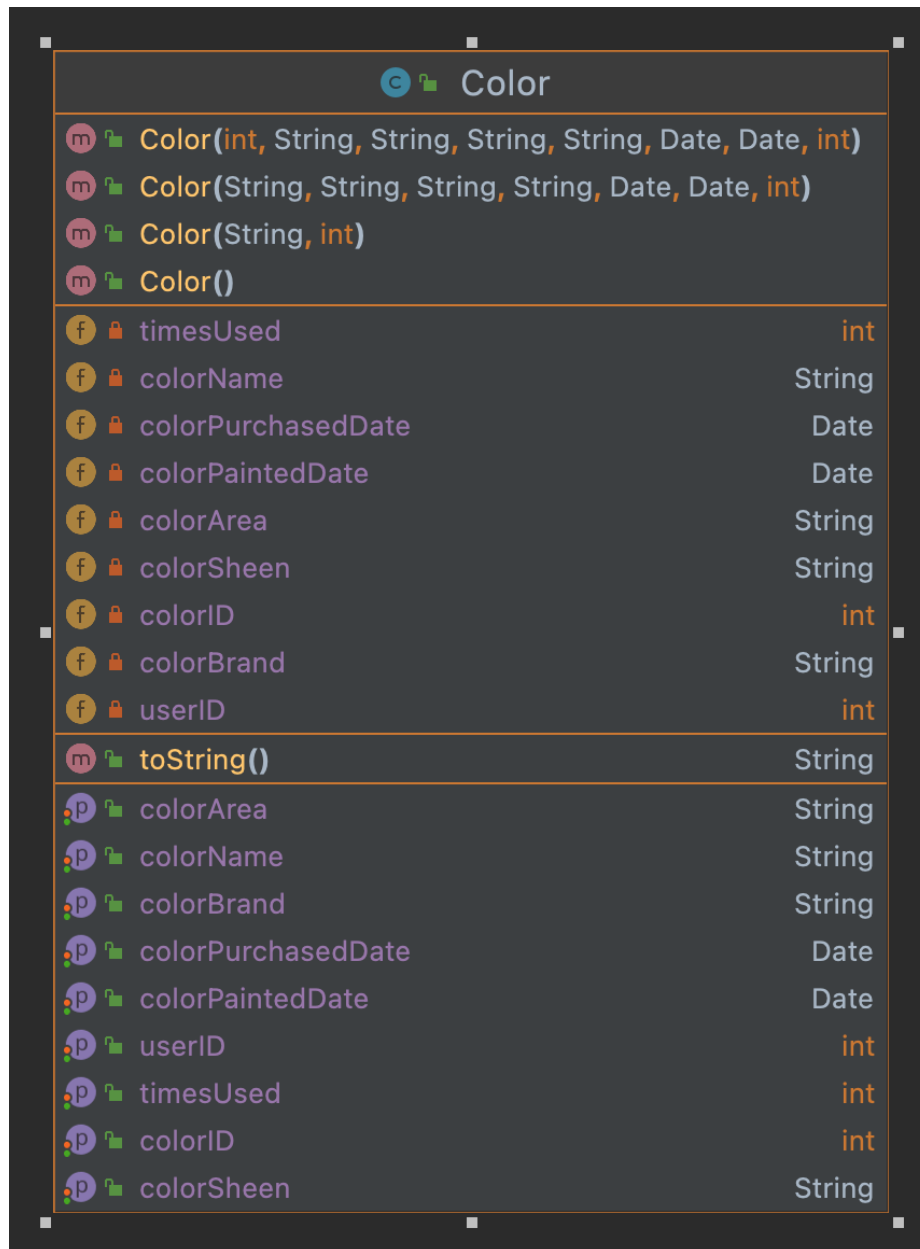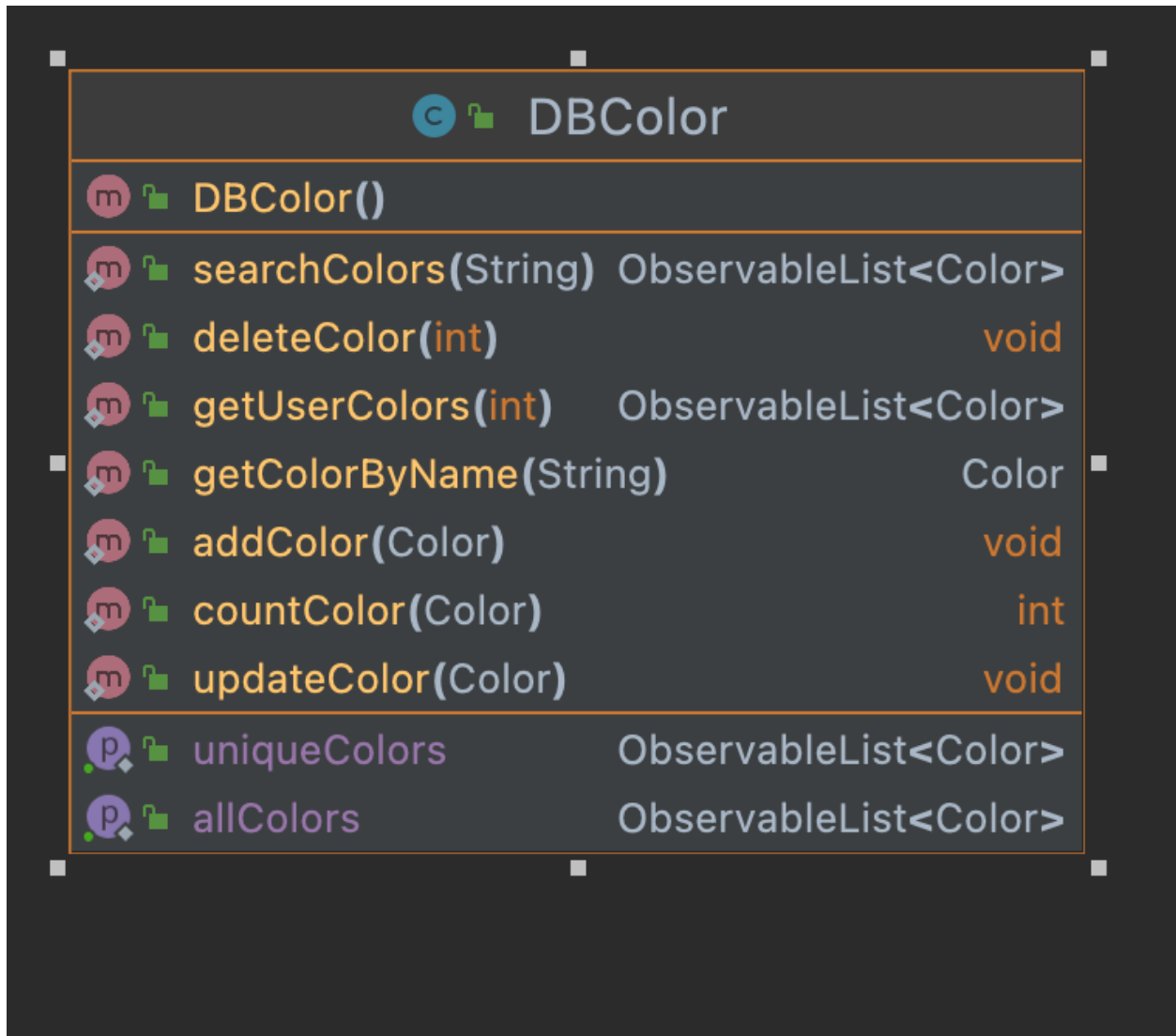
Section 4 - Class Diagrams
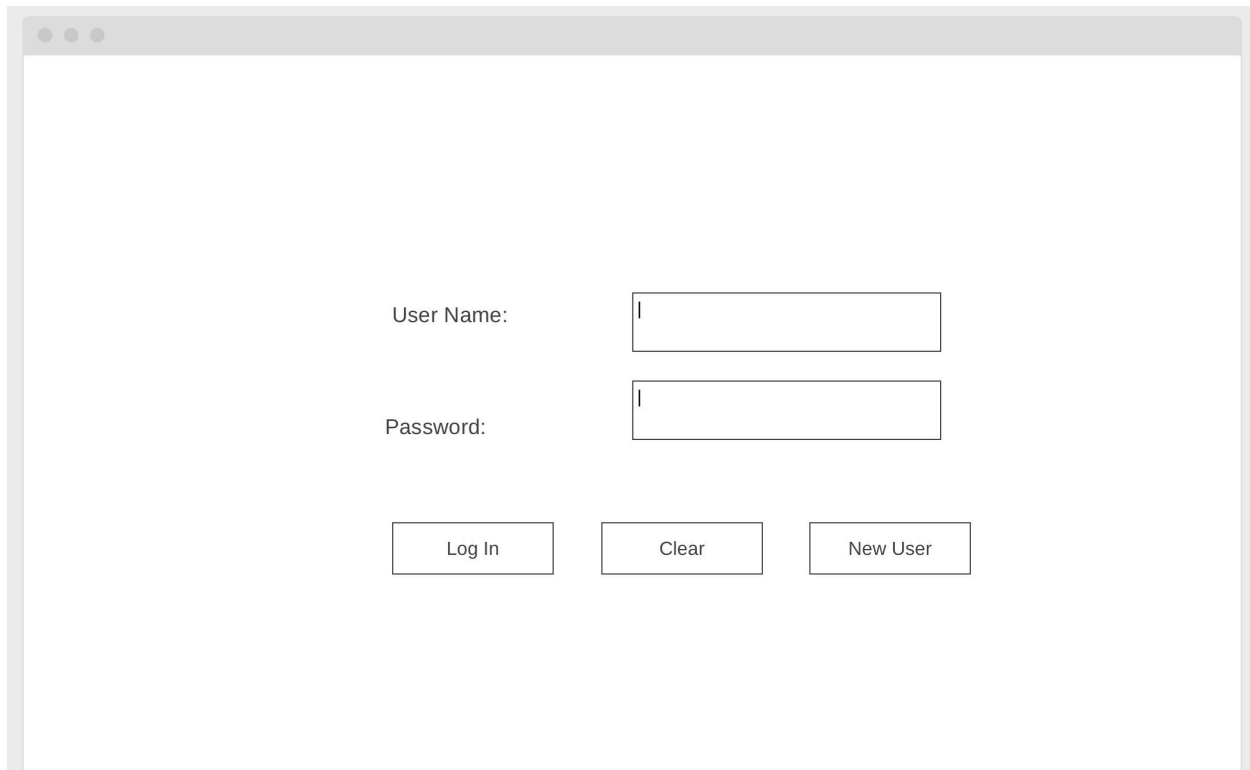
User Class

DBUser DAO Class Diagram

Color Class Diagram

Color	
ⓜ Color(int, String, String, String, String, Date, Date, int)	
ⓜ Color(String, String, String, String, Date, Date, int)	
ⓜ Color(String, int)	
ⓜ Color()	
ⓕ timesUsed	int
ⓕ colorName	String
ⓕ colorPurchasedDate	Date
ⓕ colorPaintedDate	Date
ⓕ colorArea	String
ⓕ colorSheen	String
ⓕ colorID	int
ⓕ colorBrand	String
ⓕ userID	int
ⓜ toString()	String
ⓟ colorArea	String
ⓟ colorName	String
ⓟ colorBrand	String
ⓟ colorPurchasedDate	Date
ⓟ colorPaintedDate	Date
ⓟ userID	int
ⓟ timesUsed	int
ⓟ colorID	int
ⓟ colorSheen	String

DBColor DAO Class Diagram

Section 5 - User Interface

Screen 1 - Log-In

The first screen a user sees is the log-in screen. They will be able to enter their credentials if they are returning, or they can select "New User" to sign up for a user account.

Screen 2 - New User

A user can enter their desired username and password. Repeating the password ensures that it was entered properly.

Screen 3 - Main

The fields in the top left of the screen allow the user to enter or modify color information. Their records will be displayed on the lower half of the main screen. Buttons to view color reports are on the top right side of the screen.

Screen 4 - Most Popular Colors

Color	Number of times painted by users

Exit
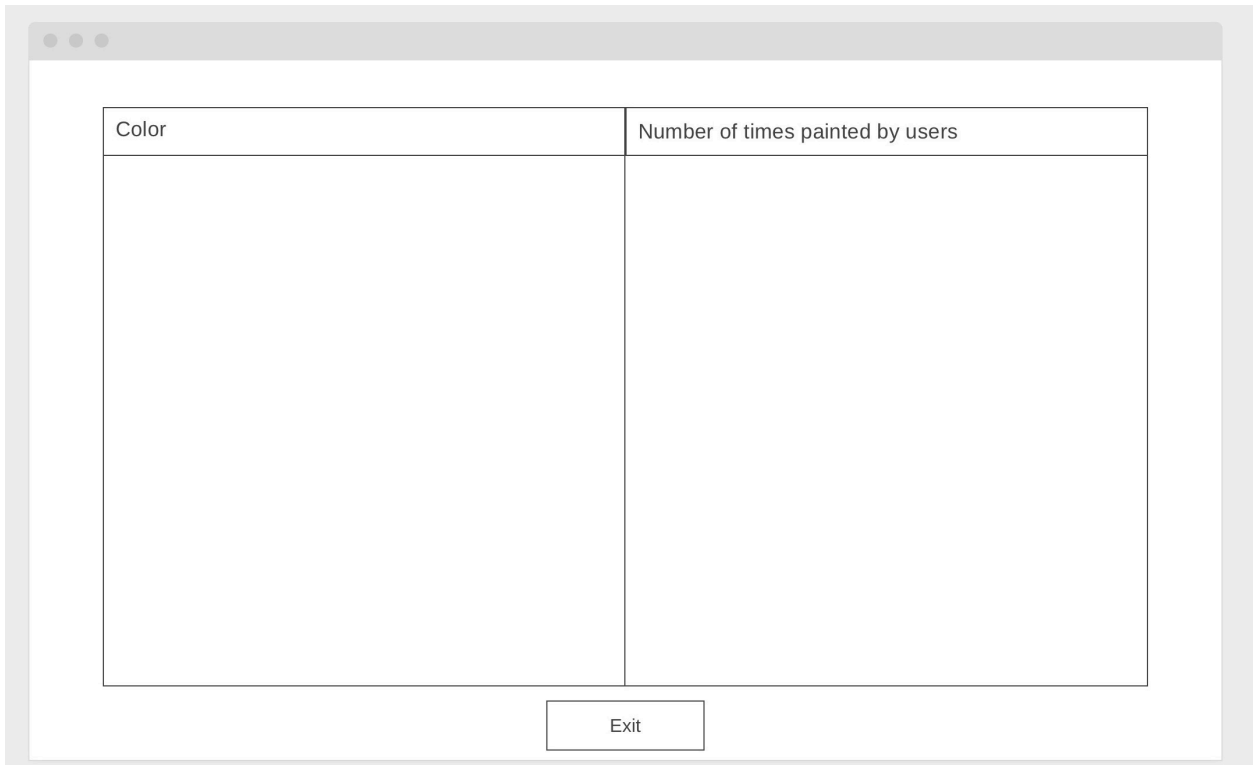
On this screen, users will be able to see the most popular colors across all users. This will be displayed by the color name on the left column, and the number of times it was used by other users on the right column.

Screen 5 - Most Recent Colors

Color	Date Painted

Exit
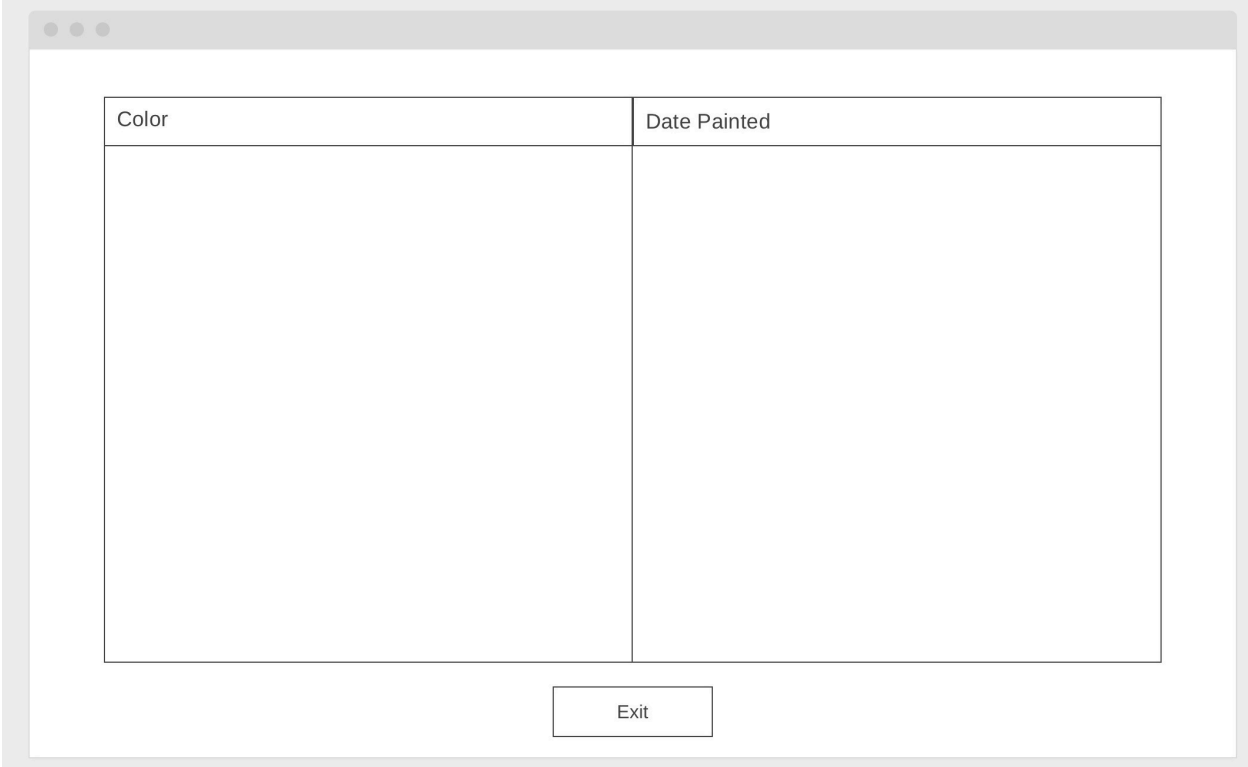
This screen will show the most recent colors painted by users. The color name will be on the left column, and the date it was painted will be on the right column.

Section 6 - Milestones

There will be seven major milestones during the development of this software and are included here in the order of expected completion.

- User Interface developed.

- Database designed.

- Software logic developed.

- Software interacts with database successfully.

- Interaction between User Interface and Software Logic completed.

- Prototype tests successfully.

- Release.

Section 7 - Conclusion

As it has been shown, this software will be helpful for anyone who owns their own home, or lives in an apartment where they are allowed to change the colors of their rooms. Through careful design, I can ensure the success of this software by building it step by step, paying close attention to the requirements and user stories for this software, and being mindful of the milestones that are needed to accomplish before successfully releasing this software to users.

Section 8 - Works Cited

Ahmed, S., 2022. *How to Write Software Design Documents (SDD) | Template & Examples*. [online] Tara AI. Available at: <https://blog.tara.ai/software-design-documents-template/> [Accessed 21 August 2022].