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FACULTY OF ENGINEERING & INFORMATION
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DEPARTMENT OF COMPUTER ENGINEERING

GRADUATION PROJECT I

Roze'



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Disclaimer

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Abstract

The days when one size fits all are gone. In this era, modern consumers require something more than what was the standard in the previous years – a more personalised approach to their needs. Our project Roze', strive to transform the flower and gifting market by providing an innovative application and website that allows customers to create memorable gifts. In addition, Roze' creates bonds by allowing people to gift their friends personalized bouquets whatsoever the distance. A few touches on your device's screen are all it takes to ease the distance and show that you care in any special moment. Essential to the Roze concept is the state-of-the-art AI driven and powered personalization system. With the help of the easy to use customization tool or by simply stating what look, occasion and price are expected, users can easily create their ideal flower bouquets . In addition, the excellent image-processing skills of Roze' make all the difference in truly identifying flower types to create truly outstanding arrangements. Apart from personalization, Roze' provides a marketplace that connects customers with a network of local florists; users can browse trending designs or place an order. To ensure some kind of competition and, therefore, always offer customers the best offers, Roze' allows the florist to bid on a particular order with a guarantee of fairness in value. Roze' has a feedback loop in order to improve the platform and user experience over time. Customers can contribute thoughts and feedback, which enhances the AI and provides florists with helpful data. Additionally, Roze' simplifies business operations by offering a comprehensive dashboard for managing items, orders, and payments. Roze' is a platform that inspires people to express their creativity and create meaningful, one-of-a-kind presents rather than just an app. Roze', with its cutting-edge technologies and emphasis on user experience, is ideally positioned to revolutionize the floral and gifting industry and become the go-to option for people searching for unique and memorable gifts.

Chapter 1

Introduction

In today's world, personalization has become a cornerstone of modern consumer expectations, replacing the outdated "one size fits all" approach. Recognizing this shift, **Roze'** revolutionizes the floral industry by introducing a cutting-edge platform that combines state-of-the-art AI technology with an intuitive user experience. **Roze'** enables users to design personalized bouquets that reflect their unique preferences and the significance of special occasions. By connecting customers with local florists through a competitive marketplace, **Roze'** bridges the gap between creativity and accessibility. Whether celebrating milestones or fostering connections across distances, **Roze'** empowers individuals to create meaningful and memorable floral arrangements, transforming ordinary moments into extraordinary ones.

1.1 Problem Statement

The traditional floral industry often falls short in addressing the needs of modern consumers seeking personalized and unique bouquet arrangements. Many existing solutions lack the flexibility to create customized bouquets tailored to individual preferences, special occasions, or budgets. Additionally, customers face challenges in sourcing high-quality, creative floral designs, especially when ordering from distant locations. On the other hand, local florists struggle to connect with a broader audience and often lack the tools to showcase their designs or compete effectively in the market. This disconnect between consumers and florists results in limited options, suboptimal experiences, and missed opportunities for both parties. To address these challenges, there is a pressing need for an innovative platform that combines advanced personalization tools, seamless ordering processes, and a competitive marketplace to bridge the gap between customers and florists. This is the goal of **Roze'**, which aims to transform the bouquet industry by enabling customers to create meaningful, customized floral arrangements while empowering florists with the tools to thrive in a competitive market.

1.2 Objectives

The Roze[‘] project is built with the vision of revolutionizing the bouquet industry by creating a dynamic, user-centric platform that caters to the needs of three distinct user types: admins, businesses, and customers. Our objectives are crafted to ensure an innovative, seamless, and personalized experience for everyone involved.

1. Empower Admins: Provide tools to manage users, bouquets, and platform operations dynamically.
2. Support Businesses: Allow florists to showcase bouquets, manage orders, and compete through a bidding system.
3. Enhance Customer Experience: Enable customers to order, customize 3D bouquets, and choose the best offers.
4. Leverage AI: Use AI for bouquet suggestions, outfit matching, and crafting personalized gift cards.
5. Bridge Connections: Create a marketplace that links customers and florists for quality and affordability.
6. Promote Creativity: Inspire users to design unique bouquets that express emotions meaningfully.

1.3 Significance

The **Roze[‘]** project is all about transforming how people experience and share the joy of flowers. It empowers customers to create personalized bouquets that truly reflect their emotions, using AI-powered tools like outfit-based bouquet matching and gift card suggestions. At the same time, it supports local florists by giving them a platform to showcase their creativity and compete fairly through a unique bidding system. Roze[‘] simplifies the entire process—whether you’re customizing a bouquet, managing orders, or finding the perfect design—making it easy for everyone to create meaningful connections and unforgettable moments. It’s not just a platform; it’s a way to bring creativity, technology, and human connection together in the world of flowers.

Chapter 2

Constraints and Earlier Coursework

2.1 Constraints and limitations

1. **AI Training Time:** Training the AI model for creating personalized gift card messages took seven days, which highlights the significant time investment required to develop and refine the system.
2. **Dataset Quality:** The performance of the gift card AI heavily depends on the quality and diversity of the training dataset. Limited or biased data could affect the relevance and creativity of the generated message.
3. **3D Customization Limitations:** While Flutter is used to develop the platform for its cross-platform compatibility, it does not support live editing of 3D objects. As a result, React was integrated specifically to handle the bouquet customization feature, which adds complexity to development and integration.
4. **Integration Complexity:** Combining Flutter for the app and React for the 3D customization required additional development effort and synchronization, which could pose challenges for future updates or feature expansions.
5. **Customization Limits:** Giving users too many options would be overwhelming. We had to design and test iteratively.

2.2 Standards / Codes

- The project was developed using the **Visual Studio Code (VS Code)** platform, providing a robust and versatile environment for coding and debugging.

- **Flutter** was used for the mobile application, enabling cross-platform compatibility and delivering a seamless user experience for both Android and iOS.
- For the 3D bouquet customization feature, **React** was integrated along with the **three.js** library to allow users to create and preview their designs interactively, as Flutter lacks support for real-time 3D editing.
- The backend was built using **Node.js**, ensuring efficient server-side logic and scalable performance to handle user requests and data processing.
- **MongoDB** was chosen as the database for its flexibility and scalability, supporting the storage and management of user and application data.
- **Firestore** was used to build and run an online database for real-time chatting and notifications, ensuring seamless communication and engagement within the platform.
- **Android Studio** was used for running the Android emulator, allowing testing and debugging of the application on the Android platform.
- **Postman** was utilized for testing APIs, ensuring that the RESTful communication between the frontend and backend is efficient, reliable, and secure.
- The AI-powered gift card system was developed using **Python**, leveraging machine learning frameworks such as TensorFlow and PyTorch to provide personalized, context-aware message suggestions.
- The application adheres to **RESTful API standards** for seamless data exchange between the frontend and backend.
- Security protocols such as **HTTPS** and **OAuth 2.0** were implemented to ensure secure user authentication and data protection.
- The application architecture follows the **Model-View-Controller (MVC)** design pattern, ensuring modular, maintainable, and organized code.

2.3 Earlier Coursework

- **Courses Utilized**
 - The **Critical Thinking** course equipped us with effective research and documentation skills, which were invaluable for writing reports and organizing our work.
 - The **Software Development** course provided a solid foundation in the **Model-View-Controller (MVC)** design pattern and software testing, which we applied in structuring and verifying our project.

- The **Advanced Software Development** course introduced us to **Node.js** and API development, which were essential for building the backend and enabling seamless communication between the frontend and backend systems.
- The **Artificial Intelligence (AI)** course guided us in training datasets and building the AI system for the project, including the personalized gift card creation feature.
- The **Image Processing** course played a significant role in developing the bouquet color-matching feature, using Python to analyze outfits and suggest suitable bouquet designs.
- The **Distributed Operating System (DOS)** course provided us with the knowledge needed to implement and manage our database using **MongoDB**, ensuring efficient data storage and retrieval.

Chapter 3

Literature Review

The bouquet industry has long relied on traditional methods of designing, ordering, and delivering floral arrangements. However, with the rise of digital platforms and advancements in technology, there is a growing trend toward personalization and seamless user experiences. This literature review explores relevant technologies, methodologies, and previous systems to contextualize and justify the development of the Roze' platform.

Personalization in E-commerce Personalization has become a cornerstone of modern e-commerce platforms. Studies highlight that users are more likely to engage with services that cater to their preferences [Bielozorov et al., 2019]. This is particularly relevant in the bouquet industry, where customers often desire designs tailored to specific occasions or personal tastes. Platforms like Etsy and Amazon have incorporated personalization to enhance user satisfaction, inspiring the customization features in Roze', including 3D bouquet design and AI-driven gift card suggestions.

Role of Artificial Intelligence Artificial intelligence has emerged as a powerful tool in transforming industries. AI-driven recommendation systems are widely used in applications such as Netflix and Spotify to deliver personalized user experiences [Gomez-Uribe and Hunt, 2015]. Similarly, in the floral industry, AI can be leveraged to match customer preferences with floral arrangements. Previous work on natural language processing and machine learning, such as BERT [Devlin et al., 2019], has informed the development of the gift card creation system in Roze', which generates context-aware, personalized messages.

Image Processing Applications Image processing technologies have been widely studied for their ability to analyze and interpret visual data. Tools like OpenCV and libraries such as TensorFlow have been instrumental in enabling applications ranging from facial recognition to style matching [Bradski, 2008]. In Roze', these techniques were adapted to develop a feature that matches bouquet colors to a customer's outfit, enhancing the personalization aspect of the platform.

Software Development Methodologies The importance of adopting structured development practices, such as the Model-View-Controller (MVC) pattern, is emphasized in software engineering literature [KRANSER, 1988]. This ap-

proach ensures modularity and scalability, which are critical for projects like Roze'. Furthermore, RESTful API standards have become a best practice for enabling seamless communication between application components [Fielding, 2000], a methodology adopted in the platform's backend architecture.

Database Systems NoSQL databases, such as MongoDB, have gained popularity for their ability to handle unstructured and semi-structured data in dynamic applications [Cattell, 2011]. MongoDB's flexibility and scalability make it well-suited for managing the diverse data generated by Roze', including user profiles, bouquet designs, and bidding records.

Existing Bouquet Platforms While several online platforms for ordering flowers exist, they often lack the level of personalization and interactivity that modern consumers demand. Studies have noted that traditional platforms focus primarily on pre-designed arrangements without offering customization options or leveraging AI for enhanced user experiences [Li and Lei, 2015]. This gap informed the development of Roze', which combines customization, AI, and competitive bidding to create a unique marketplace.

Chapter 4

Methodology

In this chapter, we will explore the tools, technologies, and programming languages that played a key role in bringing this project to life. We'll provide detailed insights into the materials and methods used, as well as a clear explanation of the implementation and development process. This will give a comprehensive understanding of how each component contributed to the success of the project.

4.1 Tools, Programming Languages, and Technologies

4.1.1 Frontend Development

Flutter

Flutter was used for developing the main mobile application. Its ability to create highly responsive and visually appealing interfaces made it the ideal choice for building a cross-platform application compatible with both Android and iOS. With its hot reload feature, development time was significantly reduced, allowing for rapid prototyping and iteration. **Key Flutter Features Used:**

- Widgets for creating dynamic UI components like bouquet catalogs, bidding systems, and order summaries.
- Cross-platform capabilities to ensure consistent user experiences on Android and iOS.

React with Three.js

The 3D bouquet customization feature was developed using React and the Three.js library to provide users with an interactive and visually engaging experience. For this, we incorporated pre-existing 3D models of flowers, vases, and leaves sourced from the internet. **Customization Options:**

- Users can choose from three types of flowers, each available in multiple color options to match their preferences or occasion themes.
- Bouquet designs can be further personalized by selecting the type and color of the vase, as well as adding leaves for additional flair.
- Users have full control over the quantity of each flower type, enabling them to create unique and balanced arrangements.
- Real-time rendering with Three.js allows users to preview their customized bouquets, including their color selections, from multiple angles interactively.

This feature combines the flexibility of customization with an intuitive interface, empowering users to create vibrant and meaningful bouquets while leveraging pre-existing 3D assets to optimize development time.

4.1.2 Backend Development

Node.js

Node.js served as the backbone of the platform, managing server-side operations efficiently. Its asynchronous nature allowed for handling multiple API requests simultaneously, ensuring a smooth user experience. **Key Backend Functions:**

- Processing bouquet customization data and sending it to businesses for bidding.
- Managing user authentication and secure transactions.
- Facilitating communication between the frontend and MongoDB database.

4.1.3 DataBase

MongoDB

As a NoSQL database, MongoDB provided the flexibility needed to store and manage unstructured data, including user profiles, bouquet designs, orders, and bidding records. Its scalability ensured that the platform could handle large volumes of data as the user base grows. **Database Structure:**

- Collections for users, businesses, orders, and bouquet designs.
- Indexing for efficient query performance, especially for filtering bouquet designs and order histories.

Firestore

Firestore was integrated to enable real-time chatting and notifications between users and florists. This ensured seamless communication for order inquiries, updates, and coordination. **Firestore Capabilities Used:**

- Cloud Firestore for storing chat messages and notification data.
- Push notifications to keep users informed about order status and bidding updates.

4.1.4 Artificial Intelligence and Image Processing

Python

Python was instrumental in developing the AI-powered gift card system. The training process for this system was built entirely from scratch, starting with a dataset of movie lines. This dataset was carefully edited and refined to create a training corpus that could generate personalized, context-aware gift card messages. **AI Development Process:**

- A movie line dataset was modified to align with the needs of the project, focusing on tone, language, and structure suitable for gift cards.
- The AI model was trained using machine learning frameworks such as TensorFlow and PyTorch to ensure high accuracy and relevance.
- The training process required significant computational resources and time, taking approximately seven days to complete.

This approach ensured that the gift card system could craft thoughtful and meaningful messages, adding a unique layer of personalization to the platform.

4.1.5 Development Tools

Visual Studio Code (VS Code)

VS Code was the primary development environment for writing and managing the codebase. Its extensions, like Prettier for formatting and ESLint for error checking, ensured clean and consistent code across all contributors.

Postman

Postman was used extensively during the development process to test APIs, ensuring that the frontend and backend communicated effectively.

Android Studio

Android Studio was employed to test the application on Android devices using its emulator. This helped identify and fix platform-specific issues during development.

4.1.6 Git and GitHub

Version control was managed using Git and GitHub to facilitate collaboration among team members. It ensured that all code changes were tracked, reviewed, and merged effectively.

4.2 Mobile Application

4.2.1 Start Page

The start page of the application offers an elegant and dynamic introduction, featuring a moving collage of floral arrangements and gift boxes to showcase its focus on personalized gifting. With a clean design, the brand logo and tagline, "Turning Petals Into Memories," emphasize the app's purpose, while intuitive "Next" and "Skip" buttons provide seamless navigation. The subtle animations enhance user engagement, creating a warm and inviting first impression.

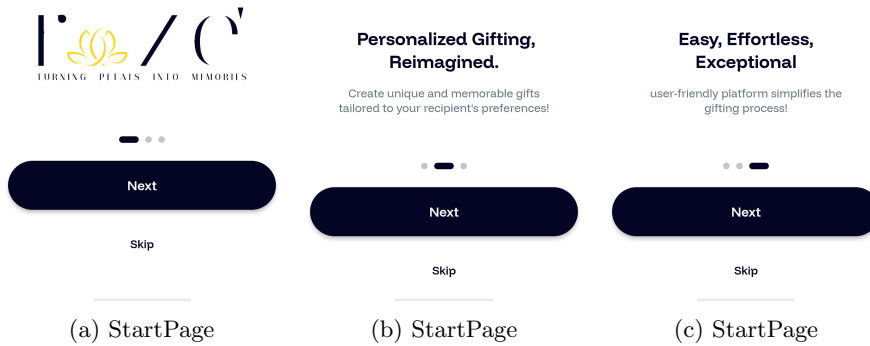
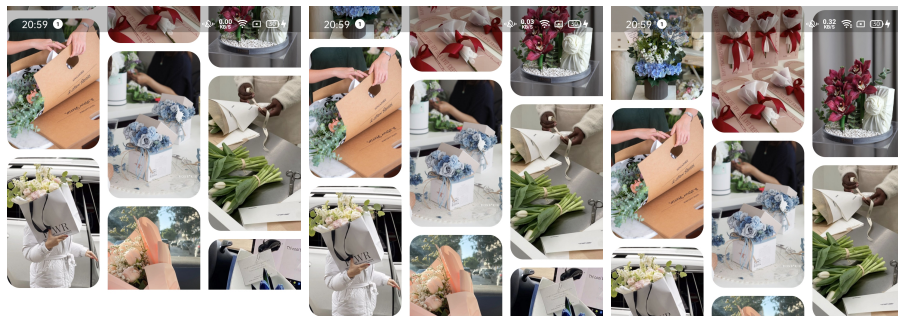


Figure 4.1: Start Pages

4.2.2 User Authentication Process

The following screenshots illustrate the user authentication process, which includes signing in, recovering a forgotten password, verifying identity with an OTP, and resetting the password. This process ensures a secure and seamless experience for users while maintaining data privacy.

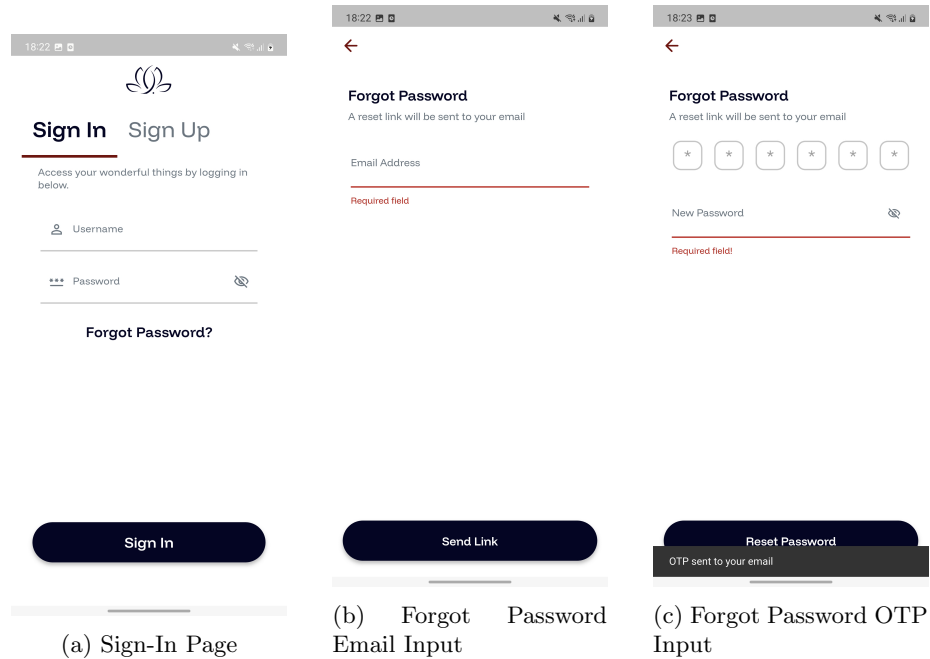
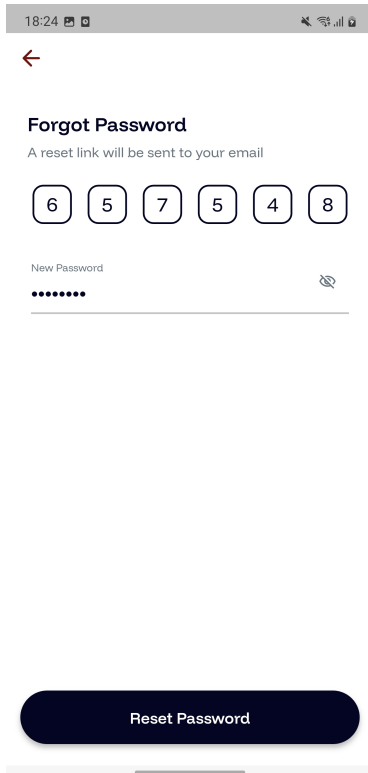
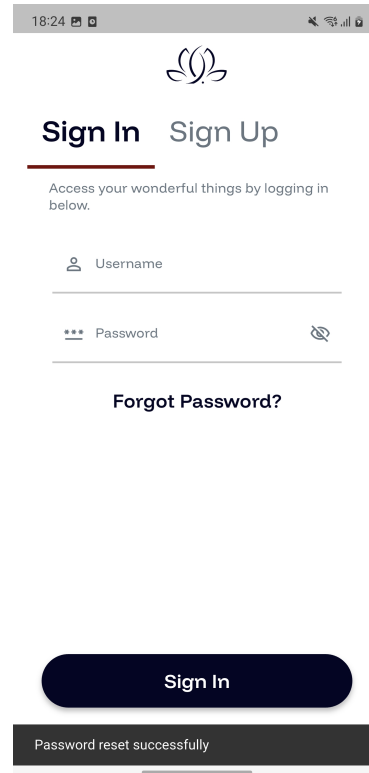


Figure 4.2: User Authentication Process - Part 1



(a) Reset Password



(b) Successful Reset

Figure 4.3: User Authentication Process - Part 2

4.2.3 User Registration Process with Validation and Error Handling

These screenshots walk through the app’s sign-up process, showing how it helps users register smoothly while keeping their data safe. The form asks for basic details like username, email, address, phone number, password, and role. Along the way, it checks for common issues—like invalid usernames, incorrect email formats, weak passwords, or mismatched confirmation fields—and provides helpful, real-time feedback to guide users. If any fields are left empty or if an account already exists, clear warnings are displayed. This thoughtful design ensures the sign-up process is easy, secure, and frustration-free for everyone.

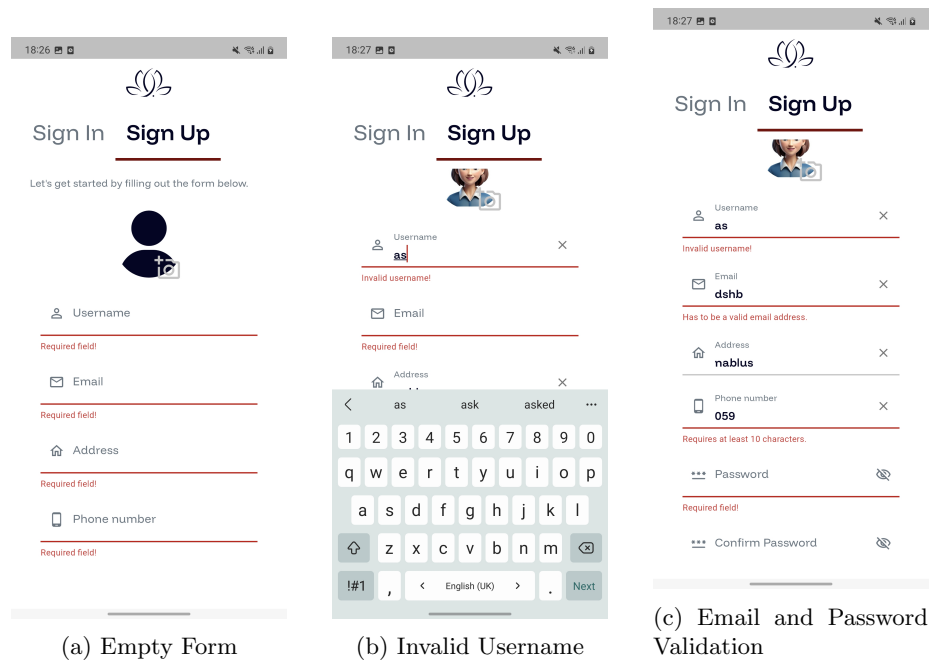
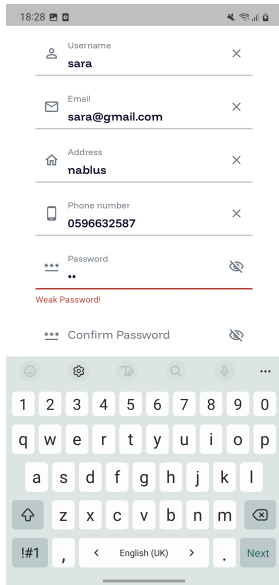
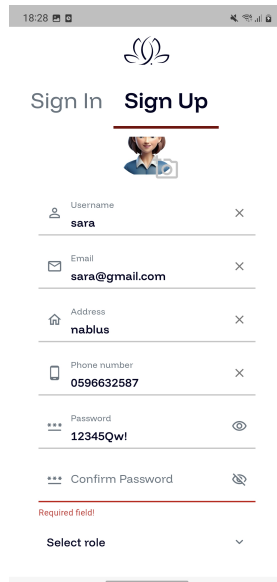


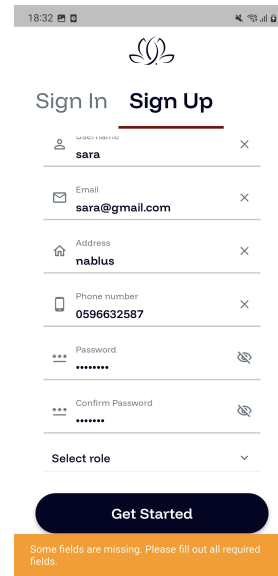
Figure 4.4: User Registration Process - Part 1



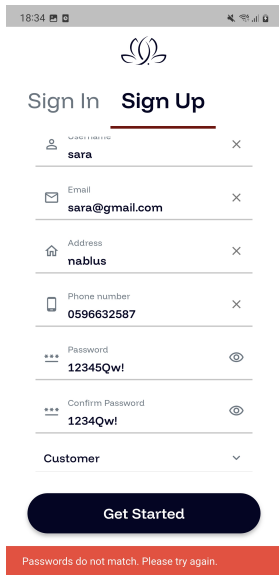
(a) Weak Password Warning



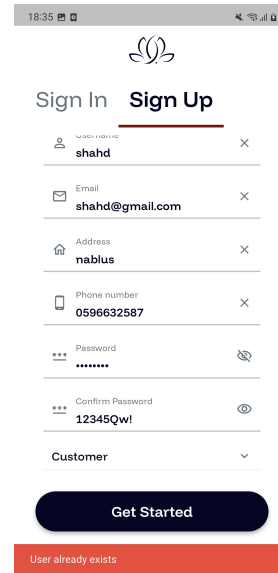
(b) Role Selection



(c) Field Validation Error



(d) Mismatched Passwords



(e) Duplicate User Error

Figure 4.5: User Registration Process - Part 2

4.2.4 Email Verification Process

These screenshots showcase the email verification process, designed to help users securely confirm their email addresses while creating an account. After receiving a one-time password (OTP), users can enter it within the provided time limit. If the OTP expires or isn't received, users have the option to request a new one, ensuring a smooth and hassle-free verification experience.

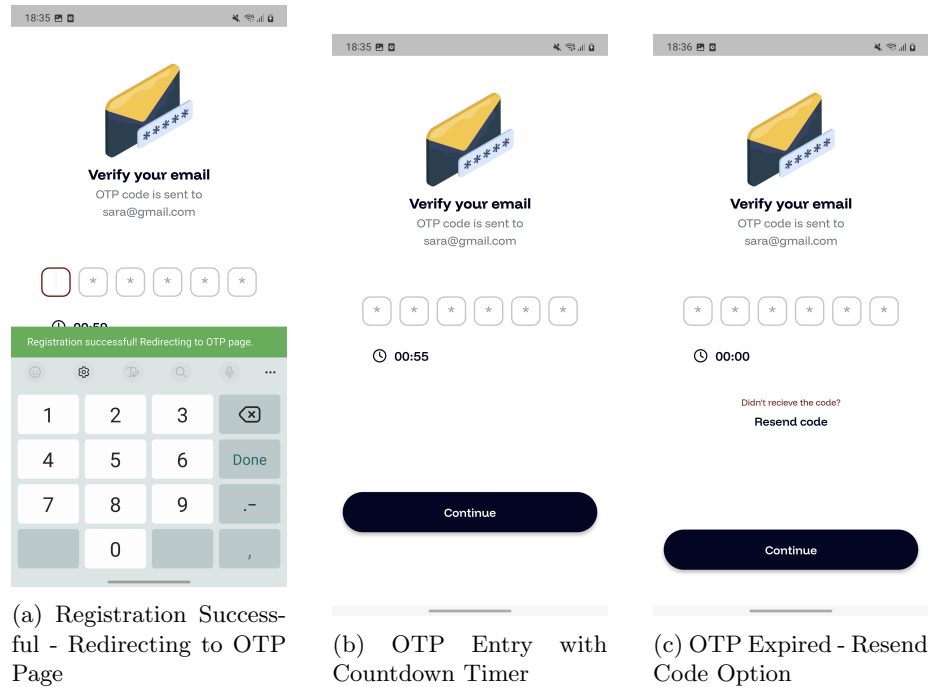
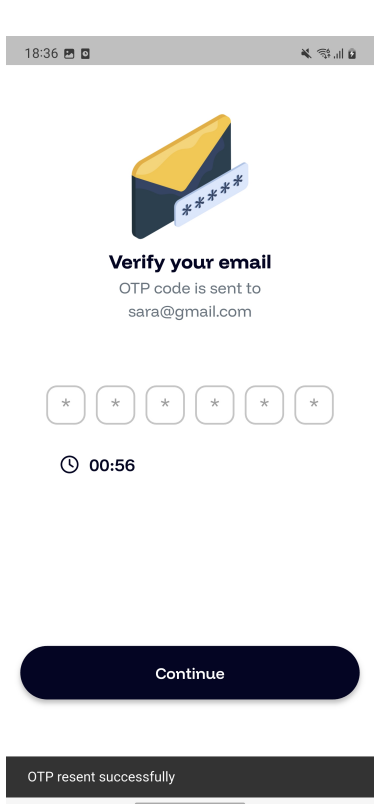
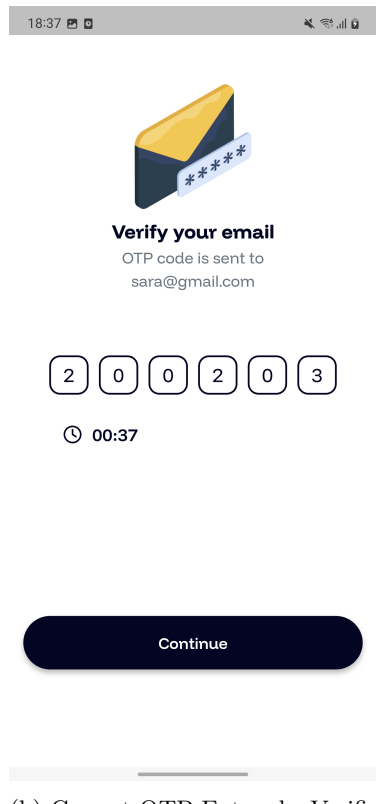


Figure 4.6: Screenshots of the Initial Email Verification Process



(a) OTP Resent Successfully



(b) Correct OTP Entered - Verification Complete

Figure 4.7: Screenshots of Resent OTP and Successful Verification

4.2.5 User Registration, Email Verification, and Onboarding

These screenshots walk through the process of signing up, verifying an email, and exploring the app's onboarding screens. The journey starts with users filling out their details like username, email, password, and role. Once submitted, they receive a one-time password (OTP) via email to confirm their identity. If the OTP expires, users can easily request a new one, making the process smooth and frustration-free. After successful verification, the registration request is sent to the admin for approval. Finally, the onboarding screens introduce users to the app's features and services, offering a friendly and inviting first impression.

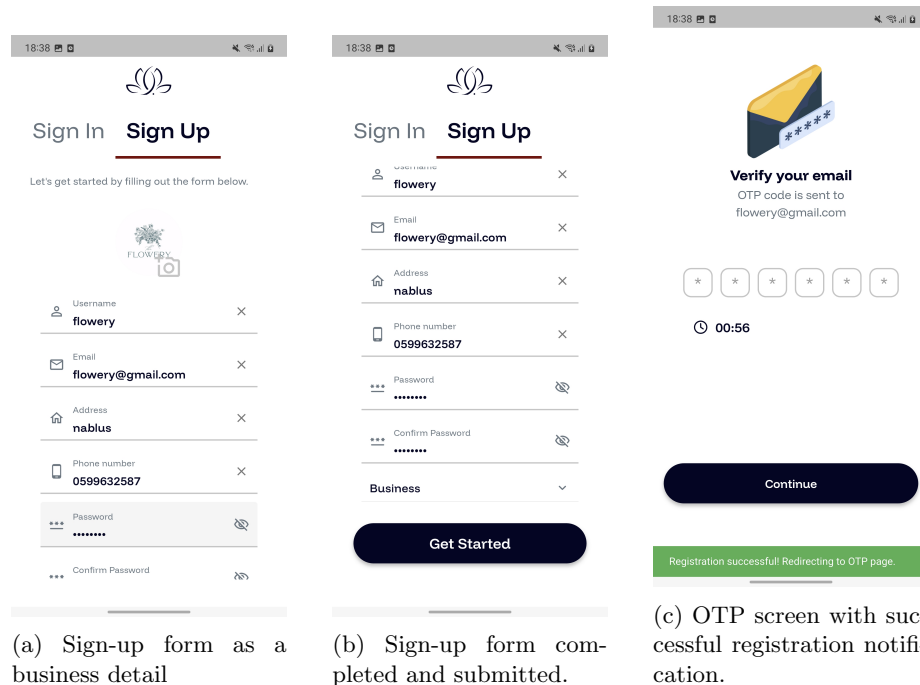
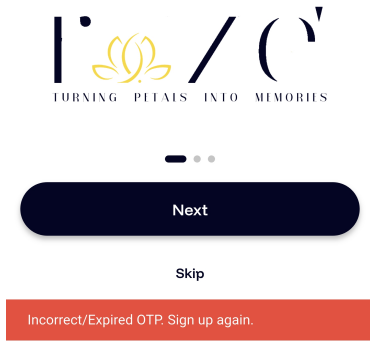
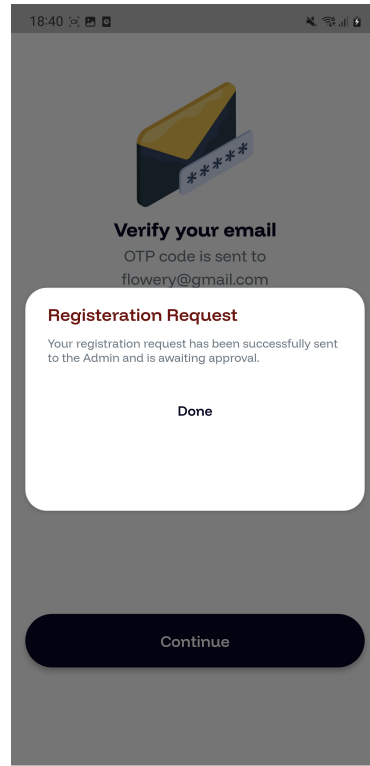


Figure 4.8: Sign-up Process: Filling details, submission, and OTP notification.



(a) Incorrect or expired OTP error.



(b) Business registration request successful, awaiting admin approval.

Figure 4.9: Verification and Registration Completion Screens: Error and success.

4.2.6 Business Account Requests

The admin dashboard makes it easy for administrators to manage business account requests. With a clean and intuitive interface, admins can review pending requests, check the details of businesses, and decide whether to approve or reject them. This ensures that only trusted businesses are allowed onto the platform, creating a safer and more reliable experience for everyone. For businesses that don't get approved, the system is clear and transparent—if they try to log in, they'll see an error message letting them know their account hasn't been accepted yet.

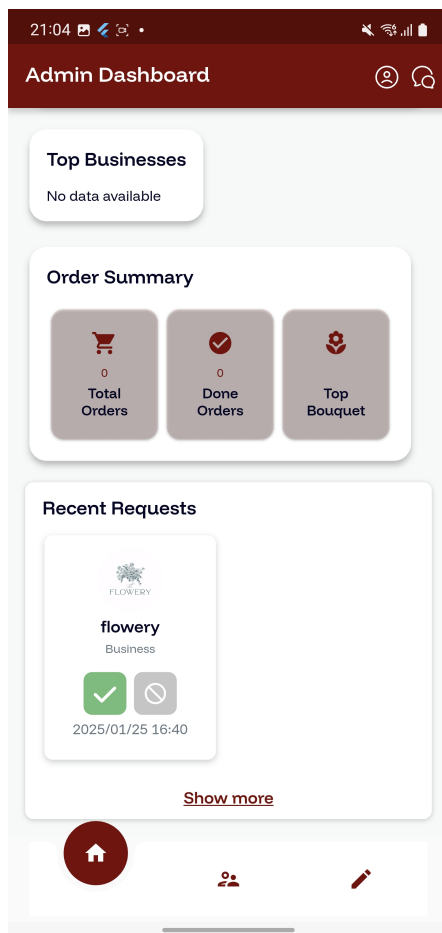


Figure 4.10: Admin dashboard showing pending business account requests with options to approve or reject.

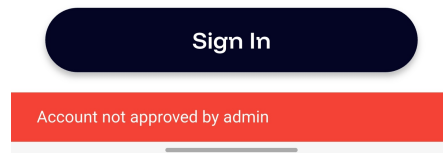
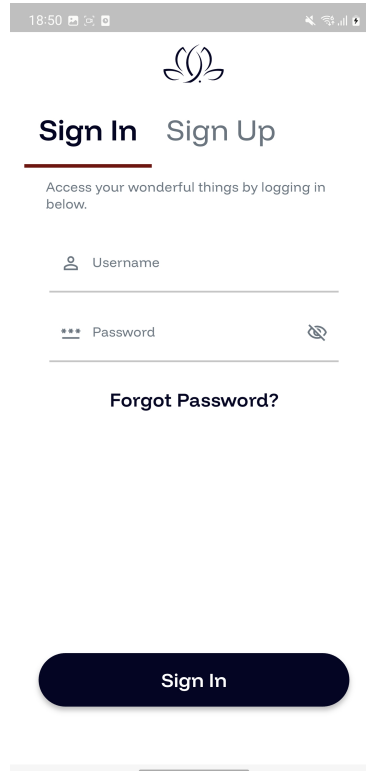



Figure 4.11: Error message displayed when an unapproved business attempts to log in.

4.2.7 Sign In Page

The Sign In page offers a straightforward and user-friendly interface for logging into the system. It includes fields for username and password, with a "Forgot Password?" option to assist users in account recovery. This simplicity ensures ease of use for all users.






18:50



Sign In Sign Up

Access your wonderful things by logging in below.

 Username

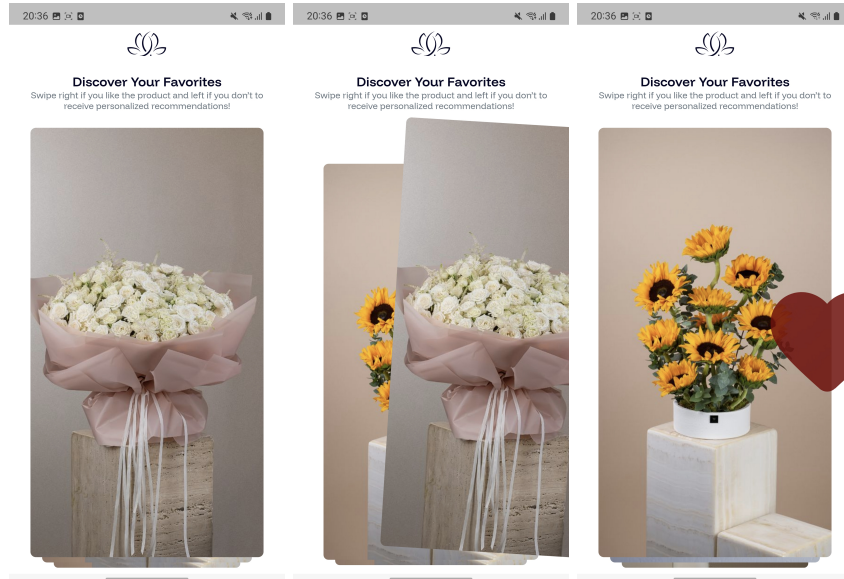
 Password 

[Forgot Password?](#)

Sign In

4.2.8 Product Discovery Page

Upon signing in for the first time as a customer, customers are greeted with the Discovery Page. This dynamic feature lets customers swipe right on items they like or left to skip, enabling the system to curate their personalized "Your Picks" section on the home page. The displayed images change dynamically.



20:36 [status icons]



Discover Your Favorites

Swipe right if you like the product and left if you don't to receive personalized recommendations!



20:37 [status icons]



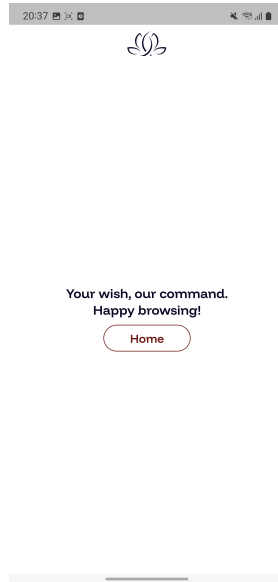
Discover Your Favorites

Swipe right if you like the product and left if you don't to receive personalized recommendations!



4.2.9 Welcome Home Page

The Welcome Home page warmly greets users with a delightful message: "Your wish, our command. Happy browsing!" This ensures a positive user experience by creating a sense of hospitality and satisfaction.



4.2.10 Customer Home Page

The customer home page provides a welcoming and customizable interface, allowing users to immerse themselves in a personalized shopping experience. The "Customize Bouquet" section, enables users to design unique bouquets tailored to their preferences, themes, and occasions. Following this, the "Bouquet for Every Moment" section showcases categories such as Engagement, Graduation, and "Thank You," ensuring that customers can easily find the perfect bouquet for any occasion. Additionally, the "Top Picks" feature dynamically highlights trending bouquets, like "Dreamy Delight" and "Classic Romance," to cater to diverse customer preferences. All sections and content on this page are dynamic and can be modified by the admin to align with evolving customer needs and trends.

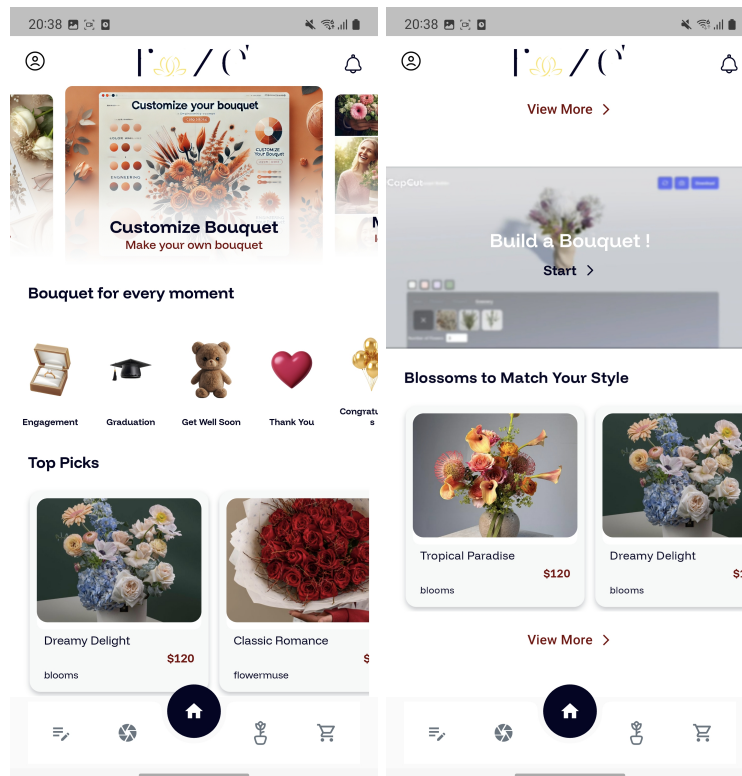


Figure 4.12: Customer Home Page: Dynamic Features and Personalized Options

4.2.11 Bouquet for Every Moment

The "Bouquet for Every Moment" section is a thoughtfully designed feature that enables customers to choose the perfect bouquet for various life moments. This feature not only simplifies the process of finding a suitable bouquet but also introduces advanced search capabilities. customers can search for bouquets based on color or type of flowers, offering a personalized and enjoyable shopping experience. With the admin dynamically managing categories, this feature stays fresh and tailored to meet customer needs.

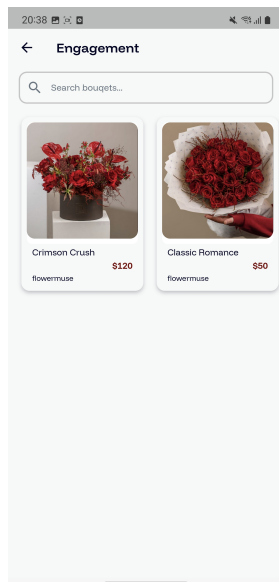


Figure 4.13: The "Engagement" category highlighting bouquets such as Crimson Crush and Classic Romance.

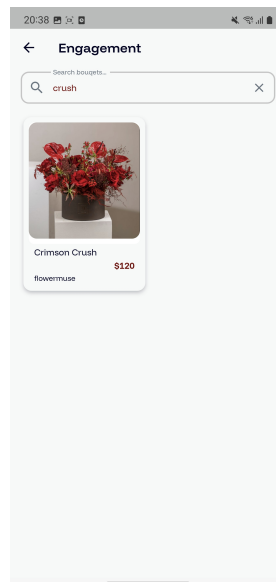


Figure 4.14: The "Search by Type or name" feature showing filtered results for bouquets have "crush" in there names like Crimson Crush.

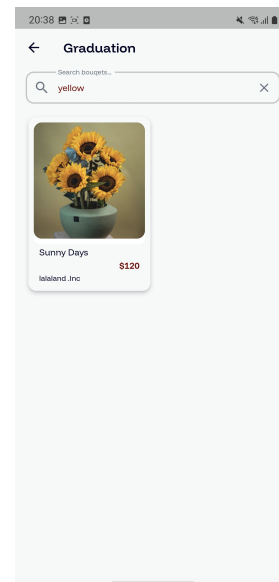


Figure 4.15: The "Search by Color" feature displaying bouquets like Sunny Days filtered by the color yellow.

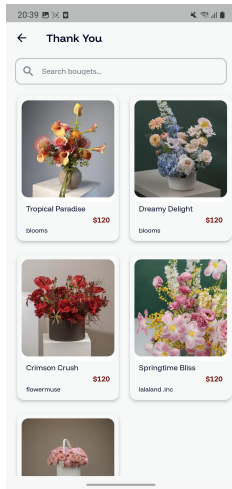


Figure 4.16: The "Thank You" category showcasing arrangements like Tropical Paradise, Dreamy Delight, and Springtime Bliss.

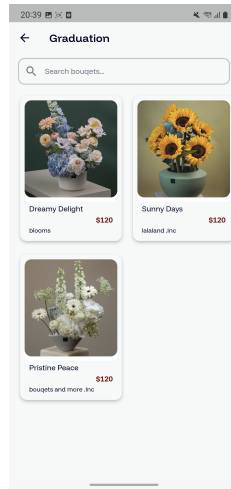


Figure 4.17: The "Graduation" category featuring bouquets like Pristine Peace and Sunny Days.

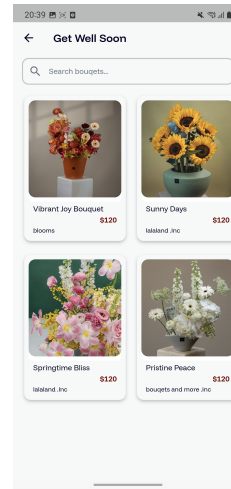


Figure 4.18: The "Get Well Soon" category displaying cheerful options like Vibrant Joy Bouquet and Pristine Peace.

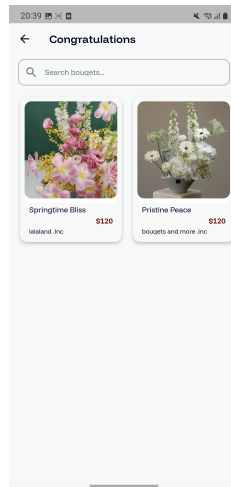


Figure 4.19: The "Congratulations" category featuring elegant options like Springtime Bliss and Pristine Peace.

4.2.12 Bouquet Page View

The "Bouquet Page View" provides an immersive experience for customers, showcasing a detailed overview of each bouquet. It includes a high-quality image, the bouquet's name, a captivating description, its price, care tips, and tags. The business name displayed on the page is clickable, redirecting customers to the respective business's page. Additionally, the tags are interactive, allowing customers to explore bouquets associated with the same tags (referred to as "moments").

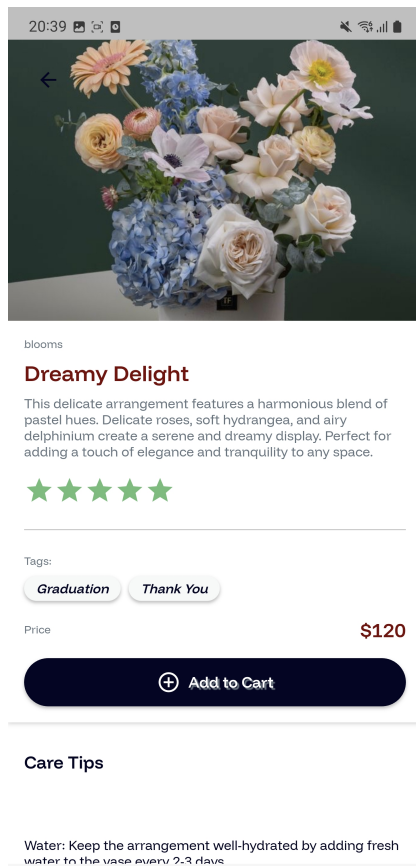


Figure 4.20: The "Dreamy Delight" bouquet features "

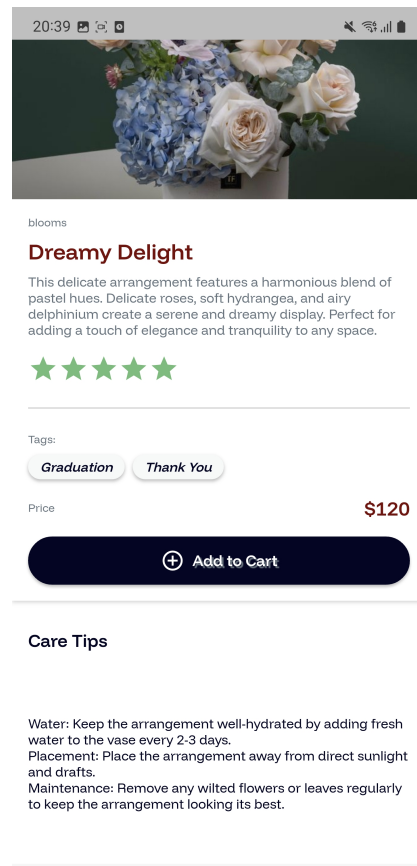


Figure 4.21: A detailed view of the "Dreamy Delight" bouquet

Each bouquet page is dynamically updated based on the bouquet's specific details, ensuring an engaging and personalized shopping experience for every customer. This interactive design ensures customers can seamlessly navigate

the platform, explore related bouquets, and connect directly with the business, offering an enhanced and user-friendly shopping experience.

4.2.13 Business Page View

The "Business Page View" provides customers with a comprehensive overview of a business, including its logo, location, contact information, and email address. This page also highlights the business's recent work, showcasing bouquets crafted by them. Customers can easily connect with the business through the displayed contact details or browse through their portfolio for inspiration.

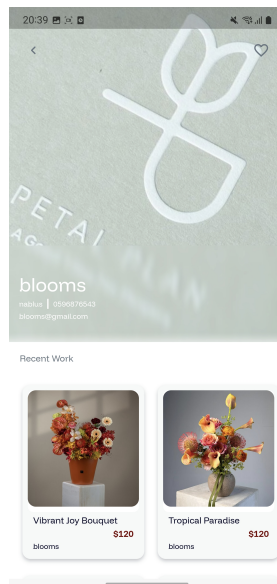


Figure 4.22: The "Business Page View" displays the business information

4.2.14 Top Picks Section

The "Top Picks" section on the homepage displays the four most popular bouquets, allowing customers to quickly access some of the most loved arrangements. For those looking to explore more, the "View More" button opens a new page showcasing the top 10 picks. This feature provides a broader range of options while keeping the homepage concise and visually appealing.

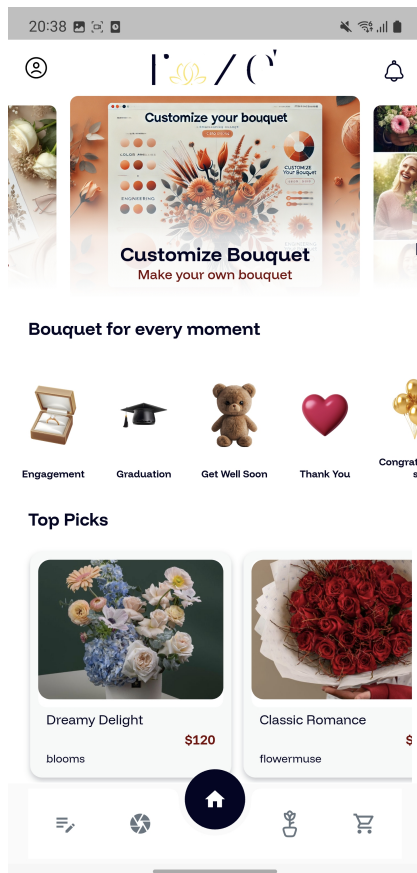


Figure 4.23: The "Top Picks" section on the homepage featuring the four most popular bouquets.

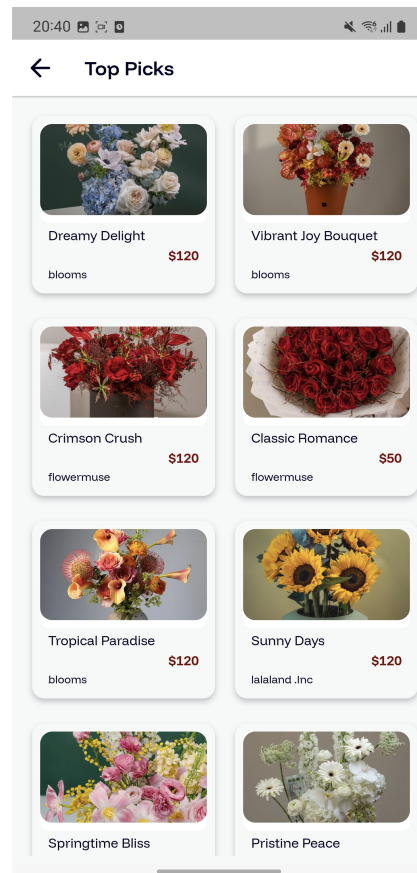


Figure 4.24: The "View More" page showcasing the top 10 bouquets.

4.2.15 Bouquet Matches Your Style

The "Bouquet Matches Your Style" section is tailored to showcase bouquets aligned with the customer's preferences. These preferences are determined during the sign-up process, where customers select their favorite flower types and styles. The dynamic flower type buttons in this section allow customers to filter bouquets further, providing a personalized browsing experience. Clicking on "View More" displays a broader range of options matching the customer's style.

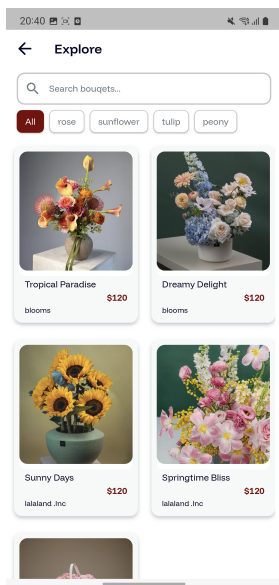


Figure 4.25: Top bouquets matching the customer's preferences

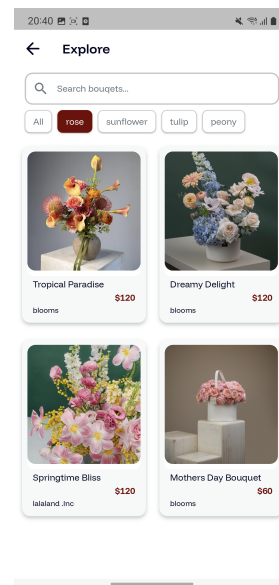


Figure 4.26: Flower type buttons dynamically generated based on customer preferences.

4.2.16 AI-Powered Gift Card Generator

To create a gift card, the customer simply enters the recipient's name, their own name, and a short message expressing their sentiments. With a single tap on the "Generate" button, the system crafts a heartfelt message, ensuring every gift card feels special and unique.

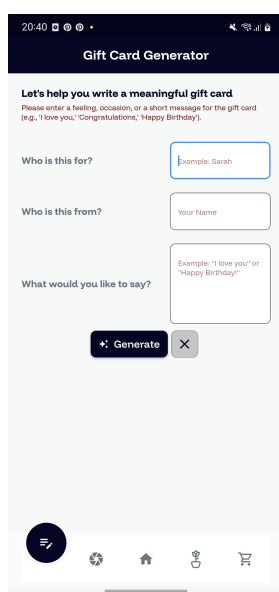


Figure 4.27: The AI-powered gift card generator interface, ready for user input.

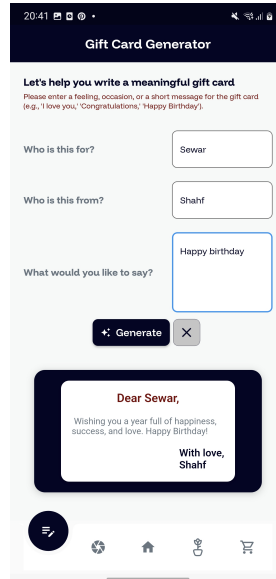


Figure 4.28: The customer fills in the recipient's name, their own name, and a heartfelt message.

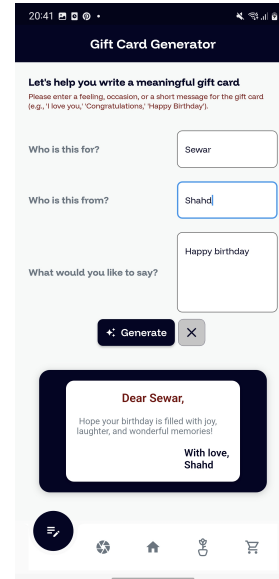


Figure 4.29: The AI generates a beautifully crafted message for the customer's chosen occasion.

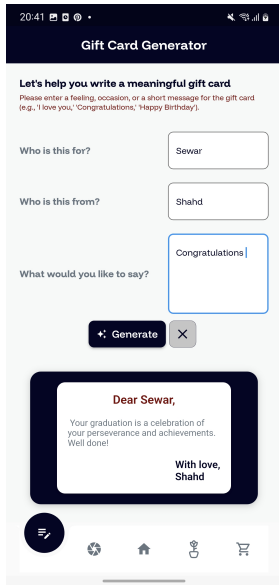


Figure 4.30: Another example of a generated message, perfectly suited for the occasion.

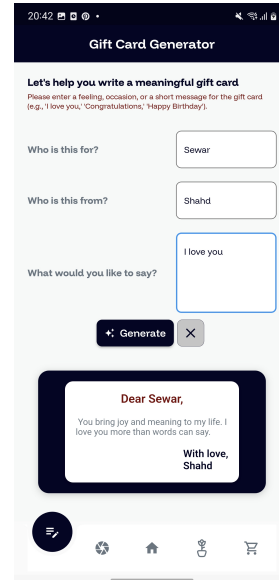


Figure 4.31: The final gift card, ready to be shared with a loved one.

4.2.17 AI-Powered Bouquet Matching Feature

The bouquet matching feature leverages **image processing** to help customers find the perfect bouquet based on the dominant colors in an uploaded or captured image. Customers can use the **front or back camera** to take a photo, and the system analyzes its colors. Once processed, a **dialog box** appears with two choices:

- **View Matching Bouquets** – Displays bouquets that best match the detected colors.
- **Retake Photo** – Allows the customer to take a new image for analysis.

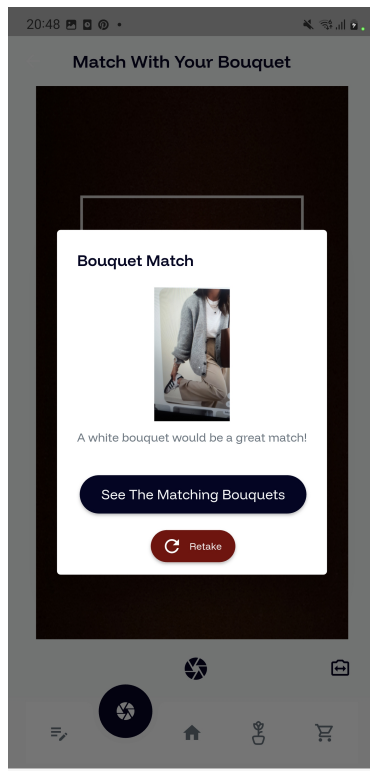


Figure 4.32: Customer captures an image for bouquet matching.

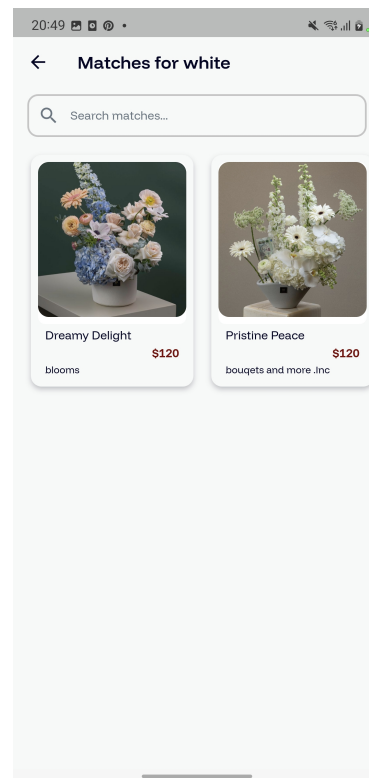


Figure 4.33: System processes the image and identifies the best bouquet color match.

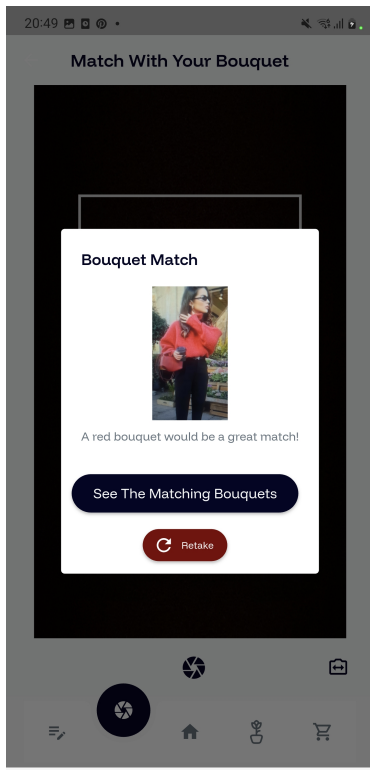


Figure 4.34: Dialog box presenting the matching bouquet suggestion and action options.

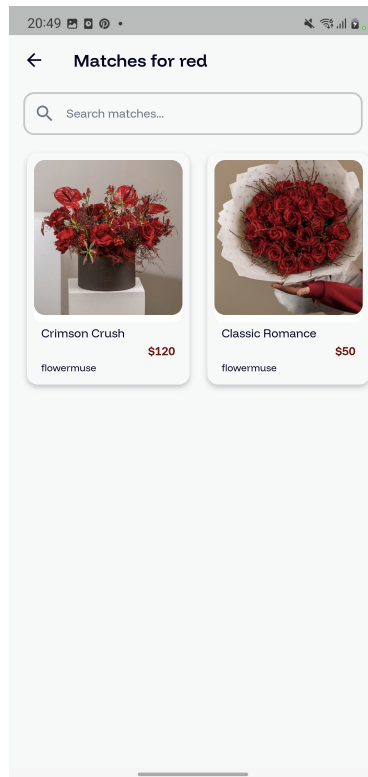


Figure 4.35: Customer views a collection of bouquets that match the detected color.

4.2.18 Customer Account Page

The "Customer Account Page" offers a user-friendly interface for managing personal information, including updating profile details such as name, email, and profile picture. Users can seamlessly edit their phone number and address with real-time feedback confirming successful updates. The page also provides access to essential account settings, such as changing passwords, viewing order history, managing favorite businesses, and ensuring secure account access with a logout option.

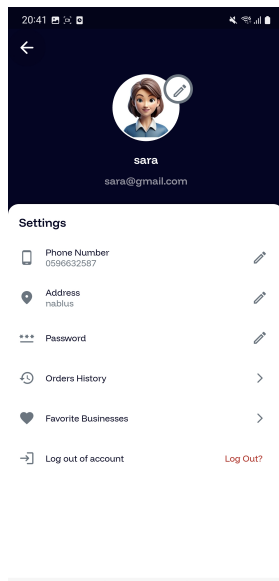


Figure 4.36: The customer account page showing the main settings.

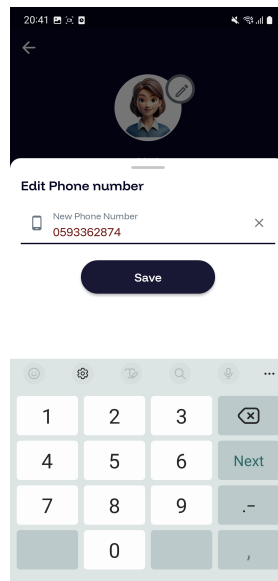


Figure 4.37: The interface for updating the phone number.

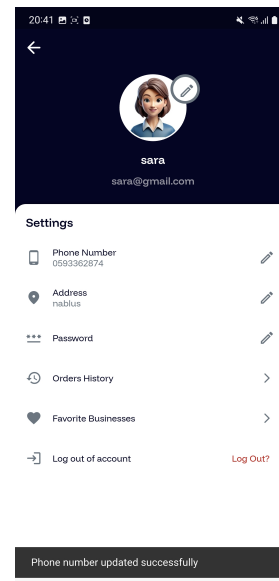


Figure 4.38: Confirmation of a successful phone number update.

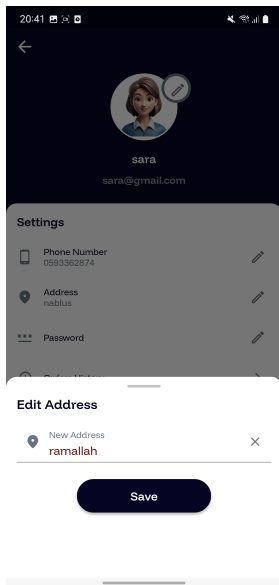


Figure 4.39: The interface for updating the address.

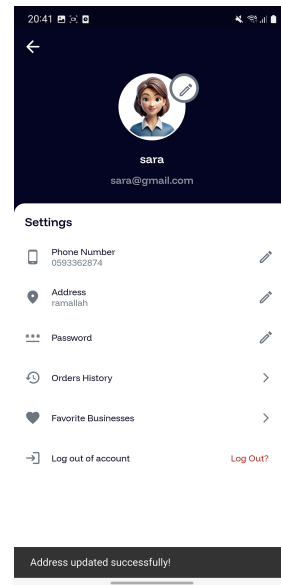


Figure 4.40: Confirmation of a successful address update.

4.2.19 Step-by-Step Ordering Process

The ordering process is designed to ensure a smooth and intuitive experience for customers. Starting with the selection of bouquets, customers can add items to their cart with a single tap. Each added item is displayed in the shopping cart with its name, price, and seller, making it easy to review and modify selections. The total price is dynamically updated to reflect the current cart contents. Before placing an order, customers are prompted with a confirmation message, ensuring clarity and intent. Once confirmed, the process proceeds to the next steps, such as delivery details and payment, creating a seamless journey from selection to purchase.

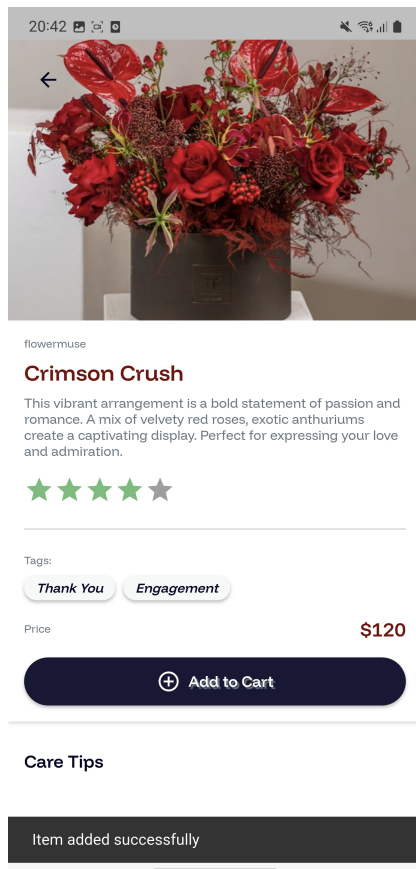


Figure 4.41: Adding items to the shopping cart with detailed bouquet information.

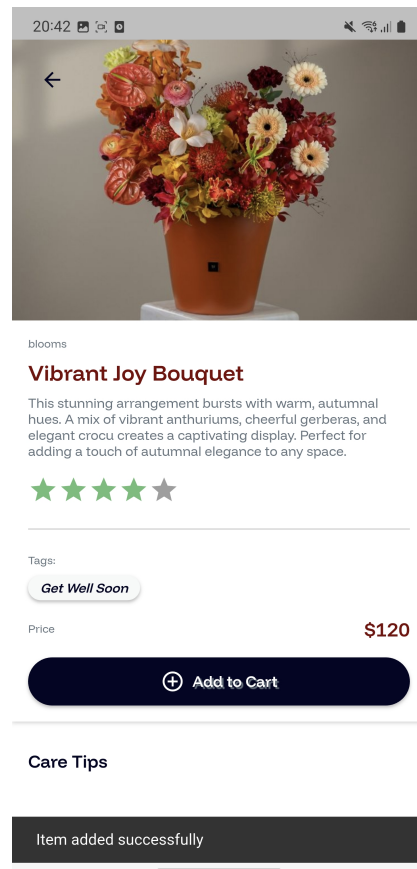


Figure 4.42: Adding items to the shopping cart with detailed bouquet information 2.

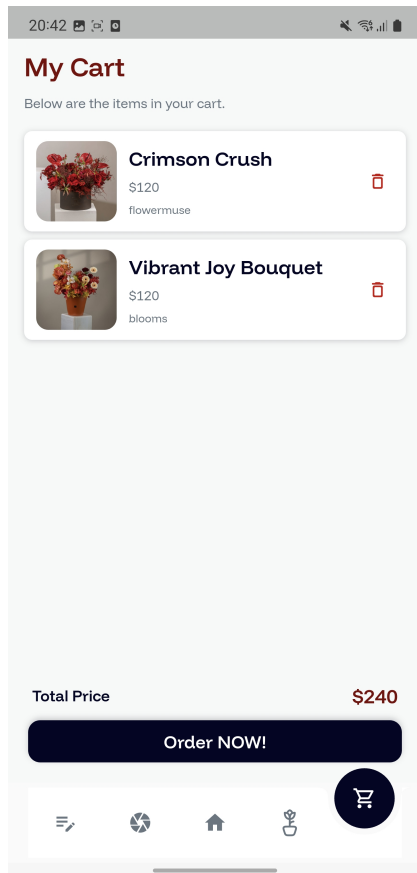


Figure 4.43: Reviewing the shopping cart with updated total price.

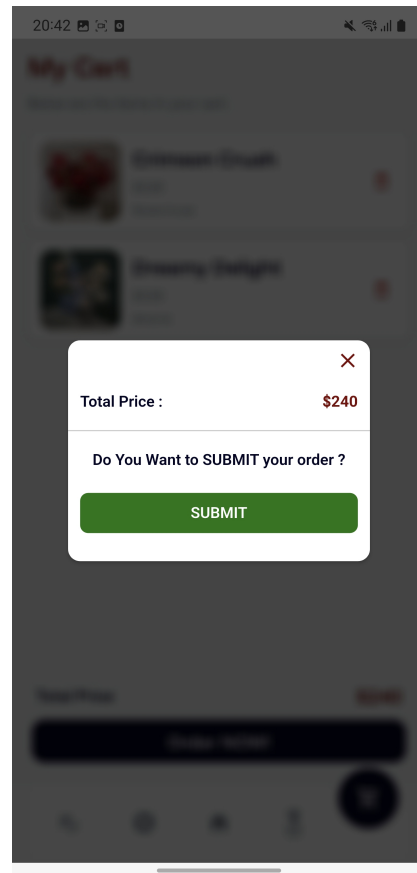
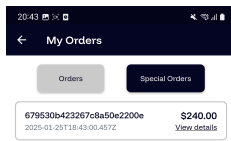


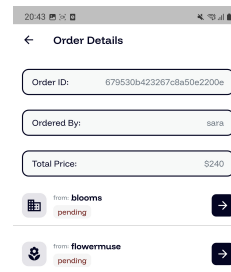
Figure 4.44: Confirmation prompt before submitting the order.

4.2.20 Order Status and Details

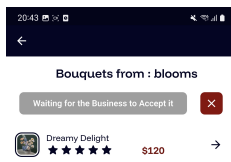
This part of the application helps customers easily manage their orders by providing an overview of past and current purchases, along with real-time updates on their status. Users can view a list of orders with details like total price and order ID, and explore each order to see bouquets organized by the businesses fulfilling them. The app clearly indicates if a bouquet is awaiting business confirmation or, in some cases, if it has been denied, ensuring customers stay informed and can respond accordingly.



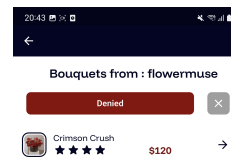
(a) Overview of all customer orders with price and ID.



(b) Detailed breakdown of order bouquets, categorized by business.



(a) Bouquet status waiting for business acceptance.



(b) Example of a denied order for a bouquet.

This intuitive design ensures customers are informed at every stage of their order journey, with real-time updates and clear categorization.

4.2.21 Order Management for Businesses

This section explains the order management process for regular orders. Each business involved in an order that includes their bouquets receives a dedicated order notification. This ensures that businesses have a clear and focused view of their specific contributions to the customer’s order.

Once a business receives the order, they have the option to accept or deny it based on their availability or capacity. If the business accepts the order, they proceed to prepare it. When the bouquet is ready for delivery or pickup, they simply mark the status as "Ready" and wait for the customer to complete the transaction.

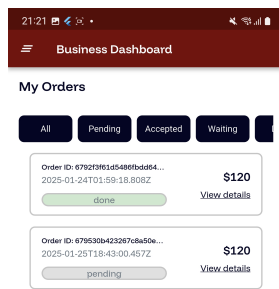


Figure 4.47: Order overview showcasing all pending and completed orders.

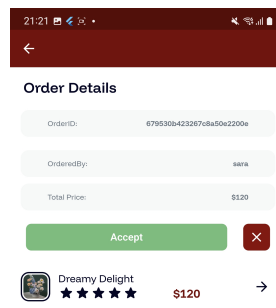


Figure 4.48: Detailed view of an individual order, highlighting the bouquet details.

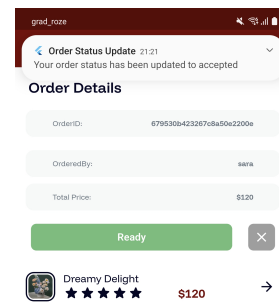


Figure 4.49: Confirmation notification when the order status is updated.

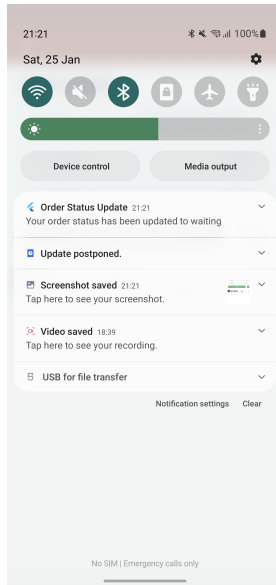


Figure 4.50: Status update panel for marking an order as ready for customer pickup.

4.2.22 Final Steps in the Regular Ordering System

The regular ordering system concludes with a smooth and intuitive process for the customer. Once the order has been successfully received, the customer can confirm the completion by pressing the "I got it" button. This step updates the system, signaling that the order has been fulfilled. To further enhance the experience, customers are encouraged to provide feedback by rating their experience, helping businesses improve their services and maintain high customer satisfaction.

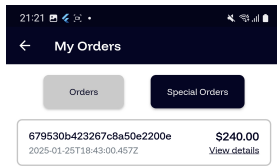


Figure 4.51: Order overview showing completed and pending orders for easy tracking.

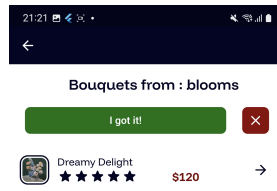


Figure 4.52: Confirmation screen where the customer acknowledges receipt of their bouquet.

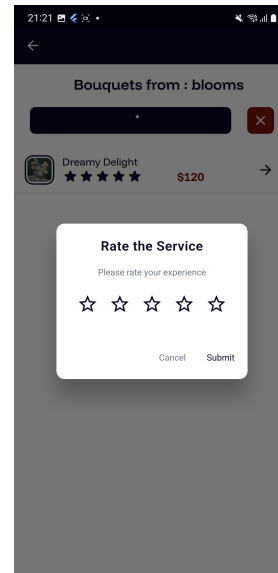


Figure 4.53: User-friendly rating interface for providing feedback on the service.

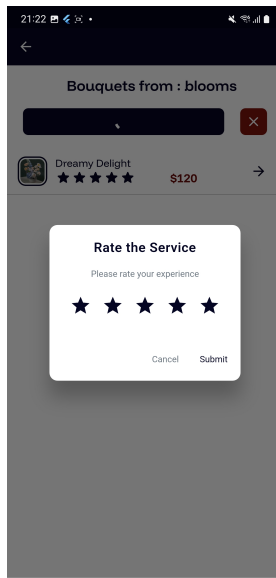
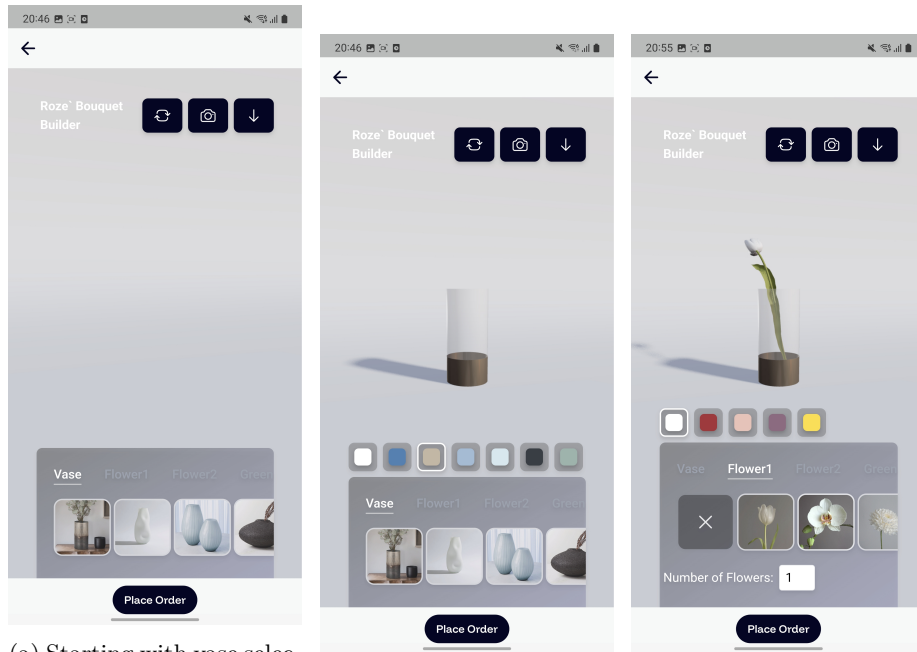


Figure 4.54: Final step: the customer's rating is submitted, completing the order journey.

4.2.23 3D Bouquet Customization

The 3D bouquet customization feature allows users to craft their ideal floral arrangements with an intuitive and interactive interface. Users begin by selecting a vase and move on to choosing flowers, customizing colors, and adjusting quantities. With a real-time 3D preview and options to save, reload, and capture snapshots, the experience is tailored to encourage creativity and ensure customer satisfaction.

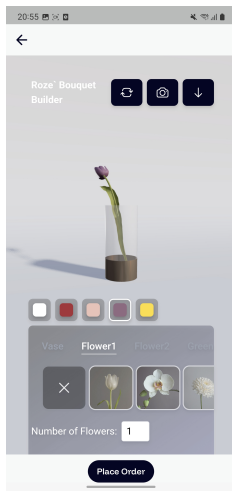


(a) Starting with vase selection.

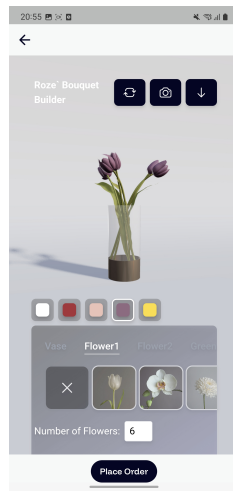
(b) Choosing vase colors.

(c) Adding the first flower.

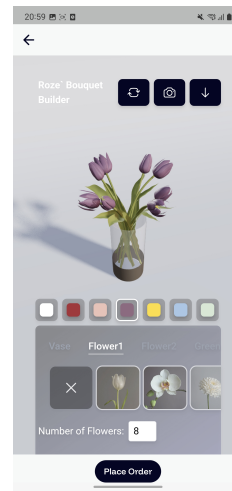
Figure 4.55: Initial steps in the 3D bouquet customization process.



(a) Customizing flower color.

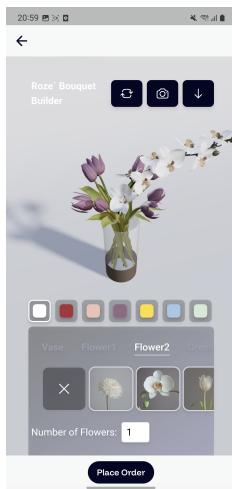


(b) Adding more flowers.

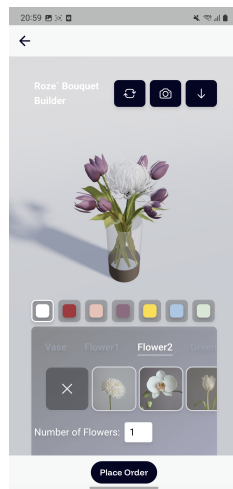


(c) Arranging the bouquet.

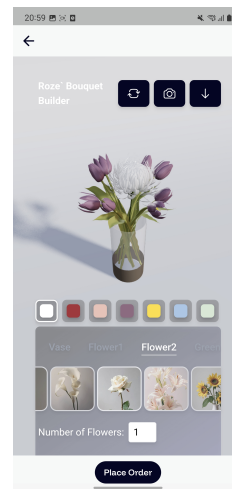
Figure 4.56: Progressing to flower selection and arrangement.



(a) Adding secondary flowers.

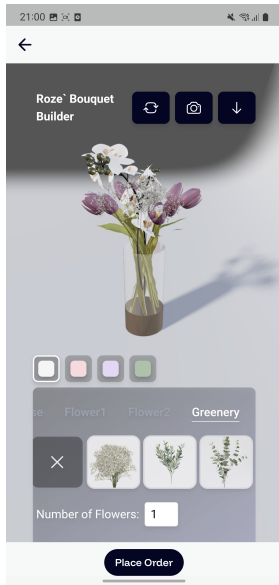


(b) Experimenting with arrangements.

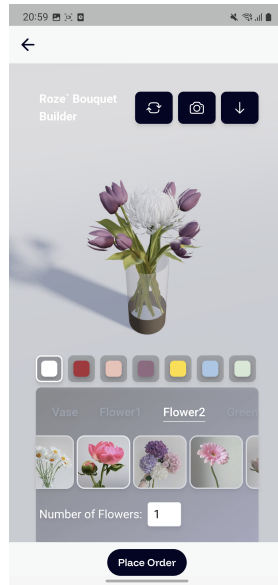


(c) Final bouquet design.

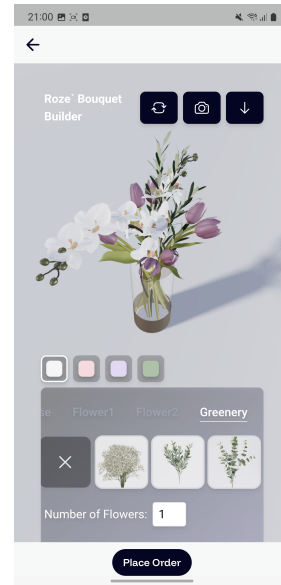
Figure 4.57: Finalizing and placing the bouquet order.



(a) Bouquet with added greenery.

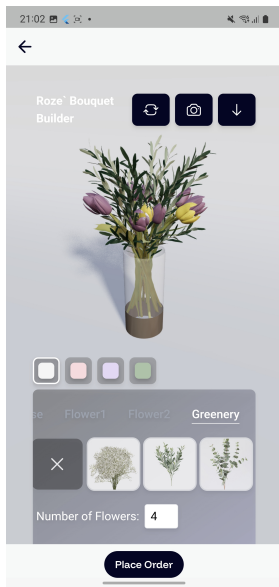


(b) Enhanced bouquet with floral details.

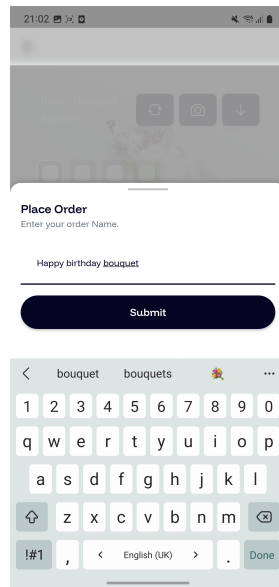


(c) Preview of final bouquet design.

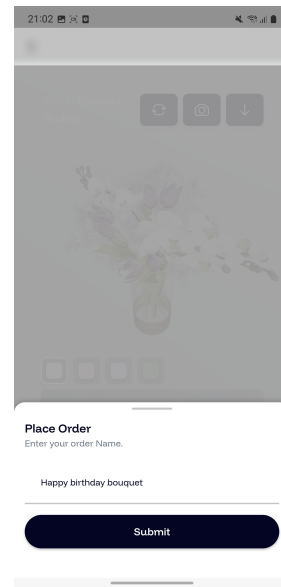
Figure 4.58: Adding greenery and viewing the bouquet progress.



(a) Finalizing the bouquet design.

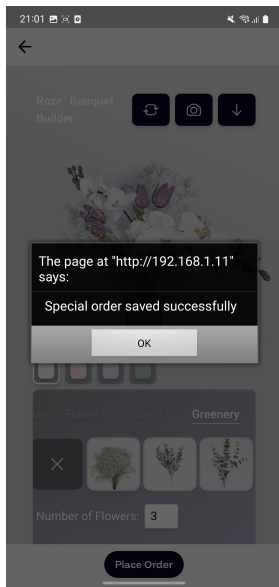


(b) Saving a customized bouquet order.

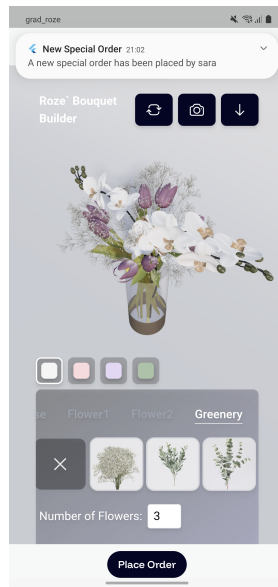


(c) Entering a name for the bouquet order.

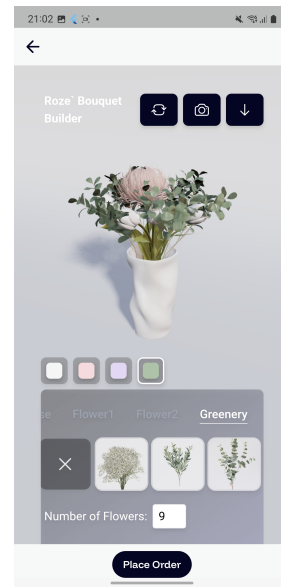
Figure 4.59: Saving and naming the bouquet order.



(a) Order saved confirmation message.



(b) Notification of a new bouquet order.



(c) another example of a bouquet.

Figure 4.60: Feedback and notifications for saved orders.

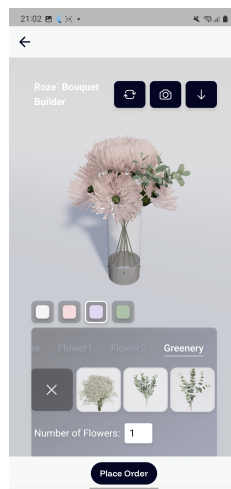


Figure 4.61: Final 3D bouquet ready for placing an order.

4.2.24 Business Handling Custom Bouquet Orders

This sequence captures the thoughtful process a business follows to handle a customized bouquet request from a customer. Beginning with the special order submission, the business carefully reviews the request which is 3d models, including flower types, vase style, and delivery details. After setting a price, an offer is sent to the customer, who is notified promptly. This approach reflects a seamless and customer-friendly ordering experience.

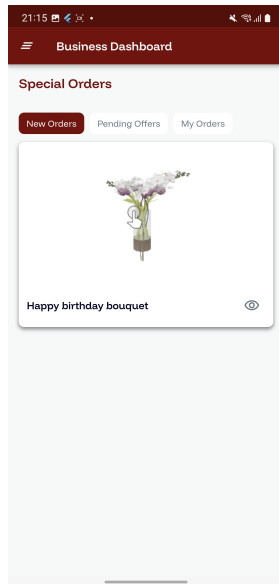


Figure 4.62: Special order by Sara.

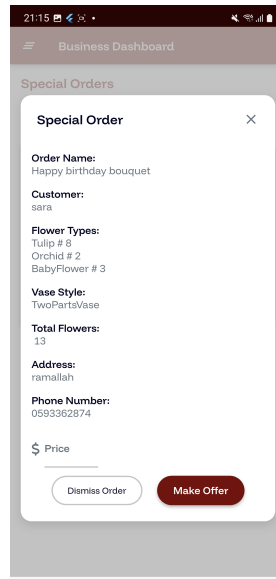


Figure 4.63: Order details.

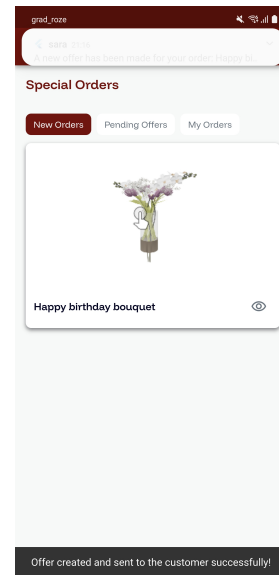


Figure 4.64: Offer sent.

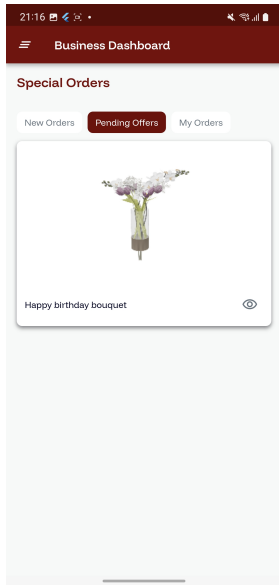


Figure 4.65: Moved to pending.

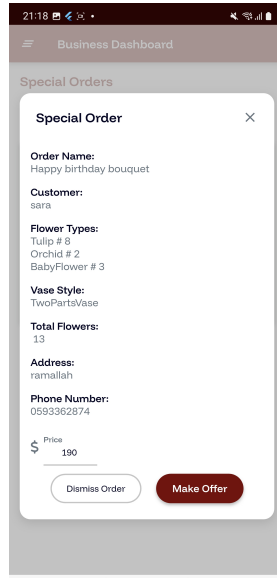


Figure 4.66: Price set.

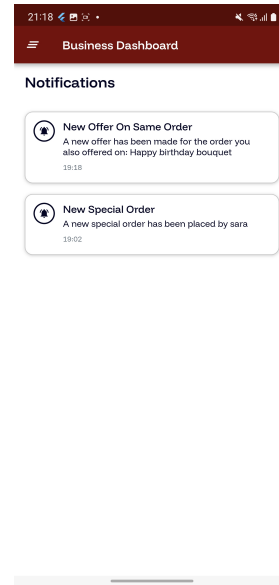


Figure 4.67: Notifications updated.

4.2.25 Customer chooses the best offer

This section brings to light the final steps in the special ordering process, where customers are presented with thoughtfully curated offers from various businesses. Each offer includes detailed information, such as pricing and the specific flower arrangements, empowering customers to make well-informed decisions. By comparing the options, customers can select the bouquet that perfectly aligns with their preferences, budget, and special occasion, ensuring a delightful and personalized experience.



Figure 4.68: Notification alerting the customer about a new offer.

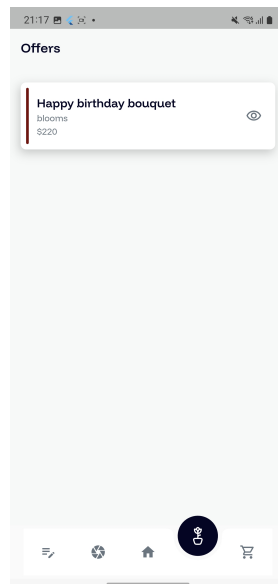


Figure 4.69: Details of the offer shared by the business.

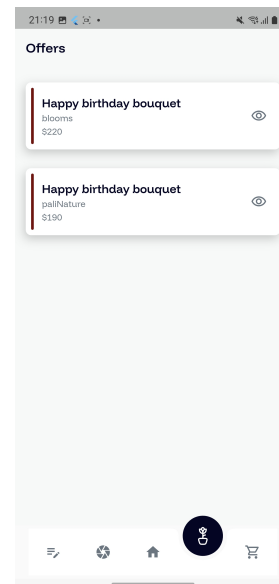


Figure 4.70: Customer reviews and compares multiple offers.

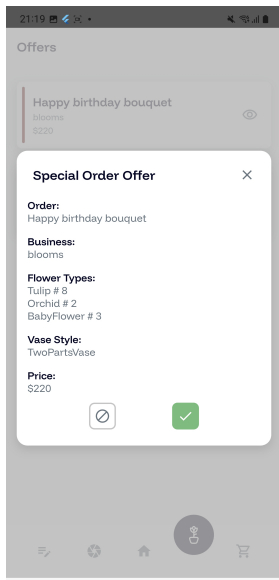


Figure 4.71: The customer selects their preferred offer.

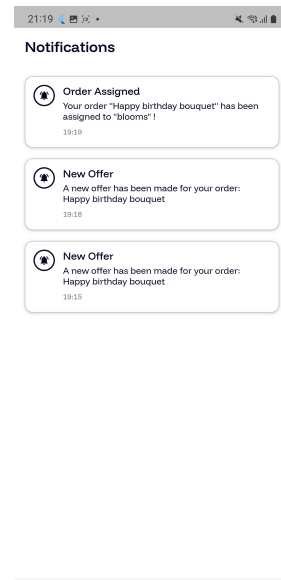


Figure 4.72: The chosen order is successfully assigned.

4.2.26 Business Receives Offer Notifications

This section showcases how businesses stay informed about the outcomes of their offers. By receiving clear notifications, whether an offer has been accepted or declined, businesses can quickly adapt and respond to the customer's needs. These timely updates foster effective communication, enabling businesses to maintain smooth operations and provide a better customer experience.

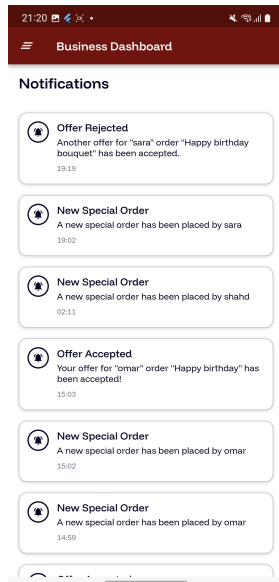


Figure 4.73: Notification of an accepted offer.

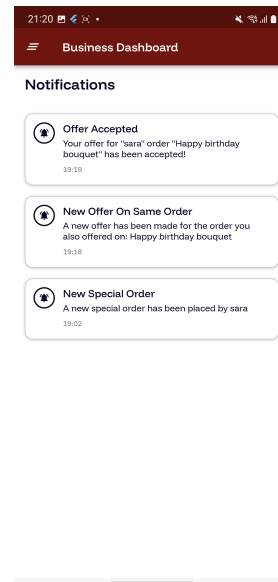


Figure 4.74: Notification of a rejected offer.

4.2.27 Business Dashboard: Managing Bouquets

Upon logging in, businesses are welcomed with a beautifully organized dashboard designed for efficiency and ease. This page is where they can showcase their creative bouquet collections, update details, or introduce new designs. Each bouquet is presented with its name, price, and customer ratings, ensuring transparency and trust. The edit and delete options provide complete control, while the "+" button allows businesses to expand their offerings. The search bar at the top ensures that finding a specific bouquet is a breeze, making this dashboard a key tool for streamlining bouquet management.

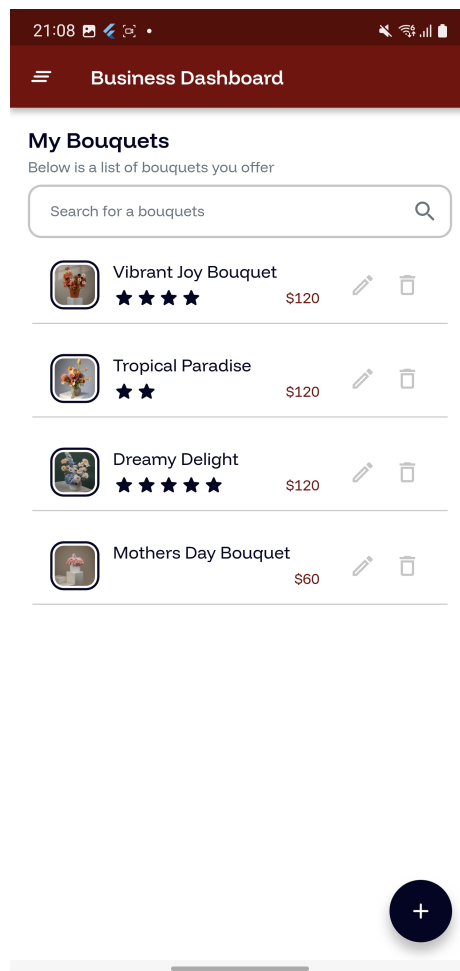


Figure 4.75: A welcoming business dashboard for managing bouquet collections effortlessly.

4.2.28 Editing a Bouquet's Details

When a business owner wants to update the details of a bouquet, the platform provides an intuitive editing interface. By clicking the edit icon, the user gains access to various customization options. These include updating the bouquet's name, selecting allowable flower colors and types, and adding relevant tags for categorization. Additionally, the interface allows users to refine the bouquet's description, include care tips for customers, and adjust the price accordingly. This user-friendly design ensures that businesses can showcase their bouquets in the best possible light while maintaining accurate and appealing details.

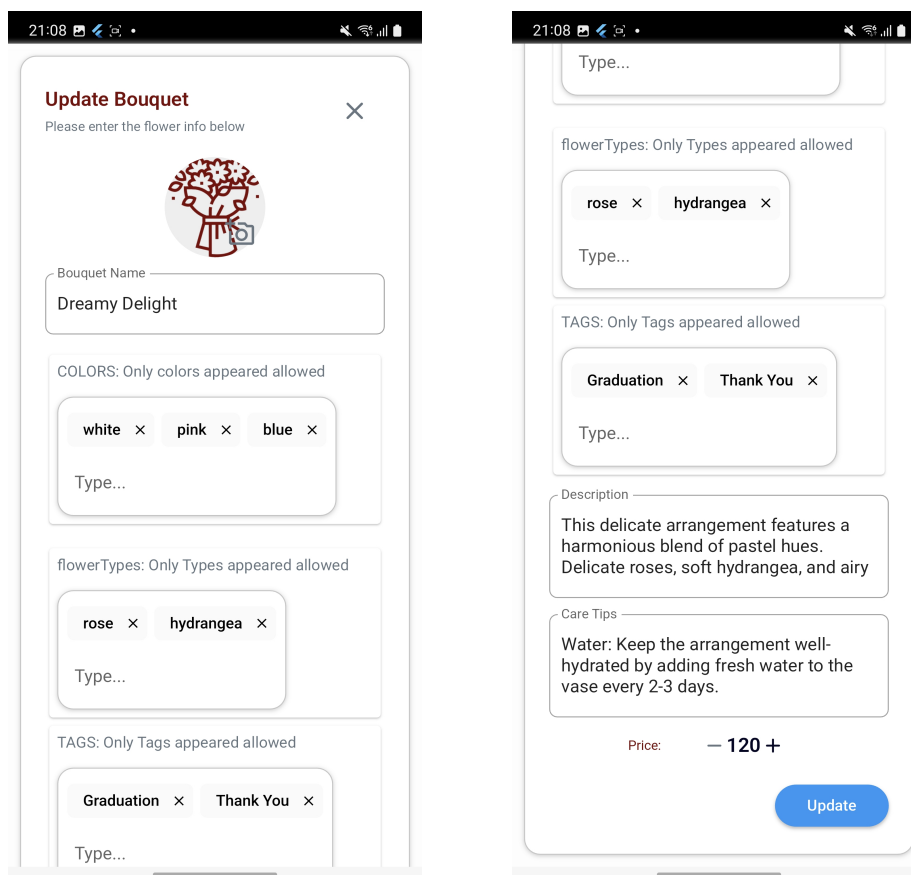


Figure 4.76: The bouquet editing interface allows business users to customize their offerings effortlessly. From updating names and colors to providing care tips and adjusting prices, this interface ensures a seamless editing experience.

4.2.29 Adding a New Bouquet in the Business Dashboard

The bouquet creation feature in the business dashboard allows businesses to showcase their creativity while following the guidelines set by the admin. Using a user-friendly interface, businesses can name their bouquet, select colors, flower types, and tags from options curated by the admin, and provide additional details such as a description and care tips. This ensures every bouquet added aligns with the platform's standards while offering flexibility for personalization. The dropdown menus for colors, flower types, and tags reflect the admin-approved options, helping businesses maintain consistency in their offerings. Once all the necessary details are filled in, the bouquet price can be set, and the addition is finalized by clicking the "Add" button. Upon successful addition, a confirmation message appears, and the bouquet is instantly visible in the business's bouquet list, ready to delight customers.

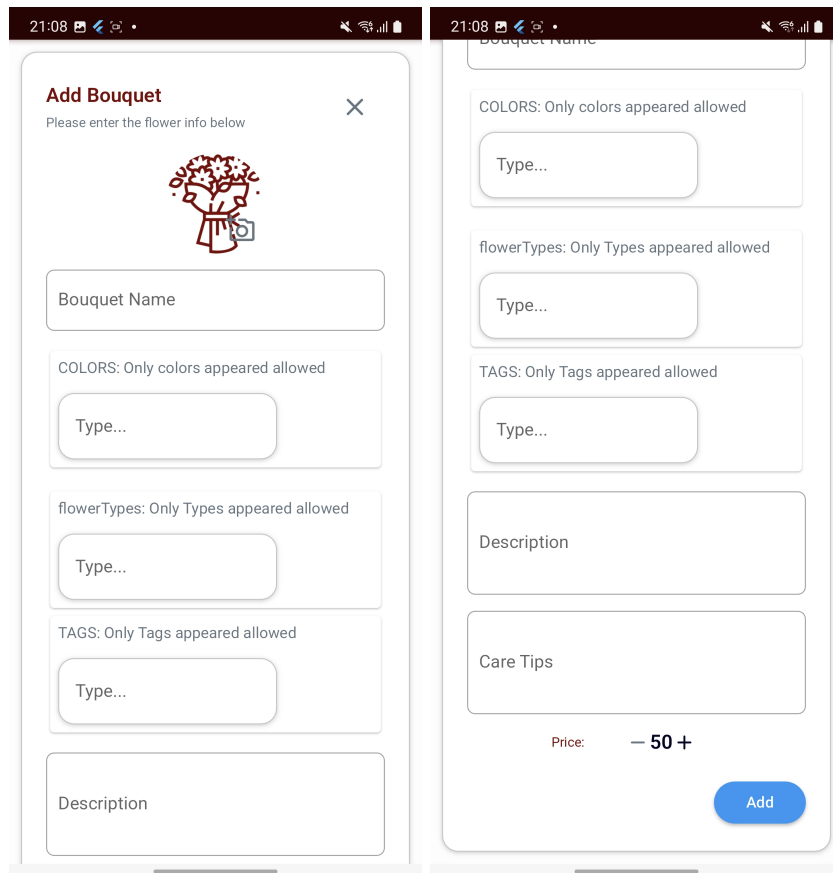


Figure 4.77: The "Add Bouquet" interface, where businesses can input all necessary details for their bouquet, including colors, flower types, and tags approved by the admin.

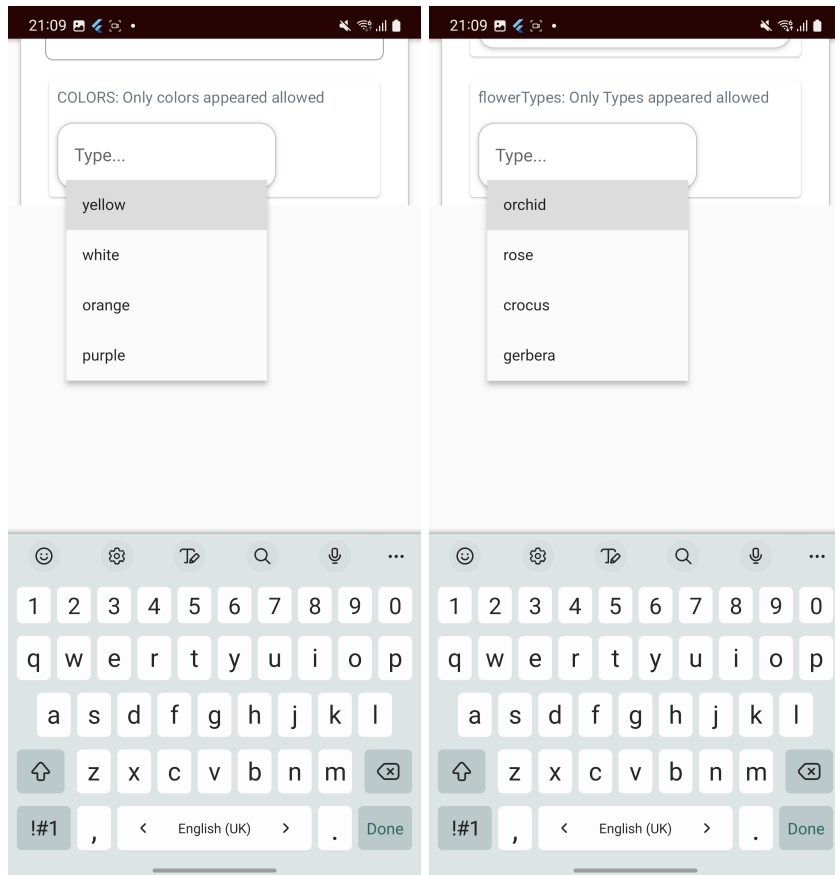


Figure 4.78: Dropdown options showcasing a variety of admin-approved colors and flower types, giving businesses creative flexibility while staying within guidelines.



Figure 4.79: The newly added bouquet appears in the dashboard list with a success message, confirming the addition was successful.

4.2.30 Updating an Existing Bouquet - Example 2

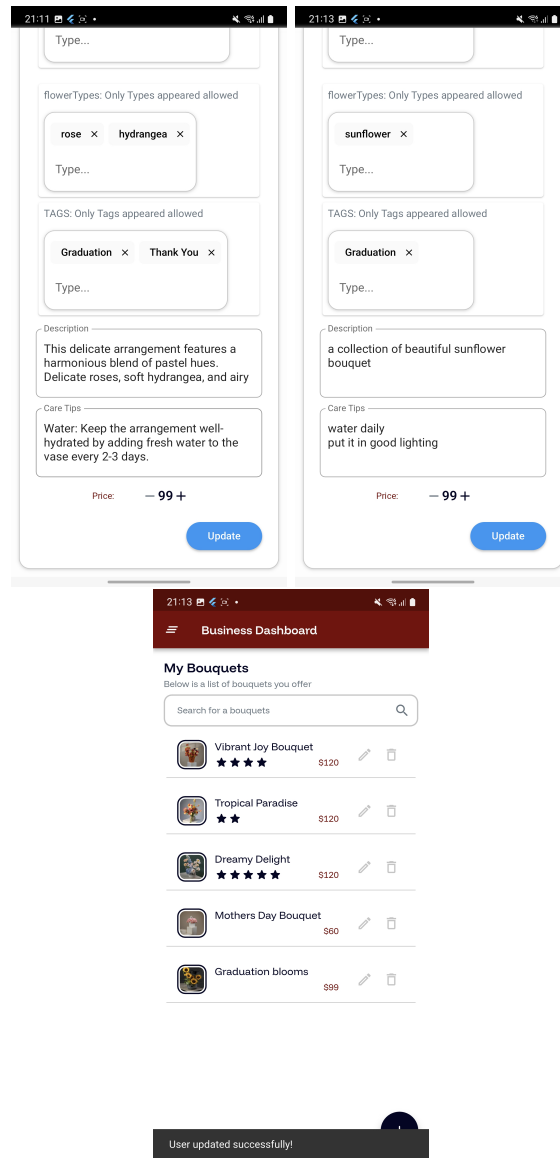
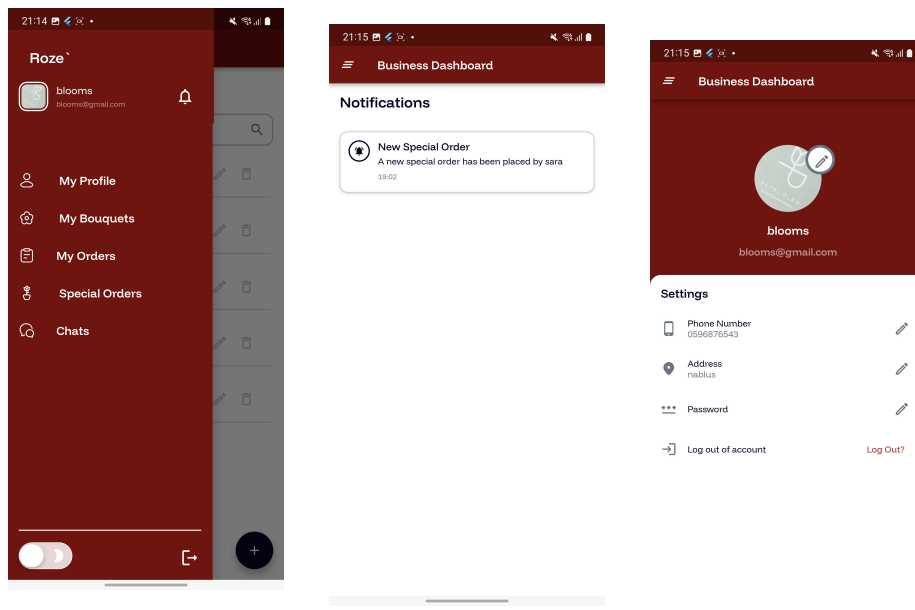


Figure 4.80: Steps in updating a bouquet: modifying details (first two) and confirmation of update on the dashboard (third).

4.2.31 Business Account Dashboard Features

This collection of images provides a closer look at the essential tools and features available to business users for managing their accounts and operations effectively.



The side menu of the business account dashboard offers a clean and organized interface. It provides quick access to key features like profile management, bouquet listings, order tracking, special orders, and chat options. The thoughtful layout ensures business owners can navigate effortlessly through their essential tools.

The notifications section keeps business users informed about important updates. This example showcases a new special order placed by a customer named Sara. The notification is time-stamped for clarity, helping businesses stay on top of their operations.

The profile page allows businesses to maintain their information with ease. Users can update their contact details, address, and password. The inclusion of a logout option ensures account security, demonstrating a focus on both functionality and user safety.

Figure 4.81: Humanized view of Business Account Dashboard Features.

4.2.32 Managing Business Account Settings

Business owners can efficiently manage their account settings through the dashboard. This includes updating their phone number, changing their address, and ensuring that all account details remain current. The process is designed to be user-friendly, allowing businesses to make modifications seamlessly.

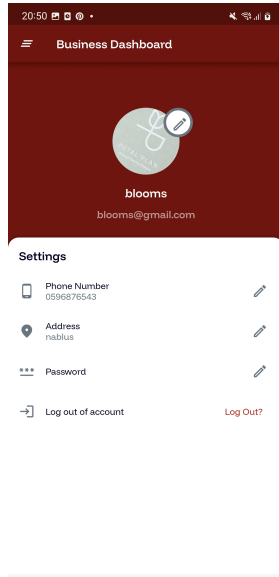


Figure 4.82: Business account dashboard displaying profile details and settings.

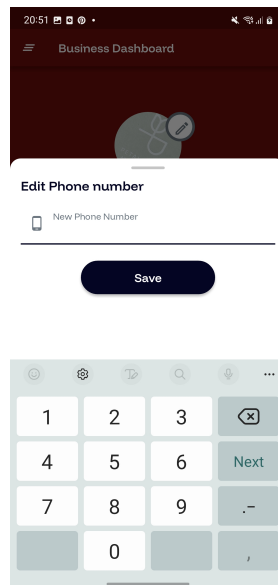


Figure 4.83: Interface for editing the business phone number.

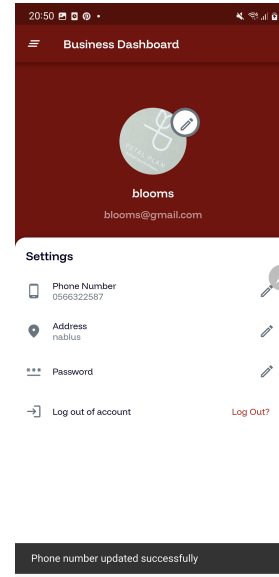


Figure 4.84: Updated phone number displayed successfully on the dashboard.

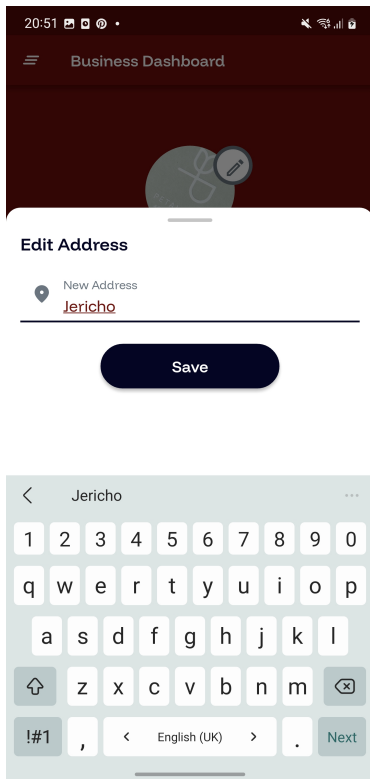


Figure 4.85: Editing the business address to update location details.

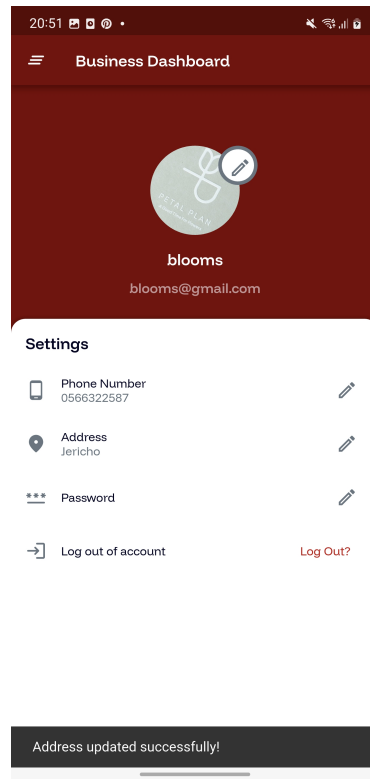


Figure 4.86: Updated address reflected in the business dashboard.

4.2.33 Chat Feature

The chat feature within the business dashboard exemplifies a streamlined and professional communication tool. It enables admins to interact with businesses effortlessly, ensuring clarity and timely responses. Starting from a user-friendly business selection list, admins can quickly navigate to specific conversations. Notifications are integrated to ensure no message goes unnoticed, making the process efficient and customer-focused.

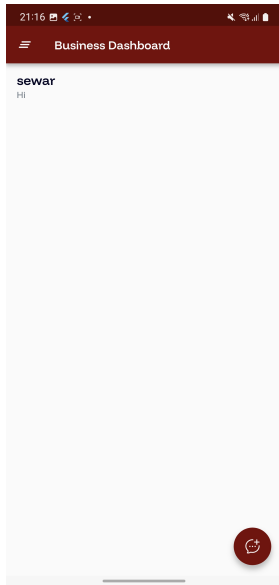


Figure 4.87: Overview of the business dashboard.

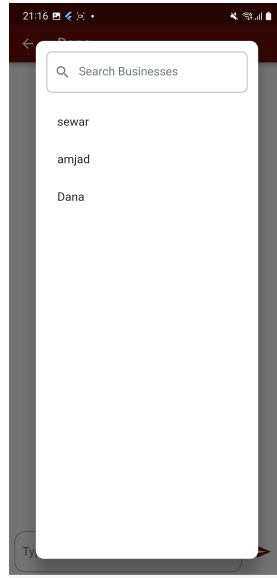


Figure 4.88: Business selection interface.

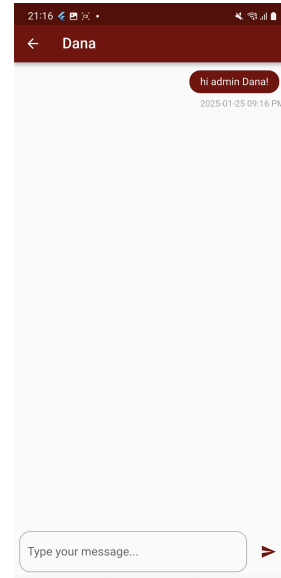


Figure 4.89: Chat messaging screen.

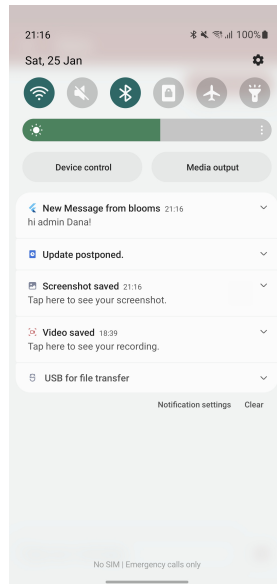


Figure 4.90: New message notification alert.

4.2.34 Admin Dashboard Overview

The admin dashboard is designed to provide a clear and intuitive overview of the platform's activity, helping administrators manage users, orders, and businesses efficiently. At a glance, it displays insights into the total number of users, breaking them down into customers, businesses, and admins, with a helpful pie chart for visualization. The dashboard also highlights the top-performing businesses based on order volume, making it easy to track sales trends. Additionally, the order summary provides a quick update on total and completed orders, ensuring that admins stay on top of operations. A dedicated section for recent requests allows admins to review and approve new business registrations seamlessly, making the entire management process smoother and more efficient.

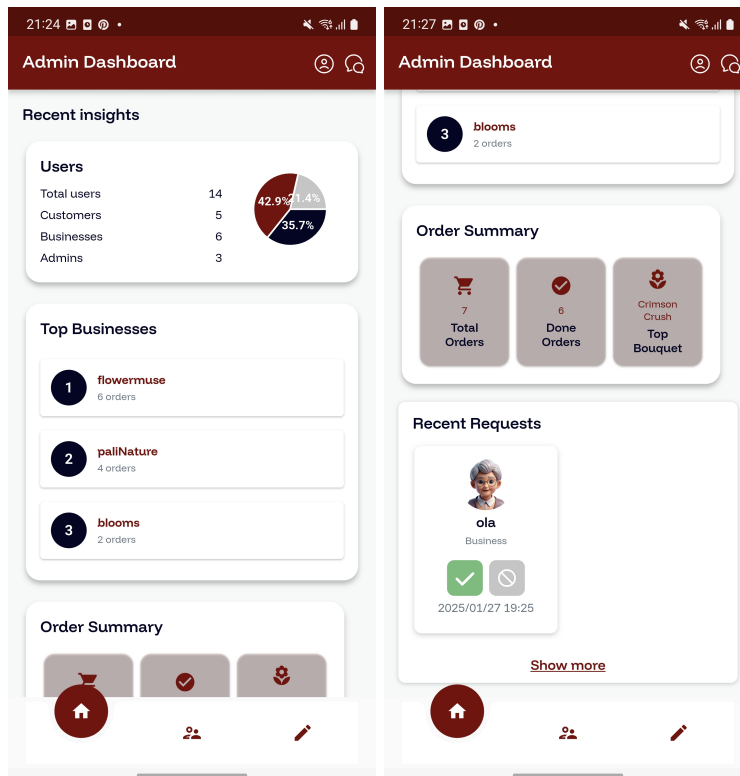


Figure 4.91: Admin dashboard displaying user insights, top businesses, order summary, and recent requests.

4.2.35 Admin User Management Dashboard

The admin dashboard provides a streamlined interface for managing users on the platform. This includes viewing all registered users, filtering them based on their role (customers or businesses), and monitoring pending account approvals. The admin can also update user information such as names, email addresses, and roles, ensuring a well-organized and efficient system. The dashboard simplifies user management, allowing the admin to maintain smooth operations with just a few clicks.

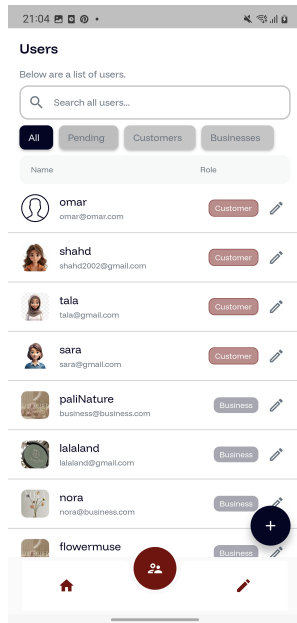


Figure 4.92: Admin's view of all registered users.

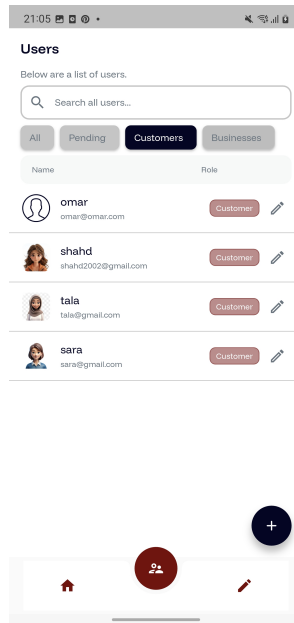


Figure 4.93: Filtering users to display only customers.

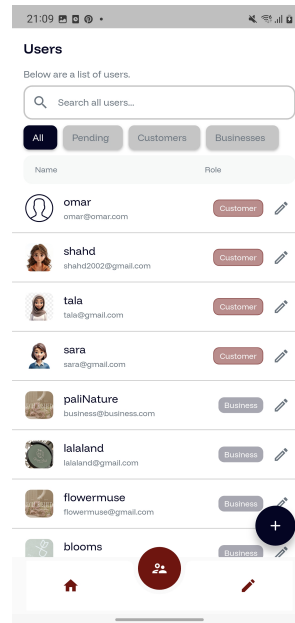


Figure 4.94: Filtering users to display only businesses.

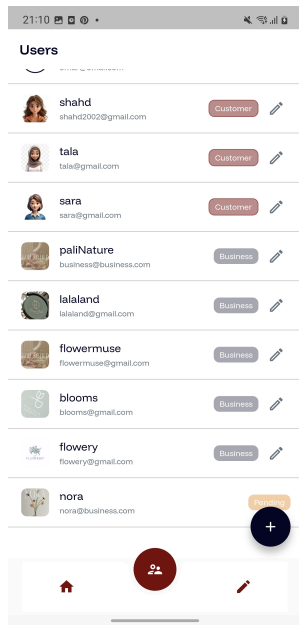


Figure 4.95: Viewing users with pending approval.

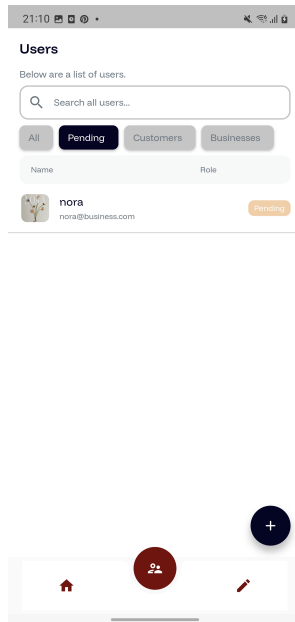


Figure 4.96: Filtering users based on roles.

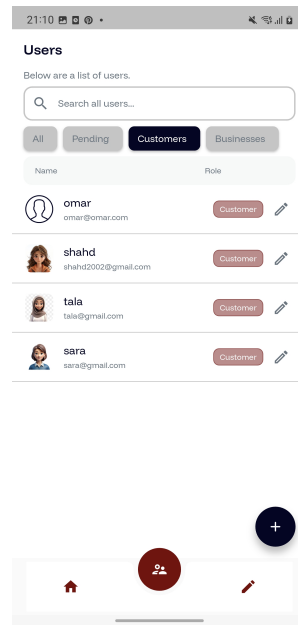
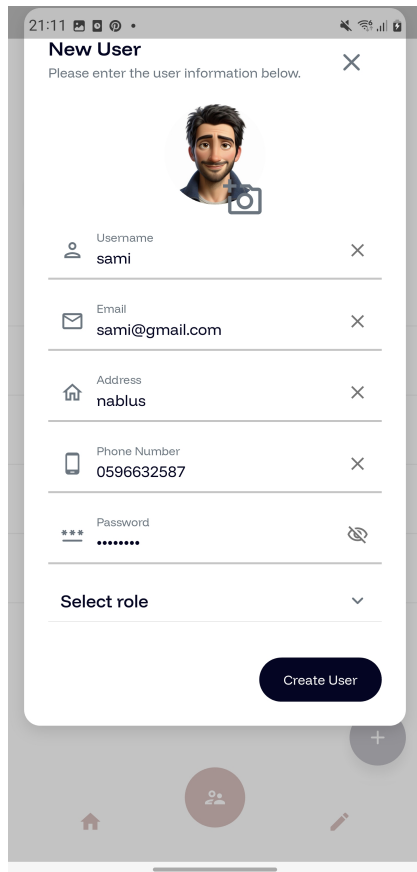


Figure 4.97: Editing user information in the admin panel.

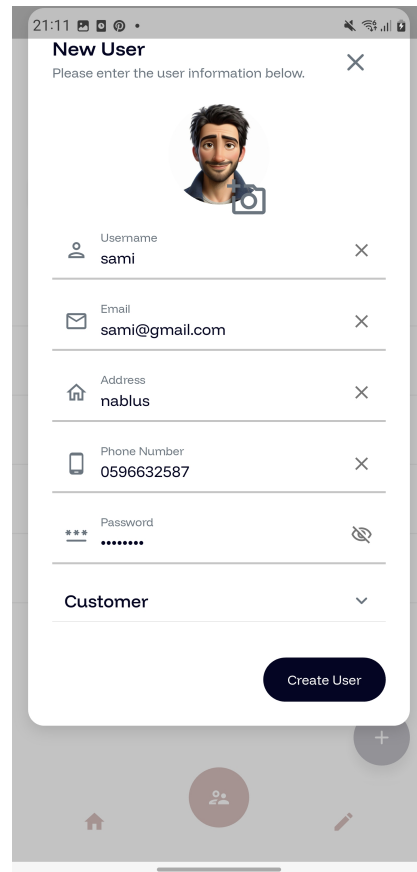
4.2.36 Admin adding a New User

The admin interface provides an easy-to-use feature for adding new users to the system. The admin can input essential user details such as username, email, address, phone number, and password. Additionally, the admin can assign roles to users, categorizing them as either customers or business accounts. Once the required information is filled out, the user is successfully added to the platform.



The screenshot shows a mobile application interface for adding a new user. The title is "New User" with a close button (X). Below the title is the instruction "Please enter the user information below." There is a profile picture placeholder with a camera icon. The form contains the following fields: Username (sami), Email (sami@gmail.com), Address (nablus), Phone Number (0596632587), and Password (masked with dots). At the bottom, there is a "Select role" dropdown menu and a "Create User" button.

Figure 4.98: Form for entering new user information.



The screenshot shows the same "New User" form as in Figure 4.98, but with the "Select role" dropdown menu set to "Customer". The "Create User" button is still visible at the bottom.

Figure 4.99: Selecting a role for the newly created user.

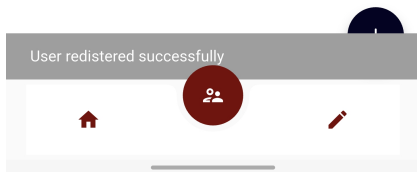
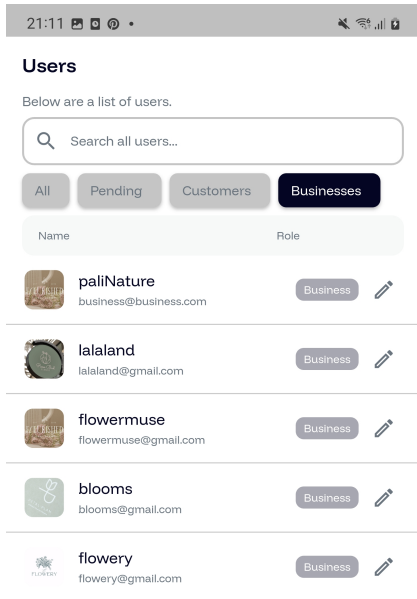


Figure 4.100: User successfully registered and added to the system.

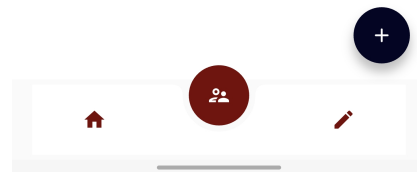
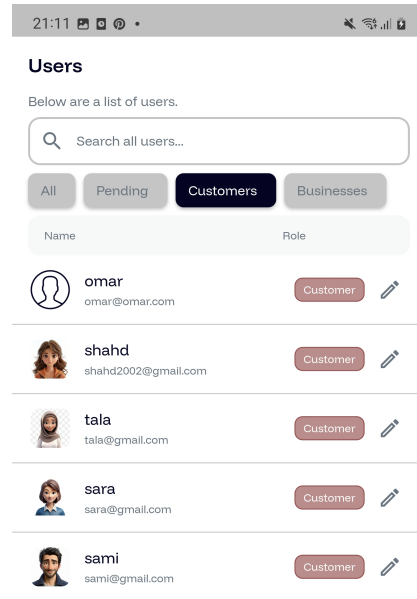


Figure 4.101: Updated user list with the newly added account.

4.2.37 User Search Functionality in Admin Users Management

The user search feature allows the admin to quickly locate specific users by entering a portion of their name or email address. The interface dynamically filters the results in real-time, ensuring efficient navigation and management. Users can also be filtered based on categories such as customers or businesses to streamline administrative tasks.

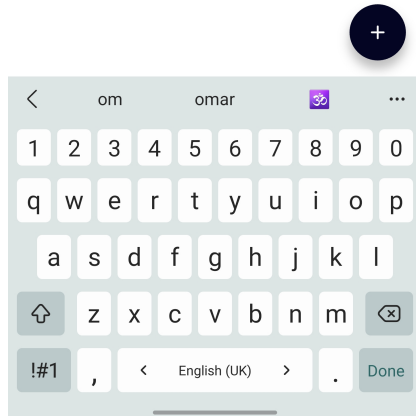
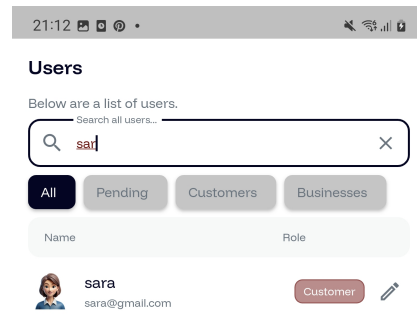
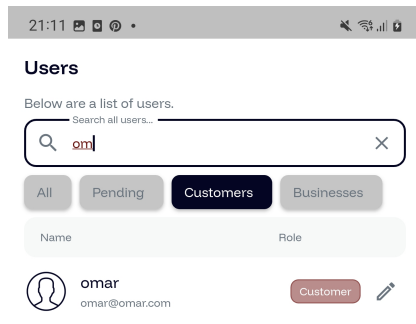


Figure 4.102: Searching for a customer named "Omar" dynamically filtering the list.

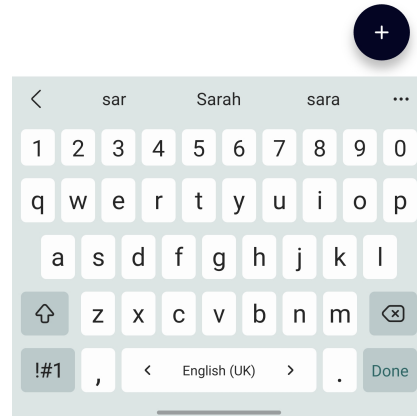


Figure 4.103: Searching for a customer named "Sara" displaying the matching result.

4.2.38 Admin Editing Interface

The admin editing interface provides an intuitive and efficient way for administrators to manage different categories within the system. It allows them to add, edit, and remove colors, flower types, and special moments effortlessly. The interface is designed with a clean layout where each category is visually represented by tags, making modifications quick and straightforward. When adding new items, a pop-up form appears, allowing the admin to input details, and a confirmation message ensures the action is successfully completed. Additionally, for special moments, there is an option to upload images, making the customization process even more engaging and visually appealing.

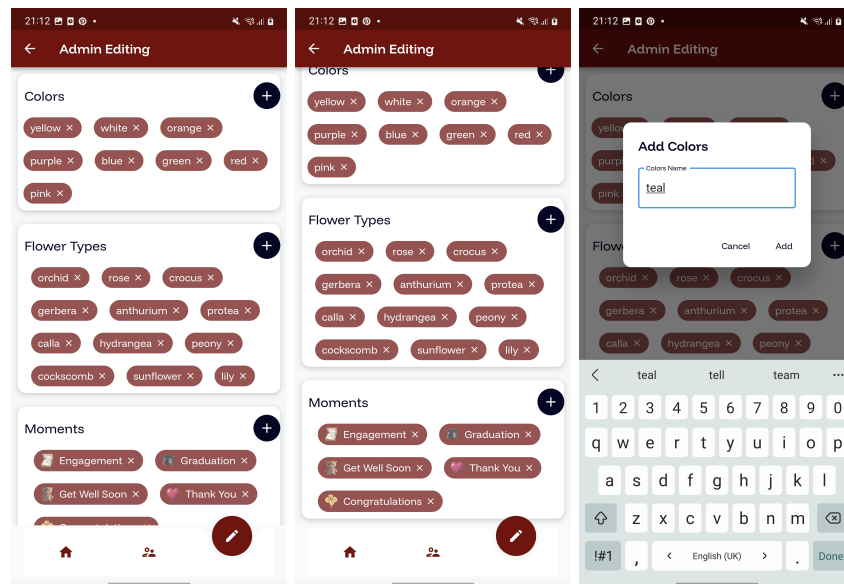


Figure 4.104: Admin interface displaying existing colors, flower types, and moments.

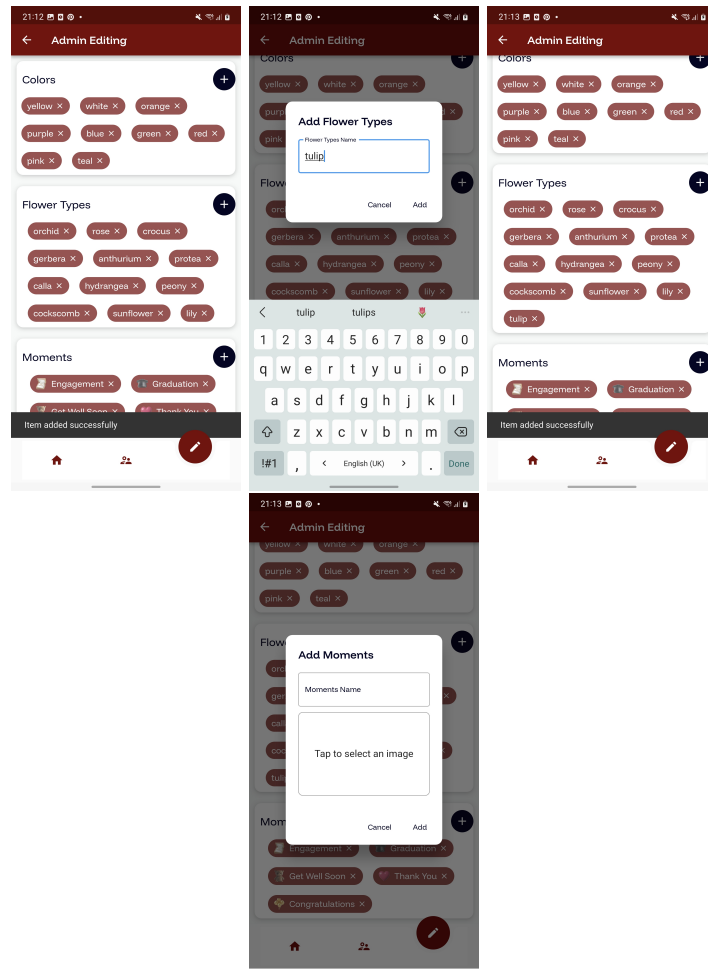


Figure 4.105: Adding new colors, flower types, and moments through a pop-up form.

4.2.39 Admin Account Management

The admin account settings provide a user-friendly interface for administrators to manage their personal details and system settings efficiently. Admins can update their profile information, including phone numbers and passwords, ensuring that their credentials remain up-to-date. The interface also offers an option to manage other admins by adding or deleting accounts as needed. The seamless pop-up forms for editing and confirming actions contribute to a smooth user experience. Furthermore, a notification system ensures that changes, such as updating a phone number or managing admin access, are successfully communicated to the user.

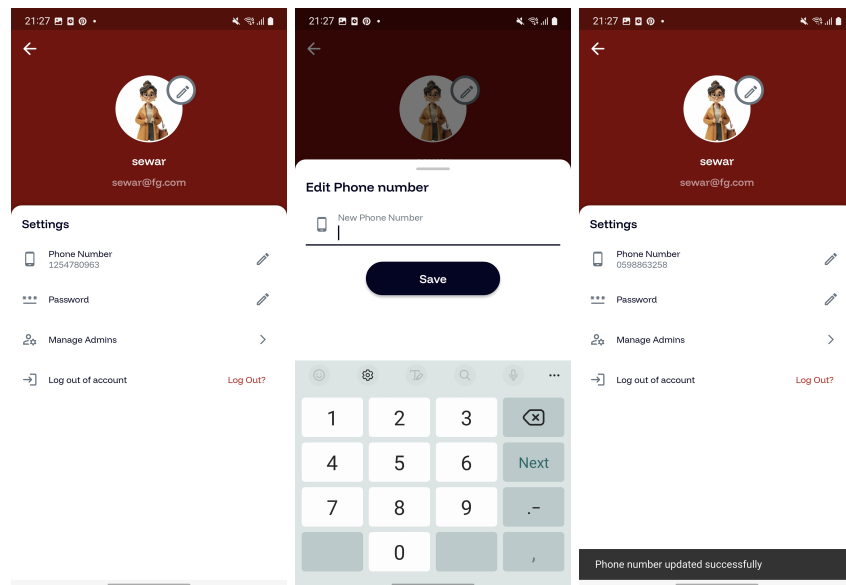


Figure 4.106: Admin profile settings with options to edit phone number and manage admins.

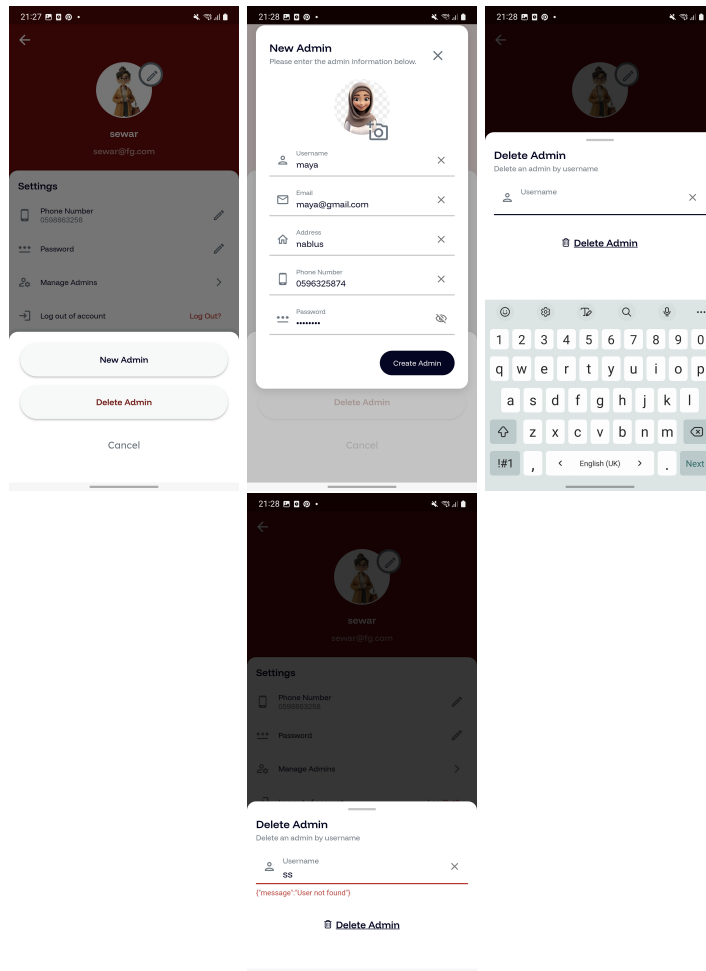


Figure 4.107: admins managements

4.2.40 Dark Theme Integration

The following screenshots highlight the application's comprehensive dark theme integration, thoughtfully designed to enhance the user experience in low-light settings. This mode not only reduces eye strain but also gives the interface a sleek and modern appearance. The consistency of the dark theme across different sections of the app ensures a visually cohesive and pleasant navigation experience. Below are examples showcasing how various pages, from menus to profile settings, adapt seamlessly to the dark theme:

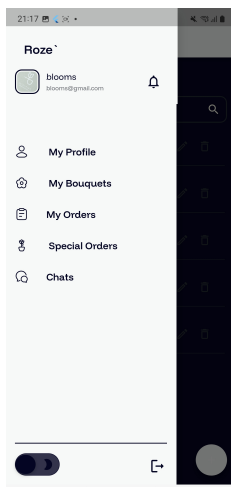


Figure 4.108: Main menu in dark mode, offering easy access to key features.

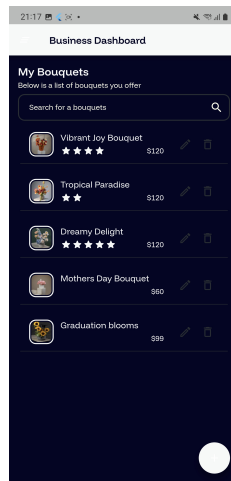


Figure 4.109: Bouquet catalog with a dark theme, providing a soothing browsing experience.

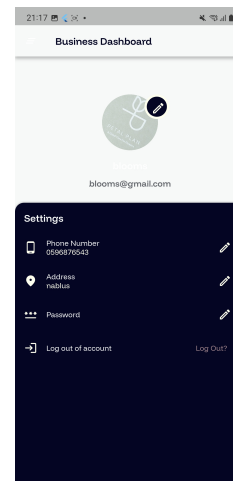


Figure 4.110: Profile settings page, elegantly displayed in dark mode for user convenience.

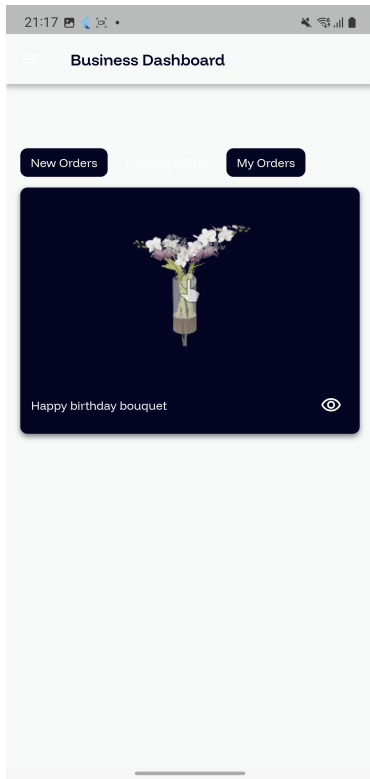


Figure 4.111: Detailed order view, maintaining clarity and focus in dark mode.

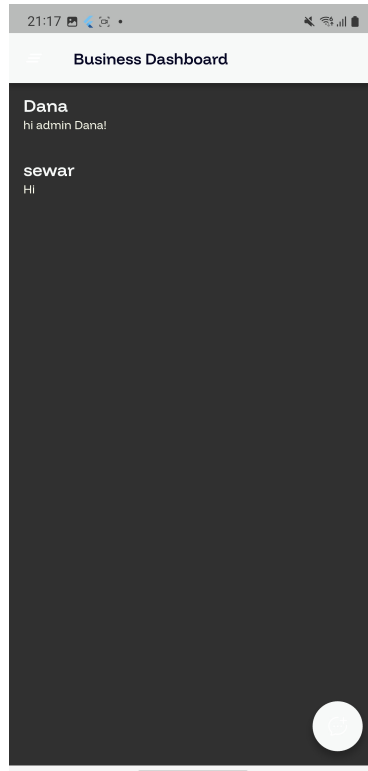


Figure 4.112: Chat interface in dark mode, ensuring comfortable and engaging conversations.

4.3 Website

All features mentioned for the mobile app are also available on the website without any exceptions.

4.3.1 Start Page

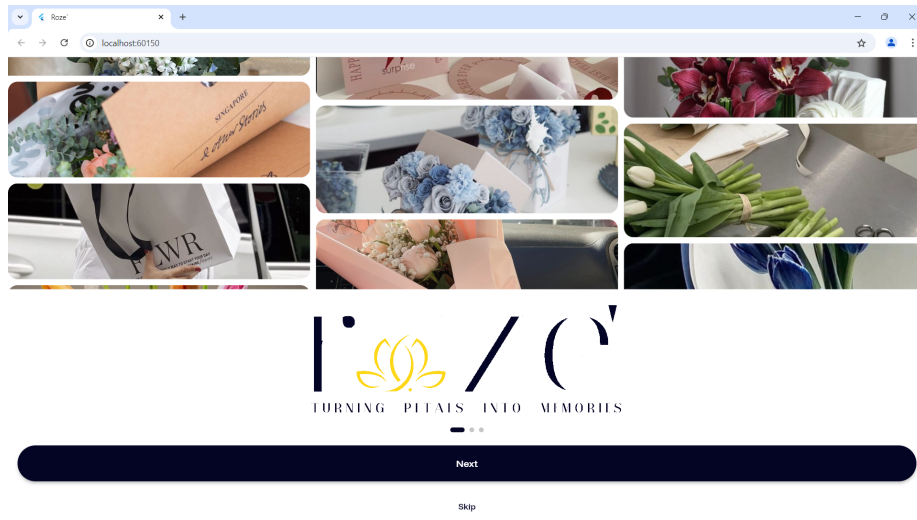


Figure 4.113: Start page of the website

4.3.2 Registration & Authentication



Figure 4.114: Registration & Authentication Processes - Part 1

Figure 4.115: Registration & Authentication Processes - Part 2

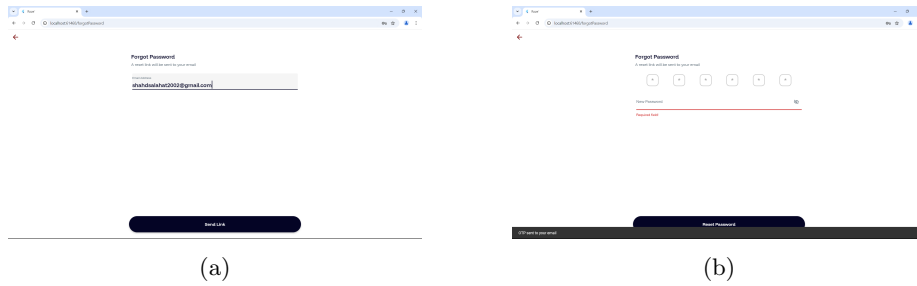


Figure 4.116: Changing password process on the Website

4.3.3 Customer profile page

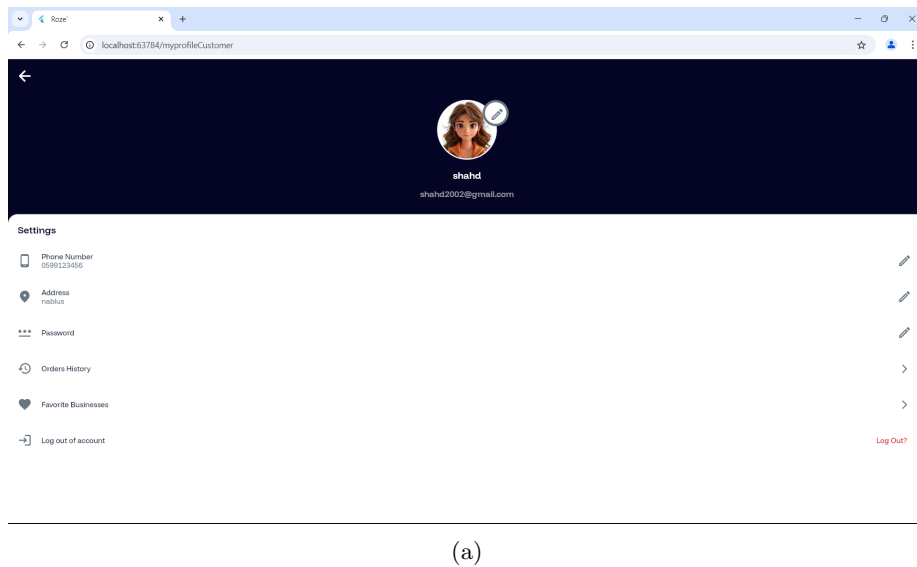
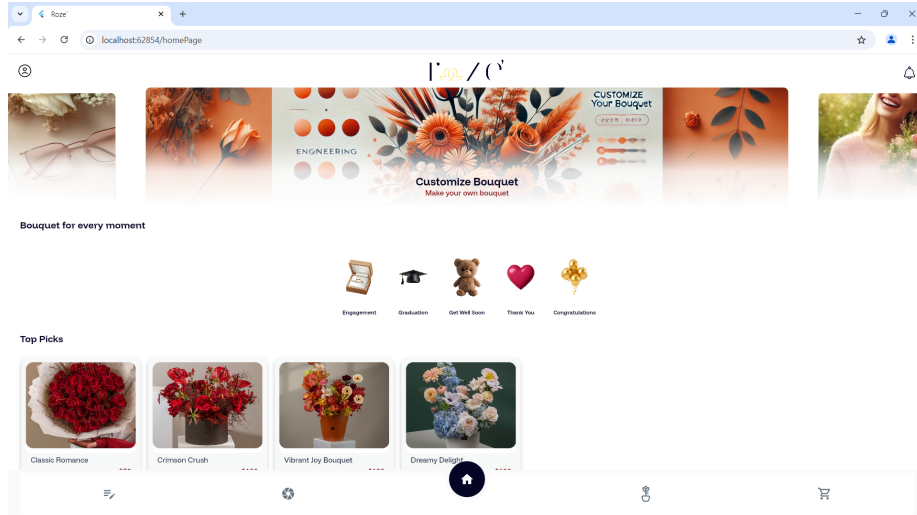
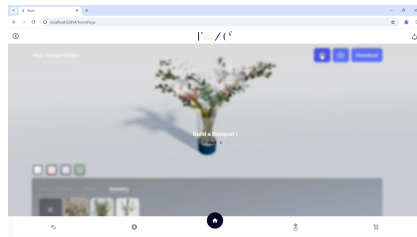


Figure 4.117: Profile page and settings.

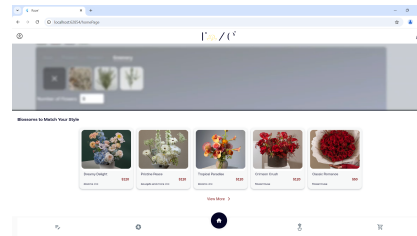
4.3.4 Customer home page



(a) Home Page: Featuring Top Picks and Moments Section



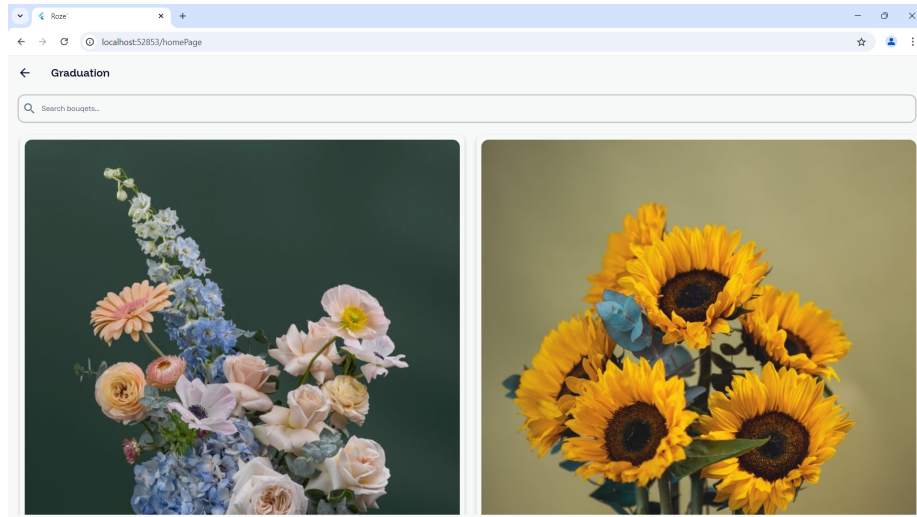
(b) Bouquet Builder: Showcasing the 3D Model Bouquet Customization Tool



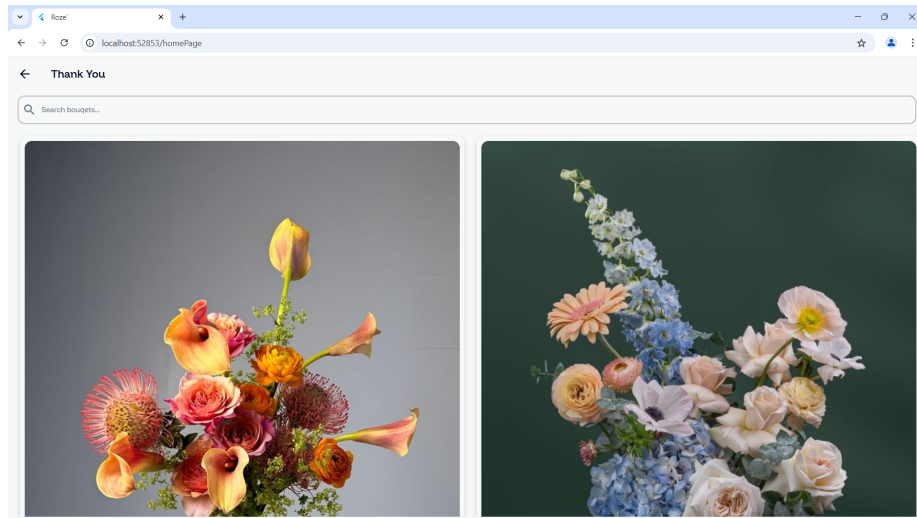
(c) Explore Page: Displaying Items Tailored to Customer Specifications

Figure 4.118: Customer Page Features.

4.3.5 Bouquet for every moment page



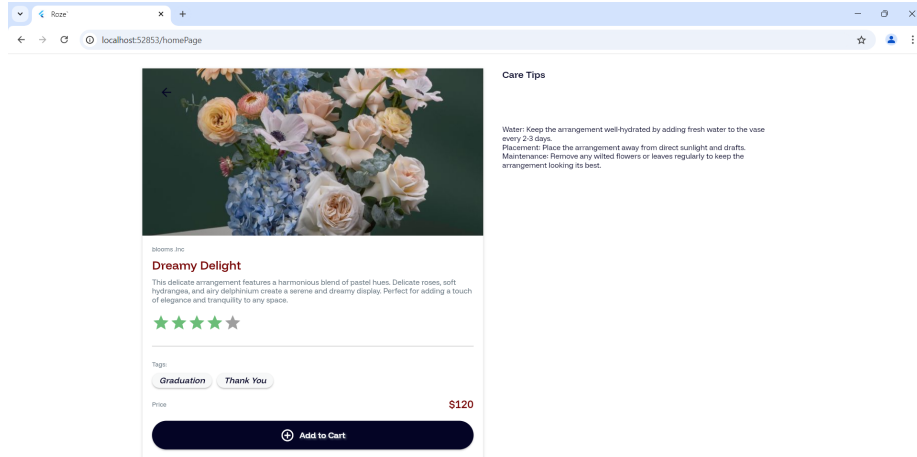
(a) Graduation bouquets



(b) Thank you bouquets

Figure 4.119: Bouquet Moments.

4.3.6 Bouquet view page



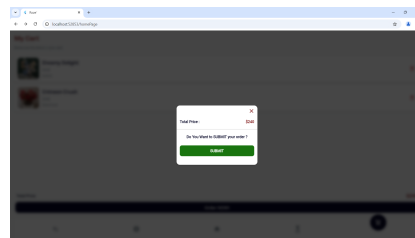
(a) Bouquet details view page

Figure 4.120: Bouquet Details.

4.3.7 Ordering process

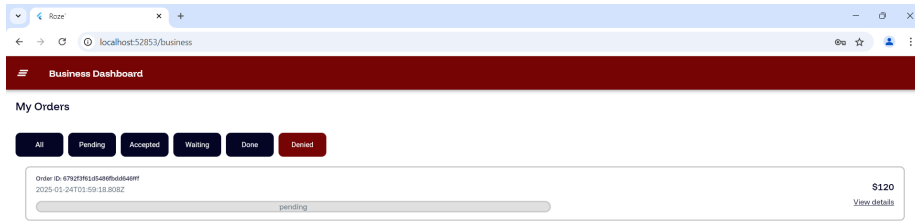


(a) Cart page



(b) Purchase dialog

Figure 4.121: Order Workflow.



(a) Business orders view page



(b) Pending order details page

(c) Accepted order details page

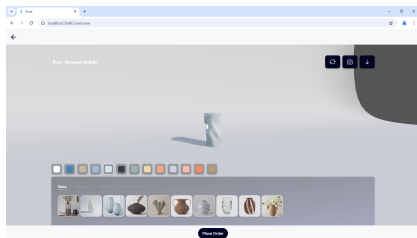


(d) Waiting order details page

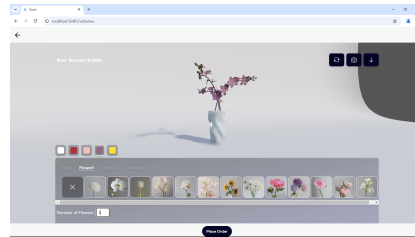
(e) Done order details page

Figure 4.122: Business Orders.

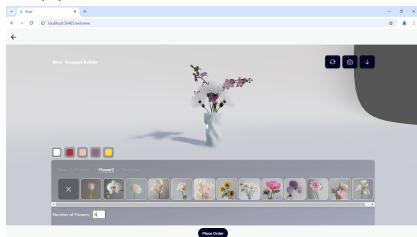
4.3.8 3D bouquet builder & special orders workflow



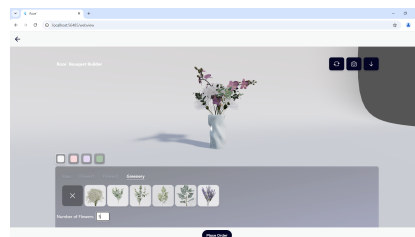
(a) Vase style and color selection



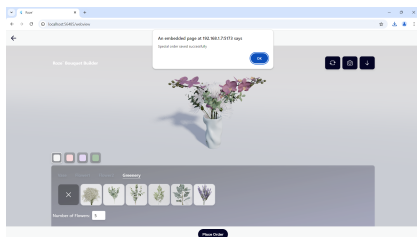
(b) 1st flower type, number & color selection



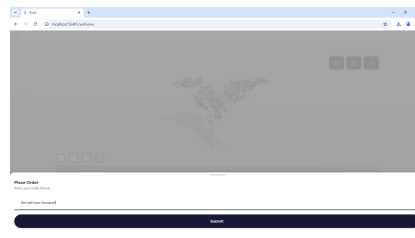
(c) 2nd flower type, number & color selection



(d) Greenery selection

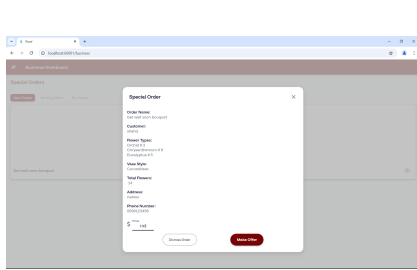


(e) Submit order & download a 3d model.

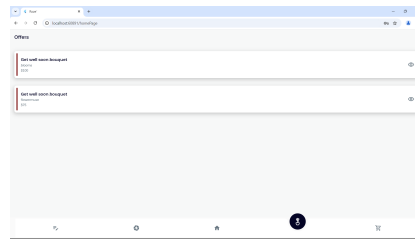


(f) Place the special order.

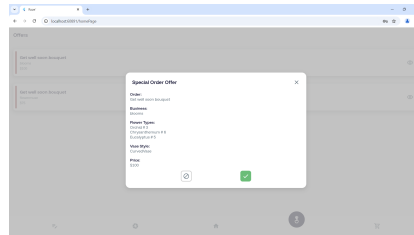
Figure 4.124: 3D bouquet builder showcasing customization steps.



(a) Business submits a bid for an order.

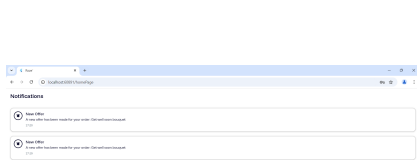


(b) Customer reviews offers submitted by various businesses.

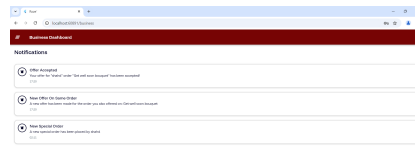


(c) Customer selects the preferred offer to assign to the business.

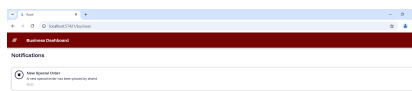
Figure 4.125: Workflow for handling special orders.



(a) Notification sent to the customer when an offer is placed on their order.



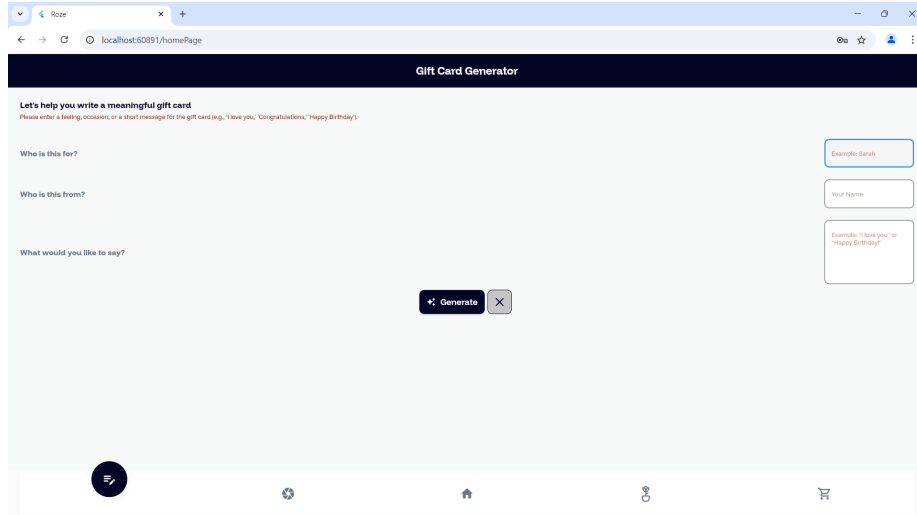
(b) Notification to the first business when an offer is accepted, rejected, or another business makes a bid on the same order.



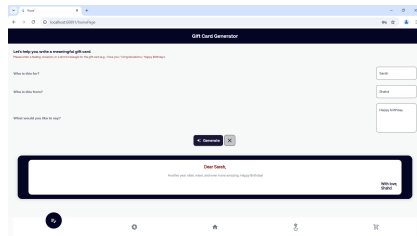
(c) Notification to the business when their offer is rejected.

Figure 4.126: Role-specific notification system.

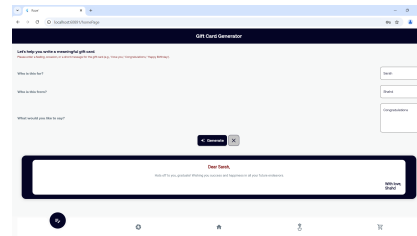
4.3.9 AI Message Generator



(a) AI-powered message generator with personalized content for both sender and recipient.



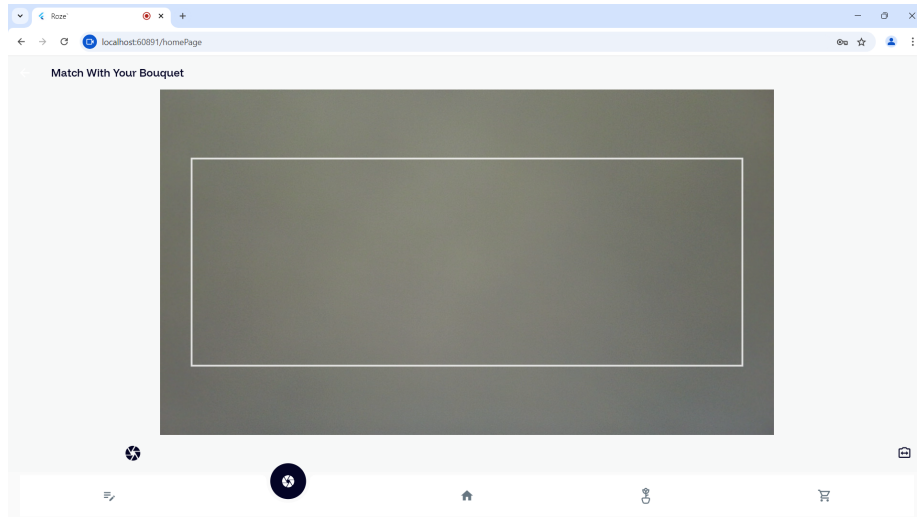
(b) Example of a personalized "Happy Birthday" message.



(c) Example of a personalized "Congratulations" message.

Figure 4.127: AI-powered message generator for various occasions.

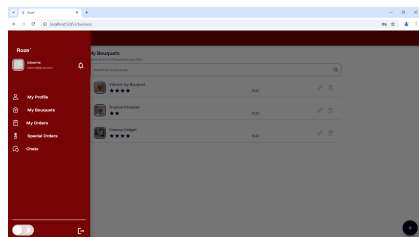
4.3.10 Image Processing for Bouquet Shopping



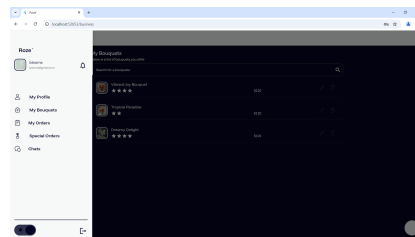
(a) Bouquet recommendation based on user-taken images for personalized selections.

Figure 4.128: Image processing algorithm for personalized bouquets.

4.3.11 Business Dashboard



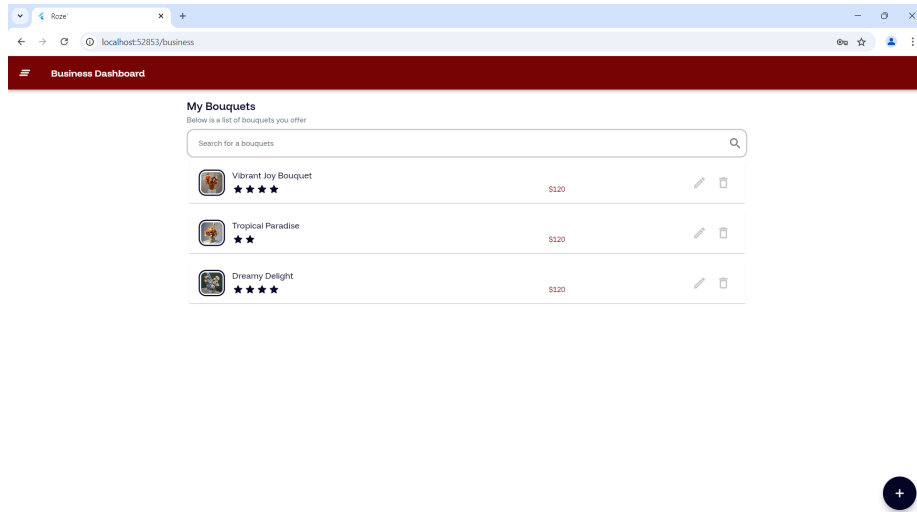
(a) Business dashboard side menu in light mode.



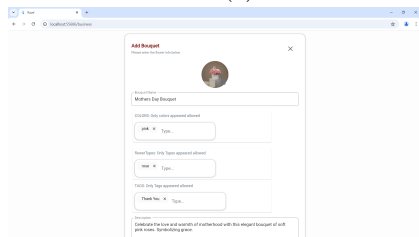
(b) Business dashboard side menu in dark mode.

Figure 4.129: Business dashboard side menu in light and dark modes.

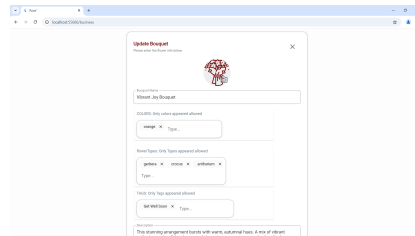
4.3.12 My Bouquet Section



(a) View and manage the available bouquets.



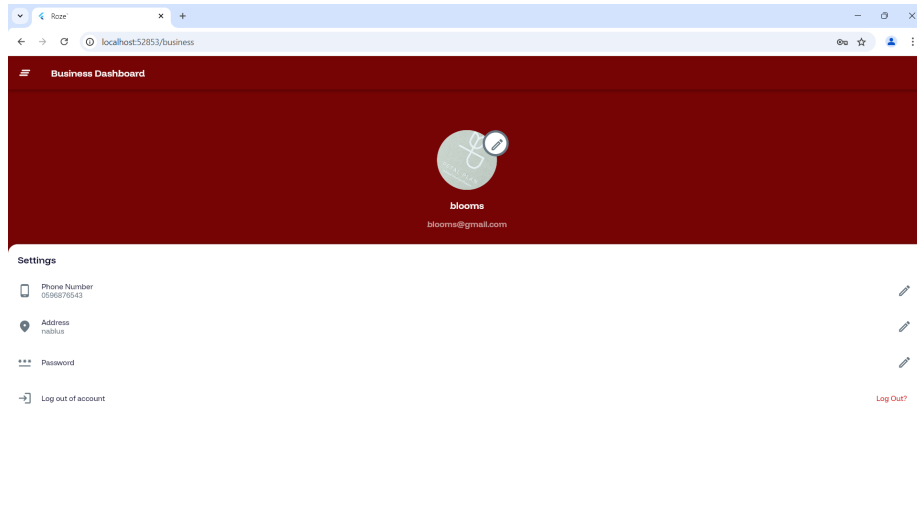
(b) Add a new bouquet to the collection.



(c) Edit details of an existing bouquet.

Figure 4.130: Bouquet management interface.

4.3.13 Business profile page



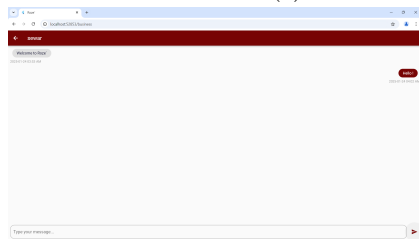
(a)

Figure 4.131: Business profile page and settings.

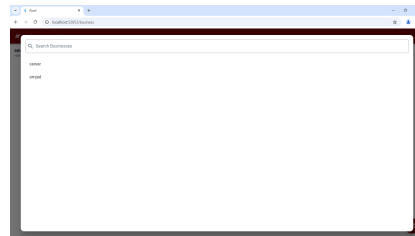
4.3.14 Business-Admin Chat system



(a) List of active chats with admins.



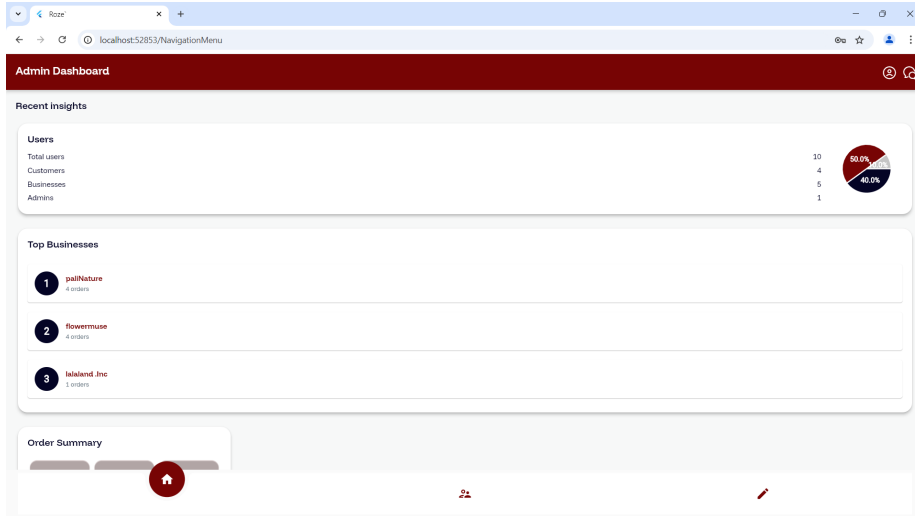
(b) Chat interface for communicating with an admin.



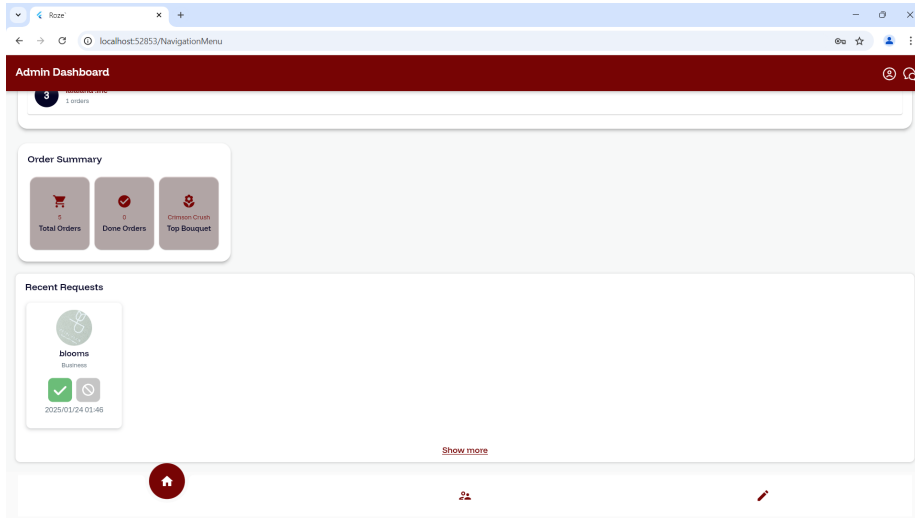
(c) List of admins available for chat.

Figure 4.132: Chat system between businesses and admins.

4.3.15 Admin Dashboard



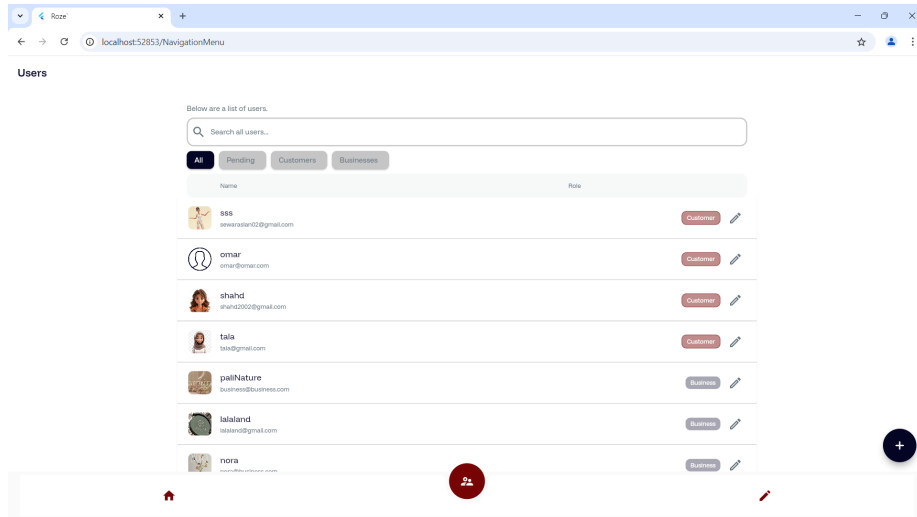
(a) Overview of the admin dashboard showing key metrics and insights.



(b) Detailed view of admin controls for managing the system.

Figure 4.133: Admin dashboard interface, management tools and insights.

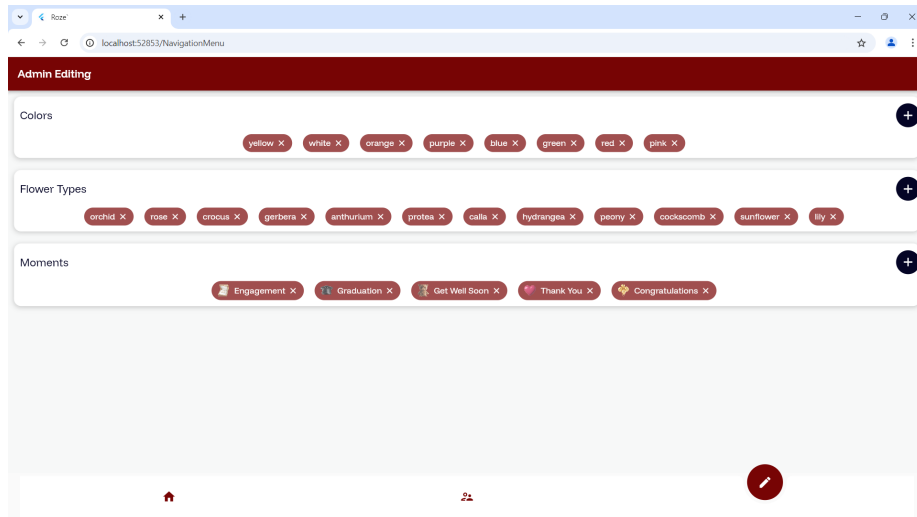
4.3.16 Users Management Section



(a) User management panel allowing admins to view, edit, and manage user accounts.

Figure 4.134: Users management section of the admin dashboard.

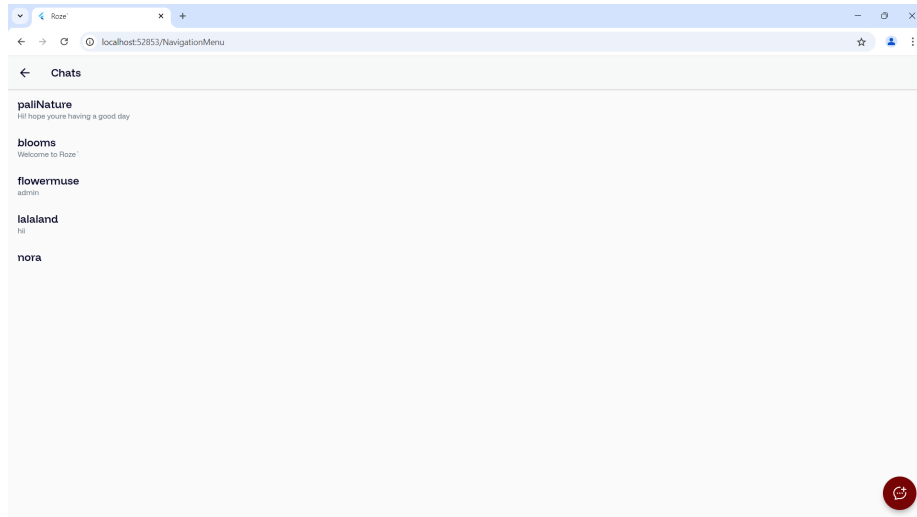
4.3.17 Admin Editing Section



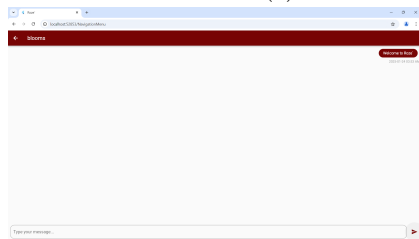
(a) Admin interface for managing flower types, colors, and occasions.

Figure 4.135: Admin editing section for flower and moment customization.

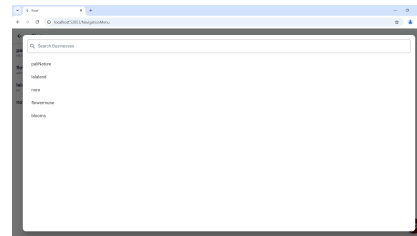
4.3.18 Admin-Business Chat system



(a) List of active chats with Business.



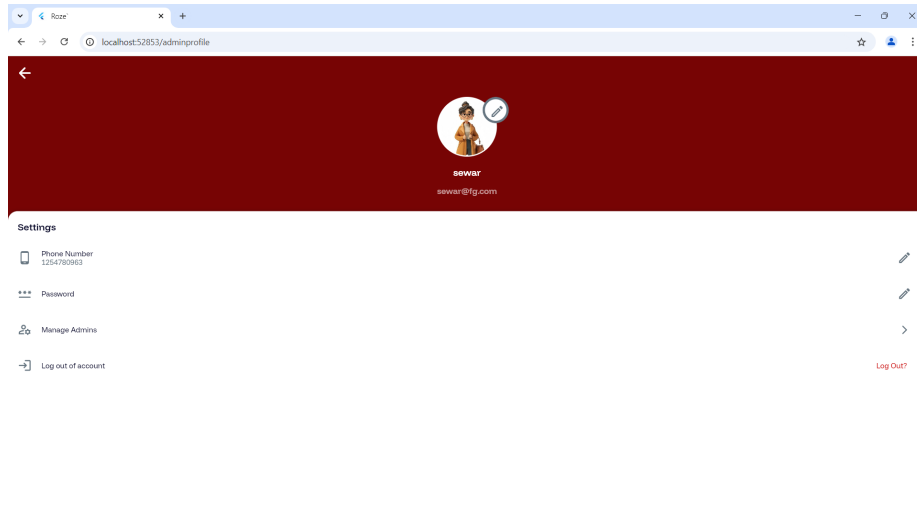
(b) Chat interface for communicating with a business.



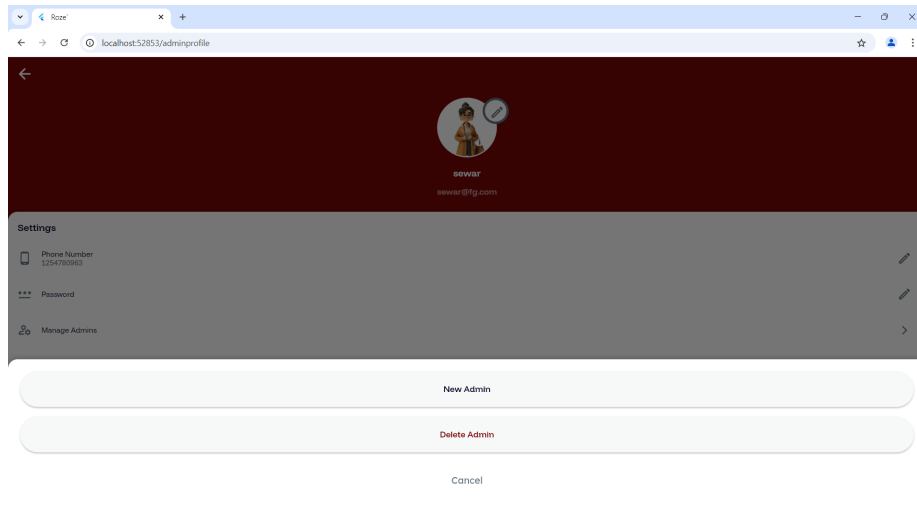
(c) List of businesses available for chat.

Figure 4.136: Chat system between admins and businesses.

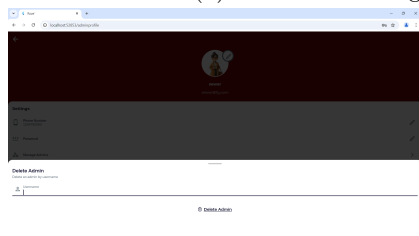
4.3.19 Admin Profile Page



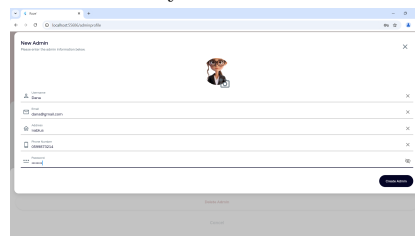
(a) Admin profile page displaying personal details and settings.



(b) Section to manage other admins in the system.



(c) Option to remove an admin from the system.



(d) Interface for adding a new admin to the system.

Figure 4.137: Admin profile page & managing tools.

Chapter 5

Results and Discussion

Results

The Roze platform, consisting of a mobile application and website, was developed to provide a seamless and user-friendly experience for purchasing and customizing floral arrangements. The following key functionalities were observed during testing and development:

- **Authentication:** The platform allows users to sign up, log in, and reset their passwords securely using OTP verification.
- **User Roles:** The system is designed to cater to three primary roles:
 - *Admins:* Oversee and manage system operations efficiently.
 - *Customers:* Explore and order personalized floral arrangements with ease.
 - *Businesses:* Manage product listings, orders, and transactions effortlessly.
- **Personalized Recommendations:** A swipable stack feature allows users to like or dislike items, tailoring recommendations displayed under the “*Tailored for You*” section.
- **AI Features:** The platform leverages AI to generate personalized messages for bouquets, adding a thoughtful touch to the gifting experience.
- **Image Processing:** Advanced image processing analyzes the colors in uploaded photos to suggest complementary floral arrangements.
- **Customized Bouquet Builder:** Users can design bouquets by selecting flower types, greenery, wrap colors, and adding a message. Real-time previews are displayed via a 3D model.

- **Marketplace for Businesses and Customers:** The platform fosters a collaborative ecosystem where businesses can list products, bid on custom orders, and interact with customers. Customers can browse trends and place personalized orders.
- **Admin Dashboard:** Admins are equipped with tools to monitor user activities, manage accounts, oversee orders, and handle transactions.

Discussion

The Roze platform showcases a well-integrated use of modern technologies to meet the diverse needs of its users. By bridging the gap between customers and florists, it ensures a seamless and personalized experience while simplifying administrative tasks.

Key Features and Innovations: Features such as the swipable stack for tailored recommendations, AI-powered thoughtful messaging, and real-time 3D bouquet customization emphasize personalization and creativity. Image processing enhances user interaction, while the marketplace nurtures collaboration between businesses and customers.

Achievements

Developing innovative solutions requires effort, patience, extensive research, and a deep understanding of new concepts and technologies. Throughout this project, significant learning milestones were achieved, leveraging tools and frameworks that were unfamiliar at the outset. Flutter and Node.js were utilized for client-side and server-side development, respectively, enabling the creation of an intuitive mobile application and a responsive web platform. Additionally, Three.js was incorporated to provide dynamic and interactive 3D visualizations, adding a new layer of complexity and creativity to the project.

The abundance of online educational content and comprehensive documentation for modern technologies facilitated the planning, development, and implementation processes. These resources streamlined the integration of various features and ensured the seamless operation of the platform across different devices.

- Achieved consistent functionality and design across mobile and web platforms.
- Overcame challenges related to feature implementation on the web by ensuring parity and coherence across all features and platforms.
- Successfully learned and utilized Three.js to enhance the user experience with advanced 3D visualizations.

Chapter 6

Conclusion and Future work

6.1 Conclusion

The Roze' platform combines technology and creativity to transform the floral and gifting industry. With its user-friendly interface, personalized features, and innovative tools, it provides a seamless experience for customers, businesses, and administrators. The platform excels in its ability to streamline order management, offer personalized recommendations, and enable users to design and customize bouquets effortlessly. Roze' demonstrates how technology can enhance traditional industries by addressing user needs with modern solutions.

6.2 Future work

1. **Location-Based Recommendations:** Implementing a location-based system to suggest florists, gifts, or bouquets that are popular or readily available in the user's area could enhance convenience and improve delivery efficiency.
2. **Community Engagement System:** Adding a feature where users can share pictures of their purchases or customized bouquets and provide feedback or reviews would foster engagement and create a sense of community among users.
3. **Inclusion of Gifts Beyond Flowers:** Expanding the catalog to include a wide range of gifts, such as chocolates, candles, or personalized items, alongside flowers would attract a broader audience and offer more gifting options.
4. **Enhanced Analytics:** Providing florists and designers with detailed analytics and insights into inventory usage, sales trends, and customer preferences would empower businesses to make data-driven decisions and optimize their operations.

5. **Delivery System:** Introducing an efficient delivery management system that allows users to track their orders in real-time, schedule delivery times, and ensure seamless delivery experiences would greatly enhance customer satisfaction.
6. **Augmented Reality (AR) Integration:** Allowing users to visualize bouquets or gifts in their environment using AR technology would elevate the shopping experience and aid decision-making.
7. **Globalization and Localization:** Enabling multi-language support and accommodating multiple currencies would make the platform more accessible to a global audience.
8. **Sustainability Initiatives:** Introducing eco-friendly options, such as biodegradable packaging or locally grown flowers, would attract customers who care about the environment and help reduce the platform's environmental impact.

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