General Sir John Kotelawala Defense University

Faculty of Management, Social Sciences, and Humanities

Department of Language

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Advanced SQL and Cloud Databases

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Group Assignment 03

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Task 1

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1. Introduction

The KDU Cafeteria App, branded as **cafEase**, was developed to address operational inefficiencies at the General Sir John Kotelawala Defence University's cafeteria. The cafeteria faces challenges like delays during peak hours, mismanagement of orders, and lack of real-time updates for customers. This app leverages Microsoft Power Apps, integrated with SharePoint, to provide a seamless experience for both customers and cafeteria staff. It simplifies menu browsing, order placement, order tracking, and feedback collection, ultimately improving customer satisfaction and operational efficiency.

1.1Scenario Selection

Why This Scenario?

This scenario was selected because cafeteria operations are critical to maintaining a positive experience for students and staff at KDU. Challenges like long waiting times, inconsistent order handling, and lack of effective feedback mechanisms highlighted the need for a centralized, efficient system.

we aimed to achieve:

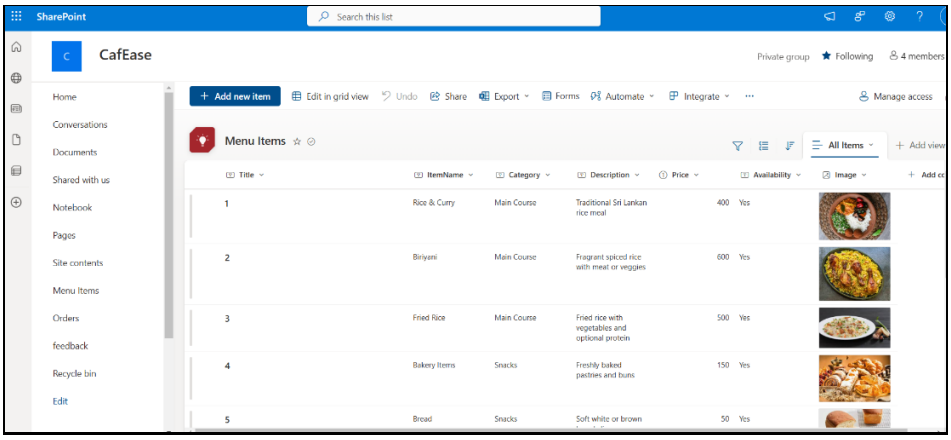
- Faster order processing.
- Improved order accuracy.
- Real-time tracking for users.
- Actionable insights from customer feedback to improve services.

2. Data Sources

The app relies on SharePoint as the primary data source. Four SharePoint lists were created to manage data efficiently:

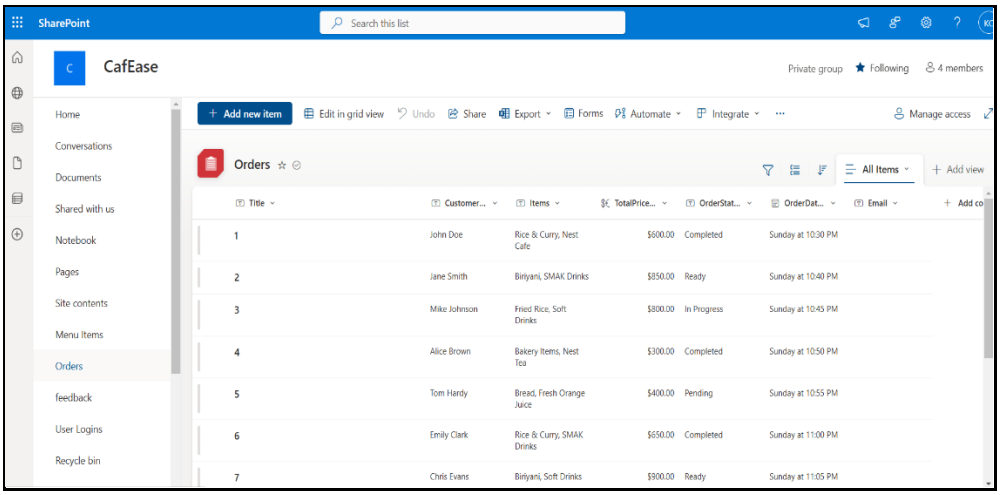
1. Menu Items

- Columns: Name, Price, Category, Availability.
- Purpose: Provides dynamic menu data displayed on the app.



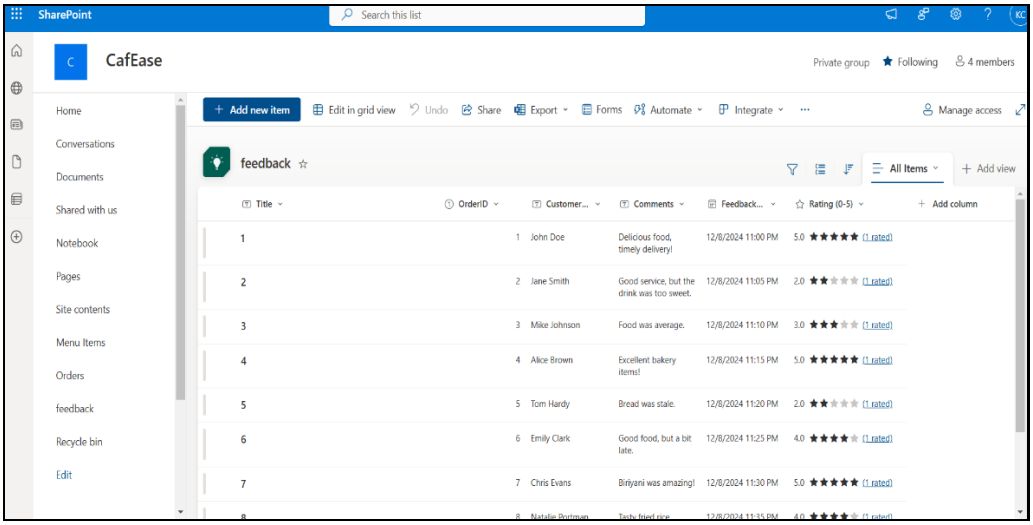
2. Orders

- Columns: Order ID, Customer Name, Items, Status, Total Cost.
- Purpose: Tracks order details and status updates.



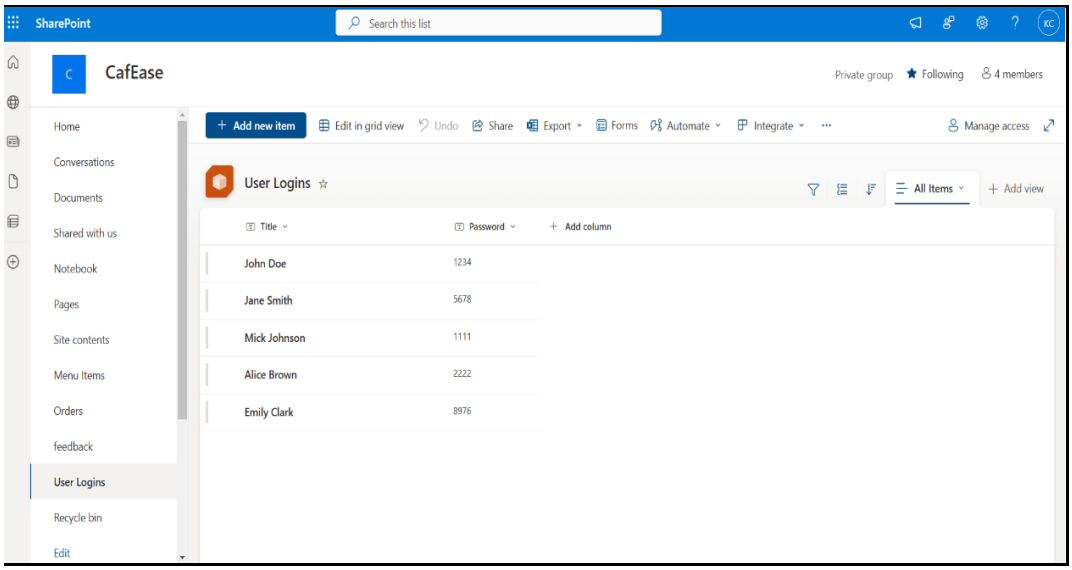
3. Feedback

- Columns: Ratings, Comments, Order ID.
- Purpose: Collects user feedback for service improvements.



4. User Logins

- Columns: User ID, Password.
- Purpose: Authenticates users securely.



3. Design Decisions

App Layout and Screens:

The app's layout was designed with user-friendliness as the primary objective. The interface includes the following key screens:

1. Login Screen:

- Secures access to the app with user authentication.
- Includes fields for User ID and Password, along with a login button.
- New customers should Sign Up and Login

Formula for login verification:

```
If(
    !IsBlank(
        LookUp(
            'User Logins',
            Title = 'User ID_txt'.Text && Password = Password_txt.Text
        )
    ),
    Notify(
        "Login successful",
        NotificationType.Success
    );
    Navigate('welcome screen'),
    Notify(
        "Invalid User ID or Password",
        NotificationType.Error
    )
)
```

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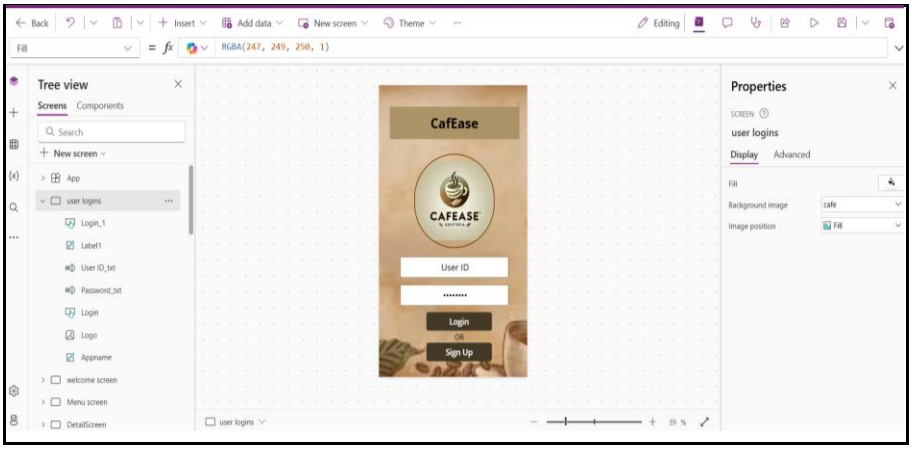
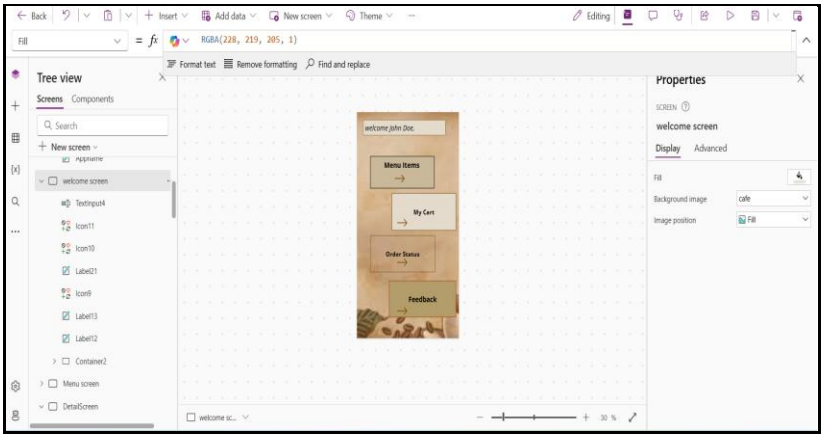


2.Home Screen:

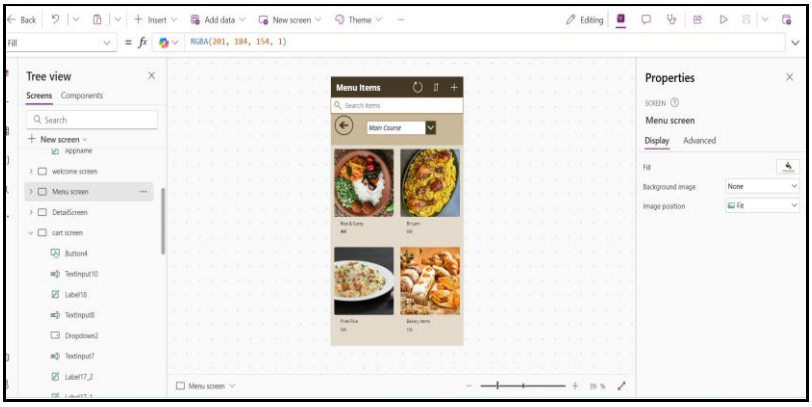
Displays a welcome message with navigation buttons for key functionality

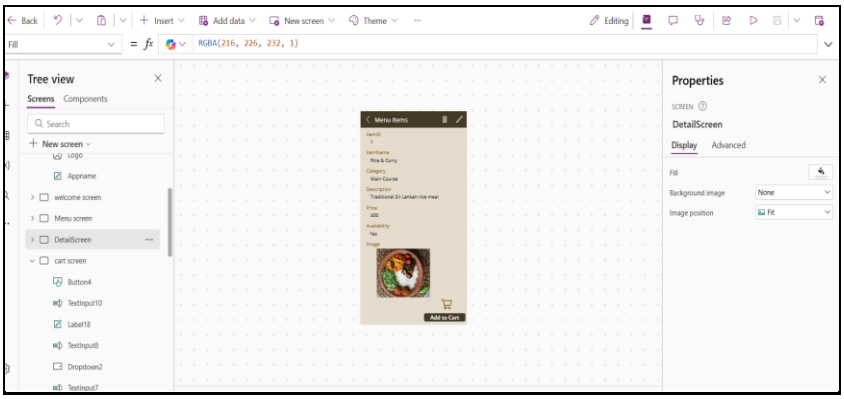
- Menu Items: Browse available items.
- My Cart: View selected items and proceed to checkout.
- Order Status: Track order preparation progress.
- Feedback: Submit feedback after an order.



3. Menu Browsing Screen:

- Showcases items categorized by type (meals, beverages, snacks) using galleries.
- Each item includes an "Add to Cart" button.





4. Cart Screen:

- Displays items added by the user, along with quantities, prices, and the total amount.

- Includes a "Checkout" button to confirm the order.

```
Collect(
    Cart,
    {
        ItemID: 'ThisItem.ID',
        Name: 'ThisItem.Name',
        Price: 'ThisItem.Price',
        Quantity: 1
    }
);
```

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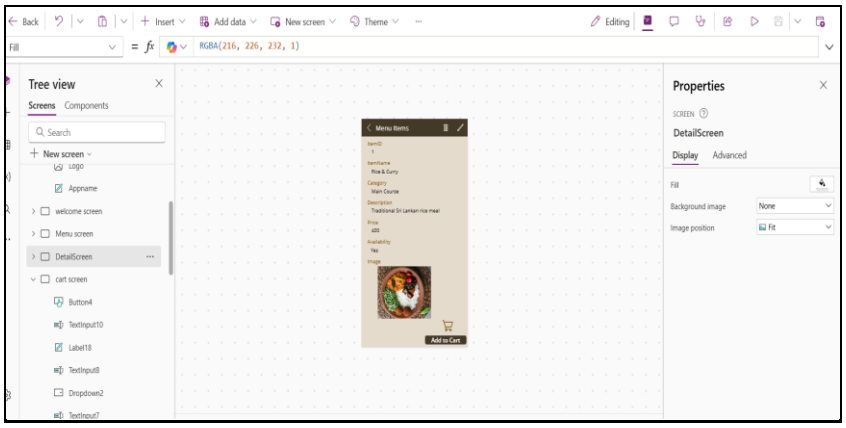
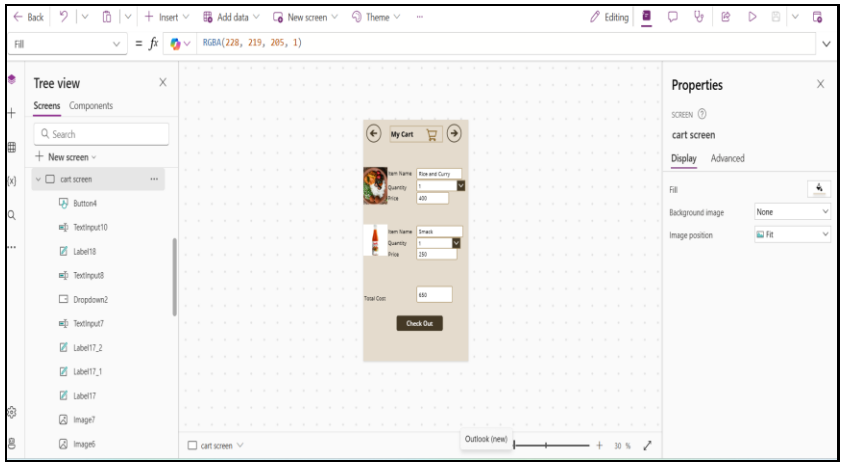
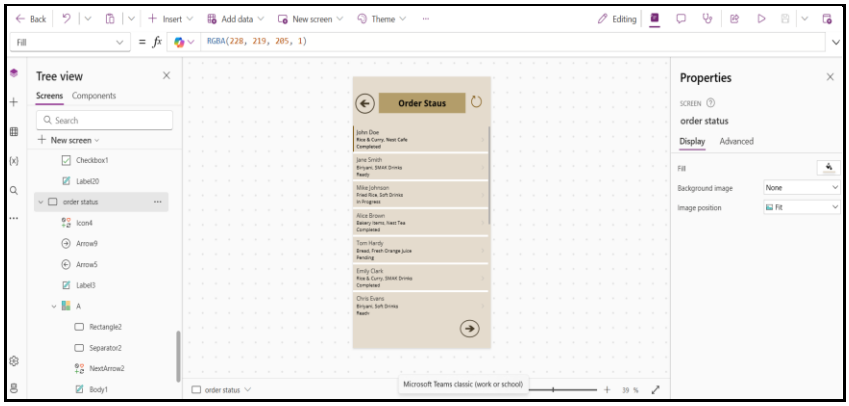
Add to Cart Button Function





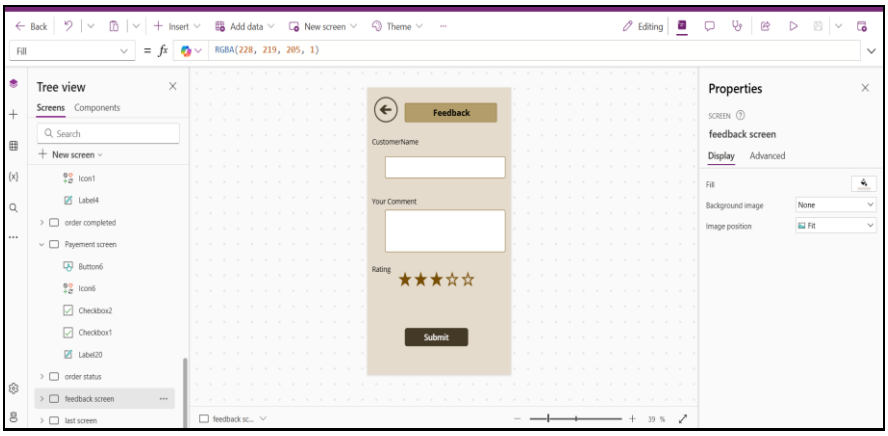
5. Order Status Screen:

- Provides real-time updates on the status of orders (e.g., In Progress, Ready, Completed).



6. Feedback Screen:

- A simple form for users to rate their experience and provide comments.



Navigation Flow:

➢ Login → Hom → Menu Items → My Cart →Payments Process → Order Status → Feedback

3.1 UI Elements:

- **Buttons**: Key action buttons such as "Add to Cart," "Check Out" "Submit Feedback," and "Confirm Payment."
- **Forms**: Utilized for login authentication and feedback collection.
- **Galleries**: Dynamically display menu items, cart contents, and order details.
- **Labels/Icons**: Provide visual cues for navigation and status updates.
- **Radio Buttons**: Used for payment method selection.

3.2 Design Choices

- **Simplicity**:

  The app's user interface was designed with a minimalist approach to ensure it remains easy to use for all audiences, including those unfamiliar with technology. This design reduces visual clutter, focusing only on essential elements like navigation buttons and user-friendly layouts. By prioritizing simplicity, the app achieves a balance between functionality and clarity, enabling users to perform tasks such as placing orders or tracking statuses without confusion.

- **Responsiveness**:

  To cater to a diverse user base accessing the app on various devices, the app was meticulously tested for compatibility across smartphones, tablets, and desktops. Responsive design features, such as adaptive screen layouts and fluid containers, were utilized to ensure the app adjusts seamlessly to different screen sizes. The ability to access the app on mobile phones during breaks or use desktops for detailed tasks enhances user convenience and accessibility.

- **Accessibility**:

  Ensuring that the app is accessible to a wide range of users, including those with visual impairments, was a critical design consideration. Intuitive buttons were implemented with clear labels, enabling users to quickly navigate the app’s features. Contrasting colors were used to improve visibility, and large, touch-friendly buttons ensured ease of use on mobile devices. These measures collectively ensure the app provides an inclusive experience.

4. Challenges Faced

1.Configuring Secure Login:

Ensuring secure login functionality for the app was a critical aspect of the development process. User authentication was implemented using SharePoint lists, where user credentials such as User ID and Password were securely stored. The challenge was to allow seamless yet secure access to the app, ensuring that only authorized users could navigate the platform. We resolved this by using LookUp formulas in Power Apps to validate user input dynamically against the stored credentials. Additionally, access permissions to the SharePoint list were restricted, so only admins could modify or view sensitive information. Error notifications were integrated to alert users about incorrect login attempts, enhancing the overall user experience. This approach not only strengthened the app's security but also ensured a smooth login process for users.

2. Real-Time Updates:

Integrating real-time updates for order statuses was essential to keep users informed throughout the order lifecycle. The synchronization between Power Apps and SharePoint was implemented to achieve dynamic data updates without delays. The app retrieves order statuses (e.g., "Preparing," "Ready," or "Delivered") directly from the SharePoint list, which staff can update from their end. To ensure real-time performance, Refresh () functions were embedded strategically to trigger data updates whenever users navigate to the "Order Status" screen. This careful integration provided a seamless flow of information, eliminating uncertainty for users regarding their order progress. By leveraging Power Apps' ability to connect

with SharePoint in real time, the app ensures both transparency and improved communication between users and cafeteria staff.

3. Responsive Design:

Creating a responsive design that works effectively across various devices, including mobile phones and desktops, was a key priority during development. Since the target audience included students and staff who may access the app on different devices, the UI was designed with flexible screen dimensions. Power Apps' responsive layout features, such as containers and alignment settings, were used to adapt the app's interface to different screen sizes. Multiple iterations of testing were conducted to optimize the app's performance and visual appeal. UI adjustments included resizing buttons, optimizing galleries, and ensuring readable fonts for small screens. By incorporating a clean and simple design, the app achieved a balance of functionality and usability. This approach guarantees consistent experience for all users, whether accessing the app from their mobile devices during breaks or using desktops for a detailed view.

5. Benefits of the App

- **Time Savings**:

One of the primary benefits of the **cafEase** app is the significant reduction in waiting times for customers. Traditionally, students and staff had to queue for long periods, especially during peak hours like lunch breaks. With the app, users can browse the menu and place their orders in advance from their devices. This ensures that their meals are ready for pickup by the time they arrive at the cafeteria. The app eliminates the need to stand in line for ordering and payment, leading to a more efficient use of time for users, who can now focus on other academic or personal activities.

- **Transparency**:

The app improves transparency in cafeteria operations by offering real-time updates for orders. Users can track their order statuses, such as "Order Received," "Preparing," or "Ready for Pickup," without relying on cafeteria staff for updates. This level of visibility reduces frustration caused by uncertainty and helps users manage their time effectively. For example, if an order is marked "Preparing," the user knows when to arrive for pickup, ensuring a seamless experience. Additionally, transparency builds trust among users, as they are kept informed throughout the process.

- **Feedback Collection:**

The app introduces a streamlined feedback mechanism that encourages users to share their experiences and suggestions. After receiving their orders, users can submit ratings and comments directly through the app's **Feedback**

Screen. This feature provides cafeteria management with valuable insights into user preferences, satisfaction levels, and areas needing improvement. Capturing feedback in a digital format also allows management to analyze trends over time and implement necessary changes to enhance food quality, service speed, and overall experience.

- **Flexible and Future-Proof**:

The app is designed to be scalable, meaning it can grow and adapt to future needs without requiring major redevelopment. Additional features, such as combo meal offers, loyalty rewards, and promotional deals, can be easily integrated into the existing app structure. For example, during special events, the cafeteria can introduce limited time offers or discounts through the app, attracting more customers.

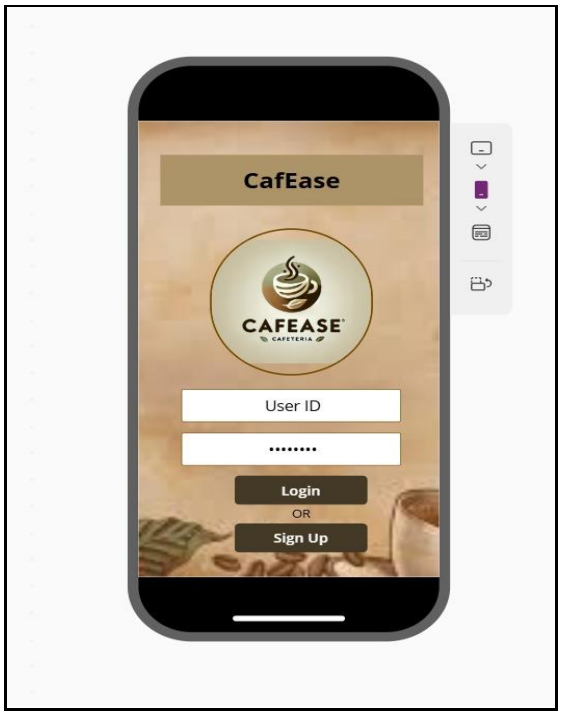
- **Analyze Data and make Decisions**:

The app can be enhanced with analytics capabilities to monitor sales trends, peak hours, and customer preferences. By analyzing this data, cafeteria management can make informed decisions, such as optimizing menu offerings, adjusting staff schedules, or introducing popular items. This scalability ensures that the app remains relevant and valuable as the needs of the cafeteria evolve over time.

6.User Guide

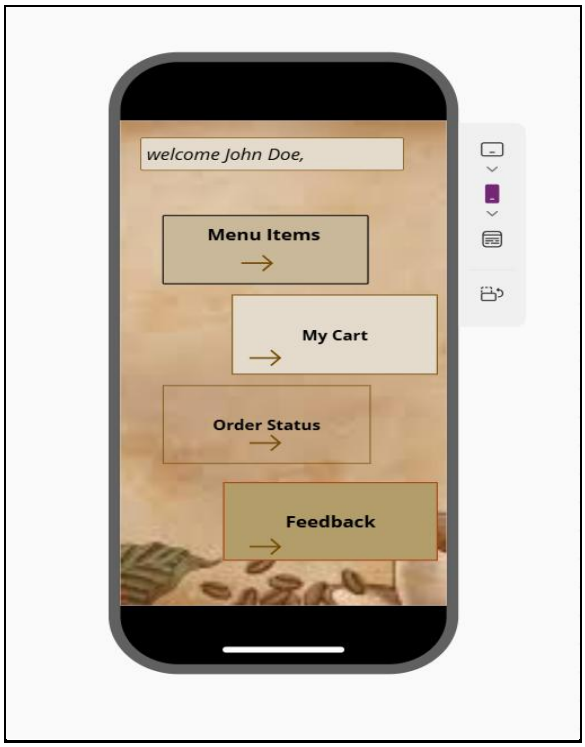
1. Login:

- Enter your User ID and Password on the login screen.
- Click the "Login" button.
-If you are a new customer, sign up firstly



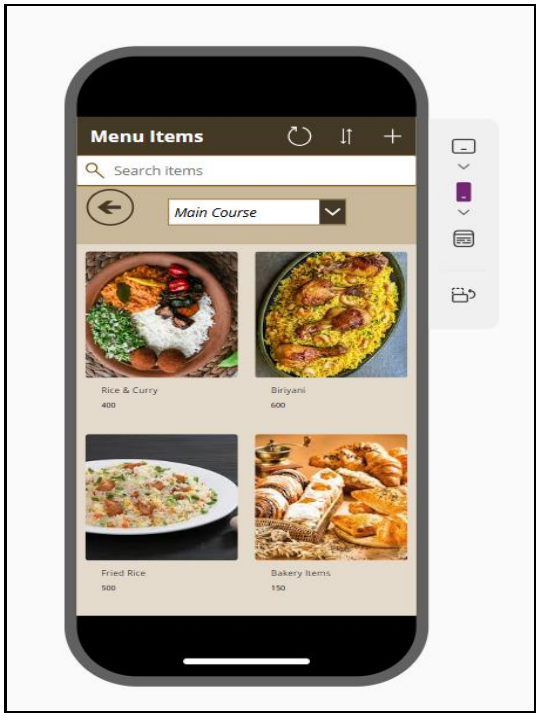
2. Welcome Screen:

- ✓ After logging in, you will see a welcome screen with a personalized message.
- ✓ Use navigation buttons to proceed to **Menu Items**, **My Cart**, **Order Status**, or **Feedback**.



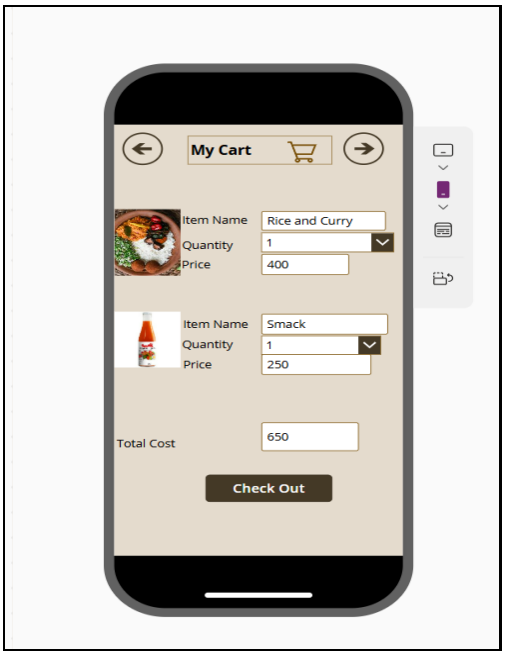
3. Browse Menu:

-Navigate to the "Menu Items" screen to view available items.
-Click "Add to Cart" for items you want to order.



4. Place Order:

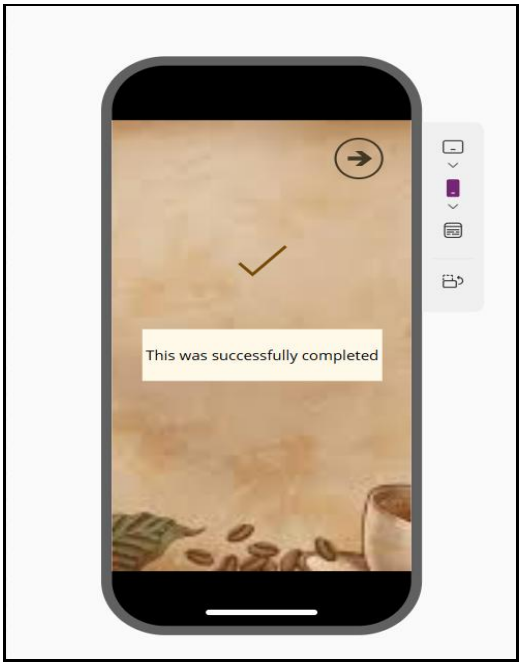
- Go to "My Cart" and review your selected items.
- Click "Checkout" to confirm the order.



5. Select Payment Method:

- You will see two options:
  - **Cash**: Check this box if you are paying with cash.
  - **Card Payment**: Check this box if you prefer to pay using a card.
- You can select only one option at a time.
- After selecting your preferred payment method, click the **"Confirm"** button to proceed.

When you complete payments process successfully can see screen like this

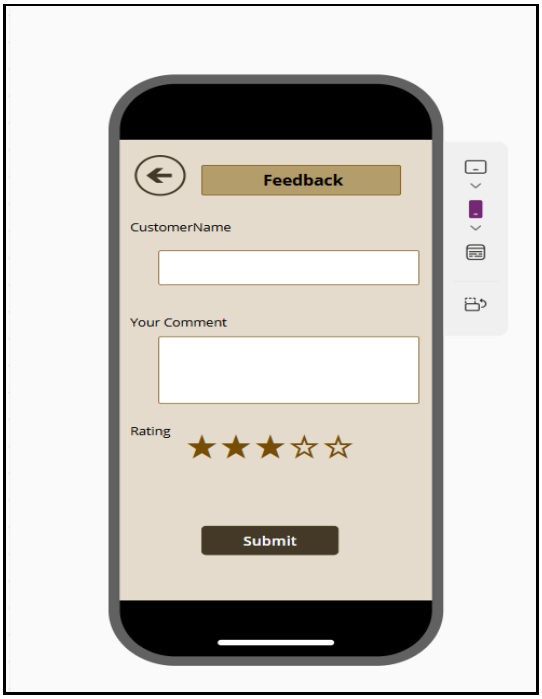


4. Track Order:

- Navigate to the "Order Status" screen to check your order’s progress.

5. Provide Feedback:

- After receiving your order, navigate to the "Feedback" screen
- Fill out the feedback form and submit it.



8. Conclusion

The **cafEase** app is a powerful digital solution that transforms cafeteria operations at KDU by addressing challenges like order delays, lack of transparency, and ineffective feedback mechanisms. By incorporating features such as a secure Login Screen, personalized Welcome Screen, and streamlined order processes, the app enhances user satisfaction and operational efficiency.

The app's design ensures simplicity, accessibility, and responsiveness across devices, while the integration with SharePoint ensures data security and integrity. Through features like real-time order tracking and feedback collection, the app fosters transparency and continuous improvement in services. Future iterations can incorporate advanced features such as combo deals, analytics dashboards, and AI-driven recommendations to further optimize the user experience.

In conclusion, cafEase serves as a robust platform that improves cafeteria management, enhances customer experience, and demonstrates the potential of Power Apps to deliver practical, impactful solutions in an institutional environment.