Catering Industry

Stakeholders

ACTOR	What they can do on the software created
Employees	Order Meal Search Meal Feedback Track Order Cancel order
Menu manager	create, edit, delete menu View orders Confirm the order
Canteen Manager	Inventory
Meal Deliverer	Deliver the meal Update delivery status
Payroll	Deduct the amount
Unilever Management	Fetch various reports
Chefs	Prepare the dishes based on orders received.
Vendors (Ingredient Suppliers)	Indirectly impacted by order predictions for better inventory planning.

Problem Definition and Solution

Employees waste approximately 30-35 minutes waiting in queues to collect their food and find a table, significantly impacting productivity by around 30 minutes. Additionally, employees often cannot get their preferred meals because popular items run out quickly. The canteen also faces considerable food wastage, discarding a substantial quantity of unsold items.

Advantages and Objectives

Advantages of the Canteen Ordering System:

Advantages for the Canteen:

1. **Reduced Food Wastage:**
    - Accurate demand forecasting ensures better inventory planning, reducing wastage of unsold food items.
2. **Cost Efficiency:**
    - Lower operating costs due to improved inventory management and optimized resource allocation.
3. **Streamlined Operations:**
    - Automated order processing and menu management reduce manual effort and errors.
4. **Improved Customer Insights:**
    - Feedback collection and analytics provide valuable insights into employee preferences and satisfaction.
5. **Enhanced Productivity:**
    - Faster service and reduced dependency on staff for food distribution and order tracking.
6. **Revenue Monitoring:**
    - Daily sales and monthly earnings reports help in better financial planning and tracking performance.

Advantages for Employees:

1. **Time Efficiency:**
    - Significant time savings as meals are pre-ordered and delivered directly to their desks.
2. **Convenience:**
    - Easy access to the daily menu, the ability to customize orders, and hassle-free payment through payroll deductions.
3. **Improved Meal Availability:**
    - Higher chances of getting preferred food items due to pre-ordering.
4. **Better Work Productivity:**
    - Reduced lunchtime waiting improves focus and allows employees to make better use of their work hours.
5. **Feedback Opportunity:**
    - Employees can share feedback on food quality and delivery, leading to better service.
6. **Healthier Choices:**
    - Access to a regularly updated menu with potential options for healthier meals.

Existing System

The current system is a manual setup where employees must physically visit the canteen to have their meals. It lacks any form of digitization or automation and operates with significant inefficiencies.

Limitations of the Existing System:

1. **No Online Ordering:**
    - Employees cannot pre-order meals; they must queue in person to collect their food.
2. **Lack of Inventory Management:**
    - There is no mechanism to forecast demand, leading to frequent stockouts of popular items and excessive food wastage.
3. **No Delivery Service:**
    - Employees must leave their workstations to collect meals, wasting time and affecting productivity.
4. **No Feedback Mechanism:**
    - Employees have no formal way to provide feedback on food quality or service.
5. **No Integration with Payroll:**
    - Payment is not automated or integrated with salary deductions; employees likely pay manually.
6. **Limited Reporting and Analytics:**
    - The system does not generate data-driven insights such as popular dishes, daily sales, or employee satisfaction.
7. **No Scalability:**
    - The manual nature of operations struggles to efficiently cater to the large employee base of 1500 individuals.

Proposed System

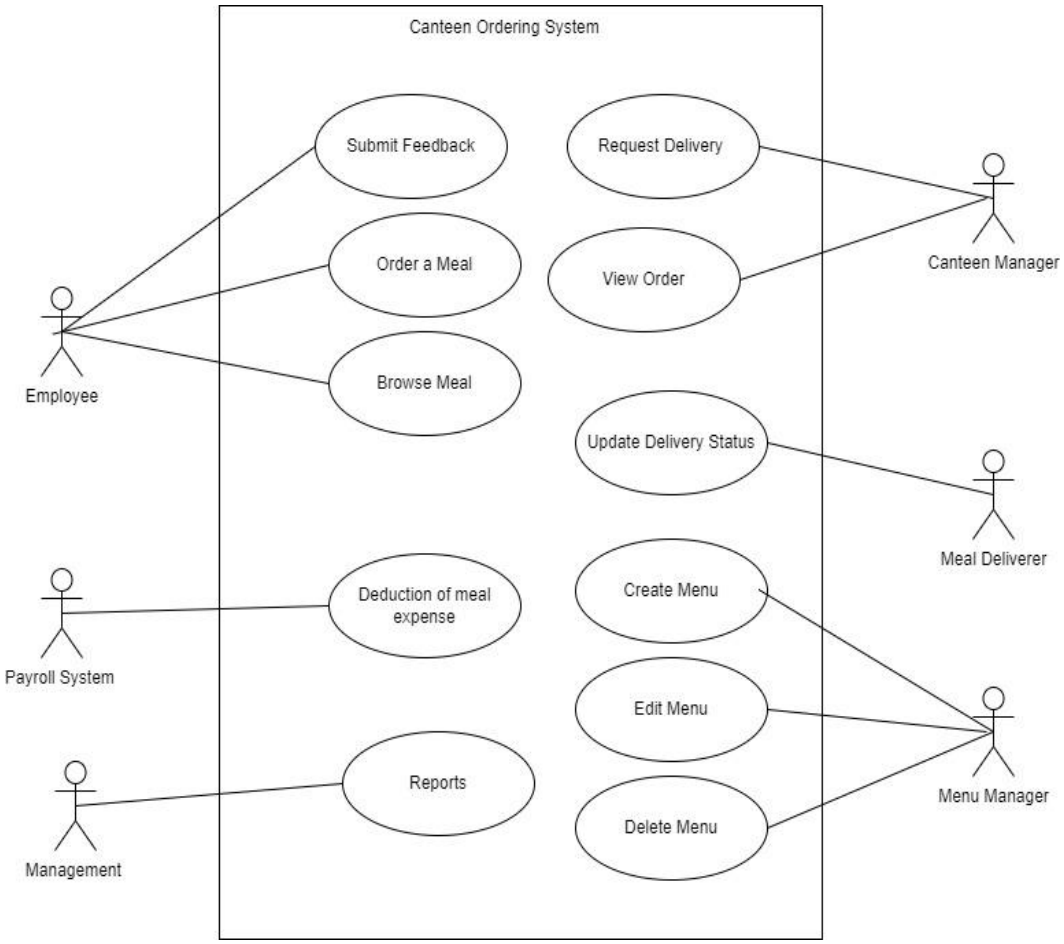
The proposed Canteen Ordering System is designed to streamline operations, enhance user satisfaction, and improve overall efficiency. The key features of the system for the user are:

---

1. **User-Friendly Interface:**
    - Intuitive and easy-to-navigate web interface with a responsive design.
    - Clear menus, buttons, and instructions to ensure a seamless user experience.
2. **Daily Menu Access:**
    - Employees can view the updated daily menu, including available dishes, prices, and quantities.

3. **Pre-Ordering:**
    - Option to pre-order meals before 11:00 AM to avoid queues and ensure availability of preferred dishes.
4. **Order Customization:**
    - Employees can add or edit items in their order before checkout for flexibility.
5. **Delivery to Workstations:**
    - Meals are delivered directly to employees' desks, saving time and effort.
6. **Feedback Submission:**
    - Users can provide feedback on food quality and delivery service to improve future experiences.
7. **Payment Integration:**
    - Seamless payment process through payroll deduction, eliminating the need for manual transactions.
8. **Timely Notifications:**
    - Notifications for order confirmation, delivery status, and menu updates to keep users informed.
9. **Secure Login:**
    - Role-based access with secure authentication to protect user information and ensure appropriate access levels.
10. **Employee Satisfaction Tracking:**
    - The system collects feedback data to continuously improve service and monitor employee satisfaction.
11. **Mobile Accessibility:**
    - Accessible on mobile devices, allowing employees to place and track orders on the go.

Scope using *use case diagram* (UML)



In Scope

 Pre-ordering:

- **Purpose:** Allows employees to plan their meals in advance, ensuring they secure their preferred dishes before stocks run out.
- **Usage:** Employees can place orders up to 12 hours before the meal service starts, reducing the rush during peak hours and aiding kitchen staff in demand planning.

 Real-time Menu Updates:

- **Purpose:** Keeps employees informed about the available food items and specials in real-time.
- **Usage:** The menu dynamically reflects changes as items are added, sold out, or updated by the Menu Manager, ensuring accurate information for users.

 Delivery Scheduling:

- **Purpose:** Offers flexibility in choosing when meals are delivered to employee workstations.
- **Usage:** Employees can select from predefined delivery time slots, ensuring timely meal service without disruptions to their work.

 Payment Integration:

- **Purpose:** Simplifies the payment process by automatically deducting meal costs from employee salaries.
- **Usage:** Ensures secure, hassle-free transactions through integration with the payroll system, eliminating the need for manual payments.

 Feedback Mechanism:

- **Purpose:** Captures user satisfaction levels to enhance service quality.
- **Usage:** Employees can rate meals and provide suggestions, enabling continuous improvement of food and delivery services.

 Order Customization:

- **Purpose:** Allows users to tailor their orders to suit personal preferences.
- **Usage:** Employees can add or remove items, modify quantities, or create special instructions for their meals before checkout.

 Consolidated Order Management:

- **Purpose:** Facilitates efficient kitchen operations by providing a summarized view of all orders.
- **Usage:** The Canteen Manager receives a consolidated list of daily orders, enabling accurate preparation and inventory allocation.

 Employee Satisfaction Tracking:

- **Purpose:** Monitors user satisfaction to measure system effectiveness.
- **Usage:** Analyzes feedback and usage patterns to generate actionable insights for management.

 Performance Reports:

- **Purpose:** Provides valuable business insights through detailed reporting.
- **Usage:** Generates reports on daily sales, popular dishes, employee usage, and food wastage for better decision-making.

 Scalability and Performance Optimization:

- **Purpose:** Ensures smooth operations for up to 1500 simultaneous users.
- **Usage:** Optimized system architecture guarantees fast load times and high availability.

 Role-Based Access Control:

- **Purpose:** Ensures secure access for different user roles.
- **Usage:** Restricts access to features based on user roles, such as Employee, Menu Manager, Canteen Manager, and Delivery Personnel.

 Mobile Compatibility:

- **Purpose:** Enhances accessibility by allowing employees to use the system on mobile devices.
- **Usage:** Enables meal ordering, tracking, and notifications on-the-go.

 Order Tracking and Notifications:

- **Purpose:** Keeps employees informed about the status of their meals.
- **Usage:** Sends notifications for order confirmation, preparation updates, and delivery status.

 Order Forecasting:

- **Purpose:** Predicts future food demand to reduce waste and improve inventory planning.
- **Usage:** Uses historical order data and trends to forecast popular items and plan inventory accordingly.

 Sustainability Tracking:

- **Purpose:** Monitors food wastage to support sustainability goals.
- **Usage:** Tracks unsold food items and helps implement measures to minimize waste over time.

Canteen Manager:

Login: The user should be able to login with user id/pwd

Create Menu: The user should be able to create menu and add it.

Modify Menu: Update existing menu items.

Delete Menu: Remove dishes from the menu.

Track Order: View consolidated employee orders for preparation.

Management: Reports: Generate sales, usage, and inventory reports.

Employee:

Search a meal from menu

Payment Tracking

Order tracking

Order Meal

Feedback

Delivery Executive: Updates the delivery status once the food is delivered

Out of Scope

Delivery of Meals Outside the Office:

- The system will only facilitate meal delivery within the office premises; external deliveries are not included in this phase.

All Payment Modes Acceptance:

- Currently, the system supports salary deductions only. Integration with additional payment methods (credit/debit cards, UPI, digital wallets, etc.) will be addressed in Phase 2.

Order Limitations:

- There will be no restrictions on the number of orders per employee in this phase; such limitations, if required, will be considered later.

Order Timings Beyond Lunch:

- The system is designed exclusively for lunch orders within specified hours. Expanding order timings to breakfast, snacks, or dinner will be considered in future updates.

Nutritional or Dietary Customization:

- Options for dietary preferences, calorie tracking, or allergen alerts are not included in the initial release.

Mobile Application Development:

- The current system will be web-based; dedicated mobile applications for iOS and Android will be explored in subsequent phases.

Advanced Order Forecasting:

- AI-driven prediction of food trends and personalized recommendations will be introduced in later updates.

Canteen Staff Management:

- Features for managing canteen staff shifts, schedules, or task assignments are not part of this phase.

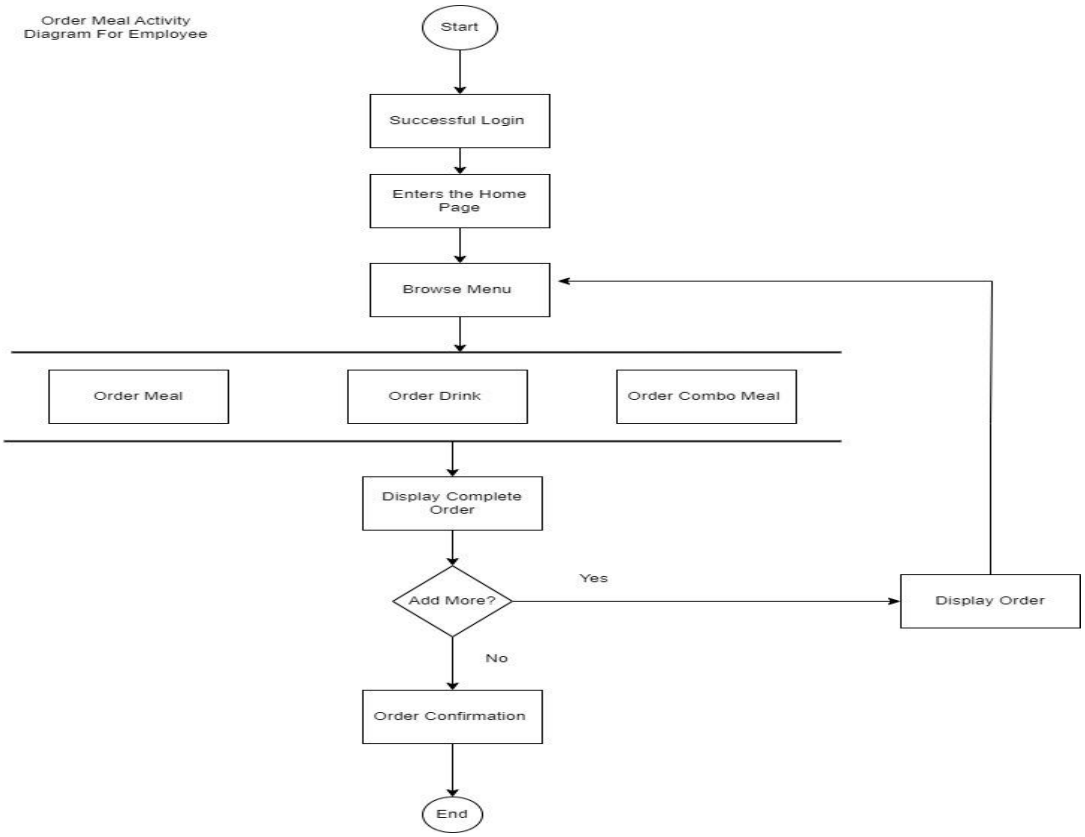
Real-time Delivery Tracking:

- While delivery updates will be available, real-time location tracking of delivery personnel is excluded from the current scope.

Integration with External Food Services:

- Partnerships with external food vendors or third-party delivery services are beyond the scope of this project phase.

Activity Diagram for the System:



Business Requirements:

Objectives:

Business Objective 1:

Reduce canteen food wastage by a minimum of 30% within 6 months following first release.

Scale: Value of food thrown away each month by examining the canteen inventory

- Previous - 25% wasted
- Must plan for: Less than 15%

Business Objective 2:

Reduce canteen operating costs by 15% within 12 months, following initial release.

Business Objective 3:

Increase average effective work time by 30 minutes per employee per day, within 3 months.

Business Objective 4:

By making the ordering process automated and by delivering the food to the user's workstation, the canteen will be able to operate with lesser manpower.

Functional Requirements (Behavioural Reqt)

Order A meal: Employee should be able to order a meal

Browse meal: Employee should be able to browse a meal from list of meal categories

Feedback: Employees should be able to provide feedback on meals and delivery service to improve future experiences.

Create menu: Canteen Manager should be able to create and add new dishes to the menu for the day.

Edit/Delete Menu: Canteen Manager should be able to modify or remove menu items as required.

Request Delivery: Employees can request a delivery of their ordered meals to their workstation.

Update Delivery Status: Delivery Executive should be able to update the status of the delivery, marking it as completed once delivered.

Fetch Reports: Management should be able to fetch reports on sales, food preferences, employee feedback, and inventory usage.

Nonfunctional Requirements

System Requirement:

Scalability and performance:

This canteen ordering system is required to support a volume of 1500 employees ordering. the web pages should be light and render fast.

Usability:

The screens should be self-explanatory and very user friendly. Management would not want employees not ordering from the system as they cannot understand the screens and data fields on screen.

Environments

We are going to be creating and maintaining the program in Java. We chose Java because it will not change much over time, and if we make it well, there will be very little maintenance to be done on the code.