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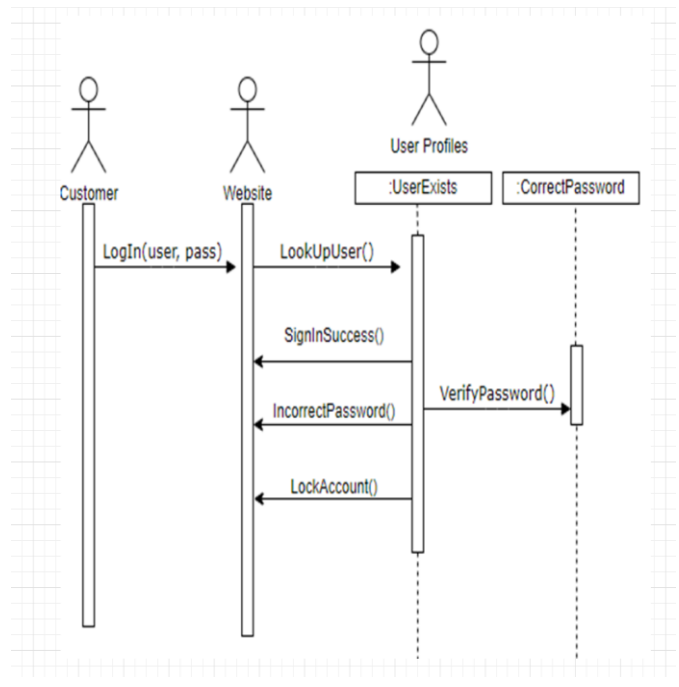
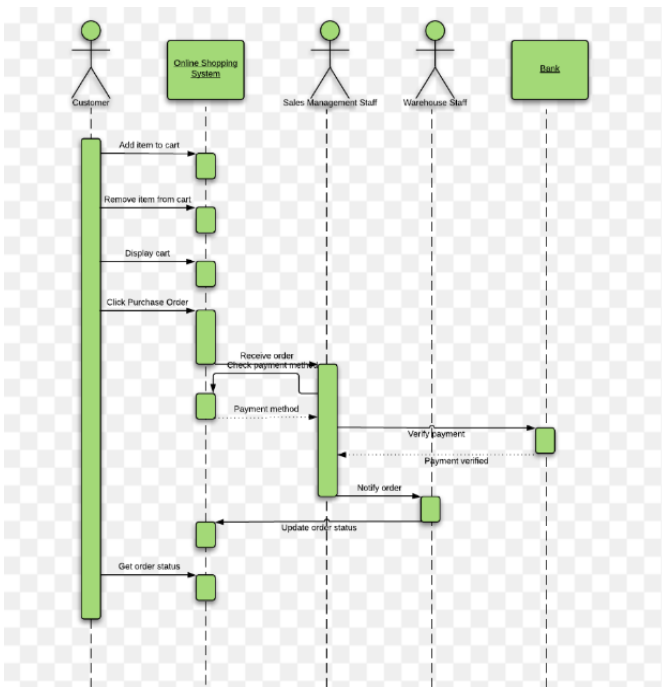
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## Project Overview

This document outlines a comprehensive testing and implementation plan for an **Advanced Smart Inventory Stock Management System** with online shopping capabilities. The system features login management, cart management, order processing, and inventory tracking functionalities tailored for small to mid-sized operations. The following sections cover test case derivation from sequence diagrams, requirements-based testing, a usage scenario, a detailed implementation plan, and quality assurance testing.

## Introduction

This document presents a comprehensive testing and implementation plan for the Advanced Smart Inventory Stock Management System, designed to streamline online shopping and inventory management. The system's core functionalities include login management, cart management, order processing, and inventory tracking, each tailored to enhance operational efficiency and customer satisfaction. The following sections provide detailed testing strategies, derived from sequence diagrams and requirements-based scenarios, ensuring each function performs as expected. Key test cases cover login success, error handling, account security, and cart functionalities, simulating user interactions to validate the accuracy of inventory updates, payment verification, and order status tracking. A phased implementation plan supports incremental development of each feature, focusing on quality assurance and a seamless user experience. This approach offers a reliable foundation for the system's deployment, ensuring that essential processes are thoroughly tested and optimized for a secure, user-friendly solution.



**Login & Use Case Testing and Test Case Derivation from Sequence Diagram**

Test Case ID	Test Case	Objective	Steps	Expected Result
TC-01	Successful Login	Ensure a customer can log in when correct credentials are provided.	1. Input valid username and password on the login page. 2. Click on "Login".	The system verifies the user exists and password is correct. SignInSuccess() message is returned, granting access.
TC-02	Incorrect Password	Confirm the system responds appropriately to an incorrect password.	1. Input valid username and an incorrect password on the login page. 2. Click on "Login".	The system finds the user but fails password verification. IncorrectPassword() message is displayed.
TC-03	Non-Existent User	Verify the system's response when the username does not exist.	1. Input a non-existent username and any password on the login page. 2. Click on "Login".	The system cannot find the user in UserExists check. Returns an error indicating the user does not exist.
TC-04	Account Lock After Failures	Ensure the system locks the account after multiple failed login attempts.	1. Input a valid username and incorrect password multiple times (as per the system's policy).	After a set number of failed attempts, the system executes LockAccount() and prevents further login attempts. Display a message indicating the account has been locked.
TC-05	Add Item to Cart	Ensure items can be added to the cart successfully.	1. Select an item from the product list. 2. Click on "Add to Cart"	The item appears in the cart, and the cart count increases by one.
TC-06	Remove Item from Cart	Confirm items can be removed from the cart as needed.	1. Open the cart. 2. Select an item and click "Remove".	The item is removed from the cart, and the cart count decreases.
TC-07	Display Cart	Verify that the cart contents display correctly	1. Add items to the cart. 2. Click on the cart icon to view cart details.	The cart displays all items added with correct quantities and prices.
TC-08	Purchase Order	Ensure the system processes a purchase order correctly.	1. Add items to the cart. 2. Click "Purchase Order". 3. Select payment method. 4. Confirm the purchase.	The order is processed, and a confirmation message appears.
TC-09	Payment Verification	Confirm that payment is verified before order completion.	1. Initiate the purchase order. 2. Choose payment method. 3. Complete payment verification with the bank.	Payment is verified, and the order proceeds to the next step.
TC-10	Order Status Update	Verify that order status updates appropriately after processing.	1. Place an order. 2. Wait for order processing. 3. Check order status.	The order status reflects the current processing stage, such as "In Progress" or "Shipped".
TC-11	Get Order Status	Ensure users can retrieve the current status of their orders.	1. Navigate to "Order History". 2. Select an order to view its status.	The system displays the current status of the selected order.

## Requirements-Based Testing

Requirement ID	Requirement Description	Test Case(s)
RQ-01	The system should authenticate users with valid credentials.	TC-01 (Successful Login)
RQ-02	The system should notify users of incorrect passwords.	TC-02 (Incorrect Password)
RQ-03	The system should inform users if the username is not found.	TC-03 (Non-Existent User)
RQ-04	The system should lock the account after consecutive failed login attempts to enhance security.	TC-04 (Account Lock After Failures)
RQ-05	The system should allow users to add and remove items from the cart.	TC-05 (Add Item to Cart), TC-06 (Remove Item from Cart)
RQ-06	The system should display cart contents accurately.	TC-07 (Display Cart)
RQ-07	The system should process orders and verify payment before completion.	TC-08 (Purchase Order), TC-09 (Payment Verification)
RQ-08	The system should update the order status based on current processing steps.	TC-10 (Order Status Update)
RQ-09	The system should allow users to check the current status of their orders.	TC-11 (Get Order Status)

### Scenario:

A customer accesses the online platform and attempts to log in. If incorrect login credentials are entered, the system prompts for retry, and after multiple failures, locks the account. Upon successful login, the customer browses and adds items to their cart, reviews cart contents, and places an order. The system verifies the payment with the bank, processes the order, and allows the customer to track the order status. Sales and warehouse staff monitor inventory, manage stock, and update order statuses as needed.

### Feature Tested by Scenario:

- Login Management: Handles successful login, incorrect password attempts, and account lockout.
- Cart Management: Allows adding/removing items and displaying cart contents.
- Order Processing: Processes orders and verifies payments.
- Order Tracking: Enables real-time order status updates for customers.

### 4. Use Case Diagram for Implementation

1. Log In
2. Add Item to Cart
3. Remove Item from Cart
4. Display Cart
5. Click Purchase Order
6. Verify Payment
7. Order Status Update
8. Get Order Status
9. Account Lock

## 5. Implementation Plan

### Phase 1: Login System Implementation

- Develop the login page UI and backend functionality for `LogIn(user, pass)`.
- Implement `LookUpUser()` to verify if the user exists.
- Implement `VerifyPassword()` to check if the entered password is correct.
- Add security measures with `LockAccount()` to lock accounts after multiple failed attempts.
- Configure error messages for non-existent users and incorrect passwords.

### Phase 2: Cart Management

- Develop the UI and backend functionality for adding, removing, and displaying items in the cart.
- Implement `AddItemToCart()` and `RemoveItemFromCart()` methods to manage cart contents accurately.

### Phase 3: Order Placement and Payment Verification

- Develop the "Purchase Order" functionality, allowing users to place an order from their cart.
- Integrate payment verification with the bank for secure transactions.
- Implement methods for verifying payment status and handling payment outcomes.

### Phase 4: Order Status Tracking

- Implement functionality for updating order status at each processing stage (e.g., "In Progress," "Shipped").
- Enable customers to view real-time status of their orders in the "Order History" section.

## Conclusion

This document establishes a detailed plan for conducting comprehensive testing for the Advanced Smart Inventory Stock Management System, focusing on several critical testing methods to ensure functionality, security, and reliability. The testing approach includes use case testing, which simulates real-world scenarios, and sequence diagram-based test case derivation to align testing with system interactions. Requirements-based testing further confirms that each system function meets specified objectives, while a usage scenario illustrates a customer's interaction with the system, showcasing login, cart management, and order processing features.

Key features tested by the scenario validate crucial use cases highlighted in the use case diagram, covering login management, cart functionality, order placement, and tracking. An implementation plan for each feature is outlined in phases, supporting a step-by-step development and testing process that ensures quality and adherence to requirements. This plan sets the foundation for starting implementation, preparing the system for reliable and user-friendly deployment.