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**Project Report: Agora-Mart System**

**Introduction:**

Agora-Mart is an advanced retail management system designed to streamline the process of product management for administrators while providing a smooth experience for users. The system offers functionalities such as user login, product viewing, adding, editing, and saving product details persistently. This project employs a Java Swing-based GUI for user interactions, ensuring a user-friendly interface and efficient performance. The primary objective is to replace temporary storage mechanisms, such as ArrayLists, with persistent storage using text files, enabling data retention between sessions.

**Methodology :**

System Design

The Agora-Mart system is composed of several core components:

Admin Login: Provides a secure login interface for administrators.

Admin View: Allows administrators to manage products by viewing, adding, and editing product details.

Product Management: Handles product data storage, retrieval, and display.

User Management: Manages user authentication and details.

Data Storage

To ensure data persistence, the system uses text files (users.txt and products.txt) to store user credentials and product information. These files are read into memory when the application starts and written back to disk when changes are made.

**Class Structure:**

The system consists of several classes, each with a specific role:

AgoraMart: Main class handling user login and data loading/saving.

AdminLogin: GUI for admin login.

AdminView: GUI for product management.

Product: Abstract class representing a product.

User: Abstract class representing a user.

Admin: Concrete class extending User for administrators.

Customer: Concrete class extending User for customers.

**UML Class Diagram :**

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**Uses :**

User Authentication

Admin Login: Admins can log in using their credentials stored in users.txt.

Customer Login: (Future Implementation) Customers can log in to view products and make purchases.

Product Management

View Products: Admins can view a list of products.

Add Products: Admins can add new products, which are then saved to products.txt.

Edit Products: Admins can modify existing product details.

Persistent Storage

User Data: Stored in users.txt and read at application startup.

Product Data: Stored in products.txt using Java serialization, ensuring data is retained across sessions.

**Difficulties :**

File Handling

Reading/Writing Text Files: Implementing efficient and error-free mechanisms for reading from and writing to text files was challenging, especially ensuring data integrity during concurrent access.

Data Serialization: Managing object serialization for product data required careful handling to ensure compatibility and avoid corruption.

User Interface

GUI Development: Creating an intuitive and responsive GUI using Java Swing posed challenges, particularly in aligning components and handling user actions.

Error Handling: Ensuring robust error handling in the GUI to provide meaningful feedback to users in case of invalid inputs or system errors.

**Conclusion :**

The Agora-Mart system successfully demonstrates the use of Java and text files for building a retail management application with persistent data storage. By transitioning from temporary storage methods to persistent text files, the system ensures that user and product data are retained across sessions, enhancing reliability and user experience. The project lays a solid foundation for future enhancements, such as expanding user roles and integrating additional functionalities. The challenges faced during development provided valuable insights into file handling and GUI development, contributing to a robust and user-friendly application.