

Final OOP Project

summary

Project Summary: Coffee Shop Inventory Management System

The "Coffee Shop Inventory Management System" is a Java-based desktop application designed to manage the operations of a small coffee shop. The system provides a complete inventory and sales management solution using a beginner-friendly yet structured approach based on Object-Oriented Programming (OOP).

Key Features:

- Product Management:**
 - Add new coffee products with name, type, and price.
 - Remove existing products from the inventory.
 - Display all products currently available in the system.
- Customer and Purchase Management:**
 - Register new customers by recording their name and contact details.
 - Link purchases directly to the customer.
 - View complete customer information along with their purchase history.
- Sales Tracking and Reporting:**
 - Automatically records the number of purchases made each day.
 - Tracks the total revenue generated daily from all customer purchases.
 - Generates purchase receipts for customers with detailed product and pricing information.
- Data Persistence:**
 - Uses file-based storage (products.dat, customers.dat) to permanently save data.
 - Serialized object streams ensure product and customer data are retained between sessions.
- Graphical User Interface (GUI):**
 - Built using Java Swing for an interactive and user-friendly experience.
 - All operations are performed via button-driven actions and dialog prompts.
- Robust Exception Handling:**
 - Input validation and error messages are implemented throughout the system.
 - Ensures that user mistakes (e.g., entering invalid prices or null values) are handled gracefully.

Technical Overview:

- The application is structured using multiple Java classes:
 - Product and its subclass Coffee for item representation.
 - Customer for storing customer data and purchases.
 - InventoryManager for backend logic, file handling, and data operations.
 - InventoryGUI for the front-end user interface.
- The use of inheritance, encapsulation, and class separation provides a clean and maintainable codebase.

Conclusion:

This project offers a practical implementation of a complete inventory system for a coffee shop. It emphasizes real-world application development using Java OOP concepts, user interface design, and file handling. The system is functional, extendable, and showcases the power of object-oriented design in solving everyday business problems.

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