

# 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:**

1. **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.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.

***Maria Qasim***

105260