



North South University

Department of Electrical and Computer Engineering

Coder's Unity

Nuha Nur Sikder ID: 2321115042

Md. Abdul Wadud ID: 2323372042

Tanvir Hossain Sakif ID: 2232935642

Course: CSE215L – Programming Language II

Section: 7

Group number: 04

Link:

Project on Customer Billing System

Faculty's name: Dr. Mohammad Shifat-E-Rabbi

Submitted To: Kazi Tanvir Akter

Description:

The Customer Billing System is a Java Swing-based desktop application designed to streamline billing operations and customer management for businesses. This project presents a user-friendly graphical interface that enables users to efficiently handle billing items, manage customer information, update inventory, and generate invoices.

The main objective of this project is to provide a robust and intuitive solution for businesses to manage their billing processes effectively. By leveraging Java Swing, the application offers a seamless user experience with interactive components and easy navigation between different functionalities.

The primary functions are outlined as follows:

1. **Provides an interactive Graphical User Interface (GUI):** Implement a user-friendly GUI using Java Swing to provide an intuitive and visually appealing interface for users to interact with the billing system.
 - **Java Swing Framework:** Java Swing is utilized to create interactive and visually appealing GUI components such as buttons, labels, and frames.
 - **Frame Initialization:** Java frames are initialized to serve as the main windows of the application, providing a platform for user interaction.
 - **Component Customization:** GUI components are customized with fonts, icons, and layouts to enhance the user experience and aesthetic appeal.
2. **Billing Items Management:** Offers functionalities for adding, editing, and deleting billing items to maintain an organized database of products or services offered by the business. Utilizes the principles of Object-Oriented Programming, such as Inheritance, Encapsulation, Polymorphism and Abstraction to manage the billing processes effectively.
3. **Customer Information Management:** Implements features for managing customer information, including adding new customers, editing existing customer details, and maintaining a comprehensive customer database.
4. **Inventory Management:** Provides functionalities for managing inventory, allowing users to add new items and update item information such as quantity and price.
5. **Invoice Generation:** Enables the generation of invoices based on selected billing items and customer information, providing users with professional and standardized billing documents for transactions. The project implements the use of FilesIO and Exception Handling to ensure the efficient management of data.
6. **Seamless Navigation:** Ensure seamless navigation between different sections of the application, allowing users to switch between billing items, customer information,

inventory management, and invoice generation with ease. The project adopts a modular design approach, organizing functionalities into separate classes and frames for easier maintenance and scalability. Common functionalities, such as database operations and UI components, are encapsulated into reusable methods and classes to avoid code duplication and promote efficiency.

7. **Implementation of Event-Driven Programming:** Event listeners are employed to handle user interactions with GUI components, such as button clicks and mouse actions. Methods are implemented to respond to user events, triggering specific actions such as navigation to different sections of the application or data manipulation.

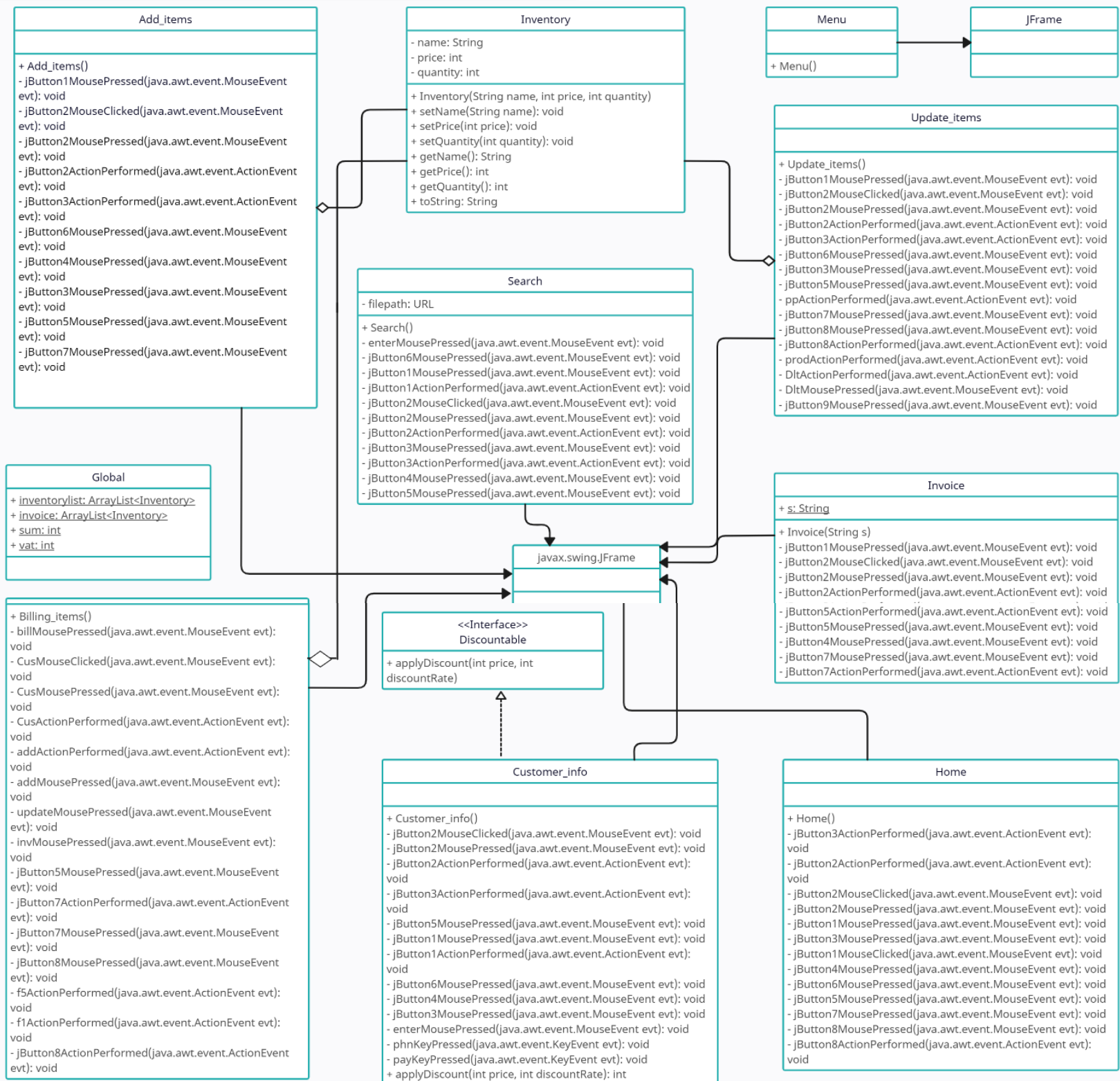
Contribution of each project member:

Nuha Nur Sikder	Provided the functionalities of the customer billing system, drew the UML diagram and wrote the report
Md. Abdul Wadud	Implemented Graphical User Interface (GUI) with appropriate classes
Tanvir Hossain Sakif	Designed the User Interface with interactive User-friendly features

Drawbacks and Future Implementations:

Despite its robust functionalities, the customer billing system project has a few drawbacks. The reliance on local file storage for inventory and customer records can lead to data inconsistencies and potential loss in case of file corruption or accidental deletion. Additionally, the current system lacks multi-user support and real-time updates, which are critical for businesses with large teams or multiple locations. The current system also lacks the functionalities related to return and refund items, along with the integration of inventory stock.

To address these limitations, future implementations could include migrating to a database management system for more reliable and scalable data storage. Integrating cloud-based solutions would enable real-time updates and better data security. Integrating the implementation of refund policies with inventory quantity would enhance reliability and control. Enhancing the system with multi-user capabilities and role-based access control would improve collaboration and ensure that sensitive data is only accessible to authorized personnel. These improvements would significantly enhance the system's efficiency, reliability, and scalability, catering to the evolving needs of growing businesses.



Conclusion:

The customer billing project is a comprehensive software solution designed to streamline billing and inventory management processes. Through a user-friendly graphical interface, it offers various functionalities such as adding items to inventory, updating inventory levels, viewing customer information, searching customer history, generating invoices, and navigating between different modules.

Utilizing Java Swing for the graphical interface, the project employs event-driven programming to handle user interactions efficiently. It integrates file I/O operations to read and write data, ensuring seamless management of inventory and customer records. Error handling mechanisms are implemented to address potential issues, such as file not found exceptions when accessing customer history.

Overall, the project provides a robust platform for businesses to manage their billing operations effectively, enhance customer service, and maintain accurate inventory records. Its intuitive design and diverse functionalities make it a valuable tool for businesses looking to optimize their billing processes and improve operational efficiency.