Client-Side Inventory Management System

The Client-Side Inventory Management System is a program designed for managing product data through a user-friendly interface. It utilizes a server-client architecture to enable seamless communication and data synchronization.

1. ClientSocket Class

The ClientSocket class represents the client-side socket responsible for establishing and managing communication with the server.

Functionality:

Connects to the server.

Sends and receives product data to and from the server.

2. UpdateRequest Class

The UpdateRequest class encapsulates updated product information for communication between the client and server.

Functionality:

Provides a structured format for sending updated product data to the server.

3. UpdateResponse Class

The UpdateResponse class represents the server's response to update requests from the client.

Functionality:

Indicates the success of an update operation.

Returns the updated product information.

4. ClientGUI Class

The ClientGUI class is the main graphical user interface for the client-side Inventory Management System.

Functionality:

Displays product data in a table.

Allows users to add, edit, and delete products.

Initiates communication with the server for data synchronization.

Program Flow

Client-side (ClientSocket, UpdateRequest, UpdateResponse, ClientGUI):

Connection Establishment:

The ClientSocket class establishes a connection to the server.

User Interaction:

The ClientGUI class allows users to add, edit, or delete products through a graphical interface.

Data Preparation:

When a user initiates an update (add/edit/delete), an UpdateRequest object is created to encapsulate the updated product data.

Communication with Server:

-The ClientSocket class sends the UpdateRequest to the server for processing.

Server-side (ServerSockets, ClientHandler, ServerData):

-Server Initialization:

The ServerSockets class initializes a server socket to listen for incoming client connections.

-*-*Client Connection Handling:

The ClientHandler class handles each client connection in a separate thread.

Data Processing:

Upon receiving an UpdateRequest, the server processes the request, updates the database using the ServerData class, and sends an UpdateResponse back to the client.

Database Interaction:

The ServerData class interacts with the database to add, edit, or delete product information.

Data Synchronization:

The server broadcasts updated product data to all connected clients through the ServerSockets class.

Client-side (ClientSocket, UpdateRequest, UpdateResponse, ClientGUI):

Data Reception:

The ClientSocket class receives the UpdateResponse from the server.

User Feedback:

The ClientGUI class updates the graphical interface based on the server's response, providing feedback to the user.

Summary

The Client-Side Inventory Management System program flow involves user interaction with the graphical interface, which triggers updates. These updates are encapsulated in UpdateRequest objects, sent to the server through the ClientSocket class, and processed by the server using the ClientHandler and ServerData classes. The server then broadcasts the updated data to all connected clients, ensuring synchronized product information across the system. The user receives feedback through the graphical interface, reflecting the success or failure of the update operation.