User Documentation

1. Introduction

The E-Commerce Platform is a Java-based application that simulates an online marketplace where users can register as buyers, sellers, or administrators. Each role has specific functionalities:

- Buyers can browse and view products.

- Sellers can manage their products by adding, updating, or deleting them.

- Admins have the authority to manage users and view all products, along with their associated seller information.

2. Class Overview

- `User` Class: Represents a general user in the system, with attributes such as `username`, `password`, `email`, and `role`. Acts as a base class for `Buyer`, `Seller`, and `Admin`.

- `Buyer` Class: Inherits from `User`. Represents a buyer with the ability to browse and search for products.

- `Seller` Class: Inherits from `User`. Represents a seller who can manage their own products.

- `Admin` Class: Inherits from `User`. Represents an admin who can manage users and view all products.

- `Product` Class: Represents a product listed by a seller, with attributes such as `name`, `price`, `quantity`, and `seller\_id`.

- `UserDAO` Class: Handles CRUD operations related to the `User` table in the database.

- `ProductDAO` Class: Handles CRUD operations related to the `Product` table in the database.

- `UserService` Class: Provides business logic related to user management, including registration and login.

- `ProductService` Class: Provides business logic related to product management.

- `DatabaseConnection` Class: Manages the connection to the PostgreSQL database.

- `ECommerceApp` Class: The main class that runs the application, handling the user interface and integrating services.

- ‘BCrypt’ Class: Hashes the password and checks to see if the passwords are the same.

3. How to Start/Access the Application

1. Set Up the Database: Ensure that PostgreSQL is installed and the necessary tables (`users`, `products`) are created as per the schema provided.

2. Configure the Database Connection: Update the `DatabaseConnection` class with your PostgreSQL database URL, username, and password.

3. Compile and Run the Application: Compile the Java project using your preferred IDE or command line. Run the `ECommerceApp` class to start the application.

4. Login or Register: Use the console interface to log in as an existing user or register a new one. Based on your role, you will be presented with a specific menu of options.

4. Class Diagram

The following is a basic class diagram showing the relationships between the main classes:

   +-----------+          +-----------+         +-----------+

   |   User    |<------- |  Product  |<--------- |  Seller   |

   +-----------+          +-----------+         +-----------+

        ^                                            ^



        |                                               |

 +----------+             +-------------+           +-------------+



 |  Buyer   |             | UserDAO     |           | Admin       |

 +----------+             +-------------+           +-------------+

        |



ProductDAO

 +----------+

 |  Admin   |

 +----------+

Development Documentation

1. Javadocs

Each class and method in the application is documented using Javadoc comments. These comments provide detailed descriptions of the functionality, parameters, and return values. To generate the Javadocs, use the following command in the root of the project:

javadoc -d doc src/\*.java

2. Source Code Directory Structure

- src/: Contains all Java source files.

- `DatabaseConnection.java`

- `User.java`, `Buyer.java`, `Seller.java`, `Admin.java`

- `Product.java`

- `UserDAO.java`

- `ProductDAO.java`

- `UserService.java`

- `ProductService.java`

- `ECommerceApp.java`

3. Build Process

1. Compiling the Project:

 - Ensure that the `src/` directory contains all the source files.

- Run the following command to compile the project:

   javac -d bin src/\*.java

 This will compile the source files into the `bin/` directory.

2. Running the Application:

 - After compilation, run the application using the following command:

   java -cp bin ECommerceApp

4. Compiler Time Dependencies

The application uses JDBC for database connectivity. Ensure that the PostgreSQL JDBC driver (`postgresql-42.x.x.jar`) is included in the classpath during compilation and runtime.

5. Development Standards

- Coding Standards: Follow Java naming conventions and best practices for class, method, and variable names.

6. Setting Up the Database

1. Install PostgreSQL and create a new database named `ecommerce`.

2. Execute the provided SQL script to create the necessary tables (`users`, `products`).

3. Update the `DatabaseConnection` class with your database credentials.

7. Source Code Repository

The source code is managed in a Git repository. Clone the repository using the following command:

git clone https://github.com/your-repo/ecommerce-app.git

Deployment Documentation

1. Prerequisites

- Java Development Kit (JDK) installed.

- PostgreSQL installed and running.

- PostgreSQL JDBC driver available in the classpath.

2. Installation Steps

1. Download the Source Code: Clone the repository or download the source code from the provided link.

2. Set Up the Database:

 - Create a new PostgreSQL database.

   - Run the SQL script to set up the necessary tables (`users`, `products`).

3. Compile the Application:

   - Open a terminal and navigate to the root directory of the project.

   - Compile the source files using the command:

   javac -d bin src/\*.java

4. Run the Application:

   - Execute the application using the command:

   java -cp bin ECommerceApp

5. Access the Application:

   - Follow the console prompts to register, log in, and use the application based on your role.

3. Troubleshooting

- Database Connection Issues: Ensure that the PostgreSQL service is running and the database credentials in `DatabaseConnection.java` are correct.

- Compilation Errors: Make sure all dependencies, such as the PostgreSQL JDBC driver, are correctly included in the classpath.

- Role-Based Access: Verify that the user roles are correctly assigned in the database.

This documentation should help you set up, develop, and deploy the e-commerce application effectively.