

Develop a Java-based Business Software Application

Assignment Objective

Create a fully functional desktop software application for a real-world business in your local area using Java, JDBC, and JavaFX. The project should follow the Extended MVC (Model-View-Controller) design pattern to ensure modularity and scalability. The final output must include a JAR file for easy distribution and deployment.

Requirements

1. Business Scope

- Identify a real business in your locality (e.g., POS system for a grocery store, library management system, medical store inventory, or a salon appointment system).
- Collaborate with the business owner (if possible) to understand their requirements.

2. Features

The application must include the following features (adapt based on the chosen business):

- **Authentication:** Login and logout functionality for admin and staff users.
- **CRUD Operations:** Ability to add, edit, view, and delete records (e.g., products, members, books, or services).
- **Database Transaction :** Business process implementation
- **Reports:** Generate reports like sales reports, inventory summaries, or overdue items.
- **Search Functionality:** Allow efficient search of records based on specific attributes (e.g., by name, ID, or date).
- **Database Integration:** Use MySQL or any other relational database with JDBC to store and retrieve data.
- **Error Handling:** Include proper error messages for failed operations (e.g., "Record not found").

3. Technology Stack

- **Frontend:** JavaFX for creating a graphical user interface (GUI).
- **Backend:** Java with JDBC for database operations.
- **Database:** MySQL (or any RDBMS).
- **Build Tool:** Maven or Gradle for dependency management and building the JAR file.

4. Design

- Use the **Extended MVC** design pattern:
 - **Model:** Define the data structure and database interaction logic.
 - **View:** Create GUIs using JavaFX to interact with the user.
 - **Controller:** Handle user actions and coordinate between the Model and View.
 - **Service Layer:** Add a service layer to implement business logic (optional but recommended for advanced projects).

5. Final Deliverable

- **Executable JAR File:** The application must be built as a distributable JAR file.
- **Database Script:** Provide the SQL script to create and populate the database.
- **Documentation:** Include a README file with:
 - Brief about the project.
 - Instructions for running the application.
 - List of features implemented.
- **Source Code:** Submit the complete source code.

Timeline

- **Step 1:** Project proposal and requirements gathering (students should submit a one-page project idea and scope).
- **Step 2:** Database design and initial implementation of the Model.
- **Step 3:** Build the GUI with JavaFX and connect it to the backend.
- **Step 4:** Complete the project, including testing, creating the JAR file.

* Finally you should present only the executable JAR file (End Product)

* You have two weeks to complete this task

Bonus Points

- Add advanced features like data visualization (charts/graphs) or export functionality (PDF/Excel reports).
- Implement a role-based access system (e.g., admin vs. staff users with different permissions).