Documentation about the project

a. Dataset References:
The dataset used for this project is the Churn Data provided by Kaggle.
Reference: Telco Customer Churn

b. External Library References:
This project utilizes the following external libraries:

- Java Swing Library for GUI components.

Reference: Java Swing Library

- JDBC Library for database connectivity.

Reference: JDBC Library

c. Installation Instructions:

1. Ensure that you have Java Development Kit (JDK) installed on your system.
2. Download and install MySQL Workbench database server if not already installed.
3. Download the project files.
4. Open the project in your preferred IDE.
5. Set up the MySQL database:
6. Create a database named "churndata".
7. Table Creation:
8. Create 6 tables within the churndata database: Customer, Service, MonthlyCharges, SeniorCitizen, PartnerDependents, and InsightsStatistics
9. Ensure that each table contains columns corresponding to its schema.
10. Import the provided datasets into the database.
11. If necessary, update the database connection details (URL, username, and password) in the code.
12. Compile and run the project.

d. Usage Instructions:
Features:

- Search by Customer ID: To search for specific customer information within the Churn Customer Application, users can utilize the search functionality by entering a customer ID into the designated search field. If a customer ID is provided, the application retrieves and displays detailed information corresponding to that specific customer, including gender, senior citizen status, partner status, dependents, and tenure. However, if no customer ID is entered and the search is initiated, the application defaults to displaying information for all customers in the database, enabling users to gain insights into the entire customer base. This flexible search feature allows users to quickly access relevant customer data based on their specific requirements, whether for individual analysis or broader assessments of customer demographics and behavior.

- Apply Filter: To apply a filter in the Churn Customer Application, users can select from three filter types: Senior Citizen, Tenure, or Paperless Billing. After choosing the desired filter type, users input the corresponding filter value. For the "Senior Citizen" filter, users can specify either "0" for no, or "1" for yes to filter customers based on their senior citizen status. Similarly, for the "Tenure" filter, users input a value to filter customers with tenure greater than or equal to the specified value. Lastly, for the "Paperless Billing" filter, users select either "yes" or "no" to filter customers based on their paperless billing preference. Upon applying the filter, the application retrieves and displays all Customer IDs that meet the specified filter condition in the result area of the application window. This feature provides users with a convenient way to narrow down the customer dataset based on specific criteria, facilitating targeted analyses and insights into customer segments.

- Select Data Table: Choose from various data tables (Customer, Service, MonthlyCharges, SeniorCitizen, PartnerDependents, InsightsStatistics) to display specific information. After selecting a data table, the application will retrieve and display relevant information from the chosen table. You can switch between different data tables by selecting a new option from the dropdown menu. The application will update the displayed information for each 'search' attempt.

- View Insights Statistics: Retrieve insights statistics for a specific customer by selecting the "InsightsStatistics" table. Once selected, the application displays various insights, including Customer Lifetime Value, Discount Eligibility, Number of Services Used, and Churn Percentage for All Customers. The Customer Lifetime Value predicts the revenue a customer will generate based on their average monthly charges and tenure. Discount Eligibility indicates if a customer qualifies for discounts based on their tenure, typically for those with 12 months or more. The Number of Services Used reflects the total services subscribed by the customer, indicating their engagement level. The Churn Percentage reveals the proportion of customers who discontinued services.

- Calculate and Store Statistics: The Churn Customer Application automatically calculates and stores key statistics for each customer, ensuring no duplicates are recorded. These statistics include:
    - Customer Lifetime Value (CLV): The application computes the CLV based on the average monthly charges and tenure of each customer. It multiplies these values to estimate the total revenue generated from the customer over their lifetime.
    - Discount Eligibility: It determines whether a customer is eligible for a discount based on their tenure. Customers with a tenure of 12 months or more are considered eligible for a discount.
    - Number of Services Used: The application calculates the total number of services subscribed to by each customer. It counts the number of non-"No" services across various categories, such as phone service, internet service, and additional features.

  These statistics are stored in the InsightsStatistics table for each customer, ensuring that only unique records are inserted. Upon entering a customer ID and initiating a search, the application retrieves the corresponding customer information and computes the relevant statistics. It then checks if these statistics are already present in the database for the specified customer. If not, it calculates the statistics and inserts them into the InsightsStatistics table, preventing duplicate entries.

This approach ensures that the statistics are tailored to each customer, providing personalized insights into their value, discount eligibility, and service usage. By focusing on individual searches, the application delivers targeted analyses that can inform decision-making processes related to customer management and retention strategies.

- Usage:

Upon running the application, follow these steps:

1. Enter a customer ID (optional) and click "Search" to view customer details.
2. Choose a data table from the dropdown menu to display specific information.
3. Click on "InsightsStatistics" to view insights statistics for the selected customer.
4. Automatically calculated statistics are stored in the database for future reference.
5. Additionally, you can select a filter type and enter the filter value, then click "Apply Filter" to filter the data. The application will display all customers that satisfy the criteria.

Note:

- The original dataset has been split into 5 tables (Customer, Service, MonthlyCharges, SeniorCitizen, PartnerDependents) for easy import and reuse.
- The ‘Contract’ column in the original dataset and sectioned ‘Service’ dataset is ignored/not imported to the database.
- ‘SeniorCitizen’ values, 0 represents ‘no’ and 1 represents ‘yes’