

Electricity Billing System

- Java Mini Project

- **1. Introduction**
- The Electricity Billing System is designed to streamline and automate the billing process for electricity consumption. The system provides a user-friendly interface for customers to view and manage their billing information and handle the billing data and customer details are records efficiently.

2. Objectives

- Automate the electricity billing process.
- Maintain accurate and up-to-date customer records.
- Provide an easy-to-use interface for customers.
- Ensure secure login and sign-up functionalities.
- Enable customers to view their billing history and details.

- **3. System Overview**
- The system is developed using Java Swing for the user interface and MySQL(**xampp**) for the database. It includes functionalities for customer sign-up, login, viewing billing details of billing information.

• 4. System Requirements

- **Hardware Requirements:**
- **Processor:** Intel Core i3 or above
- **RAM:** 4 GB or above
- **Storage:** 500 GB or more
- **Software Requirements:**
- **Operating System:** Windows/Linux/MacOS
- **Java Development Kit (JDK):** Version 8 or above
- **XAMPP:** For Apache server and MySQL database
- **Java IDE:** Eclipse or IntelliJ IDEA

Schema:
Tables

v electricity_db; **customers**

#	customer_id	: int(11)
✉	name	: varchar(255)
✉	consumer_number	: varchar(255)
✉	billing_unit	: varchar(255)
✉	meter_number	: varchar(255)
#	current_reading	: int(11)
#	last_reading	: int(11)
✉	password	: varchar(255)

v electricity_db; **bills**

💡	bill_id	: int(11)
#	customer_id	: int(11)
✉	billing_month	: varchar(255)
#	consumed_units	: int(11)
#	total_charge	: double
📅	bill_date	: date
📅	due_date	: date

6. User Interface Design

- **Home Page**
- **Login Form:** Includes fields for username and password, and buttons for login and sign-up.
- **Background Image:** A visually appealing image set as the background.
- **Sign-Up Page**
- **Fields:** Consumer Number, First Name, Middle Name, Last Name, Username, Password.
- **Buttons:** Sign-Up and Back.
- **Bill Details Page**
- **Displays:** Customer ID, Billing Month, Consumed Units, Total Charge, Bill Date, Due Date.
- **Buttons:** History, Back.

- **7. Functional Requirements**

- 1. Login Functionality**

- 1. Users can log in by providing their username and password.
 2. Credentials are verified against the database.
 3. Successful login redirects the user to the bill generator page.

- 2. Sign-Up Functionality**

- 1. New users can sign up by providing their details.
 2. User information is stored in the database.
 3. Mandatory fields must be filled out to complete the sign-up process.

- 3. Bill Generation**

- 1. Generates a bill based on the consumed units of electricity.
 2. Calculates the total charge according to predefined rates.

- 4. Billing History**

- 1. Displays a list of previous bills for the logged-in customer.
 2. Allows users to view detailed information about their past bills.

- 5. Bill Details**

- 1. Shows detailed information about a specific bill.
 2. Includes customer ID, billing month, consumed units, total charge, bill date, and due date.

- 6. Navigation**

- 1. Users can navigate easily between different pages such as Home, Sign-Up, Bill Details, and Billing History.
 2. Provides intuitive and user-friendly navigation options.

- **8. Implementation Details**
- **Application Structure**
- **HomePage:** Main entry point of the application. Handles login and redirection to other pages.
- **SignUp:** Manages the user sign-up process and stores new user information in the database.
- **BillGenerator:** Handles the generation and display of billing information.
- **Database Connection:** Uses JDBC to connect to the MySQL database for data retrieval and storage.

- **9. Conclusion**
- The Electricity Billing System simole-to-use application. It offers a user-friendly interface for handling of customer data. By incorporating Java Swing for the frontend and MySQL (**xampp**) for the backend, the system can handle and store data of costumer successfully