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**School of business**  
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**Java project description**  
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### **Electricity billing system**

- **Planning:**

Electricity Billing System Project in Java is a software-based application developed in Java programming language.

The goal of this project is to develop an electricity by computerizing the billing system. It mainly focuses on the calculation of the money to be paid to prevent fraud. This computerized system will make the overall billing system easy, accessible, comfortable and effective for customers.

#### **Project objectives:**

1. Has high speed of performance with accuracy and efficiency.
2. This application calculates the units consumed by the customer and makes bill
3. The software provides facility of sharing.
4. Generation of reports and analysis of usage data.

#### **Project goals:**

1. To ensure the security and privacy of customer information.
2. It requires small storage for installation.
3. There is provision for debugging if any problem is encountered in the system.
4. To provide insights and usage data that can aid in grid management and conservation efforts.
5. To calculate accurate units to be given to a customer according to the amount he/she has.

**Electricity billing system will solve the following future problems:**

A new software system to modernize the electricity billing procedure is required .the electricity billing system project would replace the existing traditional and analog type of electricity billing system ensuring **security,ease, Support for renewable energy sources and comfort in billing**.it meets the current user demands and new features can be easily integrated into system in future as per requirement

- **Design:**

The proposed electricity billing system will be designed as a desktop application with a user-friendly interface. The system will be built using Java programming language as for the back-end and Netbeans as for front end. The system will also use a relational database, such as MySQL, to store customer and usage data.

Users will interact with the system through desktop portal, where they will be able to register, login, calculate bills for customers and view customer bills, The team will also work on user interface design, ensuring that the interface is easy to navigate, visually appealing and provide the best user experience to the customer. The team will also conduct user testing to ensure that the interface is intuitive and easy to use.

The team will also conduct regular maintenance and updates to the system to ensure that it is running smoothly, fix any bugs, and add new features and functionalities.

- **Development:**

In this project, I used Netbeans as the front-end development platform and Java as the back-end language. The database used was MySQL and I utilized the MySQL Connector library to establish a connection between the application and the database. This allowed me to easily interact with and manipulate the data stored in the MySQL database.

- **Those features were implemented:**

### **Register**

- ❖ A user is able to access the register form
- ❖ I should not submit with missing required information
- ❖ Required fields are clearly marked
- ❖ Error message and successful message are displayed accordingly.

## Login

- ❖ User can input email and password to login
- ❖ User can not submit with missing value
- ❖ Error message is displayed for incorrect credentials and successful message is displayed for login success
- ❖ User will be redirected to dashboard after successful login

## Sell electricity

- ❖ User can have option to input client name
- ❖ User can have option to input amount to buy electricity
- ❖ User can have option to input cash power number
- ❖ User can not submit with missing value
- ❖ Bills is successful displayed after calculating
- ❖ Can have an option to print bill.

## View bills

- ❖ User view bills
- ❖ User can have option to input delete bill
- ❖ Message is displayed for successful delete
- ❖ User can have option to input cash power number

## ● **Testing:**

In the testing stage of our electricity billing system project, we followed a systematic approach to ensure that the system functioned as expected. I began by creating test cases for all the major functionality of the system, such as registering and login, generating bills, and form validations to insure security of the system. I then executed these test cases and recorded the results.

During testing, I identified several defects and bugs in the system, such as errors in the calculation of bills, issues with data validation and missing functionalities. I then used debuggers and other tools to identify the root cause of the issues and applied appropriate fixes to the code.

To ensure that the product met the original specifications.

Additionally, we also performed User Acceptance testing, where we invited a group of end-users to test the system and provide feedback, which helped us in finalizing the product and making it more user-friendly.

Overall, the testing process was an important step in the development of the electricity billing system and helped us to deliver a high-quality product that met the original specifications.

- **Deployment**

In the installation, testing, deployment and performance monitoring stages of our electricity billing system project, we used our own personal laptops as the development and testing environment.

For the installation, we first set up the necessary software and dependencies, such as the Java Development Kit, Netbeans IDE, and MySQL. We then imported the project files into Netbeans and configured the application to connect to the MySQL database. For testing, we followed the process described in the previous answer, executing test cases and identifying and resolving defects and bugs. We made sure that the system functioned as expected and met the original specifications.

For deployment, we expect to package the application into an executable jar file and create a setup file that could be used to install the application on other computers. We will then test the installation process on a separate computer to ensure that it will be seamless and easy to use.

Overall, the installation, testing, deployment, and performance monitoring stages were critical in ensuring that the electricity billing system was functional, user-friendly, and high-performing.

End.