<u>Project Proposal:</u> Electricity Bill Management System

Course: CSE311L - Database System Lab

Section: 5

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Group : 04

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Introduction:

Bangladesh is a densely populated country where electricity consumption is increasing rapidly. Efficiently managing electricity bills is hard for both users and distributors. While some systems for bill payments exist, none of them offer comprehensive information about electricity usage patterns, real-time billing data, or notifications for payments and overdue bills. This proposed web application will enable users to monitor their electricity usage, access billing information, calculate potential usage costs for individual electronic devices, and receive notifications for payment deadlines. It will also allow electricity providers to track consumer usage Estimate the costing and have proper billing History .

Objective:

- To provide users with real-time tracking of electricity consumption through electric meters.
- To send notifications to users regarding consumption thresholds or significant usage changes.
- To notify electricity providers of relevant user consumption data for monitoring and analysis.
- To generate survey reports on user electricity consumption and gather feedback for further improvement.
- To enable users to estimate electricity costs based on the duration of use for individual appliances or devices (e.g., lights, fans, etc.). This feature will be powered by a MySQL database containing consumption rates of various devices, with PHP handling data processing and calculations to provide users with accurate cost projections.

Target Audience:
The primary users of this system are residential and commercial electricity consumers who needs detailed data into their electricity usage. The system will help users avoid late fees by sending timely notifications and providing a breakdown of their electricity costs. With the added feature of estimating electricity costs for individual devices, users can make informed decisions about their energy usage. Electricity providers will benefit from an efficient, paperless system that tracks consumer payments and reduces operational delays.

Value Proposition:
This application offers significant value by enabling consumers to actively monitor their electricity usage and estimate future costs associated with specific appliances. It empowers users with the tools to better manage their energy usage, make informed decisions about appliance use, and optimise electricity consumption based on real-time data. Furthermore, the system will support electricity providers in managing user data efficiently, allowing for more accurate tracking of overall electricity demand.

Web Application Features and Description:
The system will feature a user-friendly interface with an initial pub
lic view providing general information about the services offered. Upon registration, users will gain access to personalized services, which include:

- Monitoring real-time electricity consumption data for their household or commercial space.
- Receiving notifications related to consumption levels, enabling users to manage their energy use effectively.

- **Electricity Cost Estimator**: A feature that allows users to estimate the cost of running specific appliances over a defined period. The system will include a comprehensive database of electrical appliances, their respective consumption rates, and their estimated cost based on the user's input of usage duration.

Tools and Resources:

- **HTML/CSS**: For designing the user interface and ensuring accessibility across devices.
- **JavaScript**: To provide dynamic interactivity and improve user experience.
- **MySQL**: A robust database system for storing user data, electricity usage statistics, and appliance consumption details.
- **PHP**: For backend processing, handling queries related to consumption tracking and cost estimation.

Challenges:

This project will face several challenges, particularly in the areas of data management and security. Handling large volumes of real-time data while ensuring accurate tracking of electricity usage for multiple users will need efficient database management. Additionally, the security of user data, especially in terms of access to consumption statistics, must be prioritized to avoid breaches or misuse. Another key challenge is designing a user interface that is intuitive and user-friendly, catering to a diverse range of users, including those with limited technical expertise. Preventing electricity theft, especially in areas with unregulated usage, remains an ongoing challenge for legitimate electricity users and providers alike.