COMSATS UNIVERSITY ISLAMABAD

LAHORE CAMPUS

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**SEMESTER PROJECT**

**PROJECT TITLE**

**Electricity Bill Management System**

*Group Members*

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**Project Overview**

The **Electricity Bill Management System** is a comprehensive software solution designed to automate the generation, tracking, and management of electricity bills. This project will allow users to generate bills, maintain customer details, track usage history, apply late fees, and summarize monthly and annual statistics. With adjustable settings, users can customize rates, update records, and ensure efficient operations. The system integrates core functionalities like bill calculation, record updates, and file handling to provide an effective and user-friendly experience.

**Topics to be Covered**

* Variable Declaration and Initialization
* Comments
* Input and Output
* Conditional Statements (if, if-else, if-else-if, switch)
* Repetitional Statements (while, do-while, for)
* Functions
* Arrays
* Pointers
* Characters and String
* Structures, Unions, Enumerations
* File Processing

**General Objectives**

1. Automate electricity billing and management processes.
2. Ensure accurate tracking of units consumed and payments.
3. Simplify operations with user-friendly options and adjustable settings.
4. Maintain comprehensive bill, usage, and payment histories.
5. Provide analytical summaries for decision-making

**Project Scope**

1. Generate bills for residential, commercial, and industrial customers.
2. Save and retrieve billing records using file processing.
3. Update customer details and units consumed dynamically.
4. Track bill payment status and apply late fees to unpaid bills.
5. Provide detailed summaries for company-wide usage and revenue.
6. Adjust billing rates and settings for customization.

**Function Details**

1. **mainmenu()**
   * Displays the main menu for the user to select options like bill generation, search, summary, apply late fee, update usage history, update settings etc.
2. **generatebill()**
   * Orchestrates the bill generation process by calling relevant functions.
   * Includes the following sub-functions:
     + **customerdetails()**:
     + Captures customer information such as CNIC, name, and category (residential, commercial, industrial).
     + **unitsconsumed()**:
     + Records the units consumed by the customer.
     + **generatebillID()**:
     + Generates a unique bill ID for every transaction.
     + **taxes()**:
     + Calculates applicable taxes and charges based on customer category and usage.
3. **searchbill()**
   * Allows users to search for a specific bill using CNIC or bill ID.
   * Includes:
     + **displayusagehistory()**:
     + Displays the customer's past usage and billing history.
     + **billstatusupdate()**:
     + Updates the payment status of a bill, marking it as paid or unpaid.
4. **applylatefee()**
   * Applies late fees to all unpaid bills.
   * Adjusts the total amount due accordingly.
5. **summary()**
   * Provides analytical summaries:
     + **monthly()**:
     + Calculates total company usage and revenue for a specific month.
     + **annual()**:
     + Provides a yearly summary of usage and revenue.
6. **adjustsetting()**
   * Allows users to adjust settings like unit rates, tax percentages, and late fee conditions.
7. **updatecustomerdetails()**
   * Facilitates editing or updating customer information, such as name, CNIC, or category.
8. **updateunitsconsumed()**
   * Updates the units consumed for a customer in case of errors or recalculations

**Expected Outcomes**

1. A fully functional and interactive electricity bill management system.
2. Accurate bill generation with customer-specific details.
3. Robust record management for usage history and payments.
4. Improved efficiency in managing customer and billing data.
5. Analytical tools for monthly and annual electricity usage.