**Subject:** DBMSL **Class:** SE B

**Mini Project Synopsis**

**Group Id:- 10**

**Group Members:-**

|  |  |  |  |
| --- | --- | --- | --- |
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**Project Title: Electricity Billing System**

**Problem statement:**

The existing manual billing system faces several significant drawbacks that hinder efficiency and customer satisfaction. The current process of maintaining bills by hand is cumbersome, time-consuming, and labor-intensive for both the service provider and the customers. Additionally, the system's partial automation through computerization falls short in terms of eliminating redundant data entry across various stages.

**Scope of Mini project:**

* **Features:**

1. Extensibility: The software supports extensibility by implementing principles such as hiding data structure, avoiding traversal of multiple links or methods, avoiding case statements based on object type, and distinguishing between public and private operations.

2. Reusability: The software is designed with reusability in mind, allowing for updates in future versions. Reusable code reduces design, coding, and testing costs, simplifies understanding, and promotes code correctness. Reusability is achieved through sharing newly written code within a project and reusing previously written code in new projects.

3. Understandability: Methods and code within the software are designed to be easily understood by individuals other than the original creator. Small and coherent methods contribute to achieving understandability.

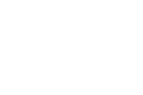
4. Cost-effectiveness: The software is developed within budget and time constraints. The aim is to minimize costs while fulfilling all the required functionalities.

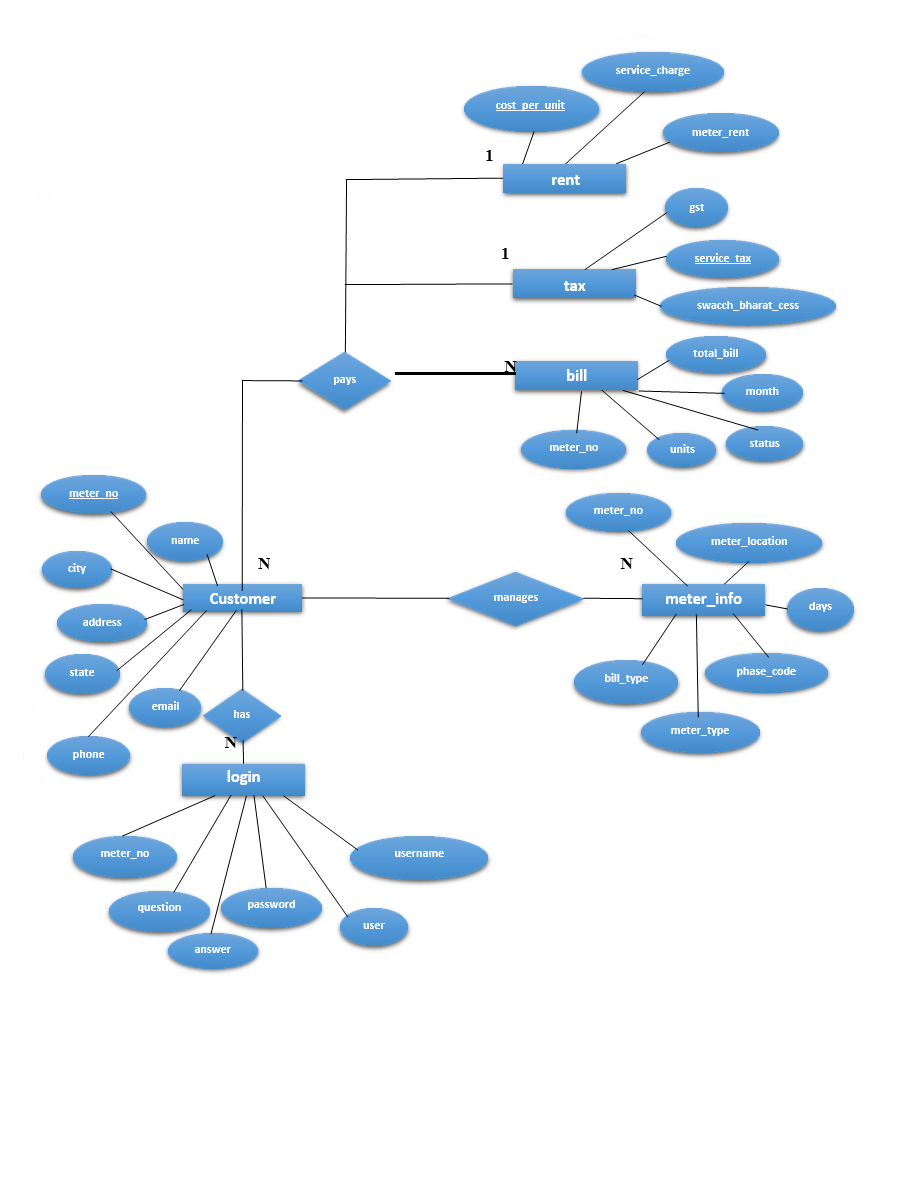
* **Functionality:**

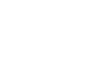
##### To keep the information of consuming unit energy of current month.

* + - To keep the information of Customer.
    - To keep the information of consuming unit energy of previous month.
    - To calculate the units consumed every month regularly.
    - To generate the bills adding penalty and rent.
    - To save the time by implementing payment process online

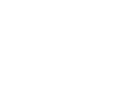
**ER Diagram:**











**ERD to Table Conversion**

**Login**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Meter No | Username | Password | User | Question | Answer |

**Customer**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | Meter No | Address | City | State | Email | Phone |

**Rent**

**Tax**

**Bill**

**Meter Info**

|  |  |  |
| --- | --- | --- |
| Cost Per Unit | Meter Rent | Service Rent |

|  |  |  |
| --- | --- | --- |
| Service Tax | Swacch bharat cess | GST |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Meter No | Month | Units | Total Bill | Status |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Meter No | Meter Location | Meter Type | Phase Code | Bill Type | Days |

**Schema Definitions/Table Creation:**

Schema definition of Electricity Billing System has six tables i.e., login, customer, tax, rent, bill, and meter\_info where each table contain attributes some with primary key, foreign key.

TABLE login (meter\_no INT PRIMARY KEY, username VARCHAR, password VARCHAR, user VARCHAR question VARCHAR, answer VARCHAR);

TABLE customer (name VARCHAR, meter\_no INT PRIMARY KEY, address VARCHAR, city VARCHAR, state VARCHAR, email VARCHAR, phone VARCHAR);

TABLE rent (cost\_per\_unit INT PRIMARY KEY, meter\_rent INTservice\_charge INT);

TABLE tax (service\_tax INTswacch\_bharat\_cess INTgst INT);

TABLE bill (meter\_no INT, month VARCHAR, units INT, total\_bill INTstatus VARCHAR, FOREIGN KEY (meter\_no) REFERENCES customer(meter\_no));

TABLE meter\_info (meter\_no INT, meter\_location VARCHAR, meter\_type VARCHAR, phase\_code VARCHAR, bill\_type VARCHAR, days INT, FOREIGN KEY (meter\_no) REFERENCES customer(meter\_no));

**H/w and S/w requirements:**

* **Software Requirements**
  + - Operating System: -Windows 10
    - Software: -Microsoft SQL Server
    - Front End: -Java core/swings (NetBeans)
    - Back End: -My SQL
* **Hardware Requirements**
  + - Hardware Specification: -Processor Intel Pentium V or higher
    - Clock Speed: -1.7 GHz or more
    - System Bus: -64 bits
    - RAM: -16GB
    - HDD: -2TB
    - Monitor: -LCD Monitor
    - Keyboard: -Standard keyboard
    - Mouse: -Compatible mouse

**References:**

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Database Management Systems 3rd Edition by Raghu Ramakrishnan (TEXTBOOK).

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* Zhu, Q. , Zhang, Y. , & Liao, H. (2013). An online electricity billing system for smart grid based on wireless sensor networks. Journal of Networks, 8(5), 1127-1134.
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* Zhu, Q. , Zhang, Y. , & Liao, H. (2013). An online electricity billing system for smart grid based on wireless sensor networks. Journal of Networks, 8(5), 1127-1134.

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**Subject Incharge**

**(Ms. Shoma S. Mitkari)**