Proposal for **Electricity Billing System**

Project name: Electricity Billing System

Submitted by:

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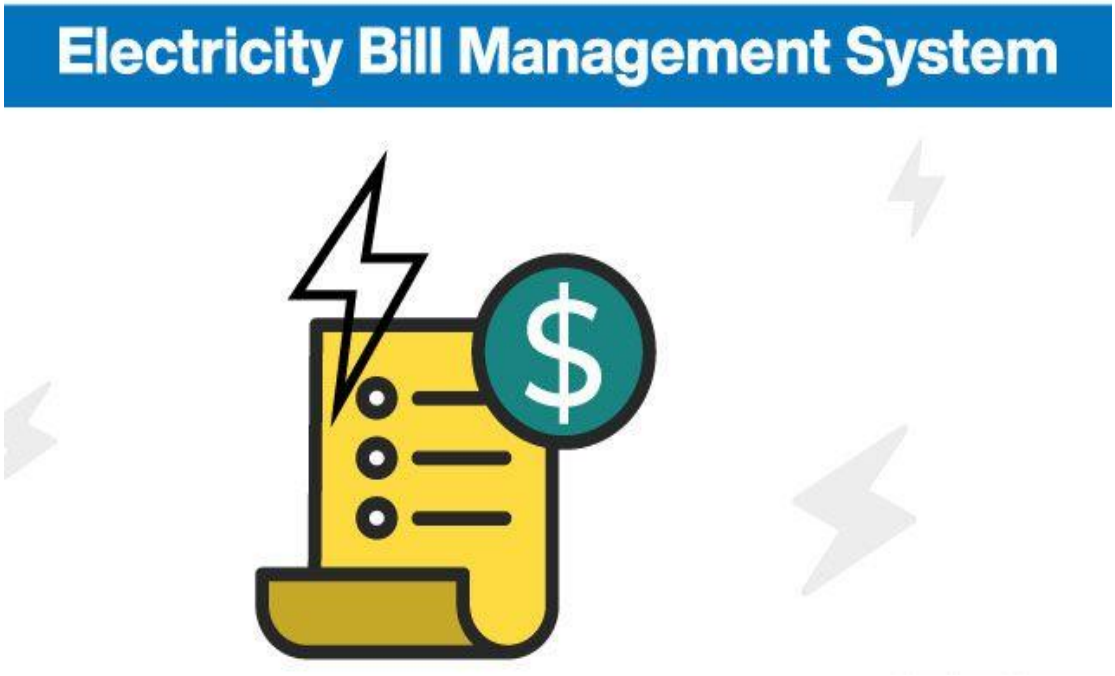
Abstract

Science and technology with all its fascinating advancements has been taking human life standards to the next level. The whole world will be literally jammed without these innovations. This project is an innovation, which makes the way of paying electricity bill simple compared to other existing projects. This project has been implemented using Java Swing as front end and MySQL as back end. The purpose of the project is to build an application program to reduce the manual work for managing the

amount of units consumed by the customers and generating the electricity bill according to the type of customer – individual or commercial. It displays the details of the customers, units consumed by them and bill history. It enables them pay their bill if not paid. The date of payment will be updated while paying the bill. It maintains error free database and easily incorporates the future developments and changes.



Introduction

Electricity Billing System is a desktop based application developed in Java programming language. The project aims at serving the department of electricity by computerizing the billing system. It mainly focuses on the calculation of Units consumed during the specified time and the money to

be paid to electricity offices. This computerized system will make the overall billing system easy, accessible, comfortable and effective for consumers. It is a new concept of paying electricity bill using Java Swing and MySQL, where the other existing methods of electricity bill management use Java, PHP, MS Access server. This system is made to keep the records about the bills of the customers. The administrator can manage all the accounts; the registered users like individual customers, commercial customers can only manage their own accounts and they cannot see any details of other customers. This system helps in maintaining the bill and payments. There are four modules namely Bill, EMP, Login, Tax.

Tools and Technologies:

1. Database: Mysql

2. Protocol: Http

4. Cloud Provider: AWS

5. PHP

Scope

Our project aims at business process automation. We have tried to computerize various process of Electricity Billing System. Scope of any application depends upon the following things:

1. It satisfy the user requirement
2. Be easy to understand by the user and operator
3. Be easy to operate
4. Have a good user interfaces
5. Be expandable

We have tried to make such type of application which satisfy the above given requirement.

Architectural Design

SDLC (System Development Life Cycle)

System development life cycle is sequence of events carried out by analyst, designers and users to develop and important an information system. Activities are carried out in different stages.

The phases are as follows

Preliminary Investigation: An important outcome of this preliminary investigation is determining whether the system requested is feasible or not.

Determination of system requirement: Determination of system requirement involves the current system in great detail to find out how it works and where improvement has to be made. This activity is carried out in two phases:

Detailed investigation

Analysis or determination of system requirement

Design of the system

The design process should take care of the following:

1. Identification of reports and outputs the new system should produce.
2. Scrutinize the data present on each report/output
3. Sketch the form or display as expected to appear at the end of completion of the system. This may be done on paper or on a computer display using one of the automated system design tools description of data to be input calculated or stored individual data items and calculation procedure written in detail.
4. The procedures written should tell how to process the data and produce the output

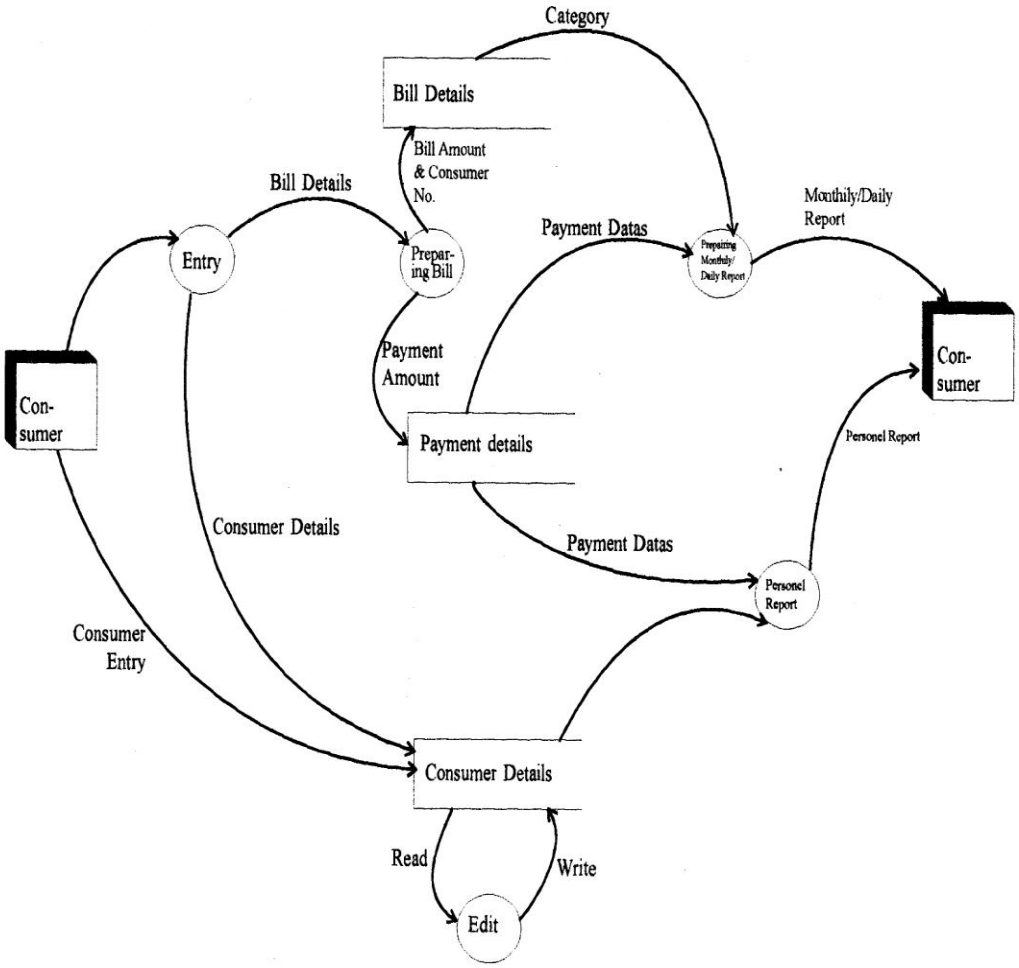
Development of Software

In this stage the actual coding / writing the program is done. Analyst – programmers do analyst and designs well as code program including comments that explain both.

System Testing

Once the programs are tested individually the system as a whole

needs to tested. During testing the system is used experimentally to ensure that the software does not fail that it will run according to its special types data is prepared as input for processing and the result are examined to locate unexpected result.



DATAFLOW DIAGRAM

Benefits Of Electricity Billing Systems:

The firm handles all the work manually which is very tedious and mismanaged. The objective of our project is as follows:

1. To keep information of Customer.
2. To keep the information of consuming unit of energy of current month.
3. To keep the information of consuming unit of energy of previous month.
4. To maintain the record of the customer.

System Analysis

Identification of Problem

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping, maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. There use to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation. There would always be unnecessary consumption of time while entering records and retrieving records.

In present, work done in the Electricity board is performed manually which is a great headache for the department. The reason behind it is that

there is a lot of information to be maintained and have to be kept in mind while running the business. For this reason we have provided features present system is partially automated, actually existing system is quite laborious as one has to enter same information at three different places.

Feasibility Study

Feasibility study is the phase in which the analyst checks that the candidates system is feasible for the organization or not. This entails identification, description and evaluation of the system. Feasibility study is done to select the best system that meets the performances requirement.

If the feasibility study is to serve as a decision document, it must answer key questions.

1. Is there a new and better way to do the job that will benefit the users?
2. What are the costs and savings of the alternatives?
3. What is recommended?

   The most successful project system are not necessarily the biggest or most visible in the business but rather those truly meet user's expectations.

Feasibility considerations

Three key considerations are involved in the feasibility study. They are as follows:

Economic Feasibility

Economic analysis is the most frequently used method for evaluation the effectiveness of the candidates system. We analyze the candidates system (computerized system) is feasible as that manual system because it saves the money , time and manpower. It also feasible according to cost benefits analysis.

Technical Feasibility

Technical feasibility centers around the technology used. It means the candidates system is technically feasible. It doesn't have any technical error and works in the given environment. Our system is technically feasible. It provides us required output.

Behavioral Feasibility

Behavioral feasibility is the analysis of behavior of the candidate system. In this we analyze the candidate system is working properly or not. If working that it communicating proper with the environment or not. All this matters are analyzed and a good candidate system is prepared. Due to the change of the system what is the change in behavior of the users, this factors are also analyzed.

System Development

Environment

System development environment shows the hardware and software required, which is necessary for developing the software. Necessary software and hardware requirement, which are necessary for making this software are follows:

Software Requirement

Software requirement for developing this project is as follows:

1. XAMPP
2. 2.Mysql

Hardware Requirement

Hardware requirement for developing this project is as follows:

1. 32 MB RAM or higher
2. 1.2 GB Hard Disk or greater
3. Video display unit
4. Keyboard
5. Mouse

Supported Operating System

We can configure this project on following operating system.

1. **Windows:** This project can easily be configured on windows operating system. For running this project Windows system, you will have to install WAMP or XAMO on your system.

Advantages:

There are many advantages of Electricity billing system :

1) The first advantage is that it offers a paperless mode of transaction which is also environmentally friendly and clutter free for both the receiver and sender of the electronic billing.

2) The online billing services are one of the least expensive forms of billing when compared to the traditional billing.

3) The electronic billing system is absolutely hassle free as one can protect the bill with the help of password and can be opened only by the recipient.

4) The electronic billing services are both customer friendly and also beneficial for the bill generators as there is focus on the process rather than on the mode of bill dispatch.

5) The electronic billing also provides a great advantage of saving time and effort that are normally lost in a traditional billing system. Besides there is no loss of bill when making use of the electronic mode of billing.

Preliminary Design of Proposed System

Data Design

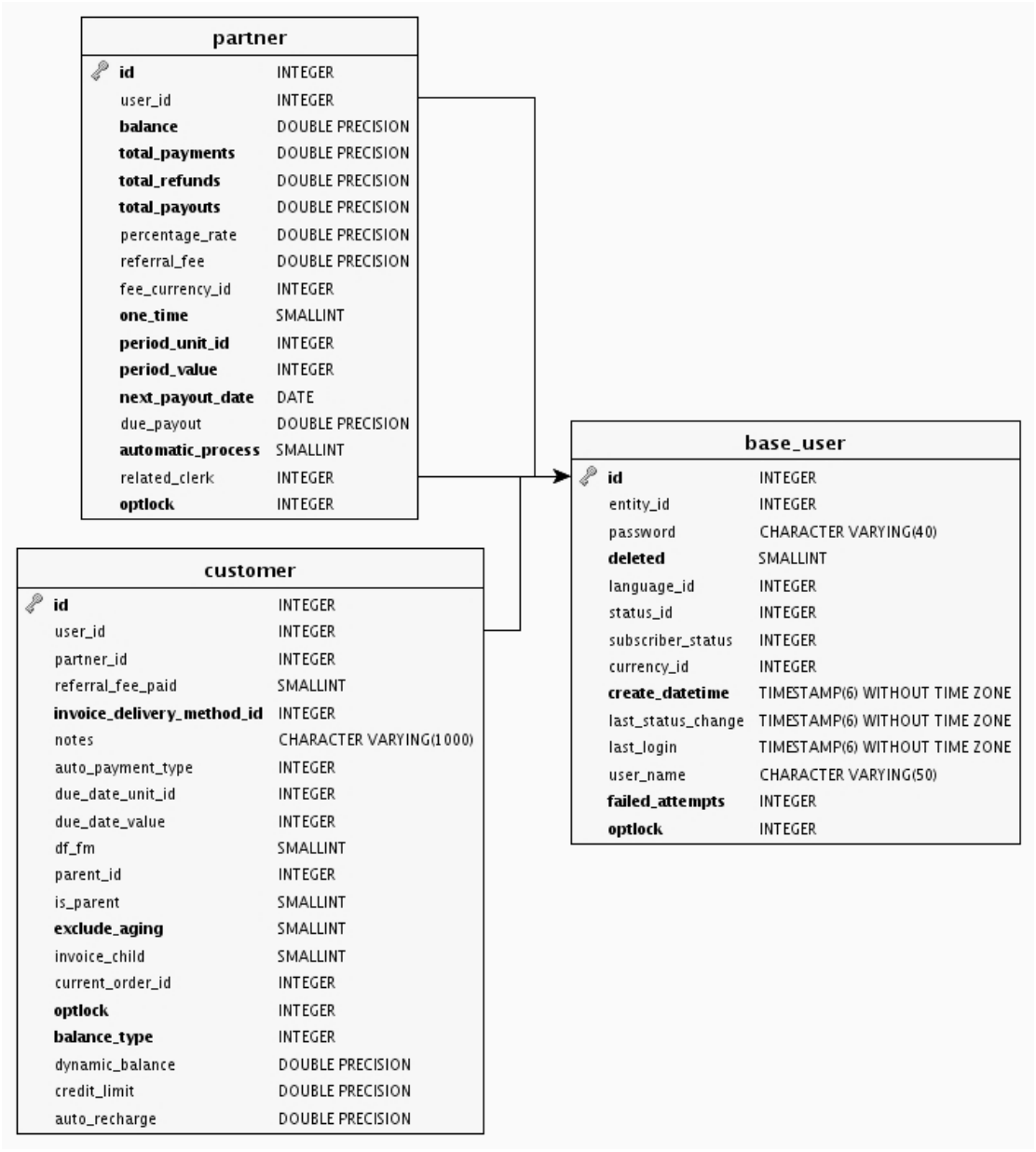
In most situation many physical database design decision are implicit or eliminated when we choose the database management technologies to use with the information system we are designing.

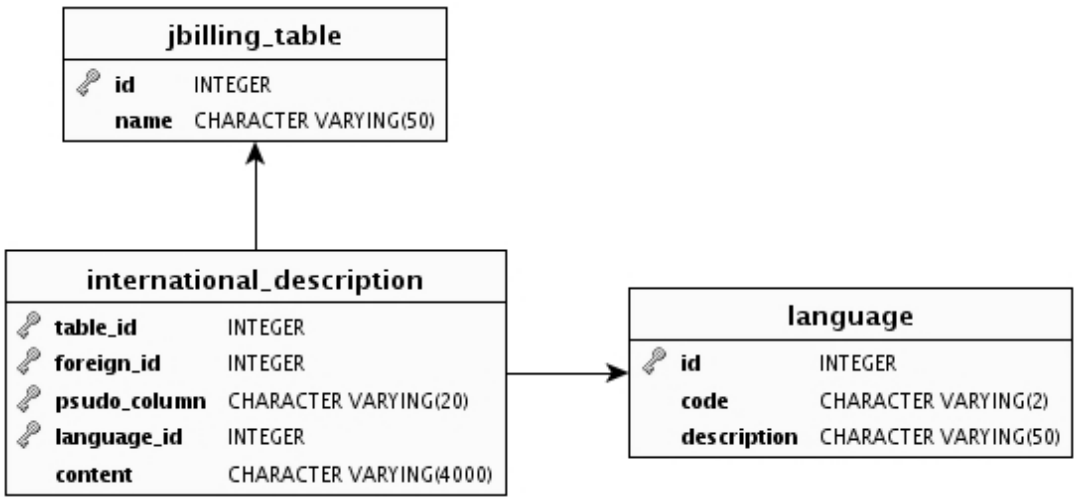
Designing Field

MySQL is a relational database, which means tables are linked together using primary and foreign keys. A foreign key is basically a copy of the primary key in a secondary table. For instance, you have a list of customers. You create an auto-incrementing numeric value as the customer identification and primary key.

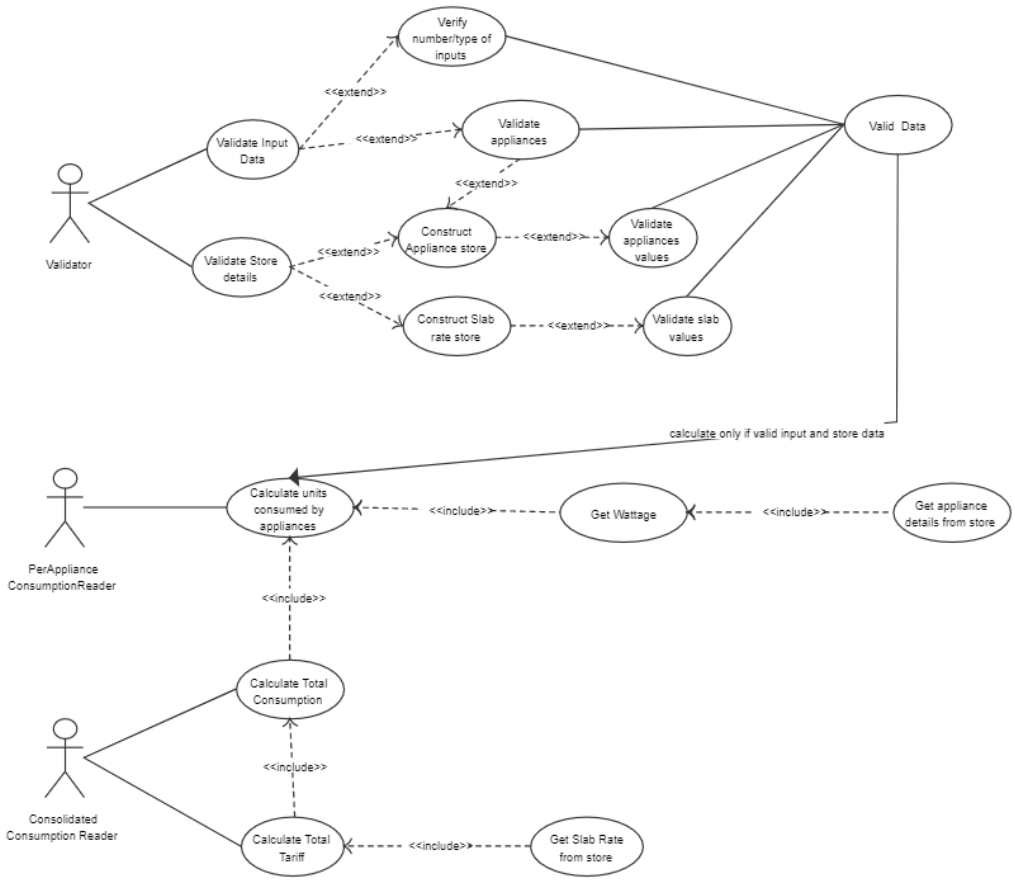
Database Schema Design

MySQL Workbench simplifies database design and maintenance, automates time-consuming and error-prone tasks, and improves communication among DBA and developer teams. It enables data architects to visualize requirements, communicate with stakeholders, and resolve design issues before a major investment of time and resources is made. It enables model-driven database design, which is the most efficient methodology for creating valid and well-performing databases, while providing the flexibility to respond to evolving business requirements. Model and Schema Validation utilities enforce best practice standards for data modeling; also enforce MySQL-specific physical design standards so no mistakes are made when building new ER diagrams or generating physical MySQL databases.

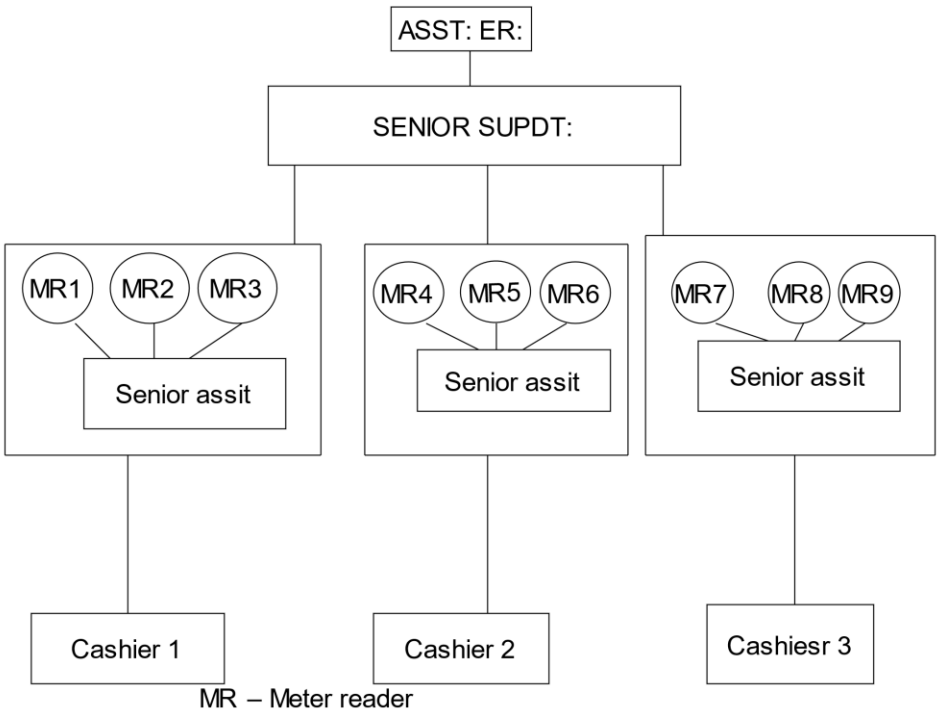

partner
id INTEGER
user_id INTEGER
balance DOUBLE PRECISION
total_payments DOUBLE PRECISION
total_refunds DOUBLE PRECISION
total_payouts DOUBLE PRECISION
percentage_rate DOUBLE PRECISION
referral_fee DOUBLE PRECISION
fee_currency_id INTEGER
one_time SMALLINT
period_unit_id INTEGER
period_value INTEGER
next_payout_date DATE
due_payout DOUBLE PRECISION
automatic_process SMALLINT
related_clerk INTEGER
optlock INTEGER
base_user
id INTEGER
entity_id INTEGER
password CHARACTER VARYING(40)
deleted SMALLINT
language_id INTEGER
status_id INTEGER
subscriber_status INTEGER
currency_id INTEGER
create_datetime TIMESTAMP(6) WITHOUT TIME ZONE
last_status_change TIMESTAMP(6) WITHOUT TIME ZONE
last_login TIMESTAMP(6) WITHOUT TIME ZONE
user_name CHARACTER VARYING(50)
failed_attempts INTEGER
optlock INTEGER
customer
id INTEGER
user_id INTEGER
partner_id INTEGER
referral_fee_paid SMALLINT
invoice_delivery_method_id INTEGER
notes CHARACTER VARYING(1000)
auto_payment_type INTEGER
due_date_unit_id INTEGER
due_date_value INTEGER
df_fm SMALLINT
parent_id INTEGER
is_parent SMALLINT
exclude_aging SMALLINT
invoice_child SMALLINT
current_order_id INTEGER
optlock INTEGER
balance_type INTEGER
dynamic_balance DOUBLE PRECISION
credit_limit DOUBLE PRECISION
auto_recharge DOUBLE PRECISION

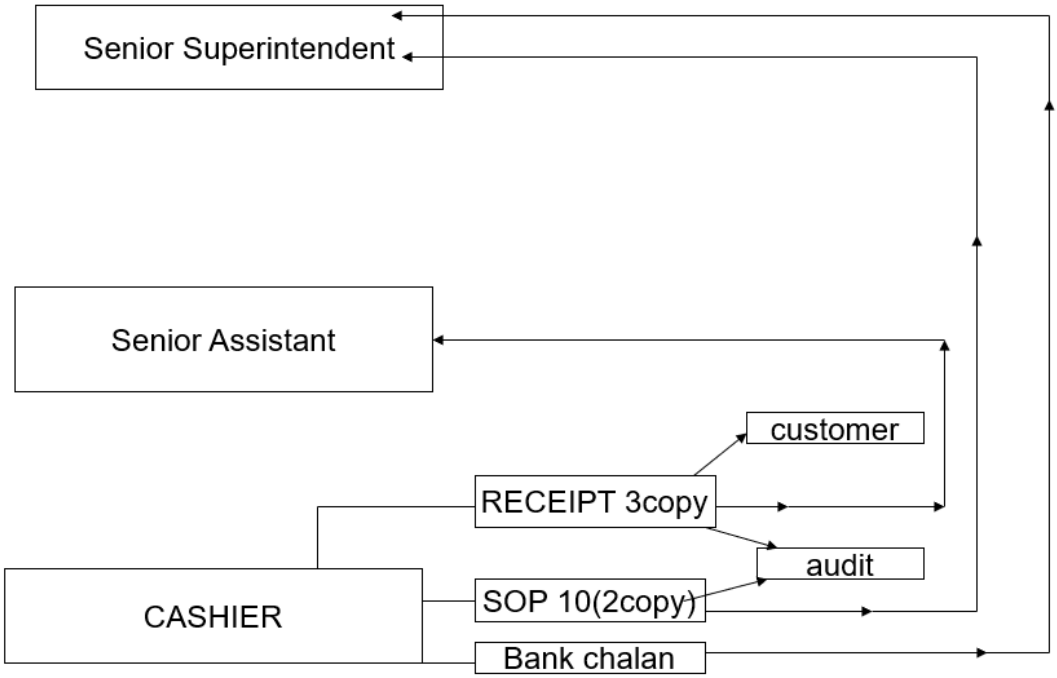

jbilling_table
id INTEGER
name CHARACTER VARYING(50)
international_description
table_id INTEGER
foreign_id INTEGER
psudo_column CHARACTER VARYING(20)
language_id INTEGER
content CHARACTER VARYING(4000)
language
id INTEGER
code CHARACTER VARYING(2)
description CHARACTER VARYING(50)

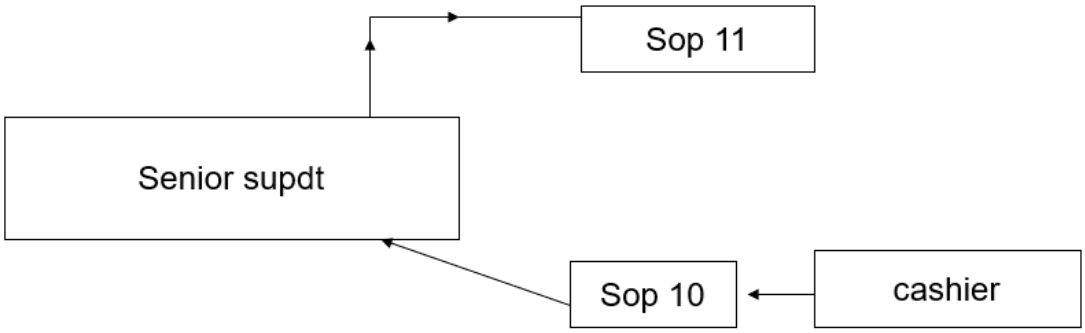
Use Case Diagram

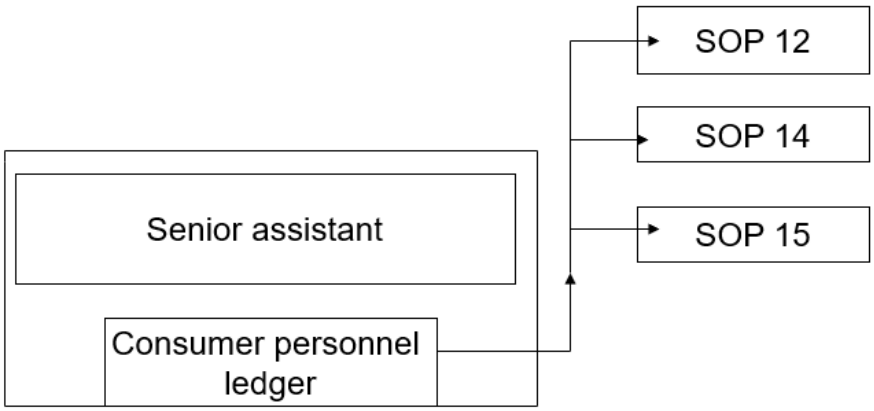


ER Diagram




Senior Superintendent
Senior Assistant
customer
RECEIPT 3copy
audit
CASHIER
SOP 10(2copy)
Bank chalan


Sop 11
Senior supdt
Sop 10
cashier


SOP 12
SOP 14
SOP 15
Senior assistant
Consumer personnel ledger

User Story

1. Download the zip file.

2. Download and install XAMPP

3. Run the XAMPP control panel and start MySQL and Apache

4. Go to C:\xampp\htdocs and extract the downloaded zip file (ebill) inside the

folder

5. Open the browser and go to http://localhost/phpmyadmin/ to create the database

6. Click the new to create a database.

7. Name the database sourcecodester_ebill.

8. Click import to import the sql file. name- sourcecodester_ebill.sql

9. Click go.

Users:

There are two users that are present here in this system. One is admin but the other is a user. This user has all the privileges but it cannot register itself on this system as the admin needs to verify the registering user.

After the admin verifies the user only then he is eligible to use the system and after that, it has all the privileges. Attributes given to the user are:

Adding user:

Admin can add a new user and can save it. The details of the user can be seen only by the valid users.

Adding staff:

In this attribute or column, the user can add the details about the staff members. Adding customers: this entity is about the details of the customers who are using the service from the company and all other details of them.

Admin panel:

There can be only one account of admin. Admin can add the users. When a user tries to register on the prison management system then the request goes to admin and if the admin verifies only the user can register itself on it.

Front-end plan

There are some templates in plan

1. Main page

2. Login page

3. Register page

4. Bill details page

Back end development

1. Transaction
2. Complaint
3. Final amount paid
4. Searching Facility

Login

This screen contains various fields like username and password.

There will be a button login. By clicking on it the user will get in to our main page where one can access to several options.

Login table two attributes:

Username

Password

EMP

By this you can add a new customer in the database system. For that you have to give some certain information of the customer.

Name

Address

Email

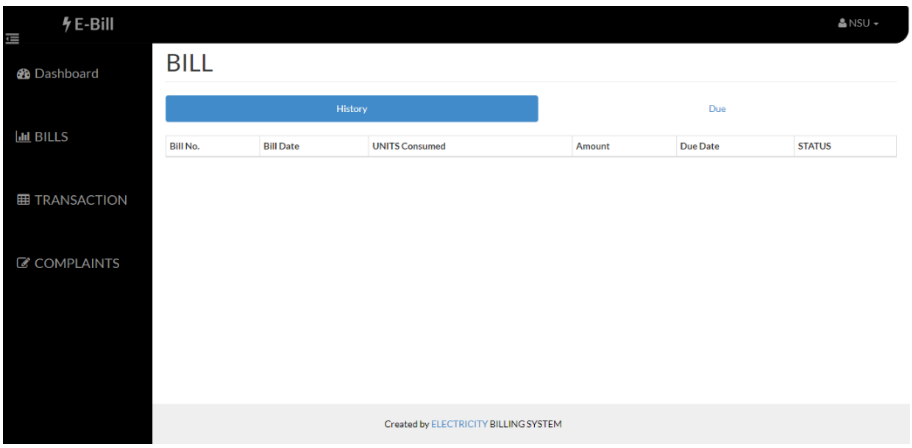
Phone No

Bill

Bill table has six attributes:

- **Bill No.**
- **Bill Date**
- **UNITS Consumed**
- **Amount**
- Due Date
- **STATUS**

Bill Dashboard

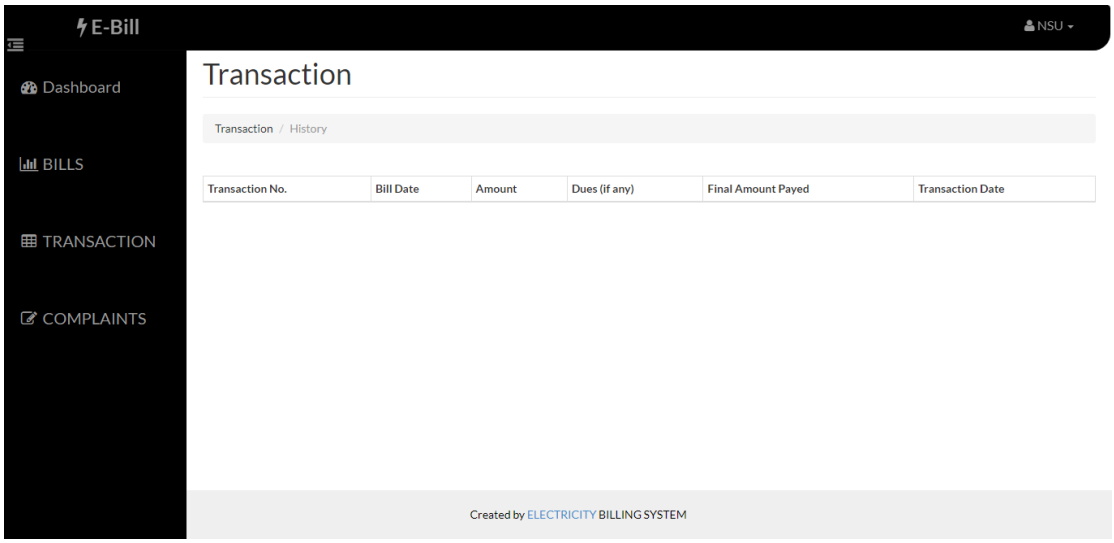


Transaction

Transaction table has 6 attributes:

- **Transaction No.**
- **Bill Date**
- **Amount**
- **Dues (if any)**
- **Final Amount Payed**
- Transaction Date

Transaction Dashboard

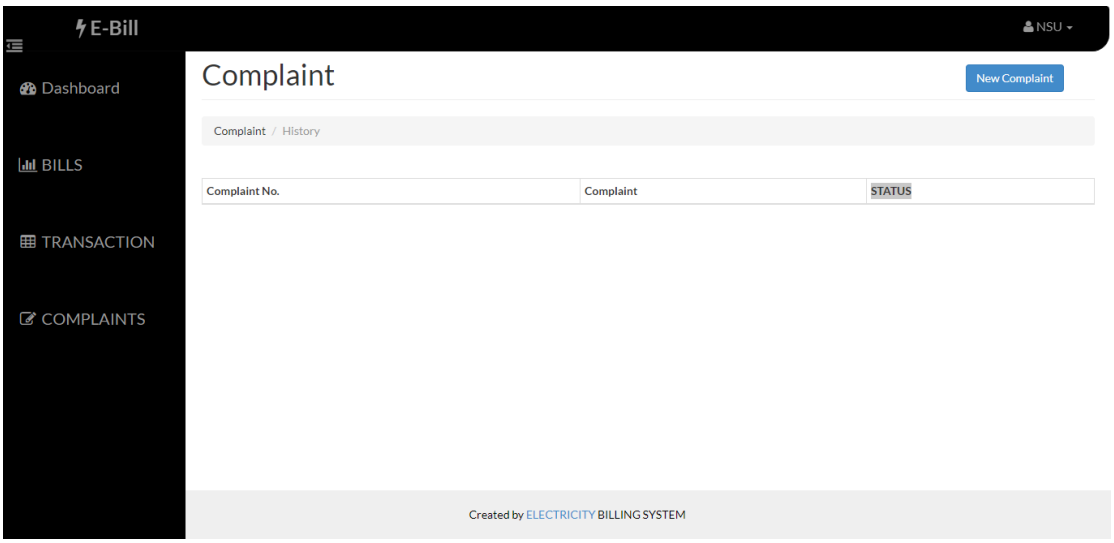


Complaint

Complaint table has three attributes:

- **Complaint No**
- **Complaint**
- **STATUS**

Complaint Dashboard



Database Structure and table Design of the Project Electricity Billing System

Login Table

Table	Action	Rows	Type	Collation	Size	Overhead
admin	Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16.0 KiB	-
bill	Browse Structure Search Insert Empty Drop	0	InnoDB	latin1_swedish_ci	48.0 KiB	-
complaint	Browse Structure Search Insert Empty Drop	0	InnoDB	latin1_swedish_ci	48.0 KiB	-
transaction	Browse Structure Search Insert Empty Drop	0	InnoDB	latin1_swedish_ci	32.0 KiB	-
unitsrate	Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16.0 KiB	-
user	Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16.0 KiB	-

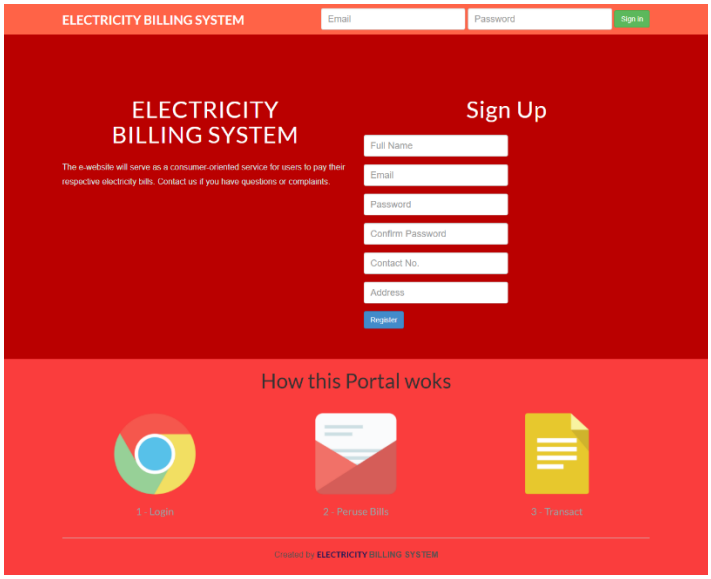
Emp table

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id	int(10)			No	None		AUTO_INCREMENT	Change Drop More
2	username	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
3	password	varchar(60)	latin1_swedish_ci		No	None			Change Drop More
4	name	varchar(60)	latin1_swedish_ci		No	None			Change Drop More

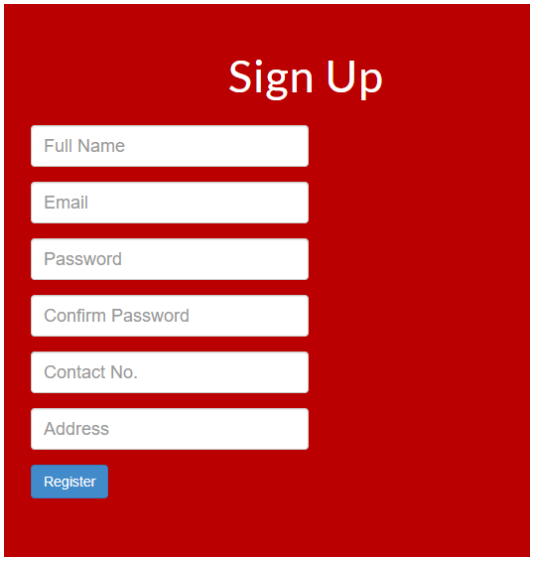
	id	lname	fname	mi	address	contact
Edit Copy Delete	1	Rezvi	ko	90	mirpur	0654100235
Edit Copy Delete	2	leyon	mk	22	mirpur	7515396522
Edit Copy Delete	3	demo	demo	54	demo	5454542222
Edit Copy Delete	4	demo	demo	22	demo address	8521479645
Edit Copy Delete	5	demo	demo	63	demo	852541000
Edit Copy Delete	6	demo	demo	52	demo address	8524796320
Edit Copy Delete	7	demo	demo	26	demo	5552121200
Edit Copy Delete	8	demo	demo	22	demo	3020201050
Edit Copy Delete	9	demo	demo	10	demo	2021555550
Edit Copy Delete	11	william	James	26	demoo	359518522
Edit Copy Delete	12	demo	demo	36	demo	7520003600
Edit Copy Delete	13	Holland	Tom	31	demo address	2225558889
Edit Copy Delete	14	demo	demo	22	demo	8520258410
Edit Copy Delete	15	Demo	demo	25	demo	7182934565
Edit Copy Delete	16	demo	demo	23	demo	8051590000

User Interface and Screens of the Project Electricity Billing System

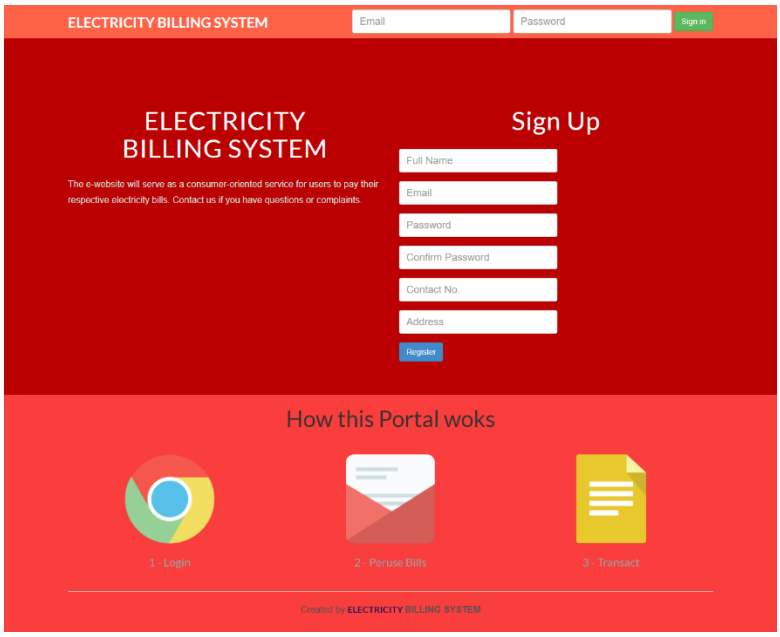
Splash screen



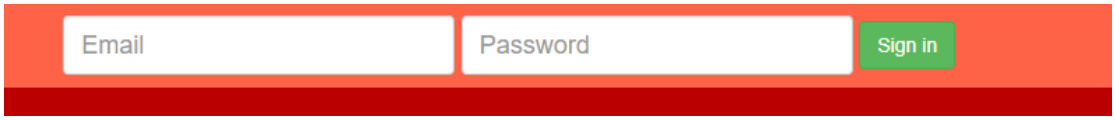
Sing up Page



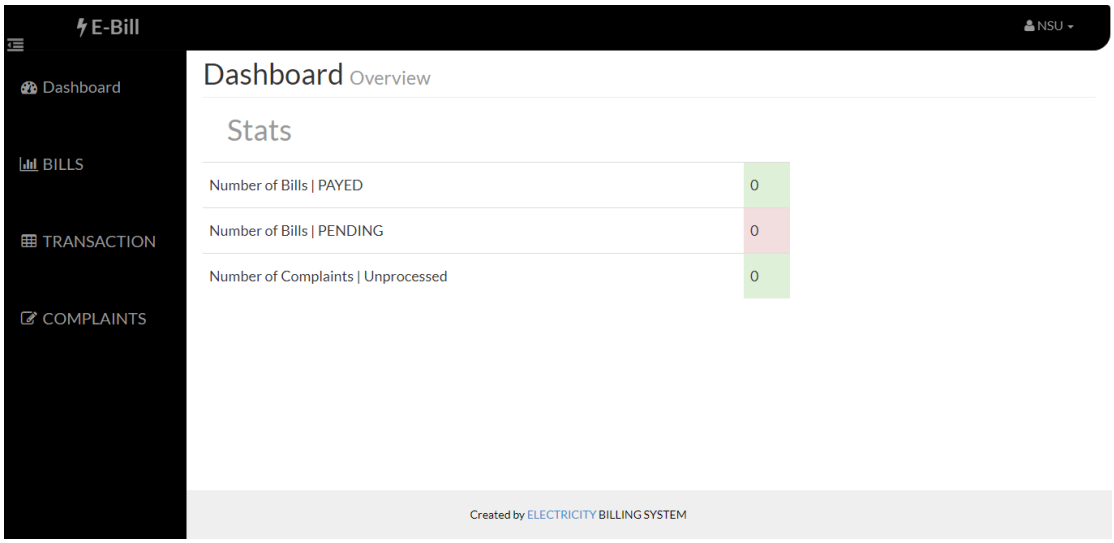
Front page



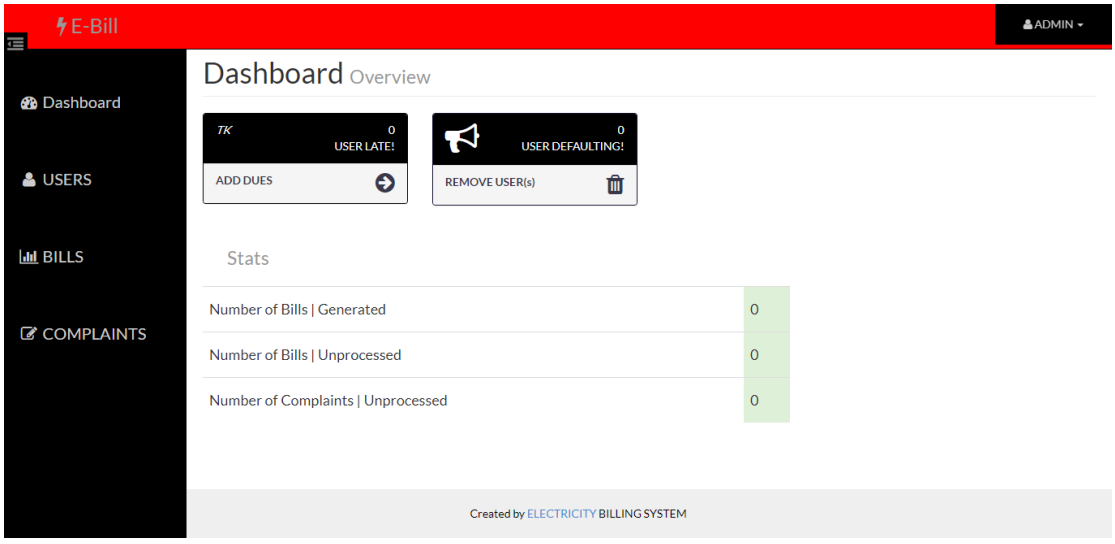
Sing in



Customer Dashboard



Admin Dashboard



CONCLUSION

After all the hard work is done for the electricity bill management system is here. It is software that helps the user to work with the billing cycles, paying bills, managing different departments under which employees are working, etc. This software reduces the amount of manual data entry and gives greater efficiency.

The User Interface of it is very friendly and can be easily used by anyone. It also decreases the amount of time taken to write details and other modules.

Electricity Bill Management System using PHP Swing and MySQL has been developed with the help of Visual Studio Code IDE effectively. It is simple and user friendly. Since this system is implemented in PHP, it is platform independent. It has wide scope for future expansion. All the manual as well as paper works can be fully

eliminated in the billing branch. The accuracy and reliability are surely increased. It makes sure that unauthorized personal cannot execute this program. This system provides secured processing without any threats.