

**A
MINI PROJECT
REPORT ON
Electricity Bill Generator**

**Report of Performing White and Black Box
Testing**

**SUBMITTED TO THE SAVITRIBAI PHULE PUNE
UNIVERSITY, PUNE.
FOR
LAB PRACTICE II**

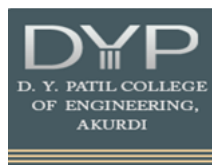
Software Testing and Quality Assurance

**BACHELOR OF ENGINEERING (COMPUTER
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INDEX

SR. NO.	TOPIC	PAGE NO.
1.	Abstract	1
2.	Introduction <ul style="list-style-type: none"> ● Scope of project ● Objective ● Motivation of Project 	1-2
3.	Outcomes	2
4.	Software/Hardware Requirements <ul style="list-style-type: none"> ● Software Requirement Specifications ● Hardware Requirement Specification 	2-3
5.	System architecture	3
6.	Mathematical model	3
7.	Test plan and Testing strategies	4-8
8.	Results <ul style="list-style-type: none"> ● Working Module Screenshot ● Testing Screenshot ● Application and Test cases code 	9-14
9.	Advantages	14
10.	Applications	14
11.	Conclusion	14
12.	References	14

ABSTRACT

Our project is titled "**Electricity Bill Generator**" aims to generate electricity bill and you are able to save data to database as well. Manual system that is employed is extremely laborious and quite inadequate. It only made the process more difficult and harder. The aim of our project is to develop a system that is meant to partially computerize the work performed in the electricity board like generate electricity bill and store record of the customer.

INTRODUCTION

Electricity has an important role in our day today lives. It has come to significance that without electricity it is impossible to survive. The electricity consumed by the commons is measured with the electric meter which is fixed at every individual's home. This is then periodically noted by the supplier most probably the government employee to calculate the energy consumed. Traditional meter reading for electricity consumption and reading is done by human operator. He has to go door to door and gave the bill slips of the utilization to the respective consumer. They go to each and every house to check for the number of units that has been consumed. The manual reading has defects such as errors in reading, inaccuracy, external conditions that influence the measured values, leads to a delay of the work. In addition, the traditional technique also requires large manpower. In order to resolve all these issues, an electricity bill generator (computerized) is proposed. By automating the meter reading process the labour employed could be reduced and they can be used for other works.

SCOPE OF PROJECT

Our project aims at Business process automation, i.e., we have tried to computerize various processes of Electricity Billing System. In the sector of electricity board, we have computerized their work. Scope of any software 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 interface
5. Be expandable

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

OBJECTIVE

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

- To keep the information of Customer.
- To keep the information of consuming unit of energy.
- To maintain the record of customer and generate bill.
- To print the electricity bill.

MOTIVATION OF PROJECT

Traditional meter reading for electricity consumption and reading is done by human operator. He has to go door to door and gave the bill slips of the utilization to the respective consumer. They go to each and every house to check for the number of units that has been consumed. The manual reading has defects such as errors in reading, inaccuracy, external conditions that influence the measured values, leads to a delay of the work. In addition, the traditional technique also requires large manpower. In order to resolve all these issues, an electricity bill generator (computerized) is proposed.

OUTCOMES

Following are the aim of project:

- Secure system by providing admin login.
- Calculate the electricity bill.
- Able to print the electricity bill.

SOFTWARE /HARDWARE REQUIREMENTS

- **Software Requirement Specifications:**

For development:

NetBeans IDE

MySQL Database

For Testing:

JUNIT: JUnit is a unit testing framework for the Java programming language. JUnit has been important in the development of test-driven development, and is one of a family of unit testing frameworks which is collectively known as xUnit that originated with SUnit. JUnit is linked as a JAR at compile-time.

- **Hardware Requirement Specification**

Intel Pentium Processor

32 MB RAM or higher

1.2 GB Hard Disk or greater

SYSTEM ARCHITECTURE



FIG.1 Electricity Bill Generator System

MATHEMATICAL MODEL

If (unit<500): charge = 1.00;

Else If (unit<500 && unit<600): charge = 1.80;

Else If (unit<600 && unit<800): charge = 2.80;

Else: charge = 3.00;

Amount = charge * unit;

TEST PLAN

Sr. No.	Test class	Description	Expected Result	Actual Result
1	Admin login open	Ensures Admin login page open	Page should open and Admin Login should be done successfully	Page open and Login done successfully
2	Home page open	Ensures Home page open	Page should open and should to calculate bill	Page open and calculated bill

TESTING STRATEGY

Unit Test: - Unit testing is white box testing. Testing is performed by Developer.

Module: - Admin login page

Test case Id	Test case objective	Steps	Input	Expected Result	Actual Result	Status
TC-1	Check for the Admin Username field	Click on Admin username field and enter valid customer username	Shweta	Admin username field should accept only valid Admin username which available in database	Admin username field accept only valid Admin username which available in database	Pass
TC - 2	Check for the admin Password	Click on admin Password	Shweta	Admin password field should accept only valid	Admin password field accept	Pass

	Password field	field and enter admin valid password		admin password which available in database	only valid admin password which available in database	
TC - 3	Check for the submit Button	Click on submit button	None	It should be active, available and get log in only for valid admin	Submit button is active, available and log in only for valid admin	Pass
TC - 4	Check for the clear Button	Click on clear button	None	It should be active, available and clear all fields	Clear button is active, available and clear all fields	Pass
TC - 5	Check for the cancel Button	Click on cancel button	None	It should be active, available and able to exit system	Cancel button is active, available and able to exit system	Pass

Module: - Home page

Test case Id	Test case objective	Steps	Input	Expected Result	Actual Result	Status
TC-1	Check for Customer ID field	Click on text field to enter ID	1	ID should be unique and numeric	ID is unique and numeric	Pass
TC-2	Check for the Customer name field	Click on text field to enter name of customer	Shweta	Customer name should contain alphabets only	Customer name contain alphabets only	Pass

ELECTRICITY BILL GENERATOR

TC-3	Check for the unit filed	Click on text filed to enter unit	800	Unit should be in the format of numbers	Unit is in number format	Pass
TC-4	Check for the Calculate bill button	Click on calculate bill button after filling above information	None	Calculate bill button should be active, available and able to calculate bill	Calculate bill button is active, available and able to calculate bill	Pass
TC-5	Check for the print section	Click on calculate bill button to view total amount to be paid for particular unit	None	Print section should be able to display customer ID, customer name, Unit and total amount to be paid	Print section is able to display customer ID, customer name, Unit and total amount to be paid	Pass
TC-6	Check for the print button	Click on print button after calculating bill	None	Print button should be active, available and able to display print	Print button is active, available and able to display print	Pass

				properties for print	properties for print	
TC-7	Check for the save data button	Click on save data button after calculating bill	None	After clicking save data button it should be save unique data to database	After clicking save data button it's save unique data to database	Pass
TC - 8	Check for the clear Button	Click on clear button	None	It should be active, available and clear all fields	Clear button is active, available and clear all fields	Pass
TC - 9	Check for the cancel Button	Click on cancel button	None	It should be active, available and able to exit system	Cancel button is active, available and able to exit system	Pass

Integration Test: - Integration testing is Black box testing. Testing performed by Tester.

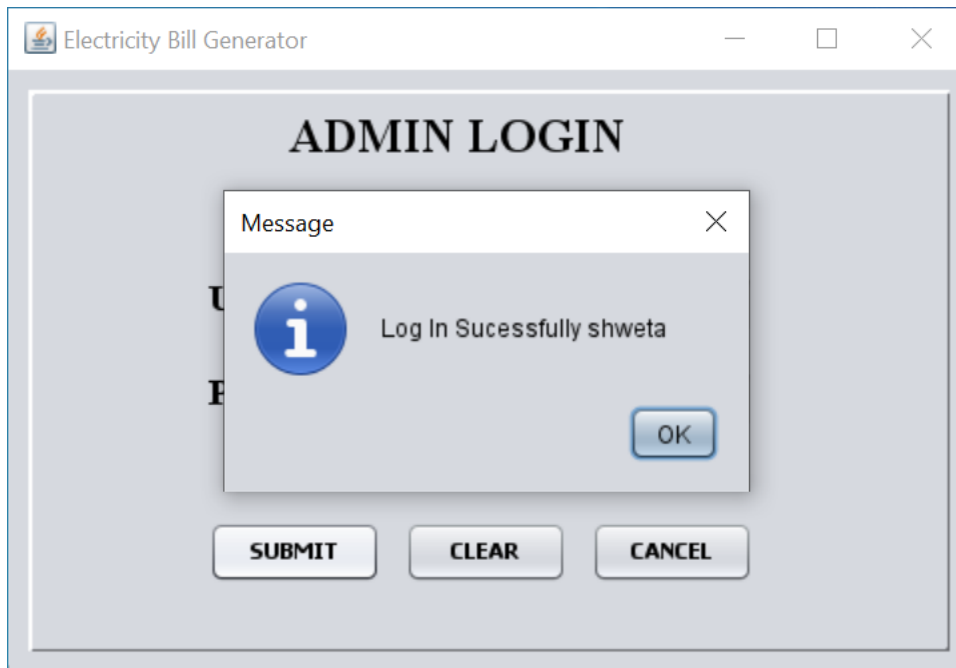
Test case Id	Test case objective	Steps	Input	Expected Result	Actual Result	Status
TC - 1	Check for the submit Button available on admin login page	Click on submit button after filling valid username and password	None	It should be active, available and get log in only for valid admin that's available in database	Submit button is active, available and log in only for valid admin that's available in database	Pass
TC- 2	Check for the print section	Click on calculate bill button to view total amount to be paid for particular unit	None	Print section should be able to display customer ID, customer name, Unit and total amount to be paid	Print section is able to display customer ID, customer name, Unit and total amount to be paid	Pass
TC- 3	Check for the print button	Click on print button after calculating bill	None	Print button should be active, available and able to display print properties for print	Print button is active, available and able to display print properties for print	Pass
TC- 4	Check for the save data button	Click on save data button after calculating bill	None	After clicking save data button it should be save unique data to database	After clicking save data button it's save unique data to database	Pass

RESULT

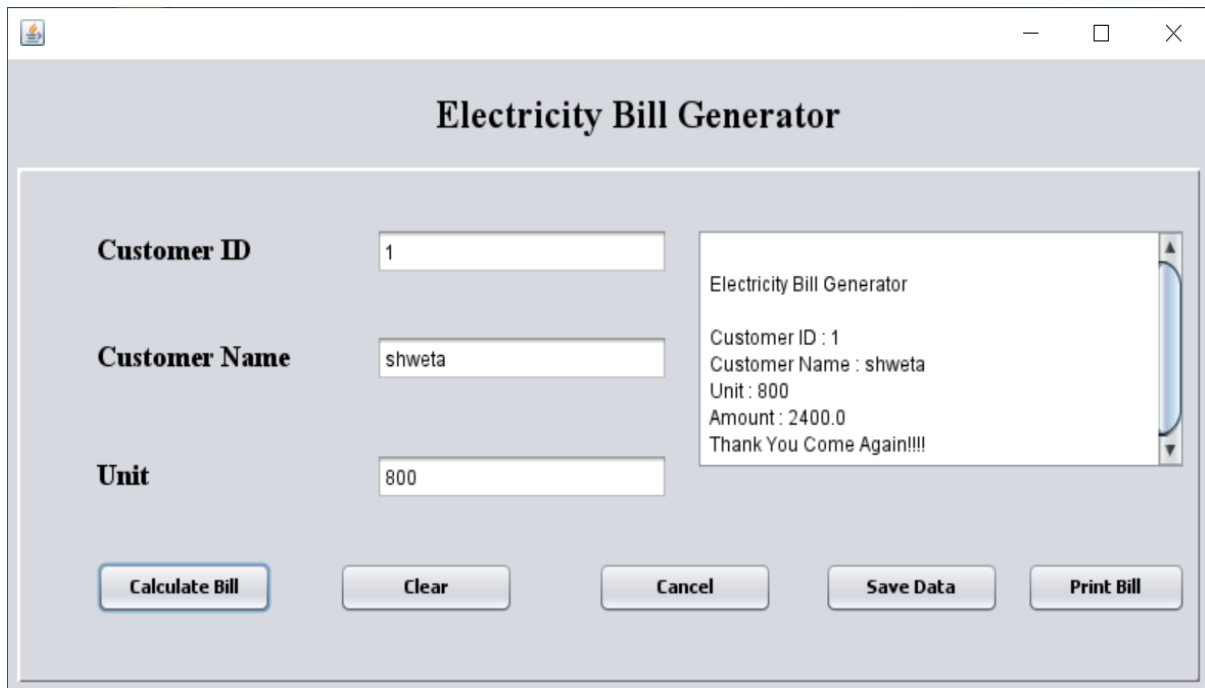
- Working module screenshot
 - Front-End



The screenshot shows a window titled "Electricity Bill Generator" with a standard Windows-style title bar (minimize, maximize, close buttons). The main content area is titled "ADMIN LOGIN" in a large, bold, serif font. Below the title, there are two input fields. The first is labeled "USERNAME" in bold, and the text "shweta" is entered. The second is labeled "PASSWORD" in bold, and the text is masked with asterisks "*****". Below the input fields, there are three buttons: "SUBMIT", "CLEAR", and "CANCEL", all in a light blue, rounded rectangular style.



This screenshot shows the same "ADMIN LOGIN" window as above, but with a modal message box displayed in the foreground. The message box is titled "Message" and contains an information icon (a blue circle with a white 'i') on the left. To the right of the icon, the text reads "Log In Sucessfully shweta". At the bottom right of the message box is an "OK" button. The "ADMIN LOGIN" window's "SUBMIT", "CLEAR", and "CANCEL" buttons are still visible behind the message box.

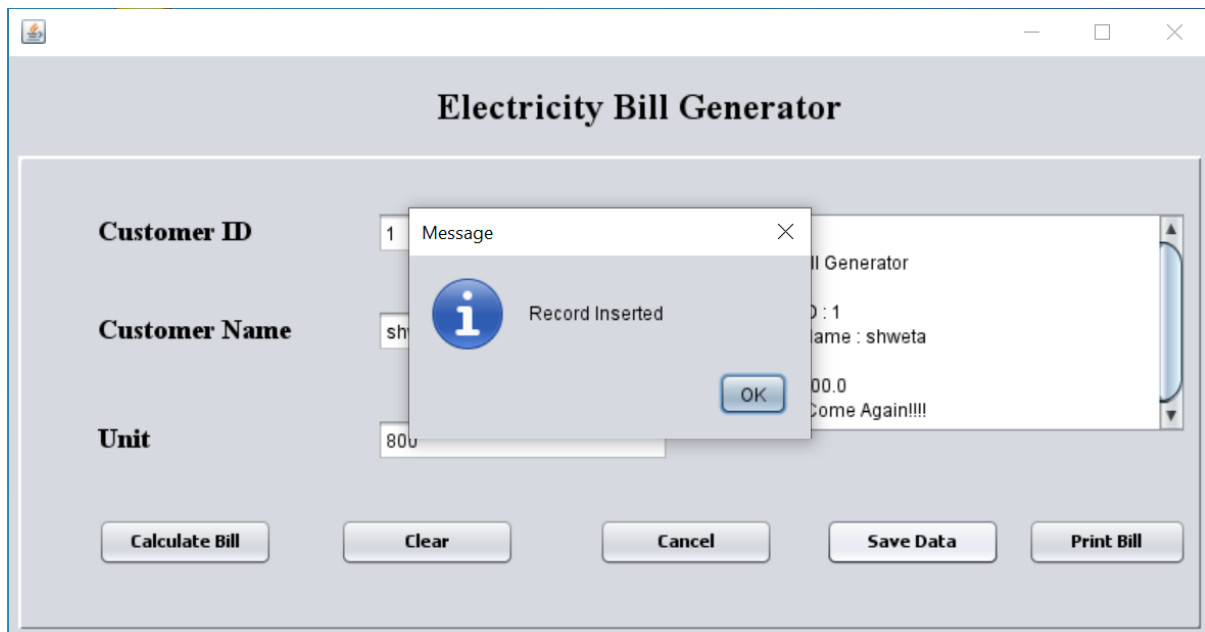


The screenshot shows the 'Electricity Bill Generator' application window. It has a title bar with standard Windows window controls. The main area is titled 'Electricity Bill Generator'. Below the title, there are three input fields: 'Customer ID' with the value '1', 'Customer Name' with the value 'shweta', and 'Unit' with the value '800'. To the right of these fields is a text area displaying the generated bill: 'Electricity Bill Generator', 'Customer ID : 1', 'Customer Name : shweta', 'Unit : 800', 'Amount : 2400.0', and 'Thank You Come Again!!!!'. At the bottom of the window, there are five buttons: 'Calculate Bill', 'Clear', 'Cancel', 'Save Data', and 'Print Bill'.

Field	Value
Customer ID	1
Customer Name	shweta
Unit	800

Generated Bill:

Electricity Bill Generator
Customer ID : 1
Customer Name : shweta
Unit : 800
Amount : 2400.0
Thank You Come Again!!!!

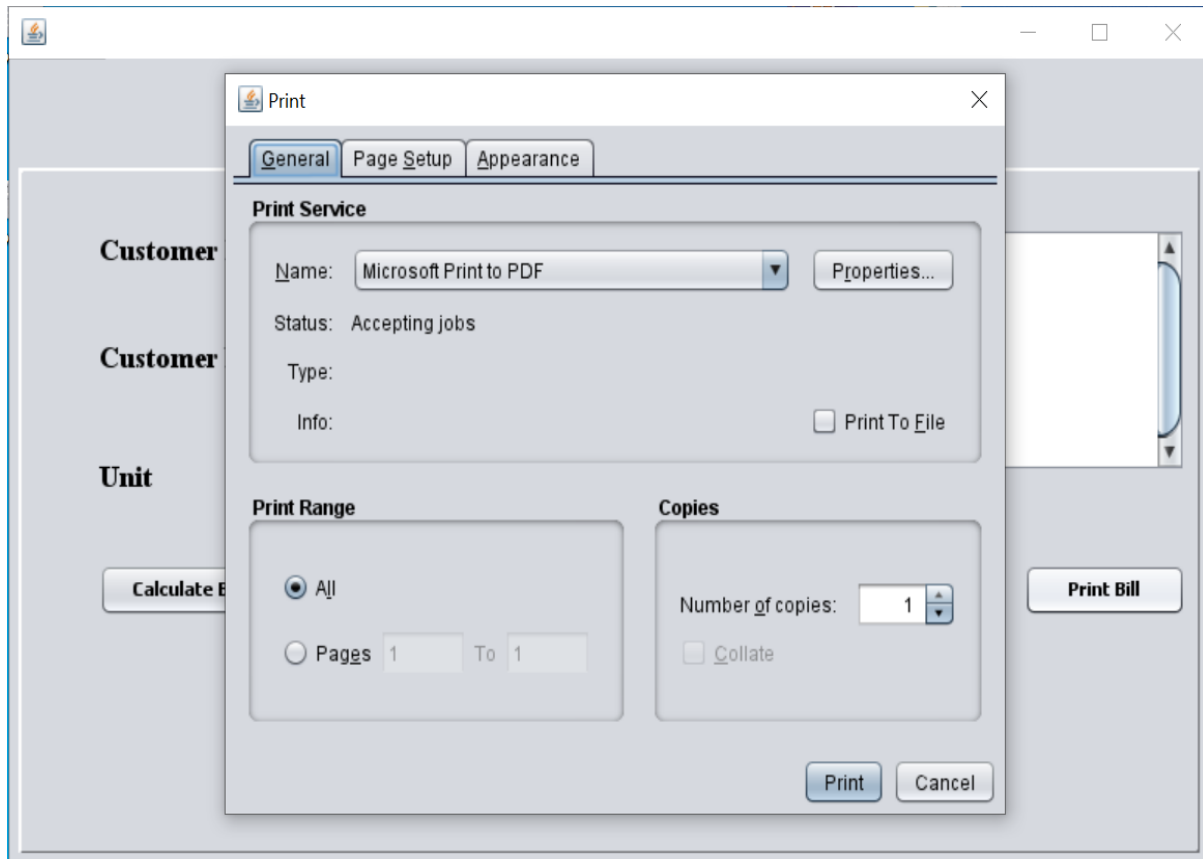


This screenshot shows the same 'Electricity Bill Generator' application window, but with a 'Message' dialog box open in the center. The dialog box has a title bar that says 'Message' and a close button. It contains an information icon (a blue circle with a white 'i') and the text 'Record Inserted'. There is an 'OK' button at the bottom right of the dialog box. The background application window is slightly dimmed, showing the same input fields and bill preview as in the previous screenshot.

Message

Record Inserted

OK



- MySQL Database

```
mysql> use ebill;
Database changed
mysql> DESC admin;
```

Field	Type	Null	Key	Default	Extra
username	varchar(20)	NO	PRI	NULL	
password	varchar(8)	NO		NULL	

```
2 rows in set (0.05 sec)

mysql> select * from admin;
```

username	password
shweta	shweta

```
1 row in set (0.00 sec)

mysql> DESC users;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	
name	varchar(20)	NO		NULL	
unit	int	NO		NULL	
amount	int	NO		NULL	

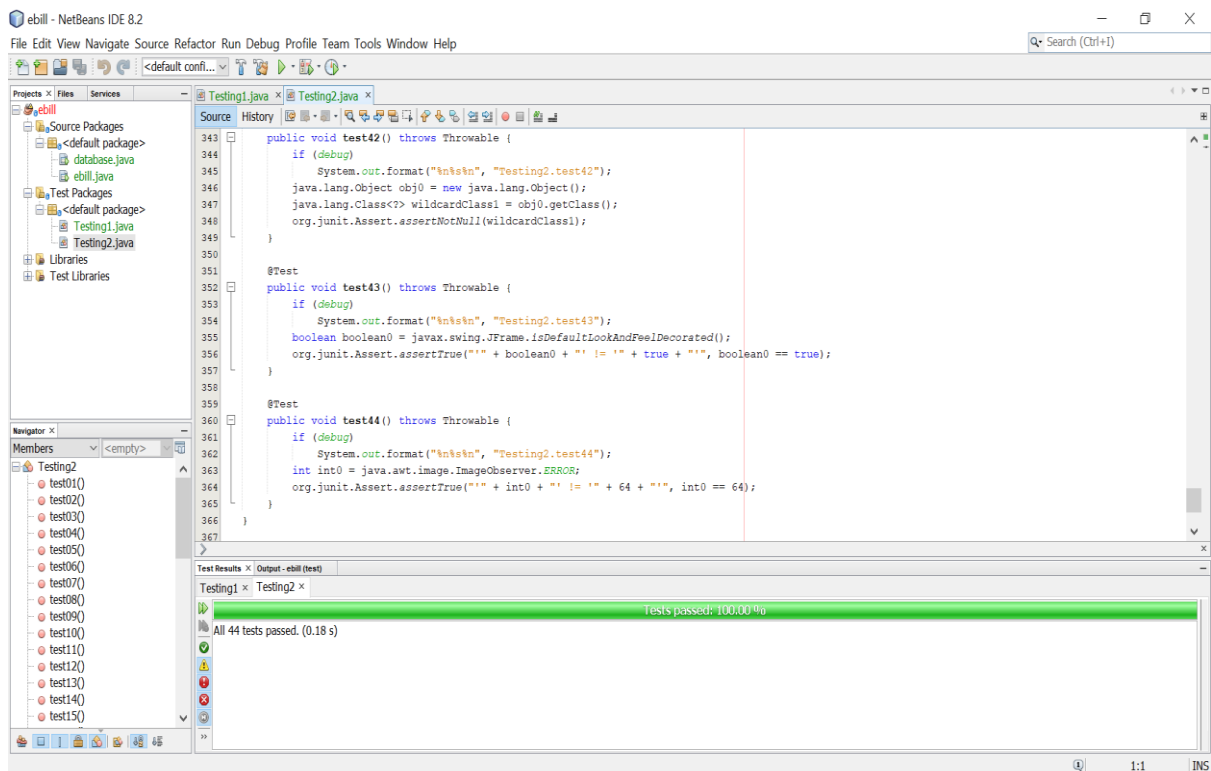
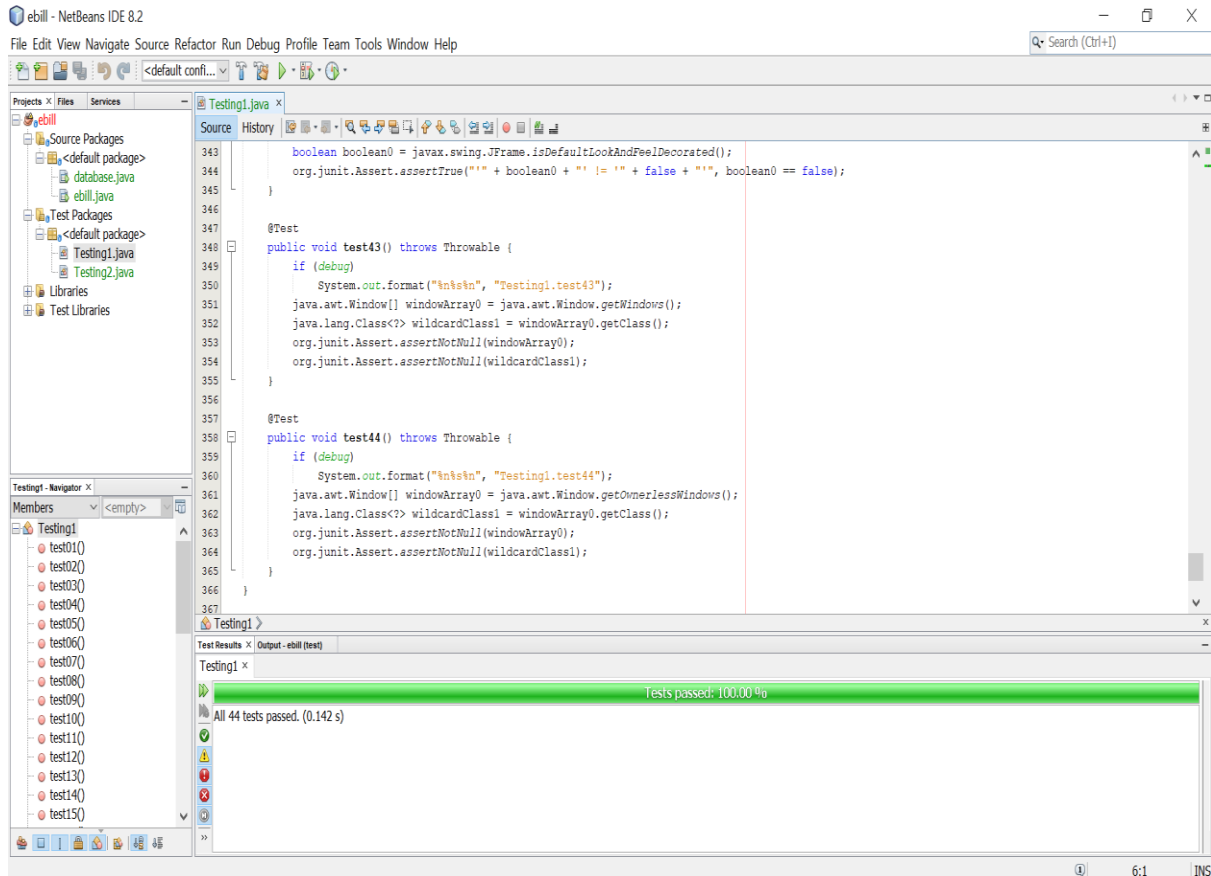
```
4 rows in set (0.00 sec)

mysql> select * from users;
```

id	name	unit	amount
1	shweta	800	2400
2	priya	500	1400
3	devika	200	560

```
3 rows in set (0.00 sec)
```

○ Testing module



CODE

Link of the code with testing code as well:

https://github.com/shwetathikekar/Electricity_Bill_Generator

ADVANTAGES

- To keep the information of Customer.
- To keep the information of consuming unit of energy.
- To maintain the record of customer and generate bill.
- To print the electricity bill.
- To reduce the man power
- To provide more accuracy
- Error free calculation and user-friendly interface

APPLICATIONS

The manual reading has defects such as errors in reading, inaccuracy, external conditions that influence the measured values, leads to a delay of the work. In addition, the traditional technique also requires large manpower. In order to resolve all these issues, an electricity bill generator (computerized) is built.

CONCLUSION

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.

REFERENCES

1. <https://www.geeksforgeeks.org/program-to-calculate-electricity-bill/>
2. <https://youtu.be/Z0xvZA65VIw>