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Abstract

Technology and Communication always try to make peoples life easier. So the main purpose of this project is based on developing an automatic electronic water billing system. In this project, we design and implement a complete automatic water billing system without interference of any employees. All currently implemented systems depends on 1 bill for the whole building and water companies pay a lot of money for printing the bills and some meters are damaged or cannot take readings from. Our proposed system consists of smart meters.

These meters are present in every house and will take the water readings and send them wirelessly to the water company base station via GSM modules. The readings are saved into the data base automatically and uploaded on the website automatically where the user can pay online. Frequent SMS notifications are sent to the user after each step. The proposed system is simple, cheap, fast and friendly user.

Introduction

The "Water Billing System" has been developed to override the problems prevailing the manual system. Due to this manual system , bill has been provided to person by going their respective home which is so time consuming. Thus, it is essential to have an efficienct system for such purposes via electronic platform with consideration to proximity.

This system is designed to auromate the water bill calculation for user convenience. The system would be having two logins: the admin and user login. The admin can view the users account details and can add or update the users information of consuming units of water of current month . The admin has to feed the system with water usage data into respective users account. The system then calculates the water bill for every user and update the information into their account.

Problem Statement

- ❖ As the current system is totally manual
- ❖ Existing system is manually, so it increases the chances of errors.
- ❖ Lot of the time consumed for each report generation
- ❖ Immediate response to the query's is difficult
- ❖ More stationary use so they are expensive
- ❖ Manual systems are takes more time
- ❖ More man power.
- ❖ Consumes large volume of pare work.
- ❖ Damage of machines due to lack of attention.

Purpose/Objective And Goals

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work. The existing system has several disadvantages and many more difficulties to work well. The proposed system tries to eliminate or reduce these difficulties up to some extent. The proposed system will help the user to reduce the workload and mental conflict. The proposed system helps the user to work user friendly and he can easily do his jobs without time lagging.

Expected Advantages of Proposed System

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations

Project Scope And Limitations

The auto-generated data will be then present on the proposed system. From creating an invoice varying sequence number to avoid confusion and less redundant to the records whenever the end user create an invoice. And an auto-generated billing form wherein calculation of bills will be automatically computed whenever others charges has been updated.

The proposed system has the ability to produce auto-generated reports on collection, invoices, and client's status and there's no need to input the information to create reports. The group develops the system to ease the process of collection and the issuance of official receipt as soon the clients pays their account.

Considering security is one of priority of an organization thus the developers creates the system with a high level of security while limiting the persons who are only authorized to manage the system. When more than one person handles billing data, it is important to have fine grained access control to ensure that data is protected from unwanted access. To create a system that auto completes future documents after the first one has been filled out.

System Analysis

➤ Existing systems

After analyzing the necessities of the task to be performed, the next step is to analyze the problem and understand its context. The first activity in the phase is studying the existing system and other is to understand the necessities and domain of the new system. Both the behaviors are equally significant, but the first movement serves as a basis of giving the

purposeful specifications and then winning design of the proposed system. Understanding the properties and necessities of a new system is more difficult and requires creative thinking and understanding of existing running system is also difficult, improper understanding of present system can lead diversion from solution.

Drawbacks of Existing System

- As the current system is totally manual
- Existing system is manually, so it increases the chances of errors.
- Lot of the time consumed for each report generation
- Immediate response to the query's is difficult
- More stationary use so they are expensive
- Manual systems are takes more time
- More man power.
- Consumes large volume of pare work.
- Damage of machines due to lack of attention.

Scope And Limitations Of Existing Systems

- Unable to generate Sales and Billing using computer software. He Generate billing by manual methods.
- If any old customer's information is required they have to search in various sales goods.
- Unable to provide better service to customer.
- Unable to overcome the situation like dead stock, over stock.
- Difficult to maintain every record for each and every customer.
- Manual generate of sale bill.

➤ **Hardware / Software specifications**

Hardware Requirement:-

Intel Corei3or Higher processor 1.80 GHz

RAM: 2GB

Hard Disc: 200 GB

Software Requirement:-

Xampp (MySQL Server)

Operating System Windows7, 8 and above

Programing Language: PHP

Front End:-

HTML, CSS, Bootstrap JavaScript

Back End:-

MySQL Server

➤ **Project Perspective, Features.**

- ☐ System can generate immediately getting the data and report.
- ☐ Avoid stationary expense
- ☐ New system provide online payment facility ☐ Any record is easy to store and manage
- ☐ Easy to solve customer query
- ☐ Provide better security in new system
- ☐ Ensure data accuracy's.
- ☐ Proper control of the higher officials.
- ☐ Reduce the damages of the machines.
- ☐ Minimize manual data entry.
- ☐ Minimum time needed for the various processing.
- ☐ Greater efficiency.
- ☐ Better service.
- ☐ User friendliness and interactive.
- ☐ Minimum time required.

Important Features

- ☐ Accuracy
- ☐ User Friendly
- ☐ Availability
- ☐ Efficiency
- ☐ Reliable

➤ Feasibility Study

Technical feasibility

Technical feasibility assesses the current resources (such as hardware and software)

and technology, which are required to accomplish user requirements in the software within

the allocated time and budget. For this, the software development team ascertains whether the

current resources and technology can be upgraded or added in the software to accomplish

specified user requirements. Technical feasibility also performs the following tasks.

- ☐ Analyzes the technical skills and capabilities of the software development team

members

- ☐ Determines whether the relevant technology is stable and established

- ☐ Ascertains that the technology chosen for software development has a large number of

users so that they can be consulted when problems arise or improvements are required.

Operational feasibility

Operational feasibility assesses the extent to which the required software performs a

series of steps to solve business problems and user requirements. This feasibility is dependent

on human resources (software development team) and involves visualizing whether the

software will operate after it is developed and be operative once it is installed.

Operational

feasibility also performs the following tasks.

- ☐ Determines whether the problems anticipated in user requirements are of high priority

- ☐ Determines whether the solution suggested by the software development team is

acceptable

- ☐ Analyzes whether users will adapt to a new software

- ☐ Determines whether the organization is satisfied by the alternative solutions proposed

by the software development team

Economic feasibility

Economic feasibility determines whether the required software is capable of

generating financial gains for an organization. It involves the cost incurred on the software

development team, estimated cost of hardware and software, cost of performing feasibility

study, and so on. For this, it is essential to consider expenses made on purchases (such as

hardware purchase) and activities required to carry out software development. In addition,

is necessary to consider the benefits that can be achieved by developing the software.

Software is said to be economically feasible if it focuses on the issues listed below.

- ☐ Cost incurred on software development to produce long-term gains for an organization

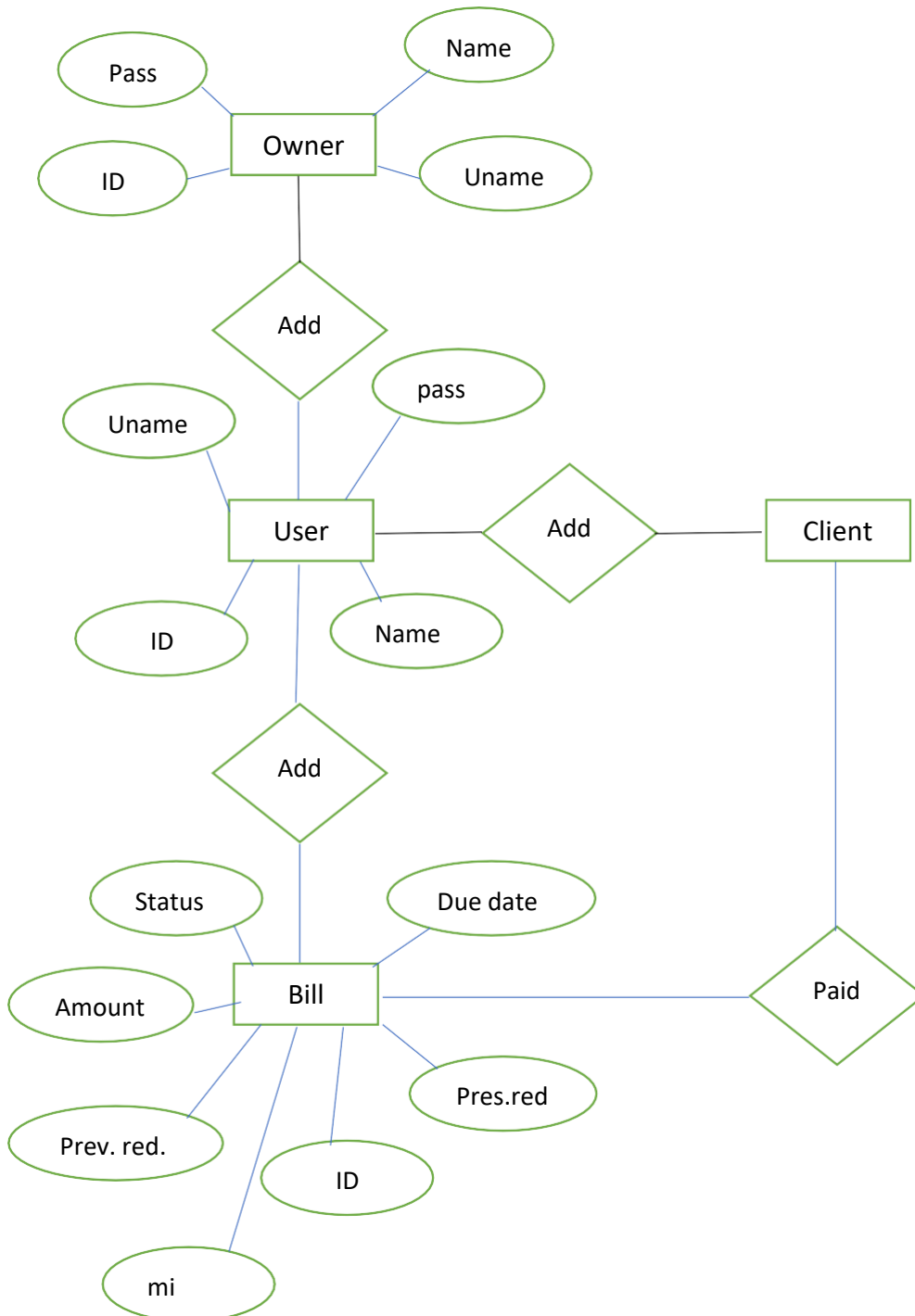
- ☐ Cost required to conduct full software investigation (such as requirements elicitation

and requirements analysis)

- ☐ Cost of hardware, software, development team, and training

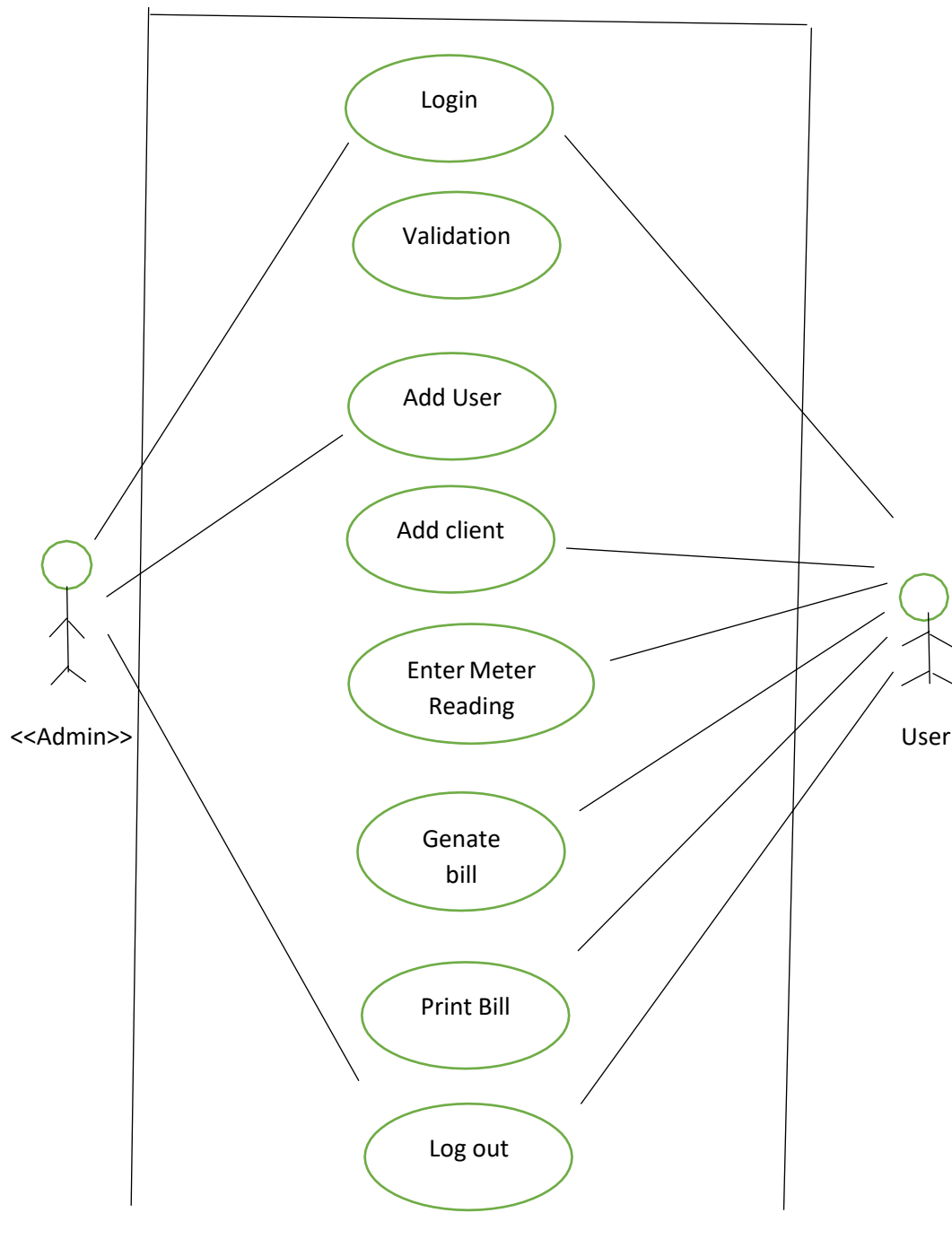
System Design

➤ ERD

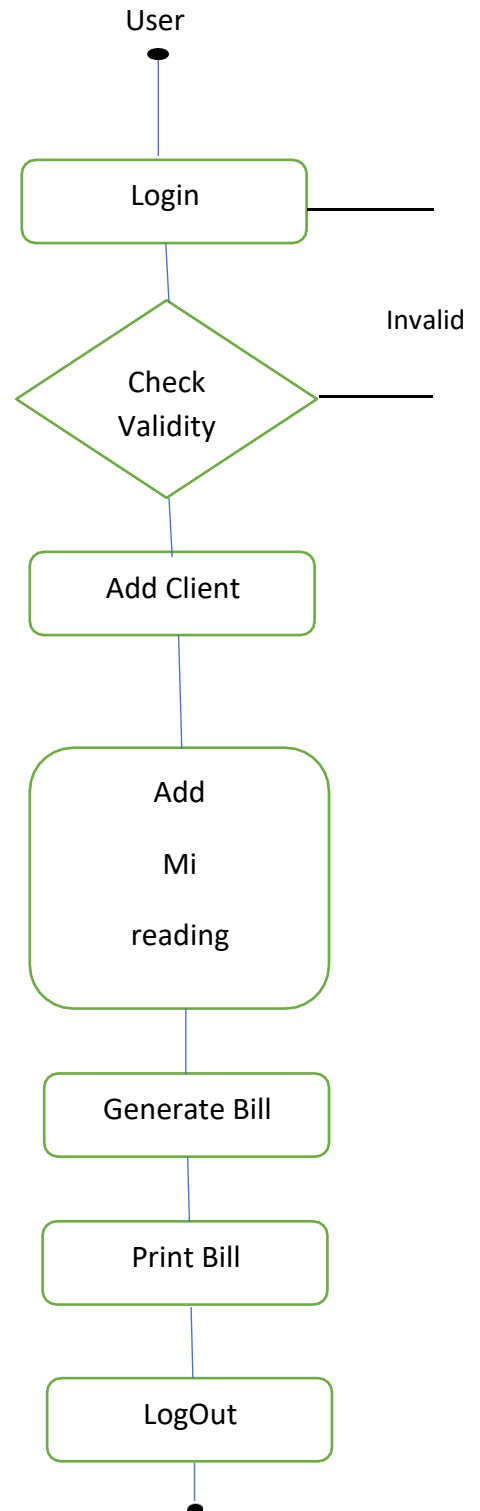
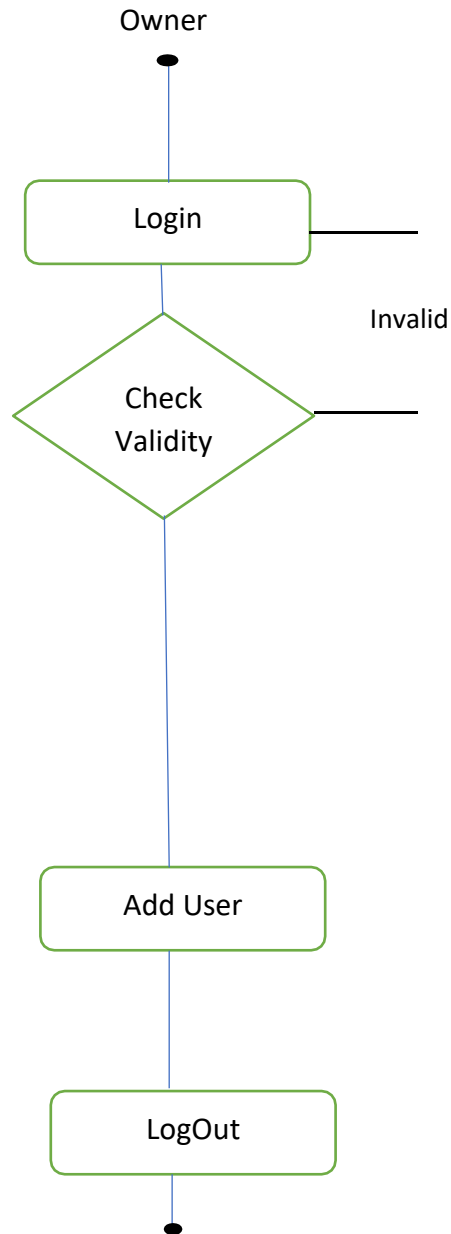


➤ **System Model: Using OOSE(UML**

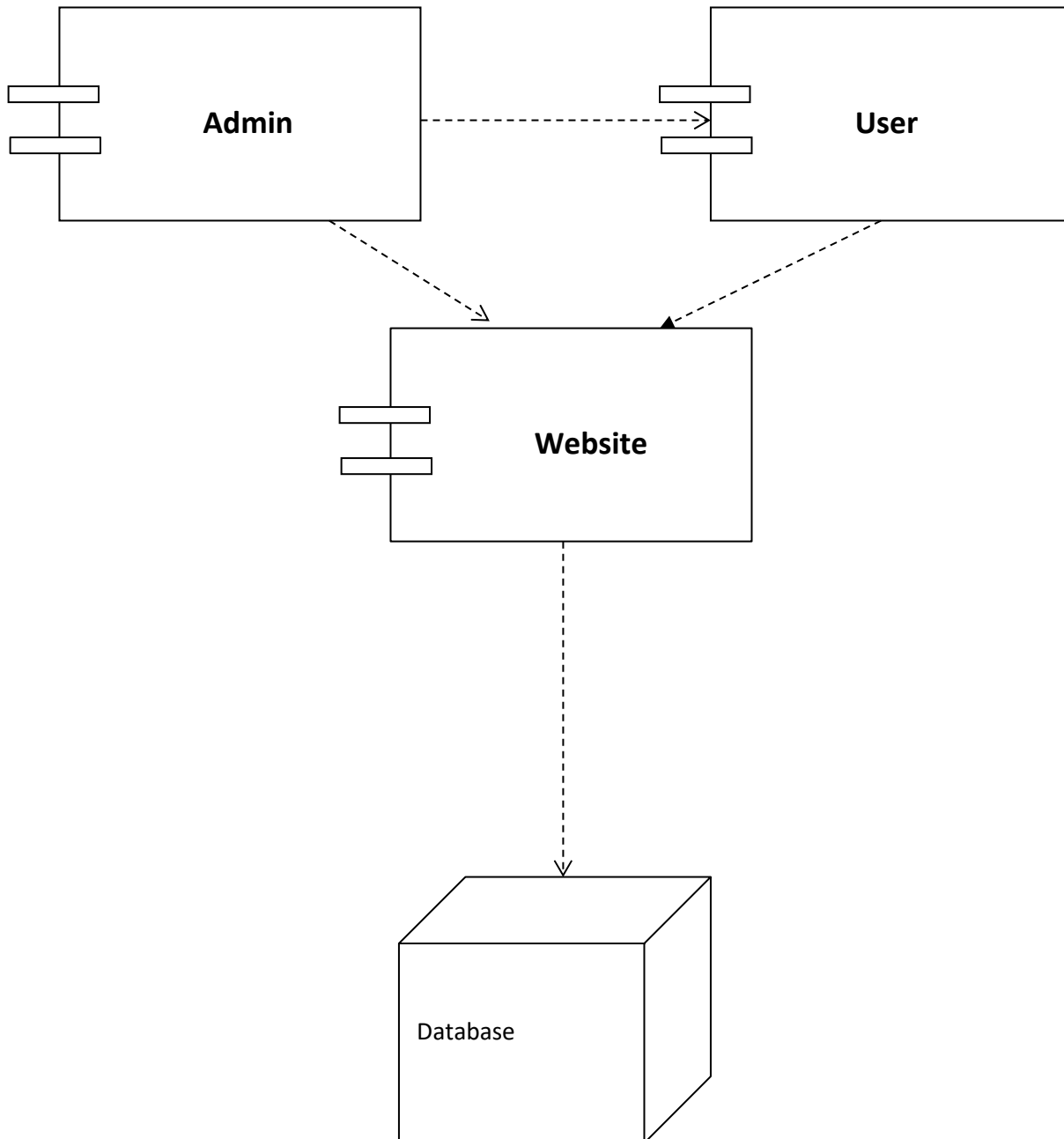
Diagrams)UseCase Diagram



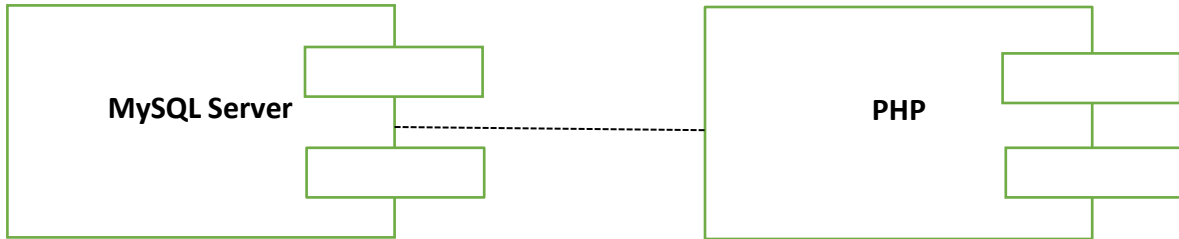
Activity Diagram



Component Diagram



Deployment Diagram



➤ Data Dictionary

User Owner:

Fieldname	Data type	Size	Constraint	Description
Id	Integer	10	Primary Key	Id of the Owner
Username	Varchar	15	-	Userame of the Owner
Password	Varchar	15	-	Password of Owner
Name	Varchar	30	-	Name of Owner

User Registration:

Fieldname	Data type	Size	Constraint	Description
Id	Integer	10	Primary Key	Id of the User
Username	Varchar	15	-	Userame of the user
Password	Varchar	15	-	Password of user
Name	Varchar	30	-	Name of user

Clients Registration:

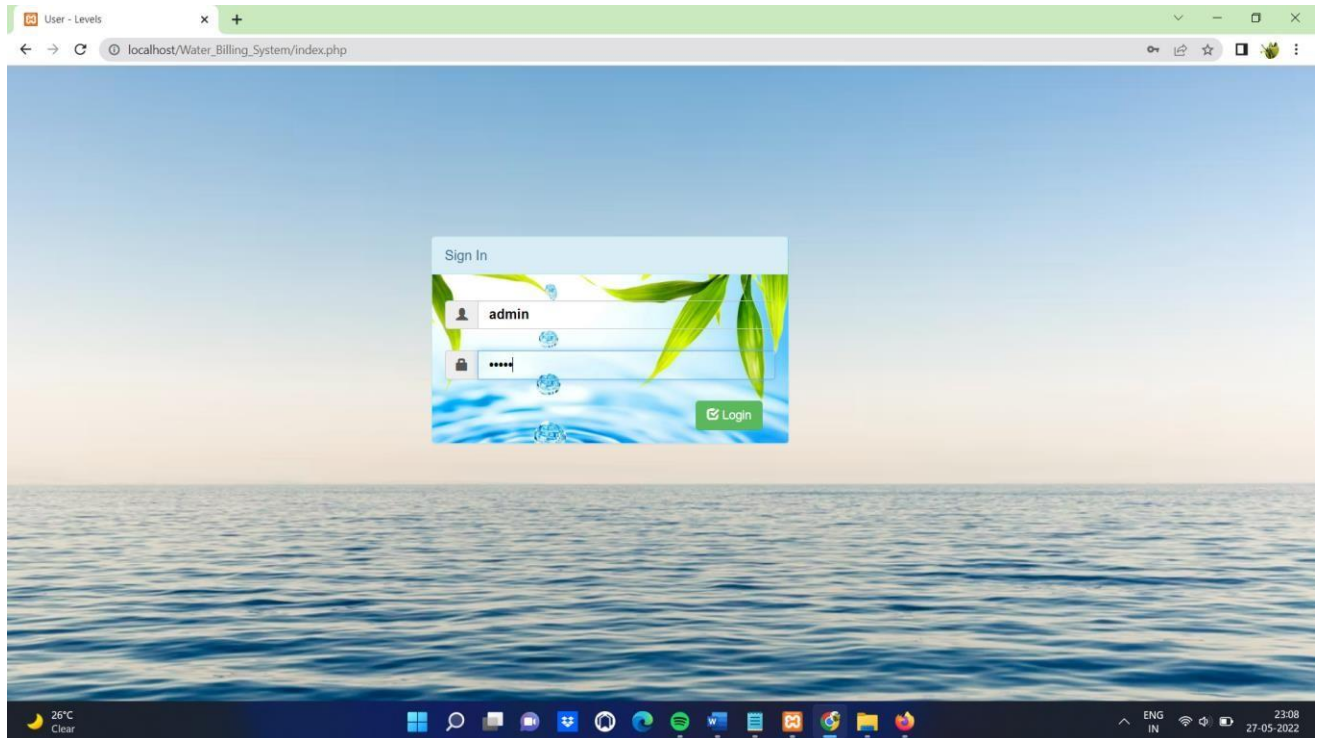
Fieldname	Data type	Size	Constraint	Description
ID	Integer	10	Primary Key	Id of the client
Last Name	Varchar	-	-	Last name of client
First Name	Varchar	-	-	First name of client
Meter Number	Integer	-	-	Meter Number of client
Address	Varchar	-	-	Address of client
Contact	Integer	-	-	Contact of client
First Meter Reading	Integer	-	-	First Meter Reading of client

Bill:

Fieldname	Data type	Size	Constraint	Description
Id	Integer	-	Foreign Key	Id of the client
Owner_id	Varchar	50	Foreign Key	Is of the User
Prev Meter Reading	Varchar	100	Foreign Key	Prev Meter Reading
Pres Meter Reading	Varchar	50	-	Pres Meter Reading
Prise	Blob	-	-	Prise
Date	Timestamp	-	-	Billing Date

➤ User interfaces (Sample Screens)

Owner Login:



Dashboard :

Water Billing System

Anshuta Patil [Logout](#)

[Home](#) [Billing](#) [Users](#) [Clients](#)

Welcome Dear, Anshuta Patil

Clients

2

[View](#)

Users

2

[View](#)

Bills and Income

1

[View](#)

33°C Mostly sunny 17:16 27-05-2022

Add User

Water Billing System

Anshuta Patil [Logout](#)

[Home](#) [Billing](#) [Users](#) [Clients](#)

System Users

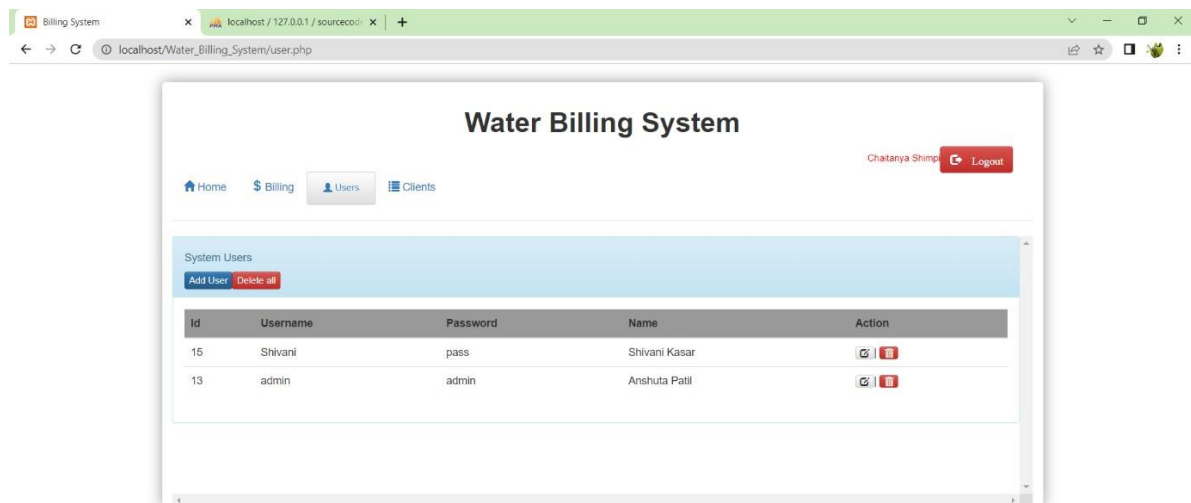
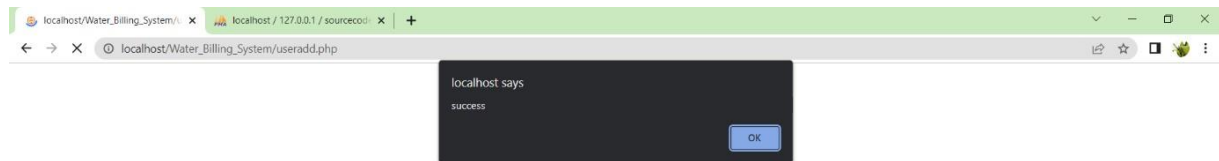
[Add User](#) [Delete all](#)

Username: Shivani
 Password: pass
 Name: Shivani Kasar
 Add

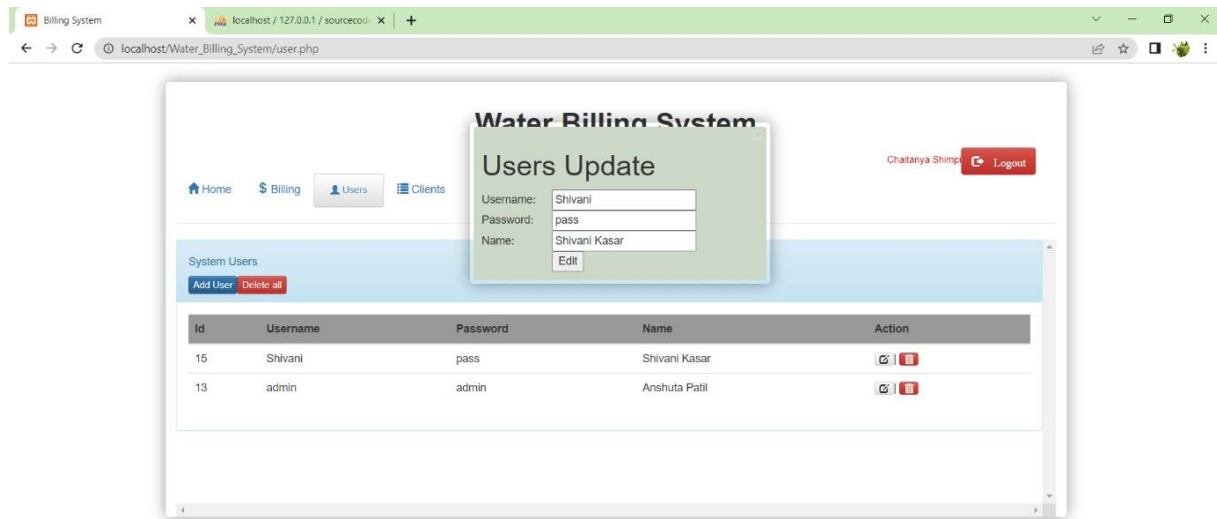
Id	Username	Password	Name	Action
14	guddu	guddu	Chaitanya Shimpi	Edit Delete

33°C Mostly sunny 17:17 27-05-2022

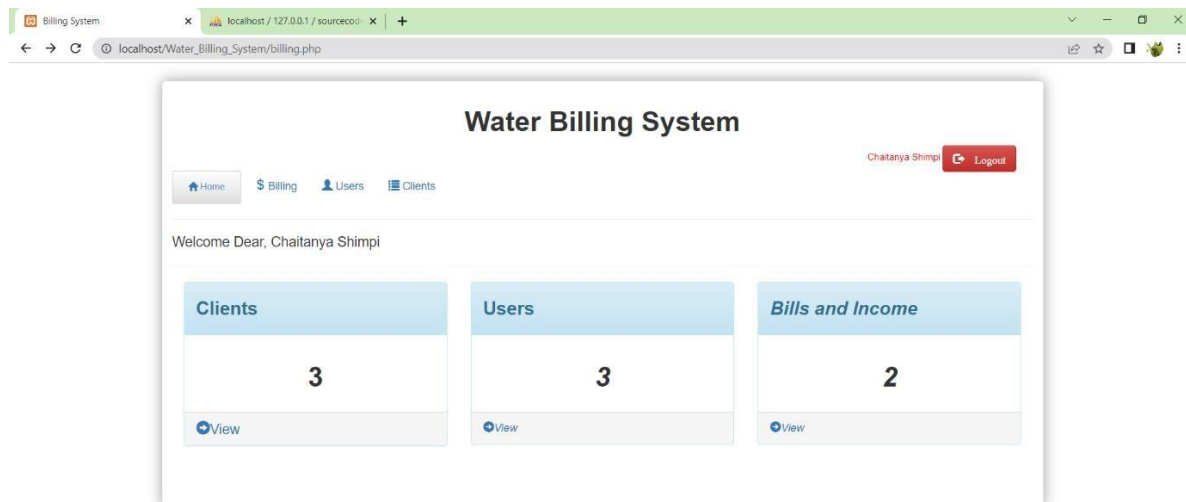
User Added Message :



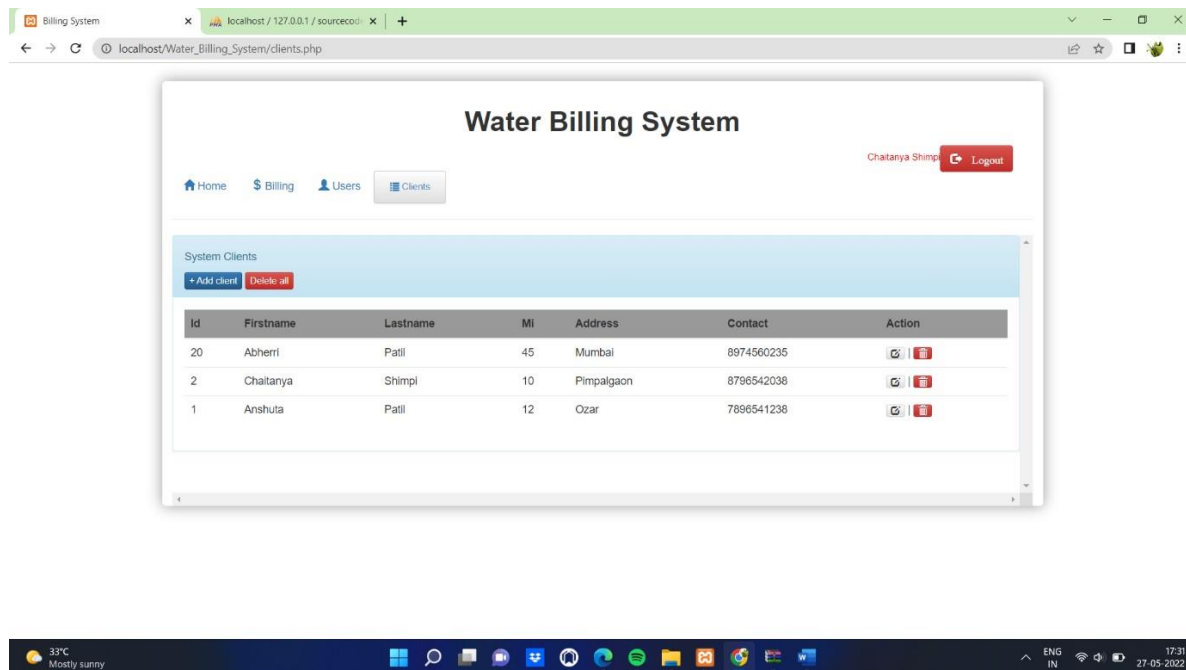
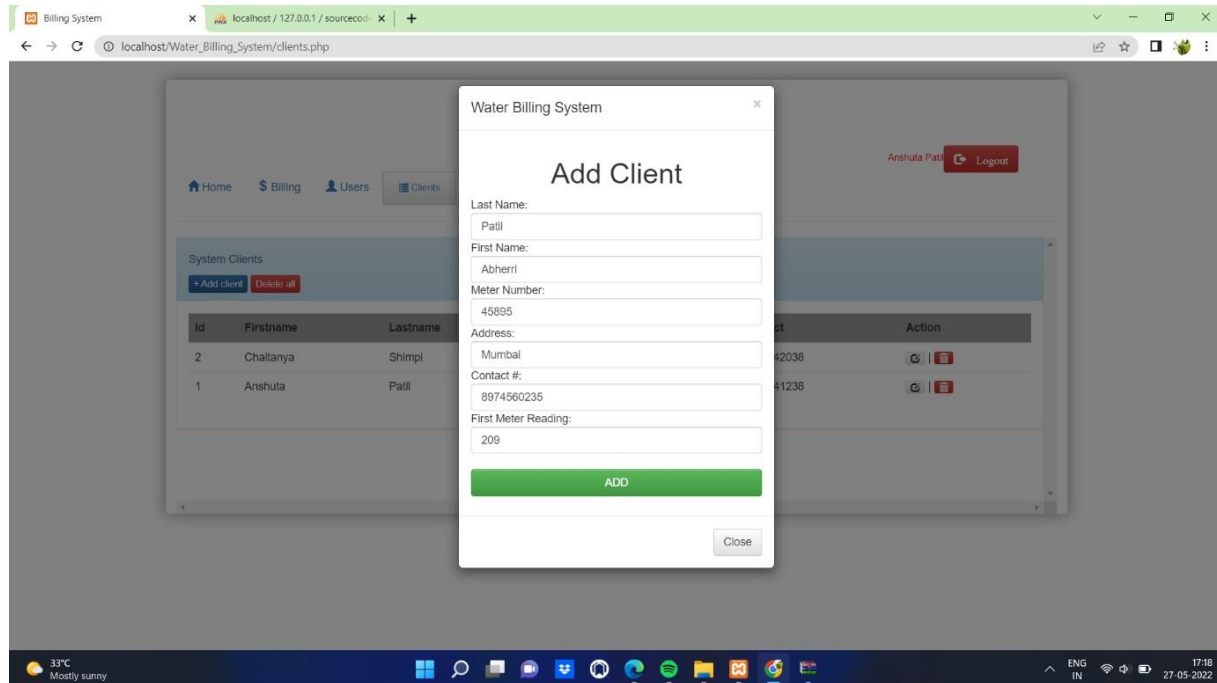
Update User



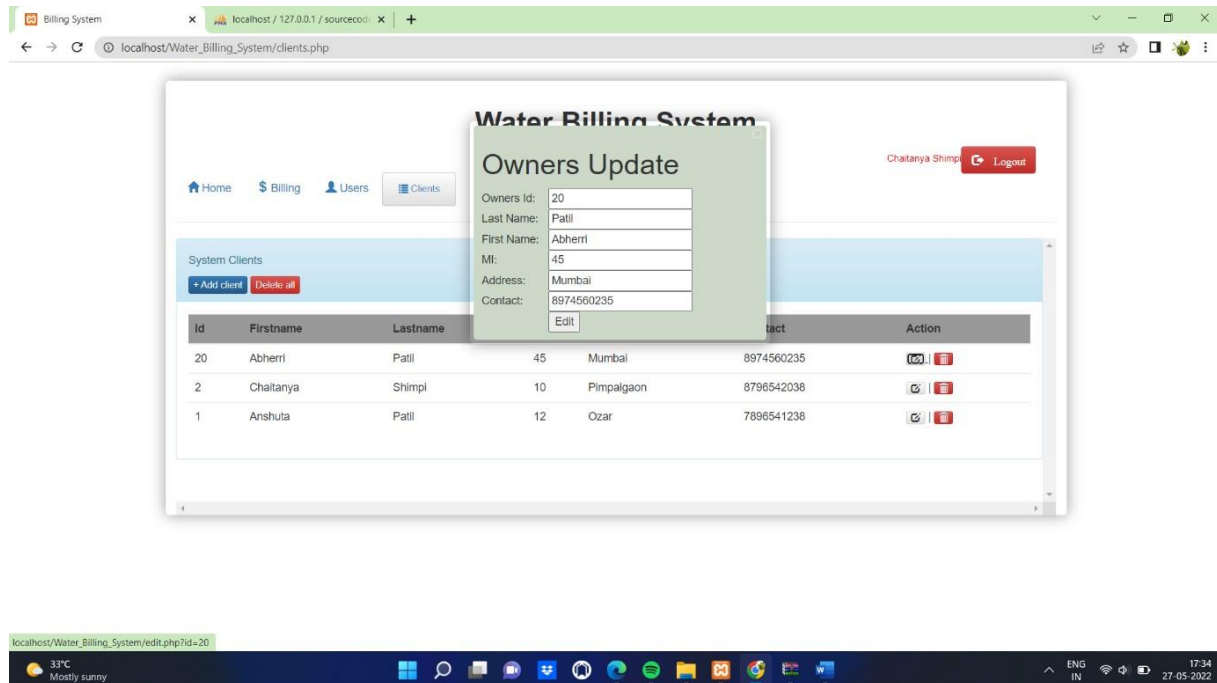
User Login :



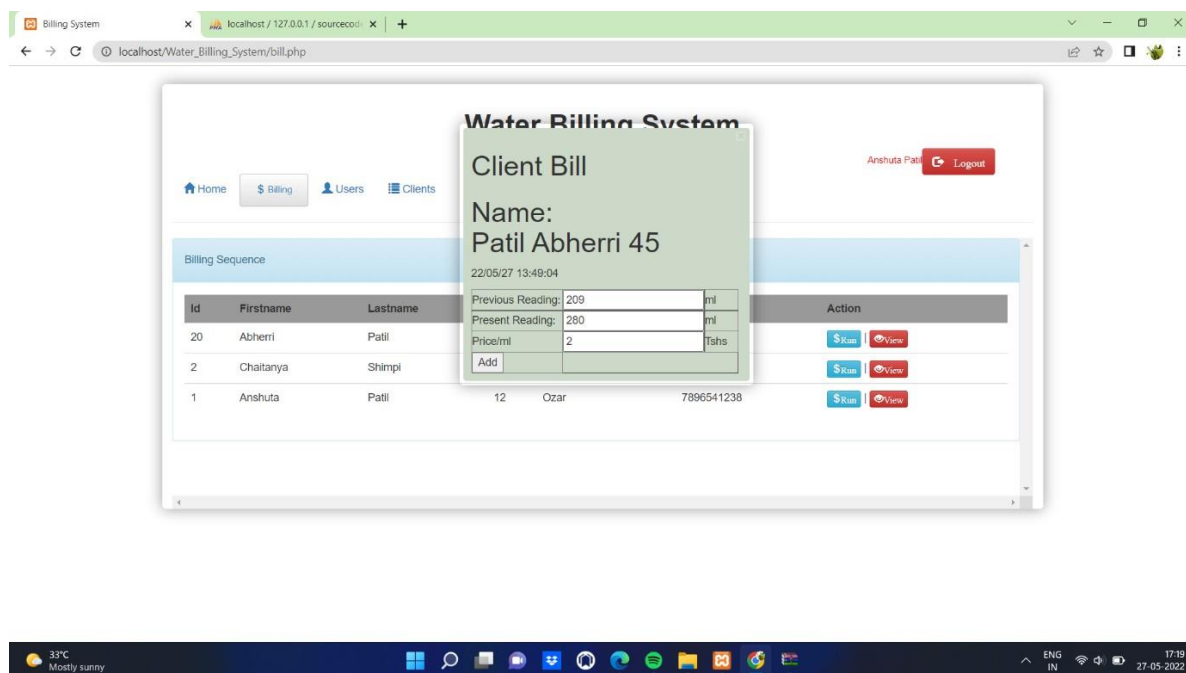
Add Client



Update Client



Clients Bill



View Bill

Water Billing System
ESPEN - ESSP
Bill Invoice
Phone: +255 (0) 654 235
Date: 22/05/20 10:36:41

Last Name:	Patil	Client ID	SMART/0020
First Name	Abherri	Meter Number	45
Address:		Mumbai	
Contact:		8974560235	
Previous Reading :	Paid	280	Present Reading : 220
Consumption:	-60	Price / unit :	-600 Tshs

Total Invoice: 36000 /= Tshs

Casher: Chaitanya Shimpi Signature: _____ Unpaid

[Print Bill](#) [Go back](#)

Bill Print

Water Billing System
ESPEN - ESSP
Bill Invoice
Phone: +255 (0) 654 235
Date: 22/05/20 10:36:41

Last Name:	Patil	Client ID	SMART/0020
First Name	Abherri	Meter Number	45
Address:		Mumbai	
Contact:		8974560235	
Previous Reading :	Paid	280	Present Reading : 220
Consumption:	-60	Price / unit :	-600 Tshs

Total Invoice: 36000 /= Tshs

Casher: Chaitanya Shimpi Signature: _____ Unpaid

Print 1 sheet of paper

Destination: OneNote (Desktop) Pages: All Layout: Portrait Color: Color

More settings

[Print](#) [Cancel](#)

Delete Bill

The screenshot shows the 'Water Billing System' interface. A modal window is open for deleting a bill. The modal contains a table with the following data:

Id	Previous Reading	Present Reading	Consumption	Price	Date	Bill Amount	Action
12	209	280	71	142	22/05/27 13:49:04	10082	View Del

Below the modal, the 'Billing Sequence' table is visible, showing a list of bills with columns: Id, Firstname, Lastname, Mi, Address, Contact, and Action. The table contains three rows of data:

Id	Firstname	Lastname	Mi	Address	Contact	Action
20	Abherri	Patil	45	Mumbai	8974560235	\$Rate View
2	Chaitanya	Shimpi	10	Pimpalgaon	8796542038	\$Rate View
1	Anshuta	Patil	12	Ozar	7896541238	\$Rate View

The browser address bar shows the URL: localhost/Water_Billing_System/delbill.php?id=12. The Windows taskbar at the bottom shows the date and time as 27-05-2022, 18:11.

User Logout

The screenshot shows the 'Water Billing System' user dashboard. The user is logged out, and the interface displays a welcome message: 'Welcome Dear, Chaitanya Shimpi'. The dashboard features three main sections: Clients, Users, and Bills and Income, each with a count and a 'View' button.

Section	Count	Action
Clients	3	View
Users	3	View
Bills and Income	2	View

The browser address bar shows the URL: localhost/Water_Billing_System/logout.php. The Windows taskbar at the bottom shows the date and time as 27-05-2022, 18:12.

Conclusion and Recommendations

The system has been developed with much care and free of errors and at the same time it is efficient and less time consuming. The purpose of this project was to develop a web application for purchasing items from a shop.

This project helped us in gaining valuable information and practical knowledge on several topics like designing web pages using html & css, usage of responsive templates, and management of database using mysql. The entire system is secured. Also the project helped us understanding about the development phases of a project and software development life cycle. We learned how to test different features of a project.

Future Scope

This project can be easily implemented under various situations. We can add new features as and when we require. Reusability is possible as and when require in this project.

There is flexibility in all the modules. There are many features which could be added to this

project for making this project more productive.

- Providing online Placement Record through our site
- Providing personalized inbox to the user
- Providing video conferencing with the Artists
- Providing links to news which will elaborate more information about them
- Providing Ajax technology refreshing in our website

This is to conclude that the project that I undertook was worked upon with a sincere effort. Most of the requirements have been fulfilled up to the mark and the requirements

which have been remaining, can be completed with a short extension.

Bibliography and References

During the development of our system, we have taken the reference from Books and journals, which we would like to mention in this section.

These books acted as our tutors during the system development.

System Analysis And Design

- Kenneth E. Kendall, Julie E. Kendall

Software Engineering

- Roger S. Pressman

Database Management System

- James A. Larson

PHP: A Beginner's Guide

- RiwantoMegosinarso

These are the following links which assist me at each and every step in completing this project, without them

- ✓ www.google.com
- ✓ www.mysql.com
- ✓ <http://en.wikipedia.org/wiki/Recruitment>

www.w3schools.com

