VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI, KARNATAKA

A DBMS Mini Project Report

(Fifth Semester)

on

Client Management System

Submitted in the partial fulfillment for the requirements for the conferment of degree of

BACHELOR OF ENGINEERING

in

INFORMATION SCIENCE AND ENGINEERING

By

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BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT
YELAHANKA, BENGALURU-560064
DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

2022-2023

Department Vision & Mission

Vision

Emerge as centre of learning in the field of information science & engineering with technical competency to serve the society.

Mission

To provide excellent learning environment through balanced curriculum, best teaching methods, innovation, mentoring and industry institute interaction.

Programme Educational Objectives

PEO-1: Successful professional career in Information Science & Technology.
PEO-2: Pursue higher studies & research for advancement of knowledge in IT industry.
PEO-3: Exhibit professionalism and team work with social concern.

Programme Specific Outcomes

1. Apply the knowledge of information technology to develop software solutions.
2. Design and Develop hardware systems, manage and monitor resources in the product life cycle.

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CERTIFICATE

This is to certify that the Mini Project (Fifth Semester) entitled **"Client Management System"** is a bonafide work carried out by **Mr. Manish Kumar Yadav (1BY20IS078), Mr. Lakshya Agarwal (1BY20IS072)** and **Mr. Mridul Sadashiv (1BY20IS090)** in partial fulfillment for the award of **Bachelor of Engineering Degree in Information Science and Engineering** of the Visvesvaraya Technological University, Belagavi during the year 2022-2023. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in this report. The mini project report has been approved as it satisfies the academic requirements with respect to mini project work for the B.E Degree.

Signature of the Guide	**Signature of the HOD**
Dr. Sheela Kathavate	

Examiner

Name	Signature
1.	
2.	

ACKNOWLEDGEMENT

We are happy to present this Mini Project after completing it successfully. This Mini Project would not have been possible without the guidance, assistance and suggestions of many individuals. We would like to express our deep sense of gratitude and indebtedness to each and every one who has helped us make this Mini Project a success.

We are grateful to **Dr. Mohan Babu G N,** Principal, BMS Institute of Technology & Management for his constant encouragement and support.

We heartily thank the Head of the Department, Information Science and Engineering, for her constant encouragement and inspiration in taking up this project.

We gracefully thank our guide**, Dr. Sheela Kathavate** Associate Professor, Dept. of Information Science and Engineering, for her encouragement and advice throughout the course of this project work.

Nevertheless, we express our gratitude towards our family and friends for the encouragement and support which helped us to finish this project successfully.

By,

Lakshya Agarwal

Mridul Sadashiv

Manish Kumar Yadav

DECLARATION

We, hereby declare that the Mini Project titled "CLIENT MANAGEMENT SYSTEM" is a record of original Mini Project work undertaken for the award of the degree of Bachelor of Engineering in Information Science and Engineering of the Visvesvaraya Technological University, Belagavi during the year 2022-23. We have completed this Mini Project work under the guidance of **Dr. Sheela Kathavate,** Associate professor, Dept. of ISE.

We also declare that this Mini Project report has not been submitted for the award of any degree, diploma, fellowship or other title anywhere else.

Student Photos:

Manish Kumar Yadav

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ABSTRACT

The “CLIENT MANAGEMENT SYSTEM” is a software tool or platform that helps businesses to manage interactions and relationships with their clients or customers. A CMS can be used to track and organize information about clients, such as contact information, purchase history, and communication records. It can also help businesses automate tasks related to client management, such as sending out invoices or following up on leads. A CMS can typically be accessed by different departments within a business, such as sales, customer service, and accounting, which allows for more streamlined communication and coordination between teams. Some CMSs also include features for managing client interactions and communication, such as email and messaging tools, and can also provide reports and analytics on client activity and engagement. Overall, it helps businesses to better manage client communication, data, and activities, which can ultimately help to improve customer satisfaction and retention, as well as sales and revenue. A CMS can help businesses to manage and track client projects, including project timelines, milestones, and progress. A CMS can also help businesses to manage and track customer service requests, including creating and assigning tickets, managing customer interactions, and analyzing customer satisfaction levels.

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CHAPTER 1: INTRODUCTION

1.1 Outline:

Database is an organized collection of data. The data is typically organized to model aspects of reality in a way that supports processes requiring information. A DBMS makes it possible for end users to create, read, update and delete data in a database. The DBMS essentially serves as an interface between the database and end users or application programs, ensuring that data is consistently organized and remains easily accessible.

The DBMS manages three important things: the data, the database engine that allows data to be accessed, locked and modified and the database schema, which defines the database's logical structure. These three foundational elements help provide concurrency, security, data integrity and uniform administration procedures. The DBMS can offer both logical and physical data independence.

This web application provides a facility to manage the clients and provide them services efficiently and effectively. This application stores the data of the client and manages it between admin and client. This web application provides a facility to manage the clients and provide them services efficiently and effectively. This application stores the data of the client and manages it between admin and client. A CMS can assist sales teams in tracking and managing sales pipelines, forecasting future sales, and identifying potential upsell or cross-sell opportunities. Some CMSs include marketing automation tools that can help businesses to create and manage email campaigns, automate social media posts, and analyze marketing performance. CMS can be used to store contact information for clients, making it easy for employees to access and communicate with them. It can also facilitate communication between different departments within a business, such as sales and customer service.

1.2 Motivation and Scope:

- To deploy a website which keeps track of all Client and Management happening at the site. Thus, creating a transparent and a user-friendly website for Client and Admin Platform.
- To reduce the redundancy of existing management systems.
- The main objective of the project is to design and develop a user-friendly efficient computerized Client Management Platform.
- Computerization can be helpful as a means of saving time & money.
- Secured data storage for authority ends.
- The Scope of this project is very broad in terms of gaining knowledge and sharing knowledge among the world.
- Can be used anywhere any time as it is a web-based application.
- This application will be used in educational institutions as well as in the corporate world.

1.3 Problem Statement:

"Our aim is to develop an application for the users in which a client can easily access all the services and subscribe to it". Many sites or web applications that are not there in the market provide these services through websites. Even if they provide, they charge huge amounts that a company doesn't want to pay directly on a web application. Hence customer support is also not available in these applications. In the Client Management System Project, we use PHP and MySQL Database. This project keeps the records of clients. The client Management System has two modules ie. Admin and client. In this application, a client keeps track of what is the status of its invoice and services provided.This system is not providing credentials for users via an email. The system is giving randomly generated credentials to users.

CHAPTER 2: REQUIREMENT SPECIFICATIONS

2.1 Functional Requirement:

- **Account Login**

  The system shall require a user to log in, in order to carry out any operations in the software. It will ask the user for information like username, password, and various other relevant fields. The User Creates an account as Admin which has all the details of their clients.

  Input: client login

  Output: Filled Registration Details.

- **Managing Services**

  Users can manage their services. They can add or remove services according to their needs.

- **Sales Management**

  Description: Client management system is used for managing the sales pipelines and helps in identifying potential upsell or cross-sell opportunities.In this section, the admin can view the client's details and check the sales reports(month-wise/year wise) in a particular period.

- **Dashboard**

  Description: In this section, the admin can briefly view the total services, total clients, total today's sales, total yesterday's sales, last seven day's sales, and total sales. In this section, the client can search for his/her invoice with the help of the invoice number. The client can also update his/her profile, change the password and recover the password.

2.2 Non-Functional Requirement:

Performance:

- Response time of the System should be less than 3 seconds most of the time.
- Response time refers to the waiting time while the system accesses, queries and retrieves the information from the databases.

Reliability:

- It shall be available 24 hours a day, 7 days a week.
- It shall always provide accurate information to the user whenever accessed.

Integrity:

- Only the system administrator has the right to change system parameters, such as deleting unwanted/spam Details concerned to Client/Admin and client details .
- Users need to be authenticated before having access to any data.

A Convenient dashboard, user-friendly UI, separation of working pages for user's convenience, separate dashboards for Client and Admin is a must.

2.3 Domain Constraints:

Domain constraints are defined as the valid set of values of an attribute. In this project, we have used various domain constraints such as primary keys, foreign keys and restrictions on the type of data stored in the table. The tables use the VARCHAR Data type to store strings and text values. INTEGER data type is used to store the respective entity. Integrity constraints are also managed in this project. The Primary Key used is unique and does not repeat. The Foreign Key used is derived from an existing table and is used for a valid attribute to make connections to the tables and run the queries easily. Normalization, which is defined as the process of storing data in a database, was also used. Normalization up to 3 Normal Form was used so as to reduce redundancy.

- **Regulatory policies**: It is mandatory that no text box must contain insufficient data.
- **Hardware limitations:** There must be 64 MB on board memory.
- **Control functions**: The software is user-friendly and displays appropriate error messages.
- **Parallel operations**: It supports many clients simultaneously.
- **Safety/security considerations**: The application always exits normally.
- **Software Requirement**: OS- Windows/Mac, Browser- Chrome/Mozilla Firefox
- **Hardware Requirement:** Processor- 32, Memory- 4GB RAM

CHAPTER 3: SYSTEM/REQUIREMENT ANALYSIS

3.1 Overall System Design:

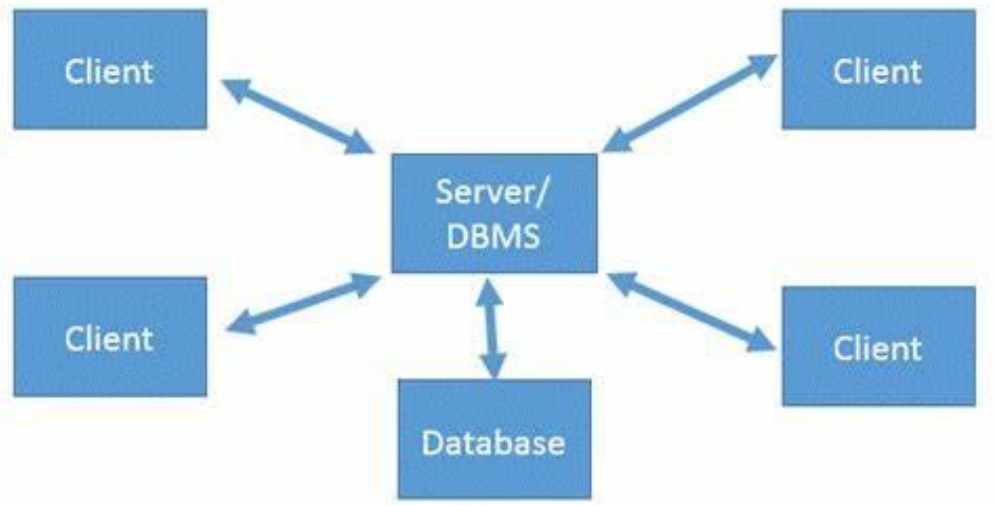

Fig. 3.1: System Design

The first step in the project was having a discussion about what functionalities I want to provide with my work. After getting a mutual understanding of what the end product might look like, I worked on the database design Fig 3.1. I made my own database schema, compared it, and put together a final database schema, with parts of all my works to make what I deemed to be the most functionally accurate database.

The next step was frontend development (using HTML + CSS) and database creation (using MySQL), both of which were done simultaneously. The frontend was made with regular interaction with the backend-in-charge, to make sure it properly reflects the backend and at the same time is user-friendly.

After these were done, PHP was used to put the project together, some final touches were added, and was then hosted onto the internet via a local host using the XAMPP.

3.2 Admin Module:

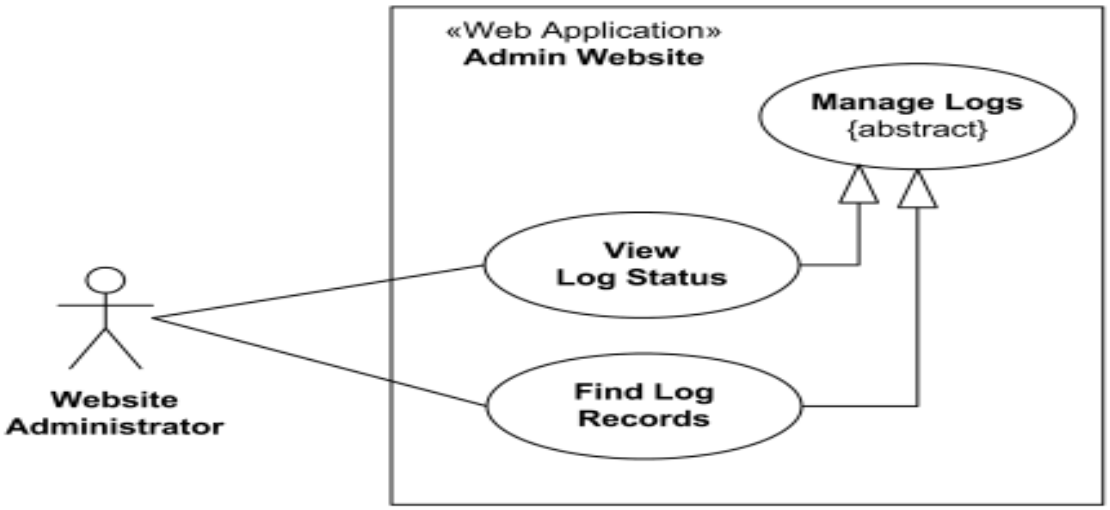

Fig. 3.2: Admin Module Design

As shown in Fig 3.2, In the admin module these are the sections present, Services is where the admin can manage services (Add/Update).In the Add Clients section, the admin can add new clients. Clients List In this section, the admin can update the client details and add services that are provided by the admin.

3.3 Client Module:

As detailed out in Fig 3.3, If the client needs to see the invoices, the invoices section is there for this purpose. In this section, the client can view the invoices of the client and also take the print off of the invoice. Search Invoice In this section, the client can search for his/her invoice with the help of the invoice number. The client can also update his/her profile, change the password and recover the password.

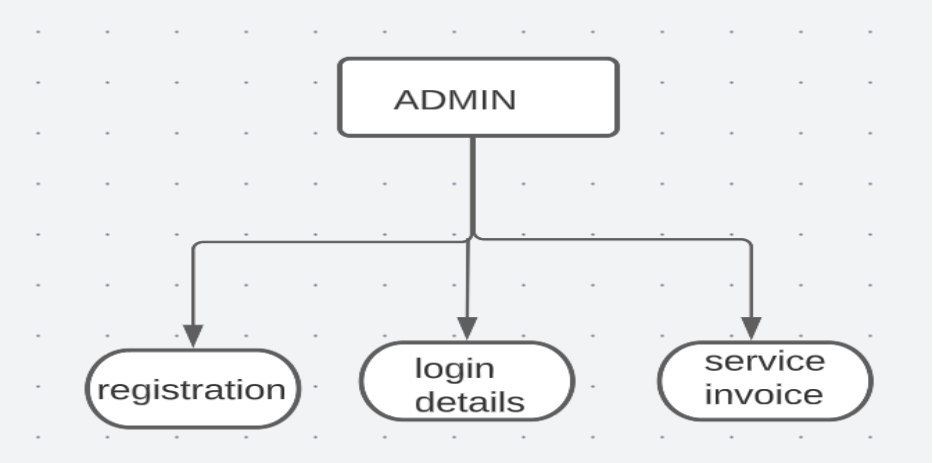

Fig. 3.3: Client Module Design

CHAPTER 4: SYSTEM DESIGN

4.1 Entity Relationship Diagram:

ER Diagram stands for Entity Relationship diagram, also known as ERD is a diagram that displays the relationship of entity sets(objects) stored in a database. In this project database, the ER Diagram is depicted in Fig 4.1.

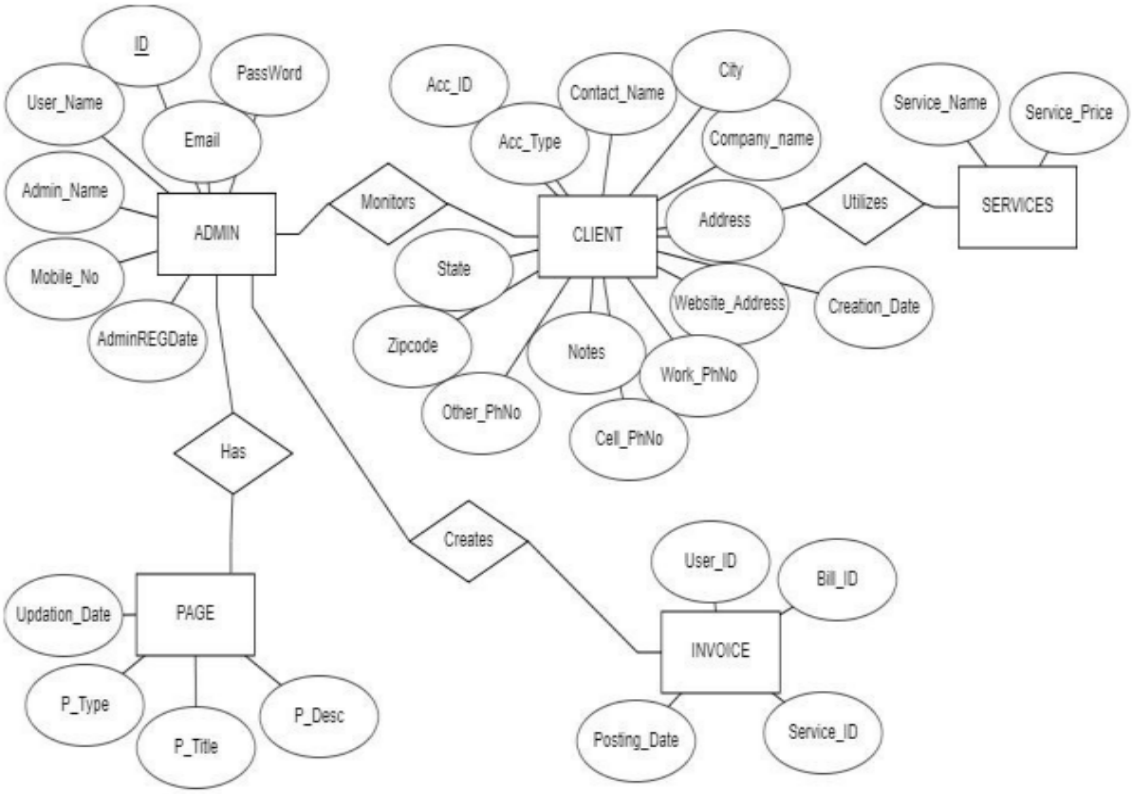

Fig. 4.1: Entity Relationship Diagram

4.1.1 Entity Sets:

- Admin

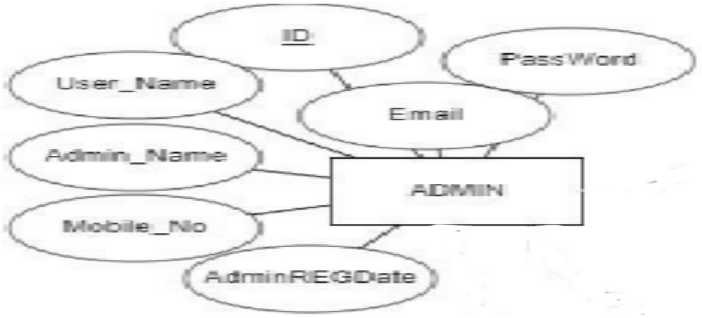

Fig. 4.2: Admin Entity Set

- Client

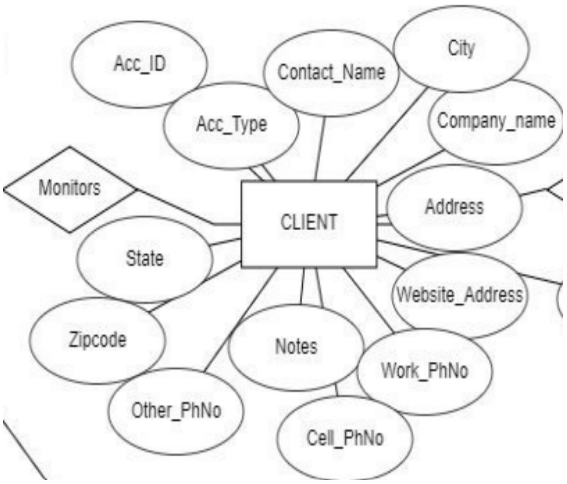

Fig. 4.3: Client Entity Set

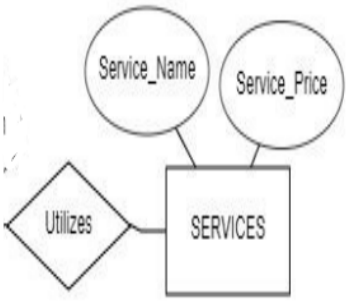

Fig. 4.4: Services Entity Set

- Page

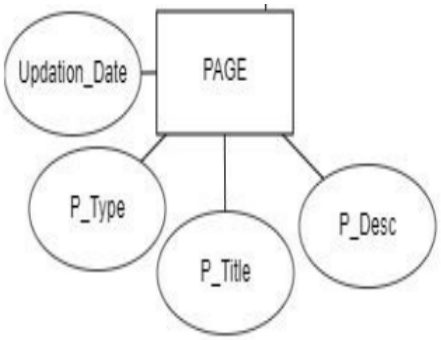

Fig. 4.5: Page Entity Set

- Invoice

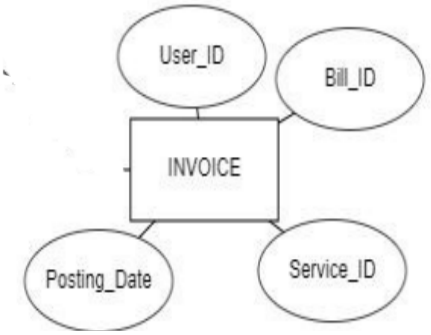

Fig. 4.6: Invoice Entity Set

As shown, there are 5 Entity Sets in our database. Admin Entity Fig 4.2 to store the admin details, Fig 4.3 to store list of clients happening and respective information , Booking Fig 4.4 to keep track of services bookings made, page Fig 4.5 to store details of all pages in the system, Invoice Fig 4.6 to store the invoice details such as price of the service.

4.1.2 Schema Diagram:

A database Schema defines how data is organized with a relational database; this is inclusive of logical constraints such as table names, fields, data types and the relationship between these entities. The Schema developed for the project is :

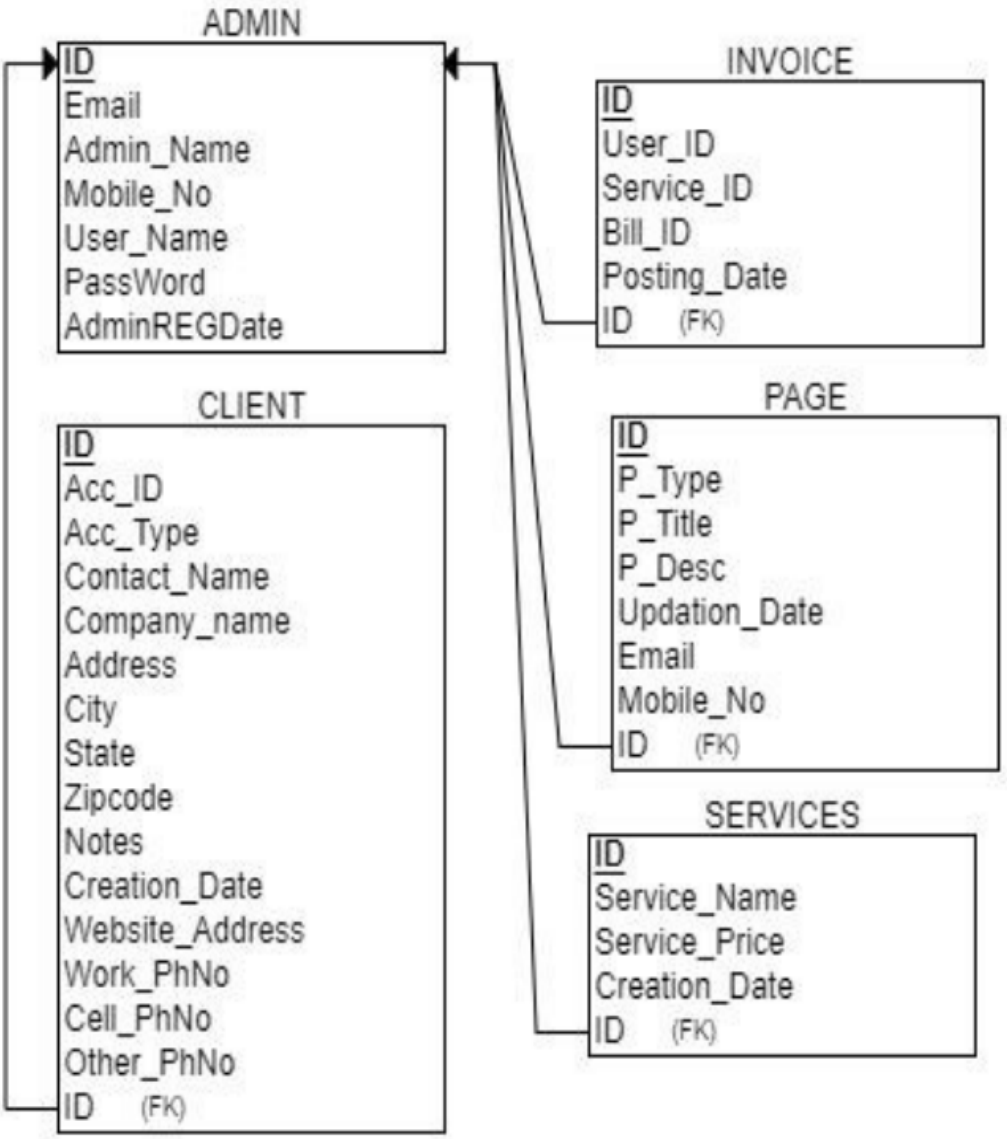

Fig. 4.7: Schema Diagram

CHAPTER 5: IMPLEMENTATION

5.1 Description of Database Tool (Backend)

The Database used was MySQL, MySQL is an open-source relational database management system (RDBMS) that works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups. It is most noted for its quick processing, proven reliability, ease and flexibility of use. It is a stable, reliable and powerful solution with advanced features like: Data Security, High Performance, complete workflow control, flexibility of open source.

The MySQL Database Server is very fast, reliable, scalable, and easy to use. If that is what you are looking for, you should give it a try. MySQL Server can run comfortably on a desktop or laptop, alongside your other applications, web servers, and so on, requiring little or no attention.

The MySQL Database Software is a client/server system that consists of a multithreaded SQL server that supports different back ends, several different client programs and libraries, administrative tools, and a wide range of application programming interfaces (APIs). It also provides MySQL Server as an embedded multithreaded library that you can link into your application to get a smaller, faster, easier-to-manage standalone product.

The MySQL Database Server is very fast, reliable, scalable, and easy to use. If that is what you are looking for, you should give it a try. MySQL Server can run comfortably on a desktop or laptop, alongside your other applications, web servers, and so on, requiring little or no attention.

PHP is a server-side scripting language designed primarily for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1994, the PHP reference implementation is now produced by The PHP Development Team. PHP originally stood for personal home page but it now stands for the recursive acronym PHP: Hypertext Preprocessor.

PHP code may be embedded into HTML or HTML5 code, or it can be used in combination

with various web template systems, web content management systems and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command-line interface (CLI) and can be used to implement standalone graphical applications.

5.2 Description of Implementation (Frontend)

For front-end development, Visual Studio Code was used. Visual Studio Code is a free source-code editor made by Microsoft for Windows, Linux and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git.

Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity).

HTML5:

Hypertext Markup Language revision 5 (HTML5) is markup language for the structure and presentation of World Wide Web contents. HTML5 supports the traditional HTML and XHTML style syntax and other new features in its markup, New APIs, XHTML and error handling**.**

CSS:

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JAVASCRIPT.

JAVASCRIPT:

JavaScript is a programming language that started off simply as a mechanism to add logic and interactivity to an otherwise static Netscape browser.

MySQL:

MySQL is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius' daughter, and "SQL", the abbreviation for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation.

CHAPTER 6: TESTING

6.1 Component Tests:

Component testing is undertaken when a module has been created and has been successfully reviewed.

Each component of the software was tested individually from the Login Page Table 6.1 for Admin and the Admin functions Page Table 6.2. The Login Test was Authenticated for an admin. The client Page Test consisted of adding new services and verifying whether the details of the services and invoices were displayed.

Table 6.1: Login-Page Test

TEST UNIT	TEST CASE	RESULT
Login Screen	Providing a registered user id and password	The system takes the user to their respective Dashboards.
Login Screen	Providing login details that do not match registered credentials	The system does not grant access to the user/admin and shows an error message

Table 6.2: Donate and Procure/admin functions

TEST UNIT	TEST CASE	RESULT
client list /services	Click on tiles to perform search/ Add.	The user is displayed with selected data & availed to register a service.
Admin Home	Admin Click on Add/Update/ Remove options	Admin corresponding providing services opens up.

6.2 System Test:

The whole system testing was done to evaluate the efficient working of software. All the bugs that were found were sorted out.

The Project went through two levels of testing:

6.2.1 : Unit Testing:

Unit Testing is a type of software testing where individual units or components of a software are tested. The purpose is to validate that each unit of the software code performs as expected. Unit Testing is done during the development (coding phase) of an application by the developers.

In the website the client.php and admin.php were the two main components and were tested individually.

6.2.2 :Integration Testing:

Integration Testing is defined as a type of testing where software modules are integrated logically and tested as a group. A typical software project consists of multiple software modules, coded by different programmers. The purpose of this level of testing is to expose defects in the interaction between these software modules when they are integrated.

The whole page was integrated and checked against dynamic changes to the website, i.e. the client and admin requested by services were validated and changes were made apparent in the respective front-end pages of the website.

Table 6.3: Integration Testing

TEST UNIT	TEST CASE	RESULT
Sign Up	Click on the Sign Up button	Takes user to the registration page (New user Registration Form)
Login	Click on login button	The system takes the user to their dashboard And admin dashboard
Responsiv e Design	Resize window	System design, including navbar, sizing, styling,changes
Navbar Button	Click on Userhome/Home	The tab userhome/Admin Home Opens
Add a entity(client,admi n)	Fill Form and click on add button	New User added and success message displays, if failure error message displayed
search saved	Saved data button is clicked	Previously Stored entries are successfully displayed and sorted, user can search key words.
Add Transactions	Fill form for transaction	Admin corresponding providing services opens up.

CHAPTER 7: INTERPRETATION OF RESULTS

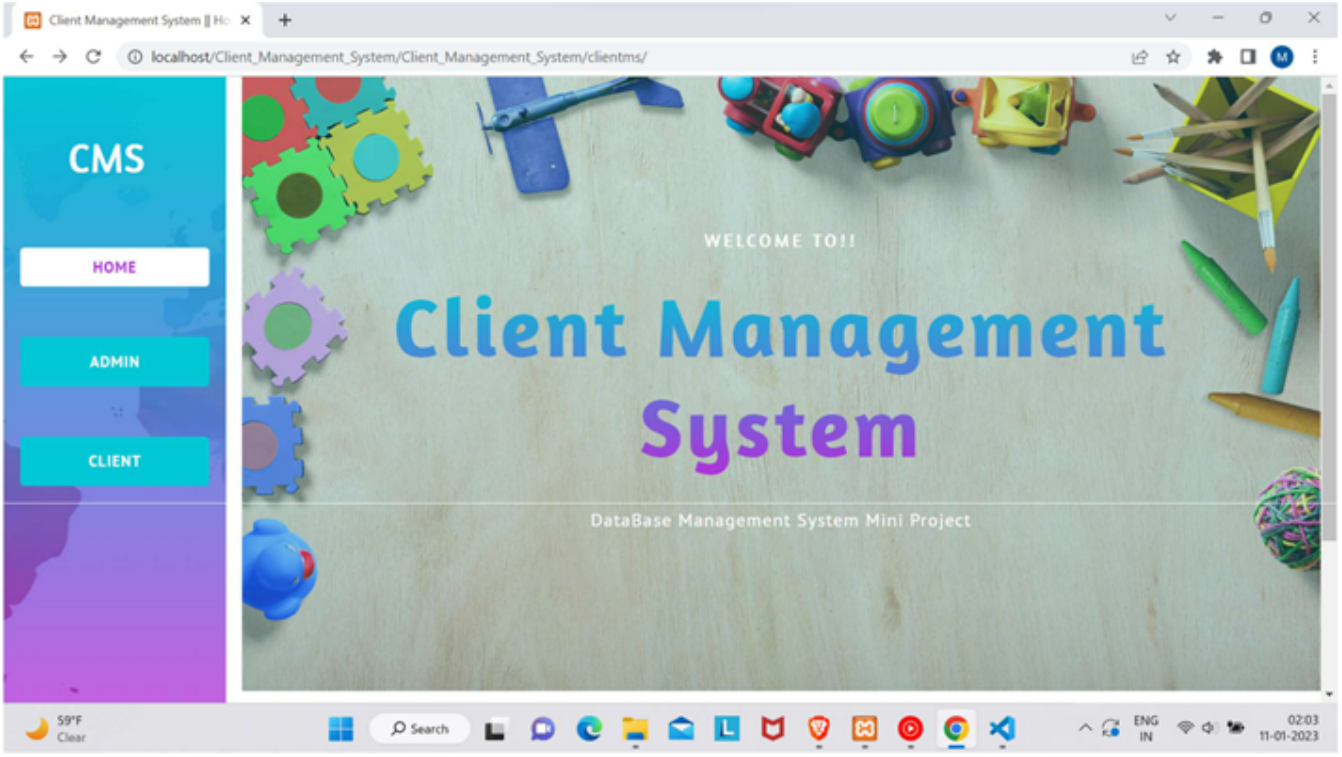

Fig. 7.1 : Home Screen

The home page of the website which shows a navigation to other parts of the website as shown in Fig 7.1.

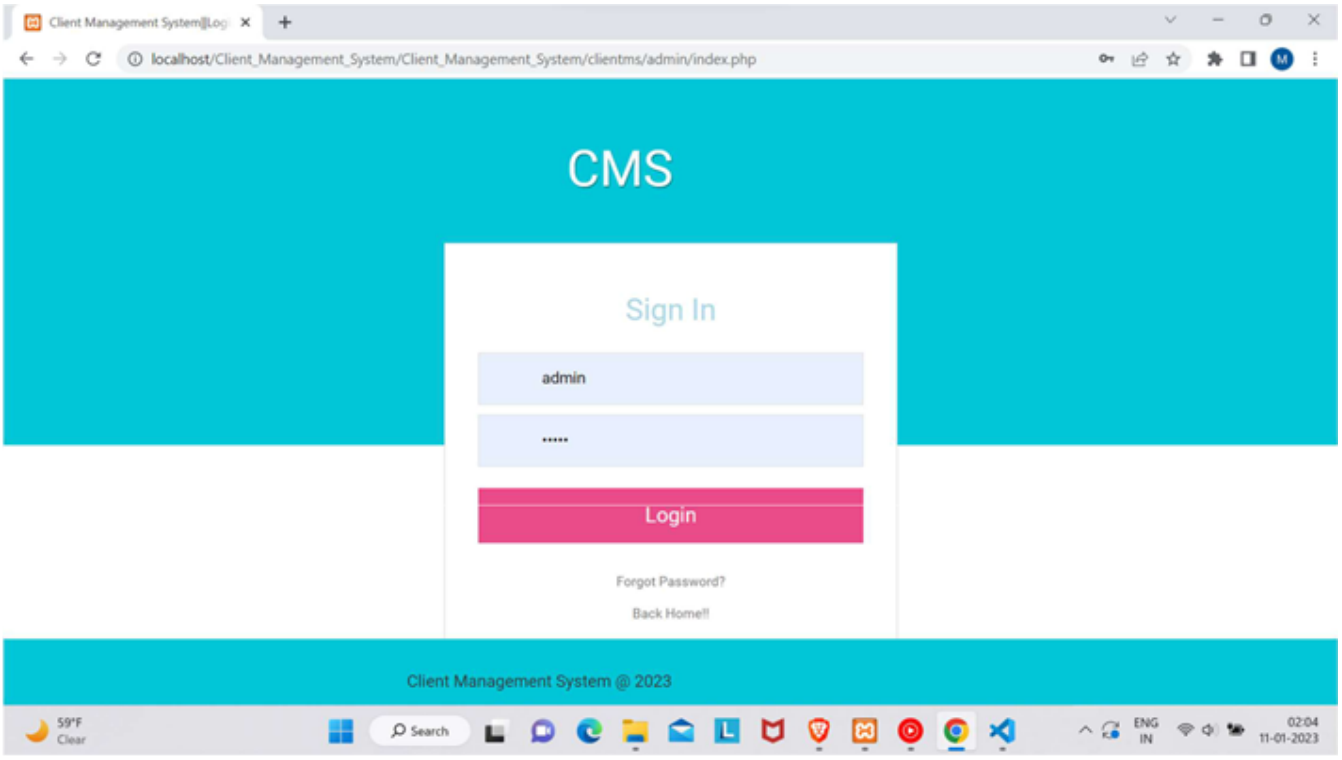

Fig 7.2 : Admin Login

All the upcoming and availed services are displayed in later section of page Fig 7.2.

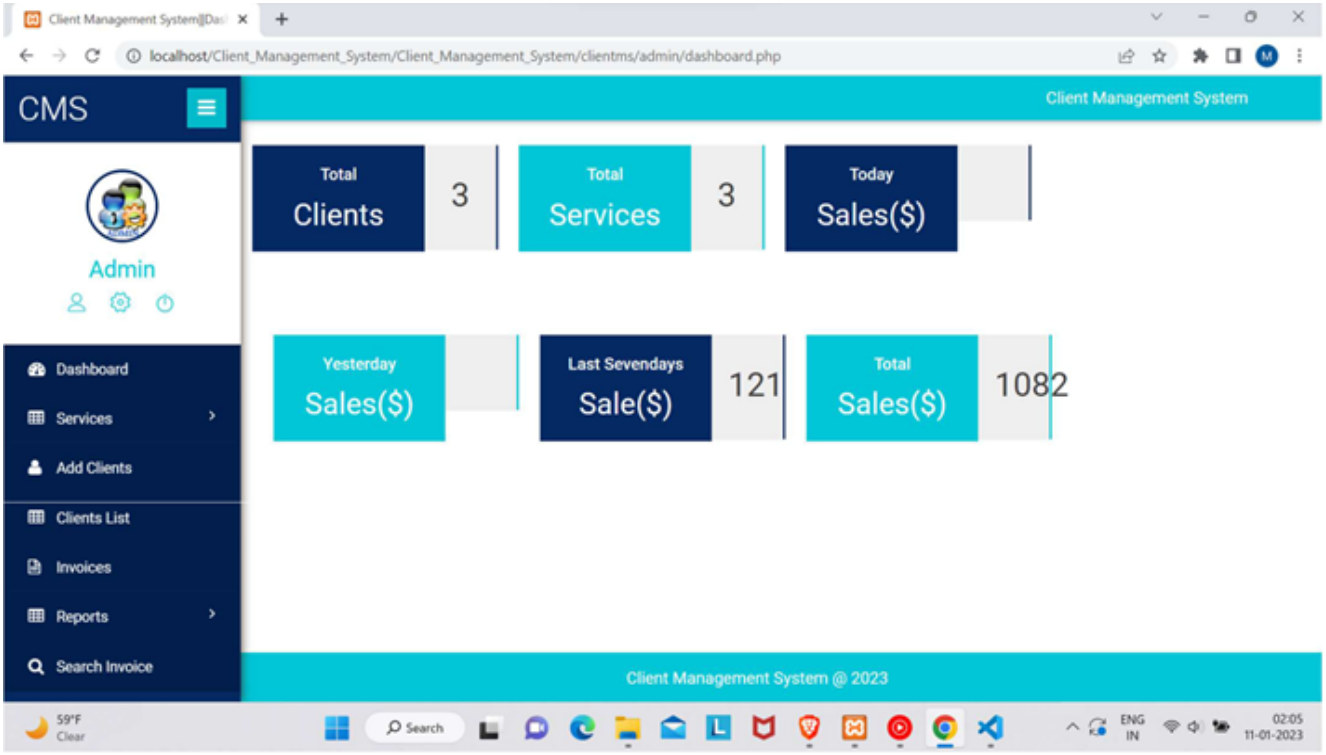

Fig 7.3 : Admin Dashboard

All the registered services and sales are displayed page Fig 7.3, Client can see the Invoice of the availed service.

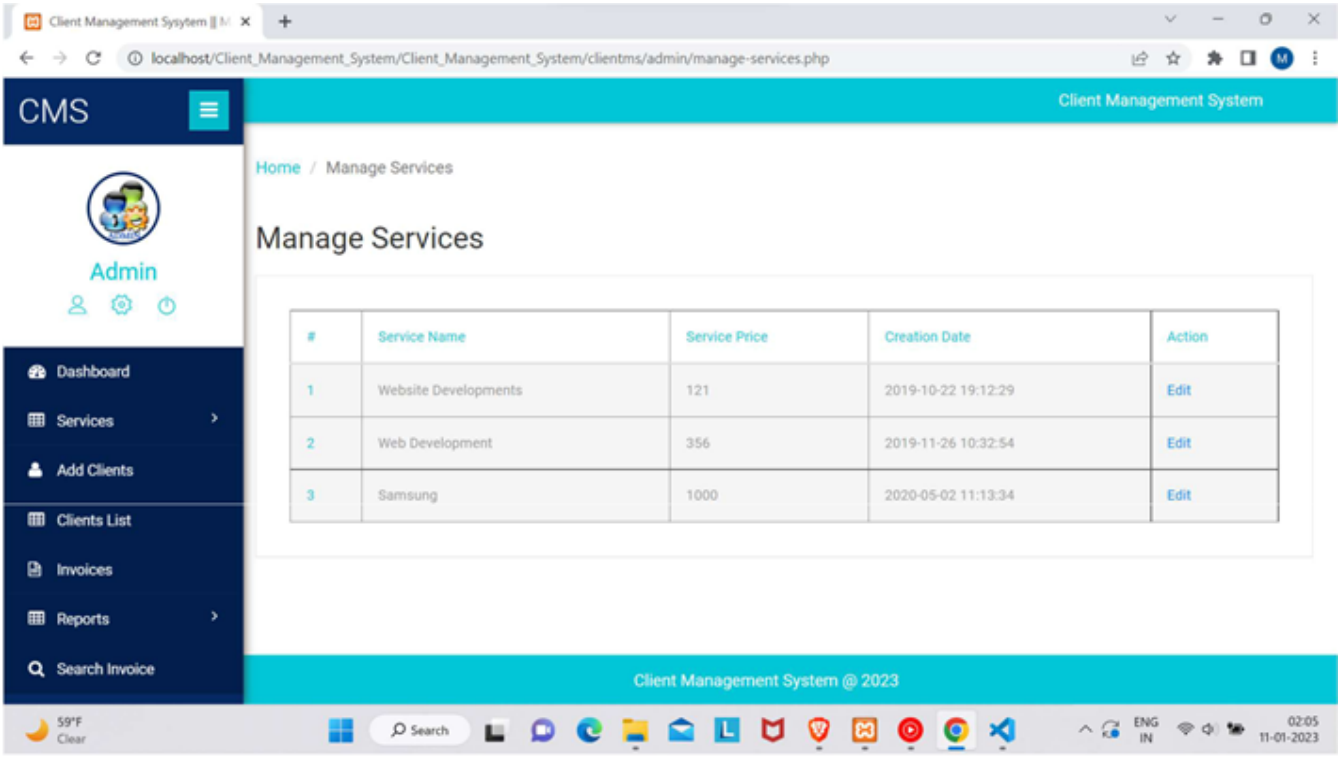

Fig 7.4 : Services

The Admin can manage the services of the client in this tab depicted in Fig 7.4.

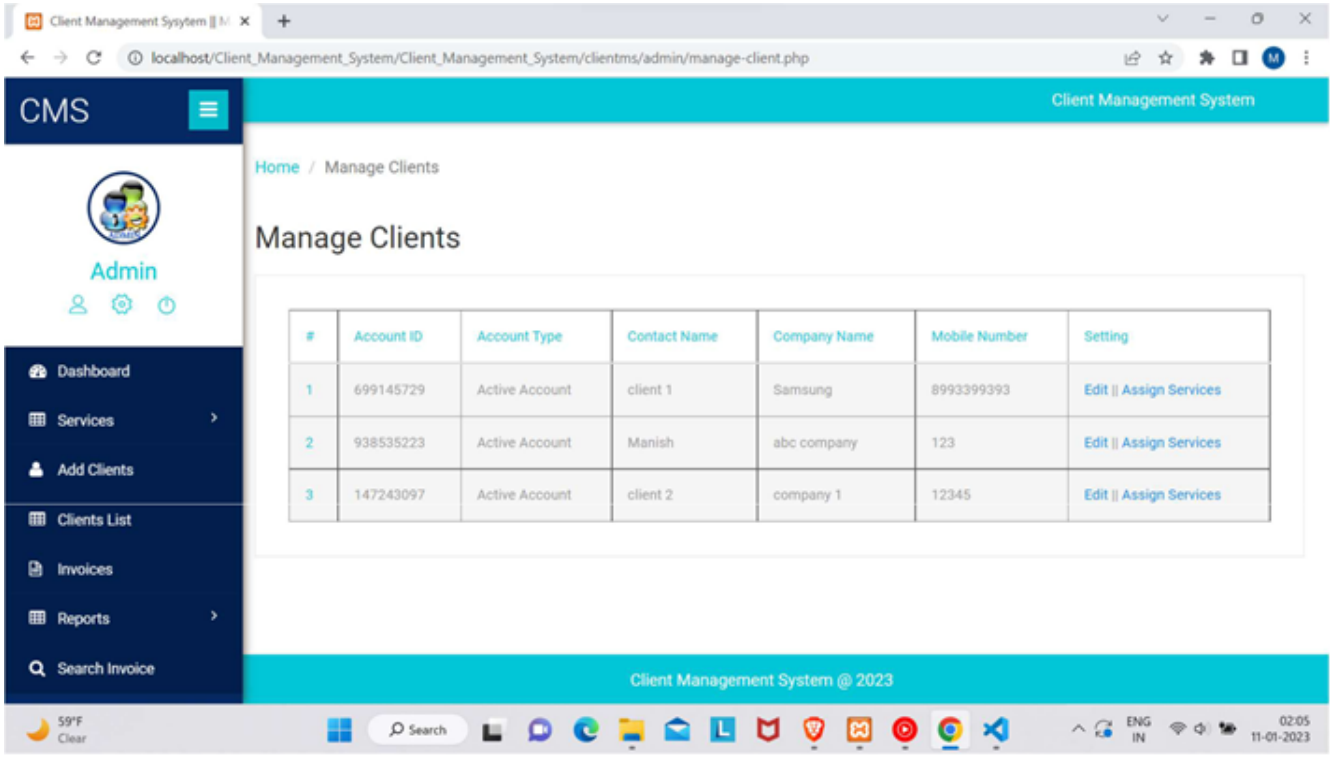

Fig 7.5 : Client management

Admin can Verify Fig 7.5 , where it can easily manage its clients and services.

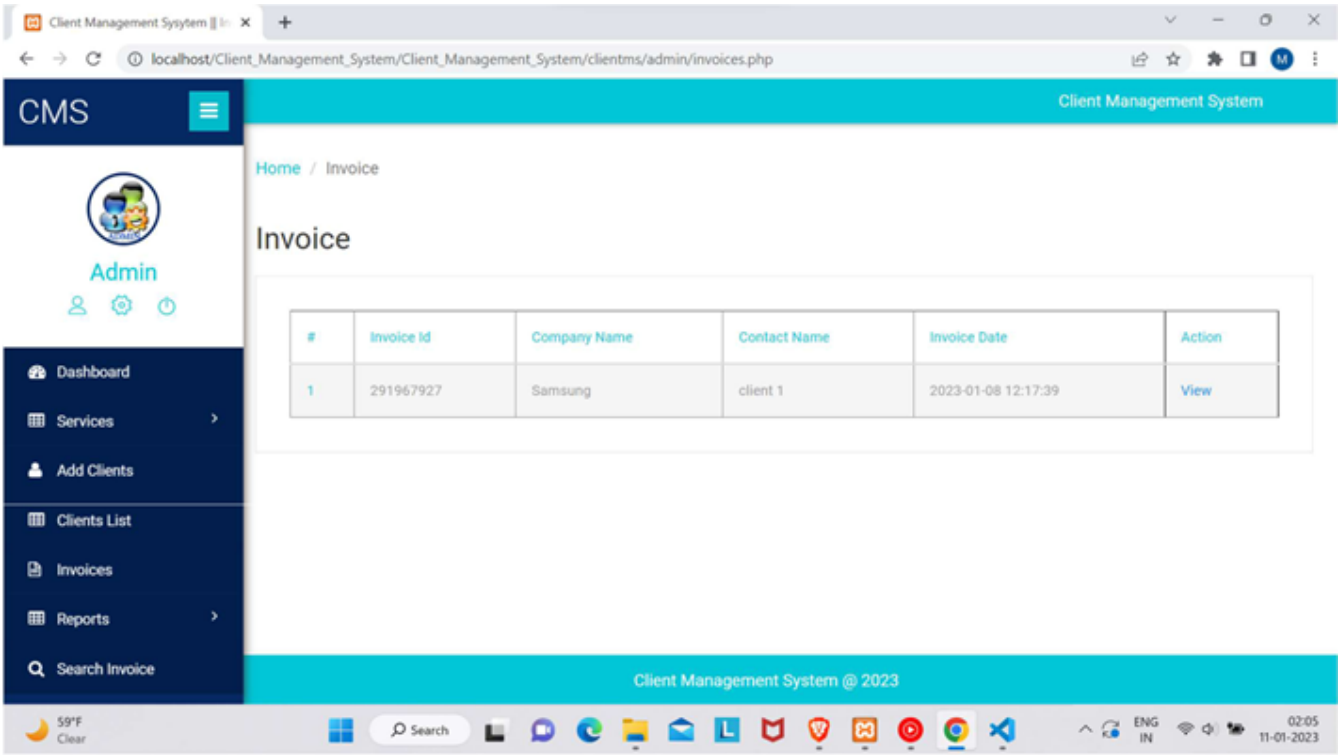

Fig 7.6 : invoices

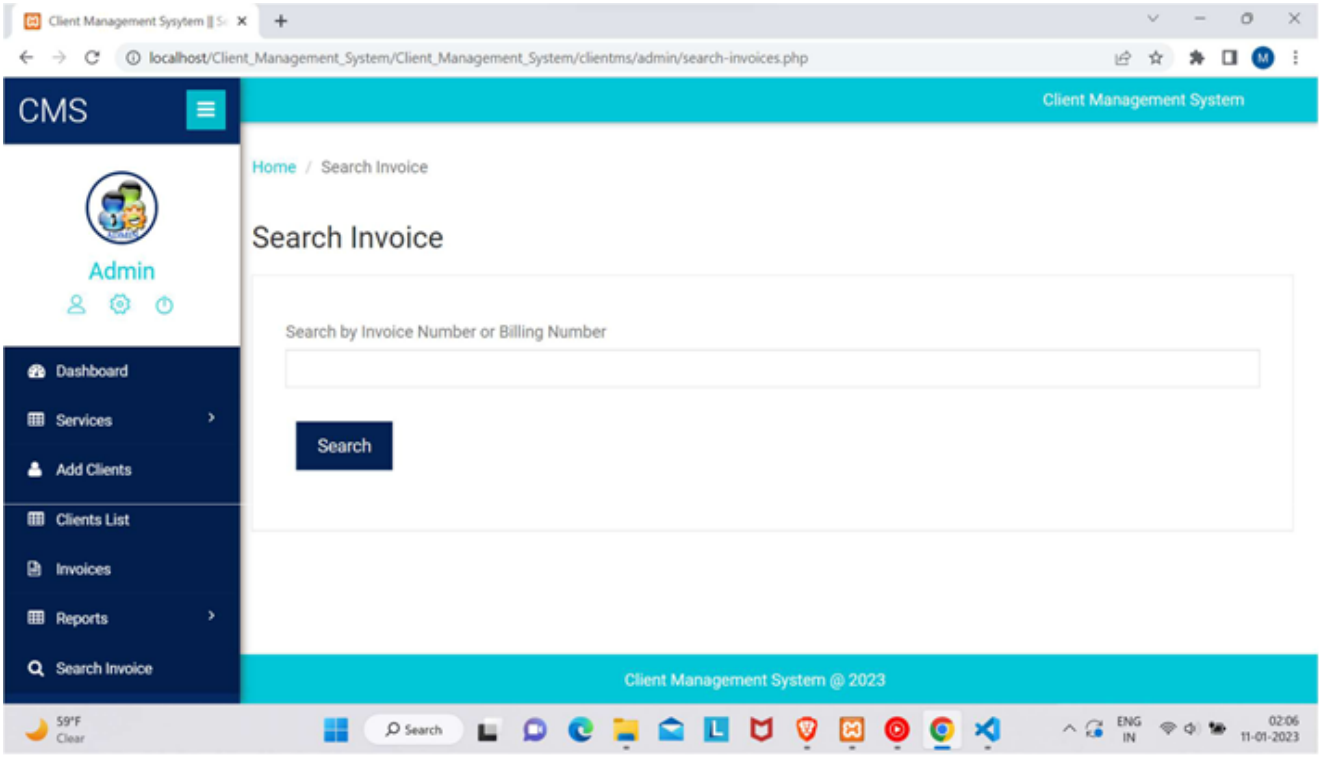

Fig 7.7 : invoice search

Admin can See the invoice for clients in the dashboard Fig 7.7.

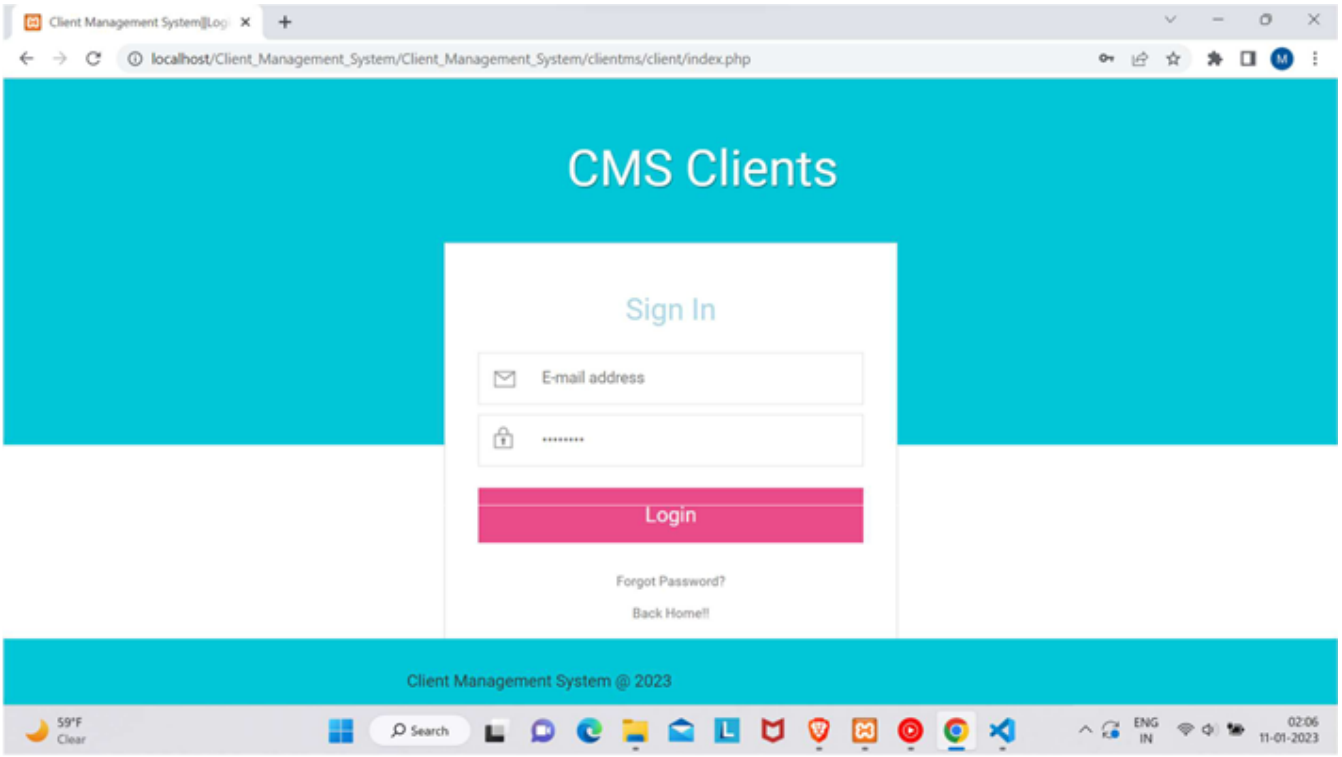

Fig 7.8 : Client login

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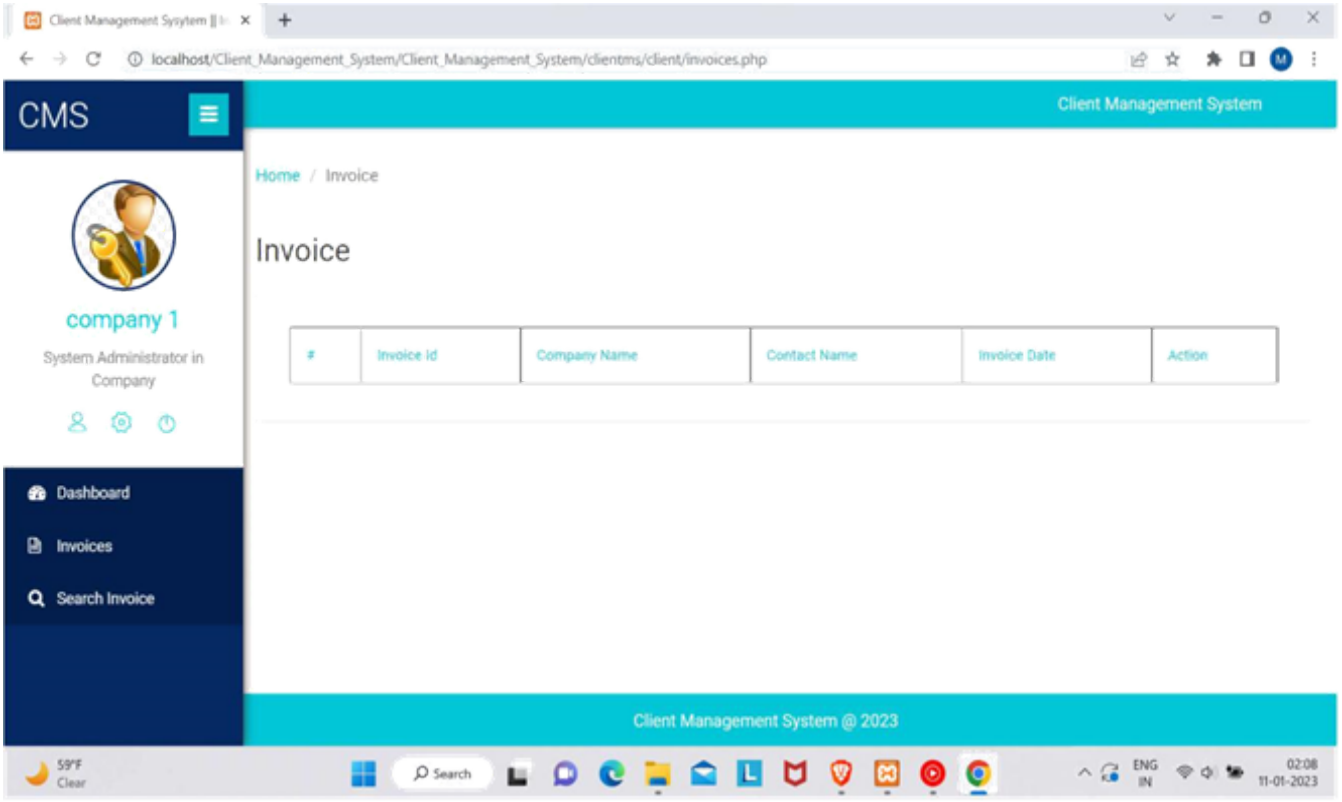

Fig 7.9: Client Dashboard

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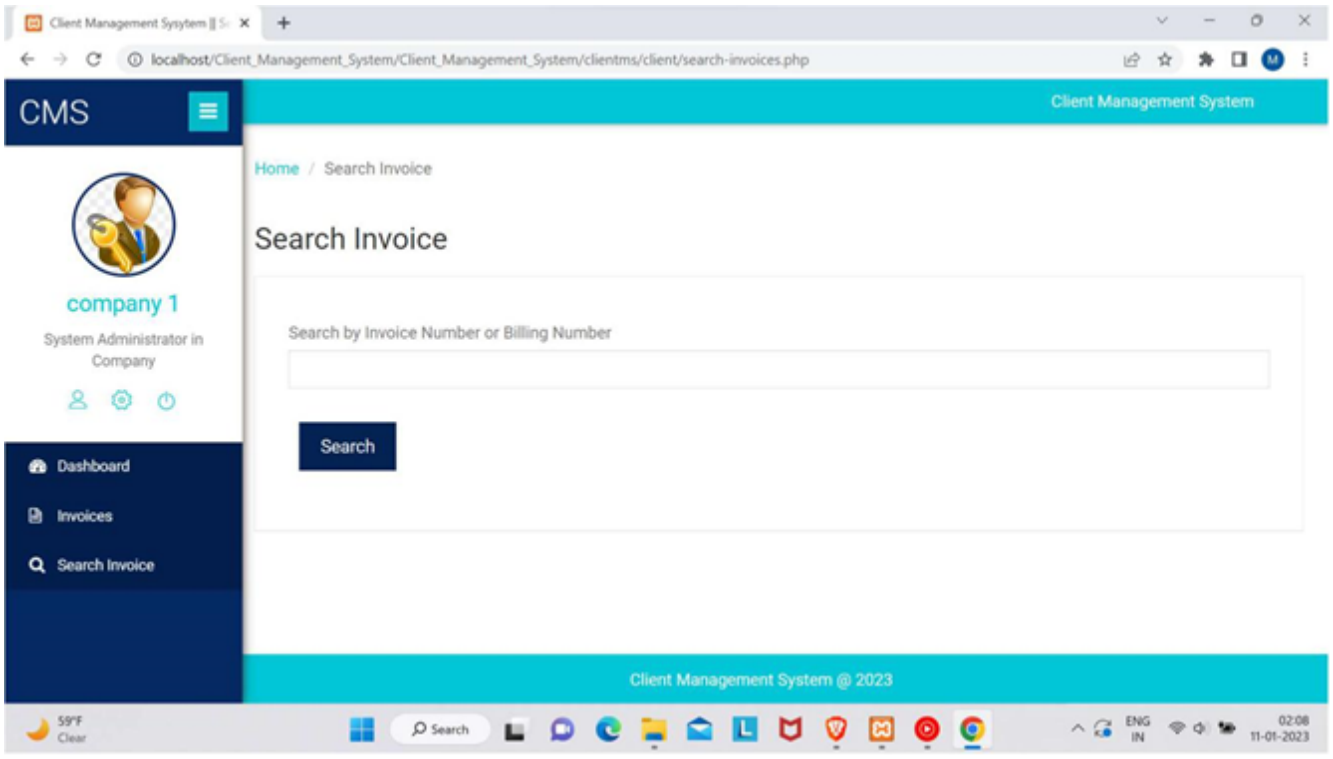

Fig 7.10: invoice search

CONCLUSION

This client management application provides the facility to provide service anywhere and anytime. I save time since the client does need to wait for results. So the admin/client can access data seamlessly. All clients get extra services in plenty of fields such as IT, management, etc. The administrator has the privilege to put as many as services in any category given in the application. The client can register, log in, and take the service of any given company with his/her specific id, and can see the reports as well.

In near Future, we will try to update many features on our website which can be used by any organization in view of the growing needs of technology.

GOALS ACHIEVED

- ✔ Reduced entry work.
- ✔ Easy retrieval of information.
- ✔ Reduced errors due to human intervention.
- ✔ User friendly screens to enter the data.
- ✔ Portable and flexible for further enhancement
- ✔ Web enabled.
- ✔ Fast finding of information request

REFERENCES

1. Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th Edition, 2017, Pearson.

2. Database management systems, Ramakrishnan, and Gehrke, 3rd Edition, 2014, McGraw Hill.

3. Learning PHP, MySQL & JavaScript: A Step-by-Step Guide to Creating Dynamic Websites, Robin Nixon, 6th Edition.

4. PHP and MySQL Web Development, Luke Welling, Laura Thomsan, 5th Edition.

5. Database management systems, Ramakrishnan, and Gehrke, 3rd Edition, 2014, McGraw Hill.

6. Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th Edition, 2017

Programme Outcomes

The graduates will have an ability to

PO1 **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4 **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6 **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.