EFFICIENT DATA RETRIEVAL

A SUMMER INTERNSHIP REPORT

Submitted by

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200410116021

In Partial fulfillment for the award of the degree Of

BACHELOR OF ENGINEERING

in

Information Technology

Sardar Vallabhbhai Patel Institute of Technology, VASAD.

Gujarat Technological University, Ahmedabad

August, 2023

SARDAR VALLABHBHAI PATEL INSTITUTE OF TECHNOLOGY, VASAD.

INFORMATION TECHNOLOGY ENGINEERING

2023-24

CERTIFICATE

Date: ___/___/2023

This is to certify that the Summer Internship Work entitled "EFFICIENT DATA RETRIEVAL" has been carried out by PONKIYA HEPIN RAMJIBHAI (200410116021) under my guidance in fulfillment of the degree of Bachelor of Engineering in Information Technology (7th Semester) of Gujarat Technological University, Ahmedabad during the academic year 2022-23.

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Date: 12th August, 2023

Ponkiya Hepin Ramjibhai
Ahmedabad

C E R T I F I C A T E

This is to certify that **Hepin Ponkiya** has completed the project on "**Efficient Data Retrieval**" under the mentorship of **Mr. Nirav Barot** with **Outamation Technologies Pvt. Ltd.** from **28th July, 2023** to **12th August, 2023.** We found his conduct good during his internship with us.

We wish him the very best in his future endeavors.

Yours sincerely,

Authorized Signatory,

Ravi Kumar Patel

Chief Solutions Architect

Outamation Technologies Pvt. Ltd.

ACKNOWLEDGEMENT

I am incredibly grateful to my internship supervisor, Nirav Barot, for their invaluable guidance and support throughout my internship. From the moment I started, Nirav Barot took the time to get to know me and understand my goals for the internship. They provided me with clear direction and expectations, and were always available to answer my questions and provide valuable feedback.

Throughout the internship, Nirav Barot provided me with invaluable insights and advice that helped me to grow as a professional. Their constructive feedback helped me to improve my skills and approach to my tasks, and their encouragement kept me motivated and focused. I am deeply thankful for Nirav Barot's time and effort, and for their commitment to my success.

Hepin Ponkiya (200410116021)

ABSTRACT

In the 15 days' summer training I had studied about WEB DEVELOPMENT Front and Backend. I chose this training because it helps to develop dynamic web pages, and it is useful for my career in Information technology Industry. Under the I learned various new techniques of building websites from basics to advanced which is the very foundation of big problems solved at various levels in the Industry. Apart from that I learned to change the functionalities of complex web pages & make them more efficient by managing lines of code & using the latest technologies. at the end I developed a project called Efficient Data Retrieval A node.js application which helped me solidify my understanding of all the latest tools and techniques learnt .

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1: INTRODUCTION

1.1 Background and Purpose:

The 15-day online internship on "Efficient Data Retrieval" was designed to equip participants with practical skills in implementing efficient data retrieval techniques using a stack of technologies including JavaScript, MongoDB, HTML, CSS, and Node.js.

1.2 Objectives:

The primary objectives of the internship were to gain hands-on experience in developing web applications, learning about database management using MongoDB, and applying efficient data retrieval techniques using JavaScript and Node.js.

1.3 Technologies Used:

The internship revolved around technologies including JavaScript for scripting, MongoDB as a NoSQL database, HTML and CSS for front-end development, and Node.js for server-side scripting and backend development.

2: TOOLS AND TECHNOLOGIES USED

2.1: HARDWARE REQUIREMENTS

- Pentium-IV(Processor) Or any processor.
- 256 MB Ram OR Above
- 512 KB Cache Memory
- Hard disk 10 GB or above
- Microsoft Compatible 101 or more Key Board

2.2 : SOFTWARE REQUIREMENTS

- Operating System : Windows 95/98/XP with MS-office or above.
- Programming languages : MongoDB, JavaScript.
- IDE : VS Code

2.3 : JAVASCRIPT

JavaScript often abbreviated as JS, is a programming language that conforms to the ECMA Script specification. JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype based, object-orientation, and first-class functions.

Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it for client-side page behavior, and all major web browsers have a dedicated JavaScript engine to execute it.As a multi-paradigm language, JavaScript supports event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard

data structures, and the document object model (DOM). However, the language itself does not include any input/output(I/O), such as networking, storage, or graphics facilities, as the host environment (usually a web browser) provides those APIs.

2.4 : MongoDB

MongoDB is a flexible and scalable NoSQL database system that stores data in JSON-like documents. It's known for its dynamic schema, which allows data structure changes without downtime. It supports replication for data redundancy and sharding for horizontal scalability. MongoDB is used in various applications due to its versatility and ability to handle diverse data types and high loads.

2.5 : VS CODE

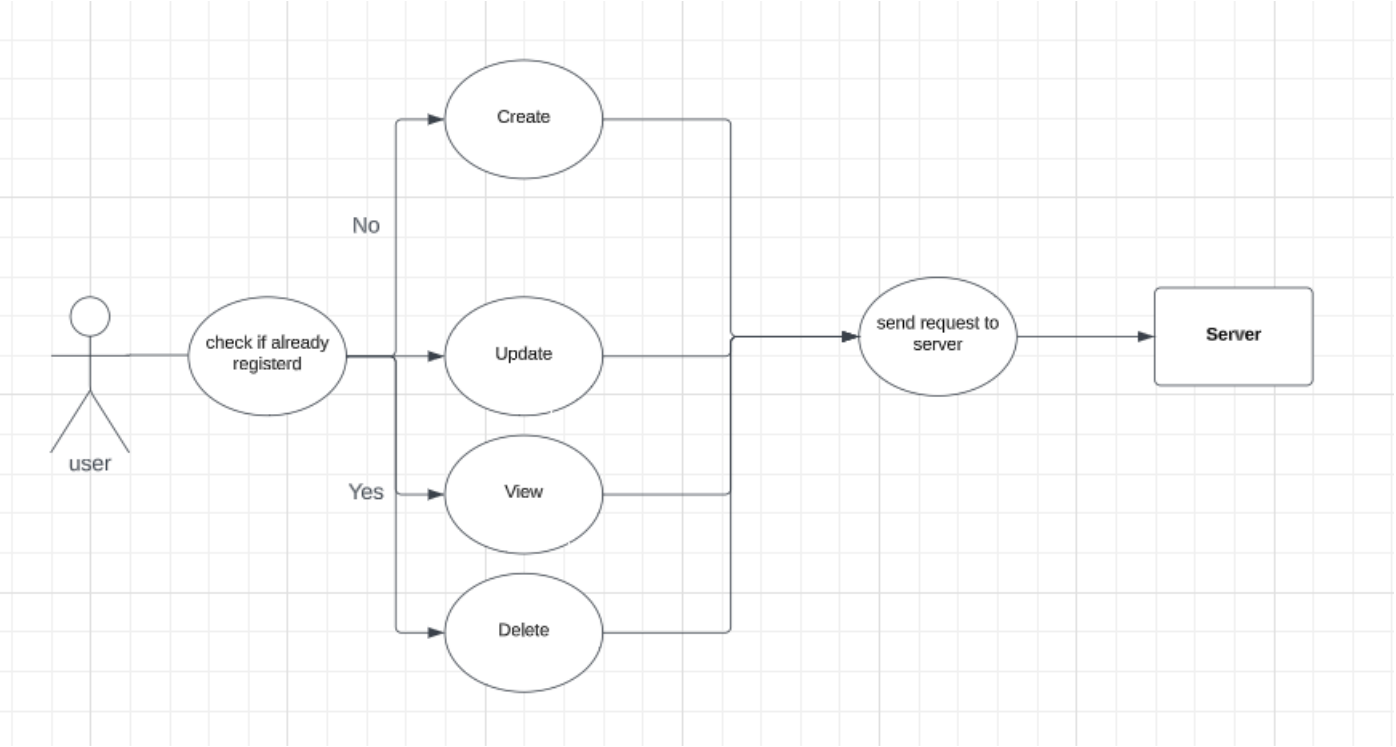
Visual Studio Code is a source-code editor developed by Microsoft for Windows, Linux and macOS.It includes support for debugging, embedded Git control and GitHub, syntax highlighting, intelligent code completion, snippets, and code refactoring. It is highly customizable, allowing users to change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality. The source code is free and open source and released under the permissive MIT License. The compiled binaries are freeware and free for private or commercial use.

Visual Studio Code is based on Electron, a framework which is used to deploy Node.js applications for the desktop running on the Blink layout engine. Although it uses the Electron framework, the software does not use Atom and instead employs the same editor component (codenamed "Monaco") used in Azure DevOps (formerly called Visual Studio Online and Visual Studio Team Services).

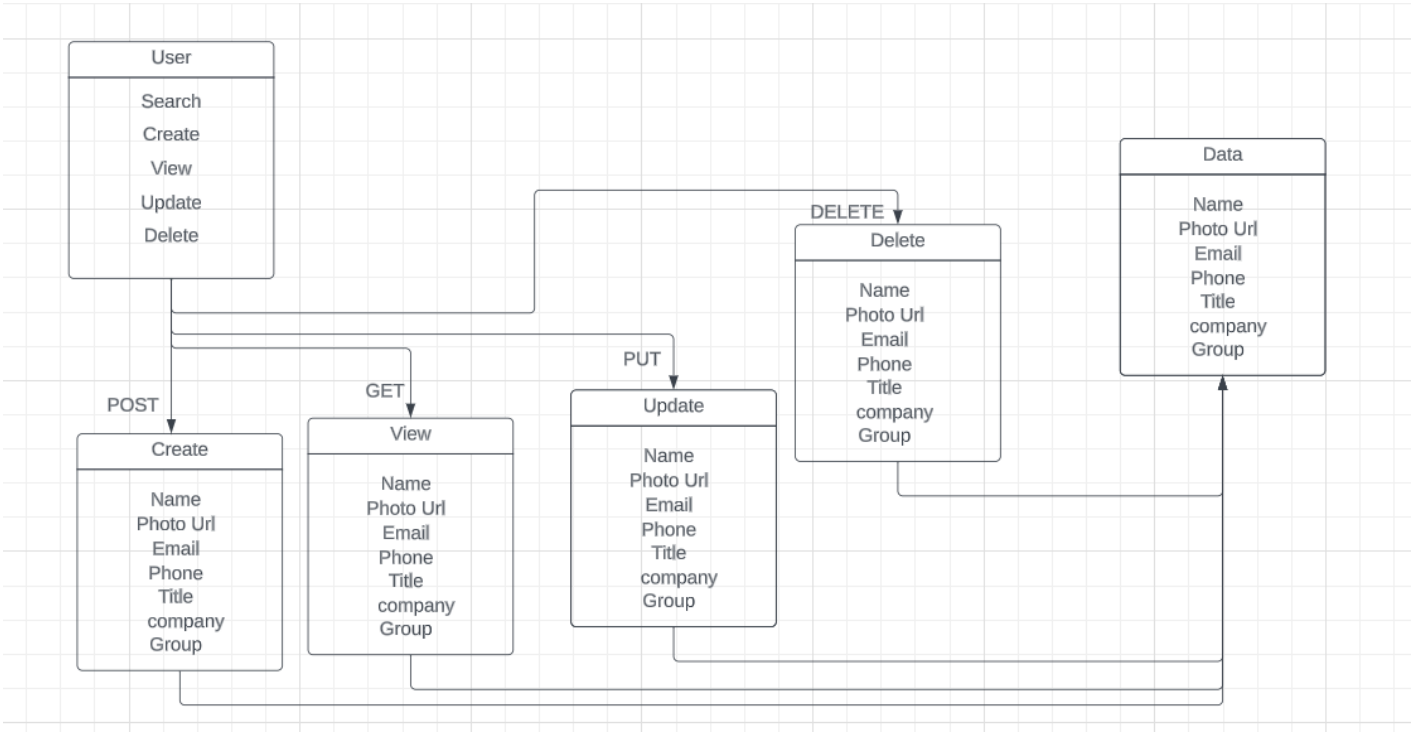
In the Stack Overflow 2019 Developer Survey, Visual Studio Code was ranked the most popular developer environment tool, with 50.7% of 87,317 respondents claiming to use it.

3: SYSTEM DESIGN

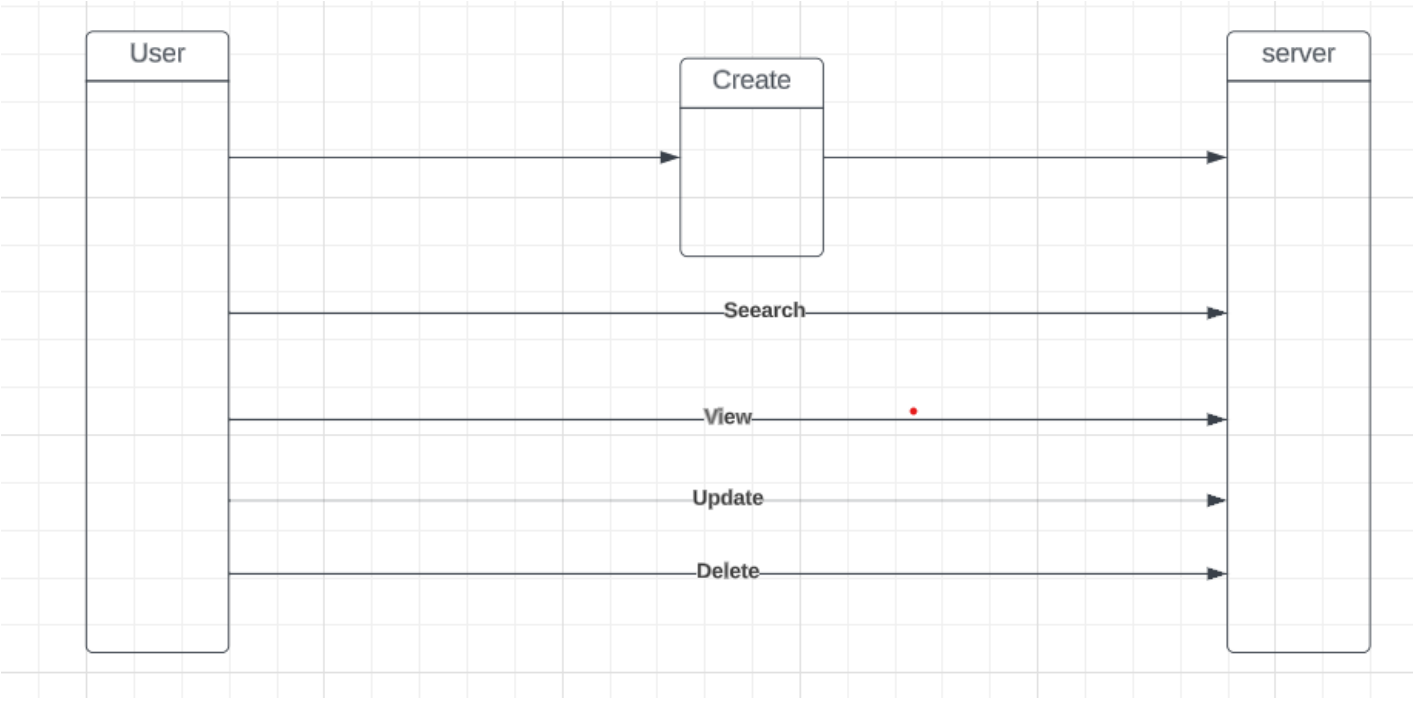
3.1 Use Case Diagram



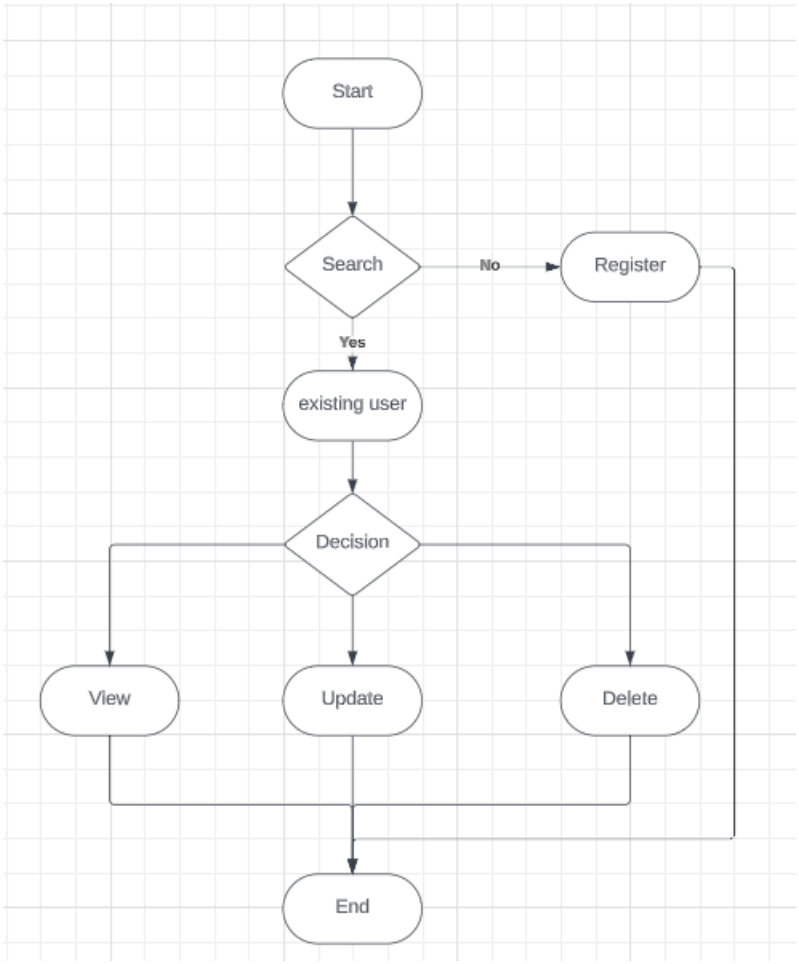
3.2 Class Diagram



3.3 Sequence Diagram



3.4 Activity Diagram



4: TECHNICAL CONTENTS

1) Getting hold on development basics

The course covered various basic Topics like how one should and can follow the path of being a full stack developer from basics to advanced level . A lot of problems were solved based on basic knowledge & it's implementation rather than just memorizing stuff .

2) HTML & CSS

This includes covering commonly used HTML tags. We can refer to MDN Docs as well quite early in the course as a reference material. Overall this is a small section which gets completed soon. We got skimmed through CSS section. There is lot of ground to cover in CSS. We got to learn about Specificity and Cascade, Selectors, Fonts etc. There were 2 projects to give a practical experience in writing CSS.

3) Bootstrap

This is a huge section where we learn about various Bootstrap(latest version) components such as navs, grids, forms. There is a image gallery project using Bootstrap which was cool.

4) JavaScript

JS lessons were very good. Syntax, Control Flow, Functions, Arrays, Object Basics were taught in great detail. (Almost 8 hrs content in 40 hrs course). This is mainly because whole backend section rests on JS foundations taught in these sections. There are various tiny coding exercises and quiz to hammer home the JS concepts.

5) DOM Manipulation

This was very good and most interesting part of the course. DOM manipulation was taught using vannila JS with methods such as querySelector, querySelectorALL, addEventListner etc.

6) NODE

Introduction to REPL, quick exercises, npm, installing packages etc. npm faker exercise was fun.

7) Express

This begins with a simple express app, package json file, route params, basic exercise. Colt uses 'ejs' or embedded JavaScript to render view templates.

8) Database (MongoDB and Mongoose)

We got a brief introduction to MongoDB, Mongo Shell and Mongoose connection etc. Further about how to integrate mongdb with yelpcamp (Data Persistence) to create various campgrounds, users, comments etc.

5: INTERNSHIP CONTENTS

1) Basics & Logic building

- Path to be a full stack developer
- Installation & basics
- VS Code local environment set up

2) Front End

- HTML
- CSS
- JavaScript + jQuery
- Bootstrap

3) Advanced Front End

- SemanticUI
- Advanced DOM Manipulation

4) Back end

- NodeJS
- NPM
- Express JS
- MongoDB

5) Advanced Back end

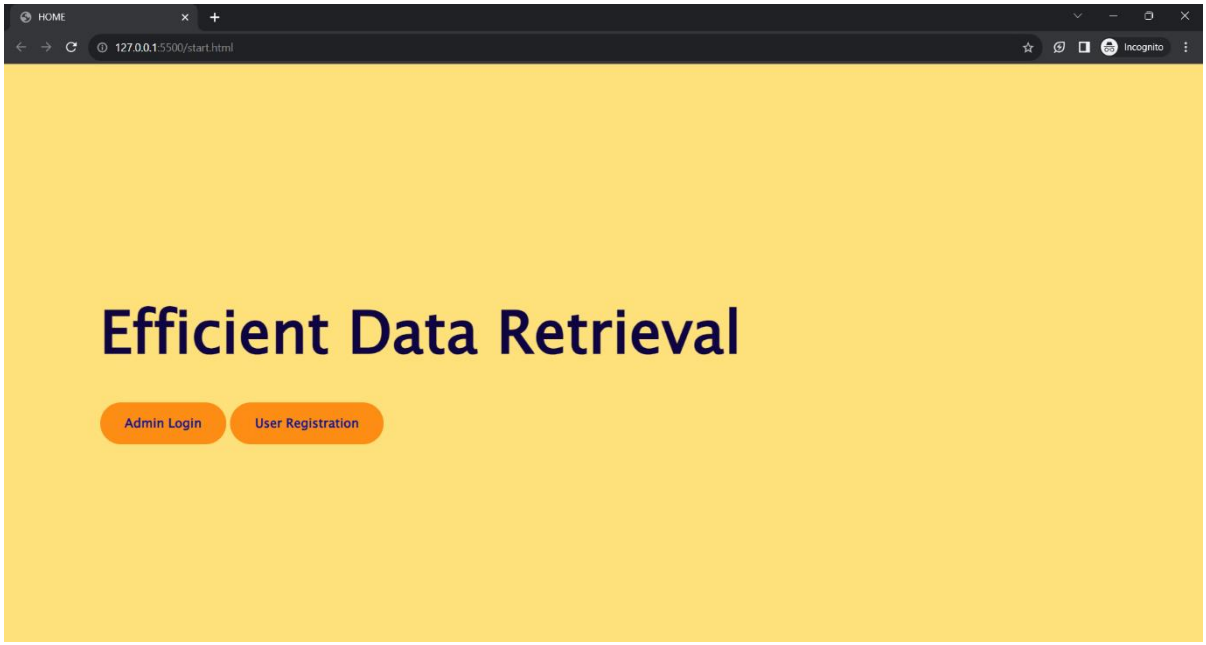
- REST API
- Database Associations
- Authentication
- Authorization

6) Main Project concepts

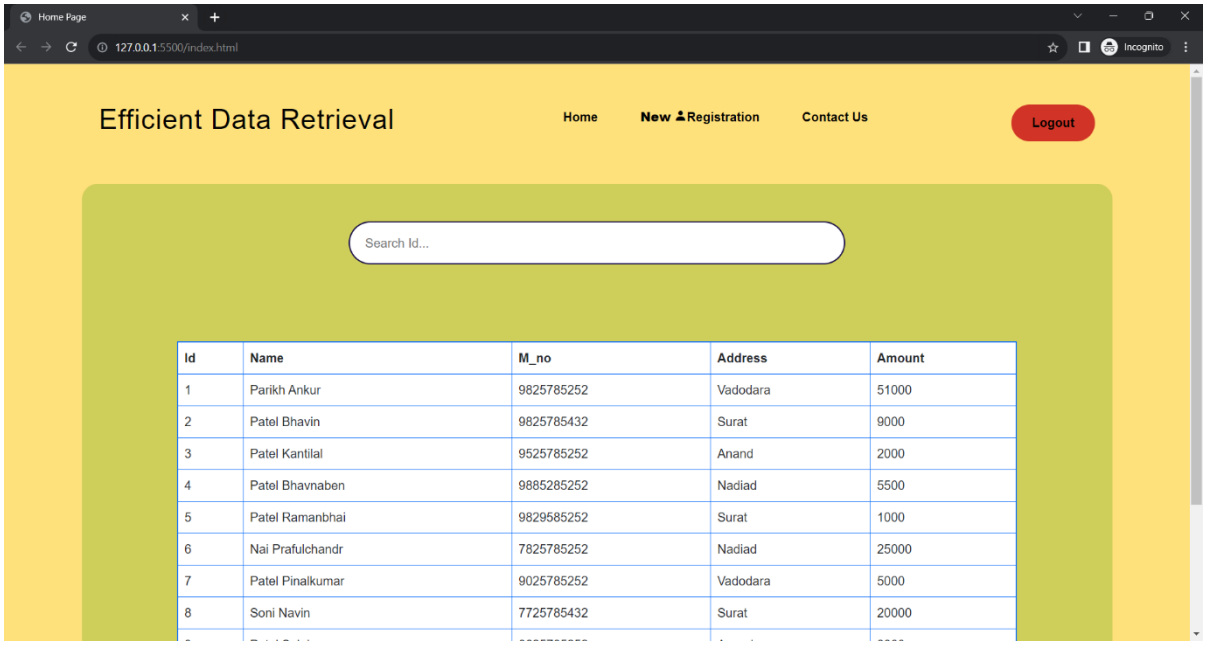
- Efficient Data Retrieval
- Maintenance

6: USER INTERFACE

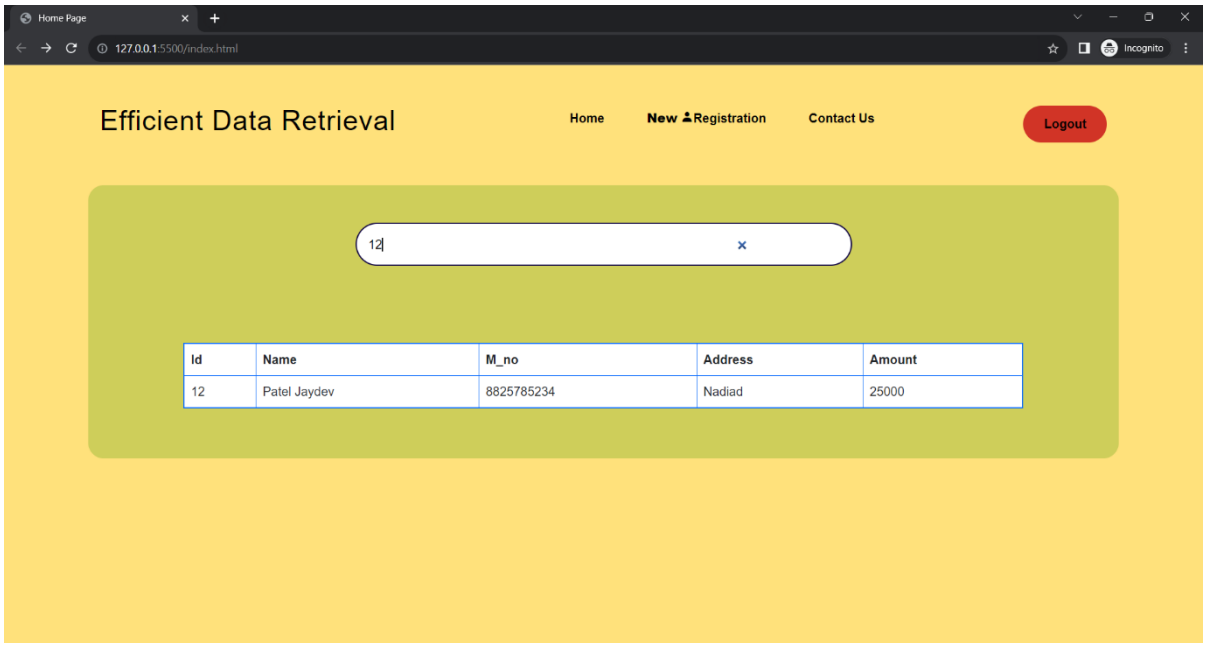
Start Page :-



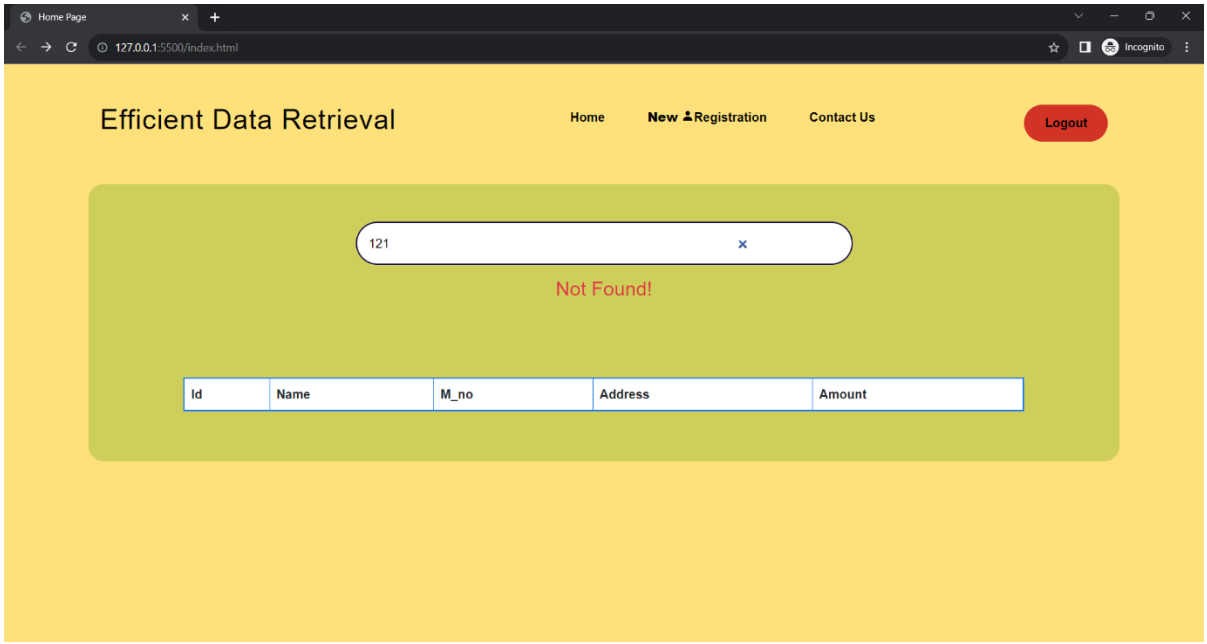
Home Page :-



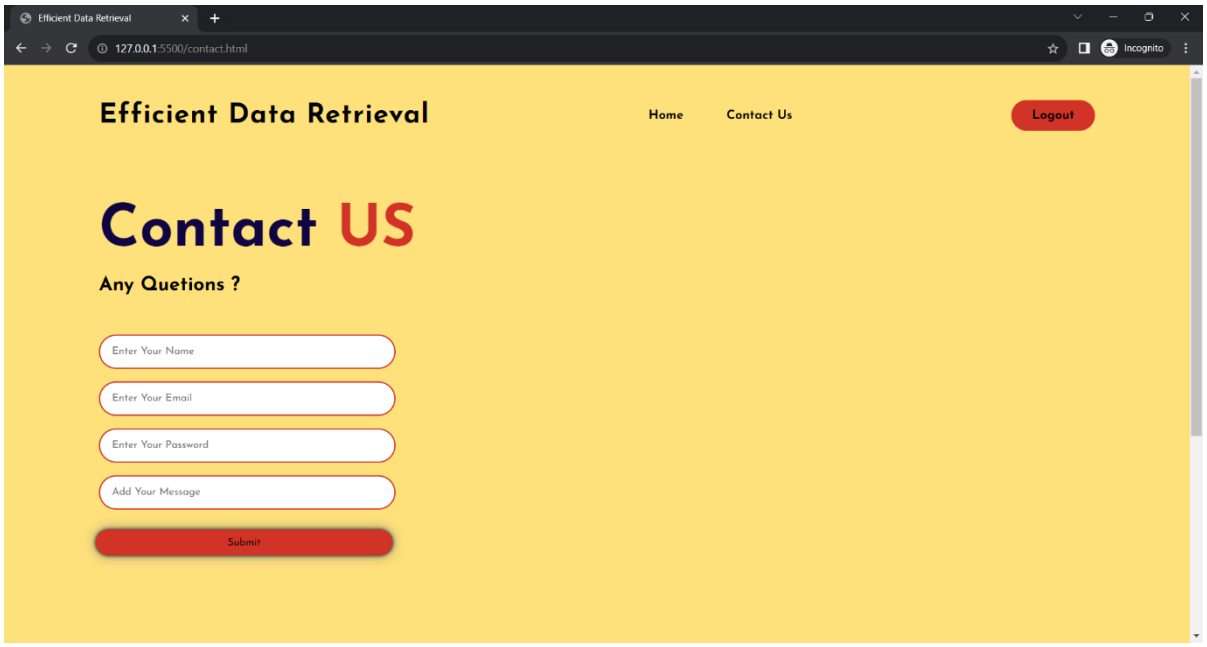
After Search :-



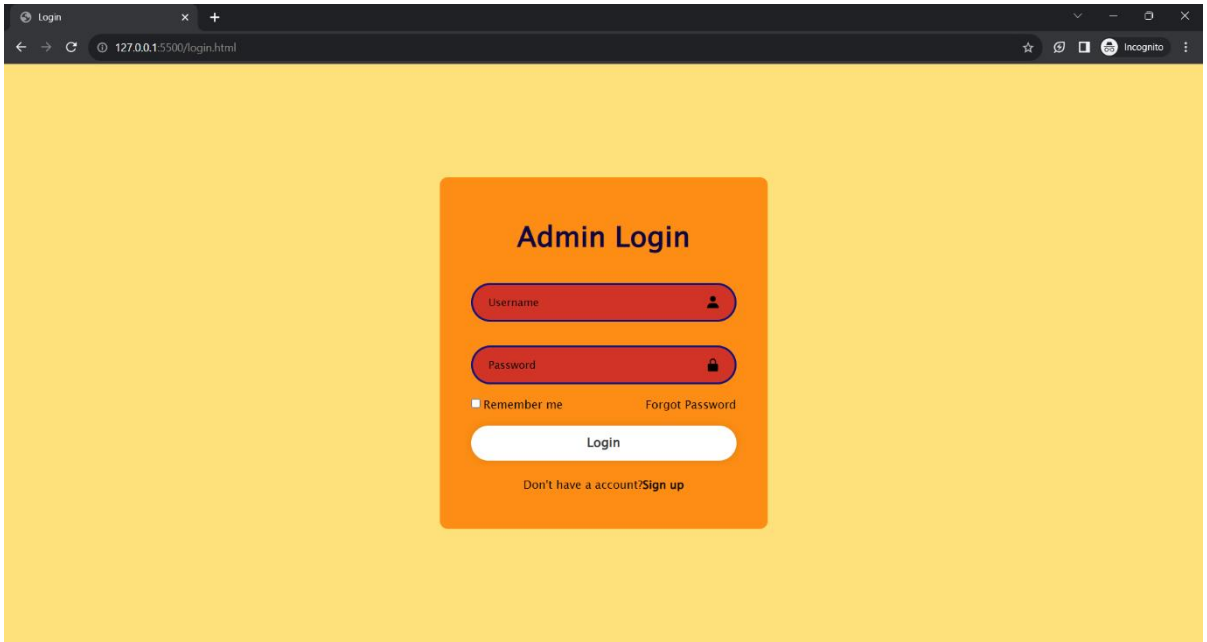
Not Found! :-



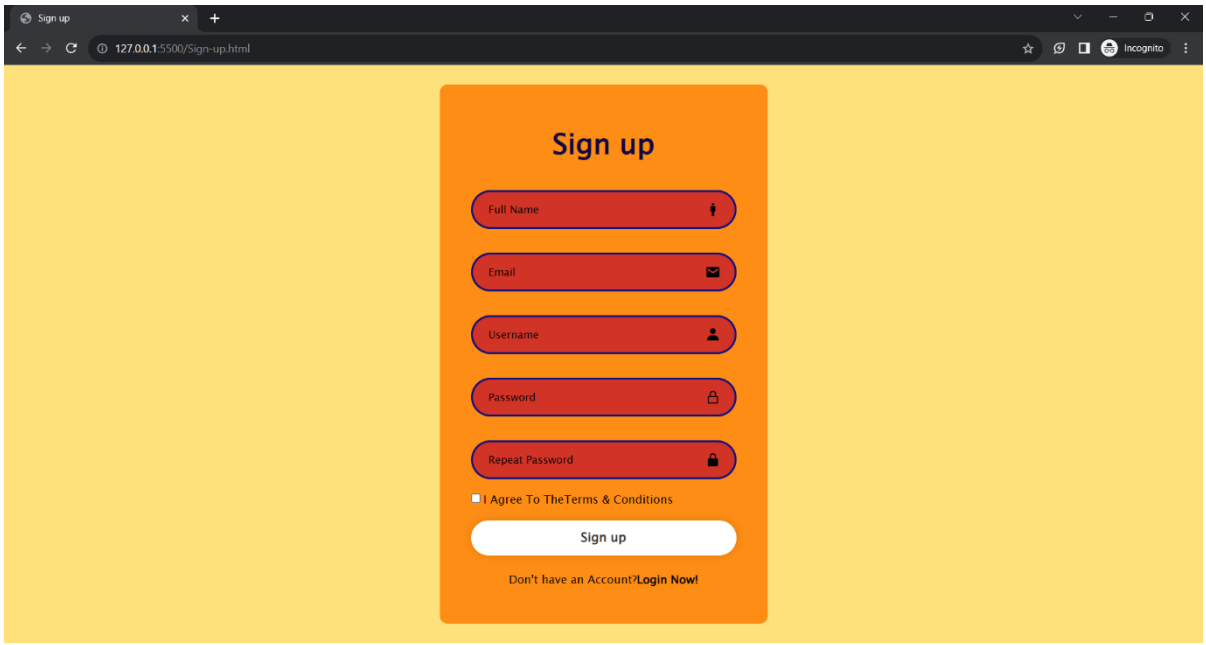
Contact US:-



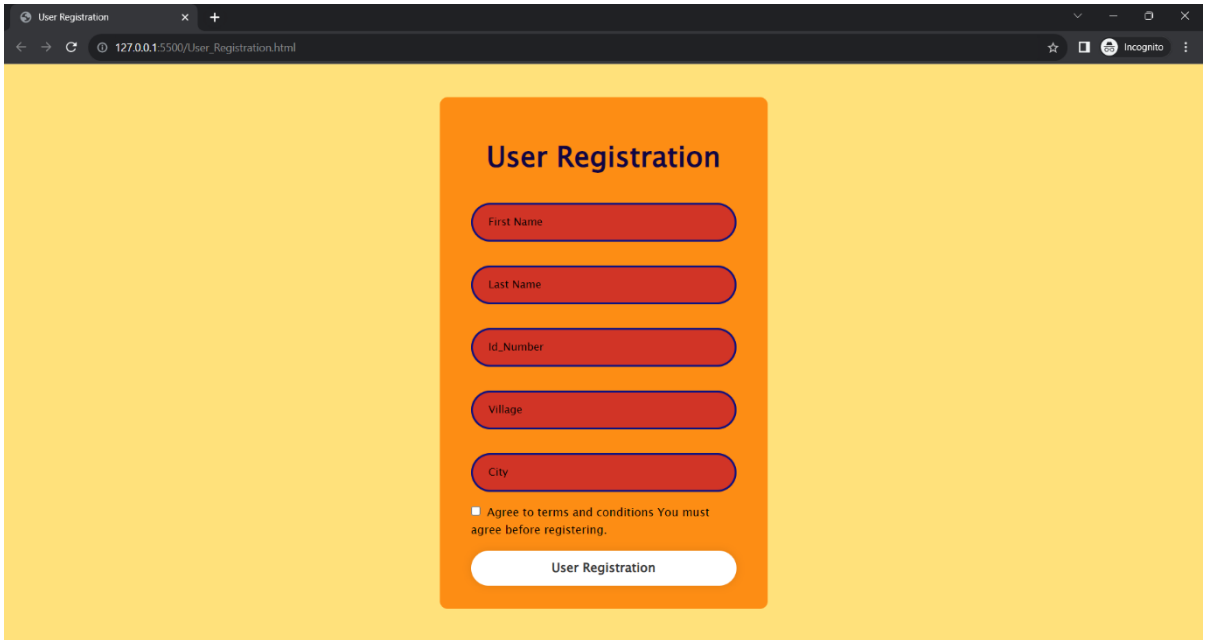
Admin Login Page :-



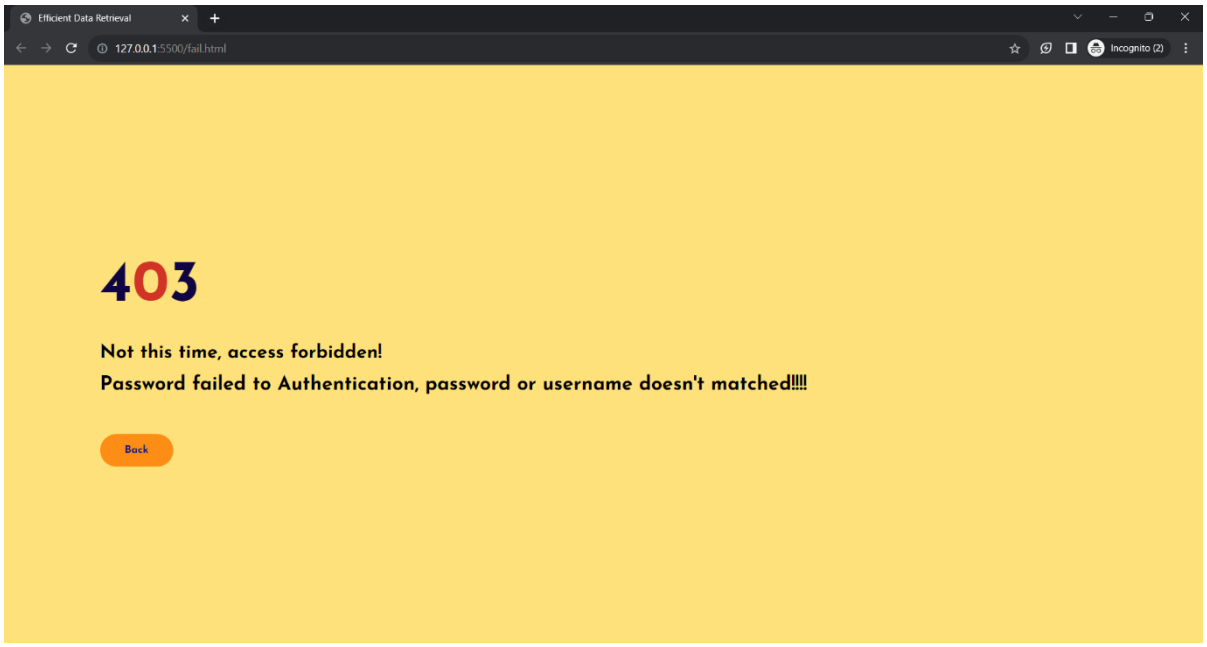
Sign up Page :-



User Registration :-



Error 403 Page :-



7: CONCLUSION:

7.1 Reflection on Online Internship Experience:

The online internship provided a unique learning experience, demonstrating the potential of remote learning and skill development.

7.2 Acknowledgments:

Heartfelt thanks to [Supervisor's Name] for their guidance and support throughout the online internship journey.

7.3 Personal and Professional Growth:

The internship contributed to personal growth by enhancing technical skills, adaptability, and fostering virtual collaboration capabilities.

8: REFERENCES:

List the online resources, tutorials, webinars, books, and other references used during the online internship for research and learning.