“CENTRALIZED PAYMENT PORTAL FOR COLLEGE APPLICATION”

Submitted in partial fulfillment of the requirements of the degree

B.Tech.

Computer Engineering

By

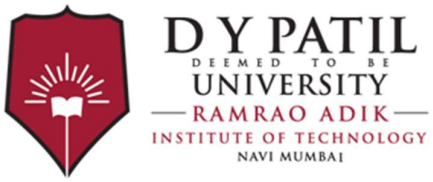
Deeptanshu Lal 22CE1285

Krish Pradeshi 22CE1232

Simardeep Lamba 22CE1072

Supervisor

Shital Patil



Department of Computer Engineering
Ramrao Adik Institute of Technology,
Sector 7, Nerul, Navi Mumbai
(Under the ambit of D. Y. Patil Deemed to be University)

November 2021

Ramrao Adik Institute of Technology
(Under the ambit of D. Y. Patil Deemed to be University)
Dr. D. Y. Patil Vidyanagar, Sector 7, Nerul, Navi Mumbai 400 706.

Certificate

This is to certify that, the Mini Project – I entitled

"CENTRALIZED PAYMENT PORTAL FOR COLLEGE APPLICATION"

is a bona fide work done by

Deeptanshu Lal 22CE1285
Krish Pradeshi 22CE1232
Simardeep Lamba 22CE1072

and is submitted in the partial fulfillment of the requirement for the degree of

B. Tech. in Computer Engineering
to the
D. Y. Patil Deemed to be University

Supervisor

Shital Patil

Dr. Siuli Das	Dr. A. V. Vidhate	Dr. Mukesh Patil
Mini Project Coordinator	Head of Department	Principal

Mini Project - I Approval

This Mini Project - I entitled **"CENTRALIZED PAYMENT PORTAL FOR COLLEGE APPLICATION"** by **Deeptanshu Lal 22CE1285, Krish Pradeshi 22CE1232 ,Simardeep Lamba 22CE1072** is approved in the partial fulfillment of the requirement for the degree of **B. Tech. in Computer Engineering**

Examiners

1……
(Internal Examiner Name & Sign)

2……
(External Examiner name & Sign)

Date:04/11/2023

Place: Nerul

Abstract

The "Centralized Payment Portal for College Applications" project aimed to simplify the payment process for college application fees by creating a single, user-friendly platform. Through research and iterative development, the project focused on designing a secure and efficient portal for students to pay fees.

The methodology involved researching existing systems, user preferences, and the development of a secure, intuitive payment portal. Iterative design stages incorporated user feedback to ensure a reliable and scalable system.

The achieved outcome is a comprehensive payment solution that simplifies the application process for students and administrators by providing a centralized platform for fee payments.

Contents

Follow below Formatting guideline and remove this page from final report

Project Report Specifications

1) Textual contents must be neatly typed in **one and half** space on A4 size bond paper on one side with **LM**= 1.25", **RM**=1.25", **BM**=1.0" and **TM**=1.0".

2) The font details to be selected for various textual contents are as follows

   Chapter heading → 20 pts.
   Section heading → 16 pts.
   Sub-section heading → 14 pts.
   Normal text → 12 pts.
   Font type → Times New Roman.
   Font style → Regular.
   Font spacing → Normal.

3) All figures and sketches and diagrams as well as the tables, if any must be properly **numbered** chapter wise and the sequence in which they appear within a chapter. Further, these must be followed by the suitable **captions.**

4) All pages are to be **numbered** in Arabic numerals (1, 2…) starting from chapter 1 and ending with the last chapter 5 including all the **non-textual** pages. All chapters should start from new page.

5) Abstract not exceeding one A4 size page is to be typed in **single space**.

6) Avoid all sorts of colors, decorations and any other face-lifting measures, unless demanded by the **nature** of work carried out by you or unless all the important features are already **embedded** in the report.

7) All regular students appearing for Mini Project-I exam are required to submit one copy to the guide for exam work.

Chapter 1

Introduction

Introduction:

In the realm of our daily experiences, the process of applying to colleges often involves a multitude of challenges, especially concerning the payment of college fees which is more time taking than it needs to be. Real-time observations of this problems have revealed numerous issues faced by students and applicants. The absence of a unified and streamlined system for fee submission stands as a significant obstacle, adding unnecessary complexities to an already demanding college application process which leads to students skipping classes and standing in line for registration which takes place afterward.

This project aims to address the following specific issues:

1. Enhancing the ease and convenience of paying application fees
2. Creating a secure and intuitive platform to ensure the reliability and safety of payment transactions.
3. Enhancing the overall efficiency and user experience in the college application process by centralizing fee payments.

The observations of the challenges surrounding college fee payments form the foundation of this project's motivation, driving the pursuit of an effective solution to simplify and streamline this crucial aspect of the application procedure.

Chapter 2

Literature Survey

An exploration of the available systems reveals a range of features related to methods for fee submission, user interfaces, security measures, and overall user experiences. However, a significant drawback found across these systems is the absence of automation, leading to a lack of streamlined processes. This deficiency results in undue stress and uncertainties during the critical phase of academic pursuits, as manually managing diverse fees becomes an intricate and time-consuming task for students. The absence of automation within these systems contributes to the burdens faced by students, creating a convoluted maze rather than a seamless payment process.

Chapter 3

Proposed System

The developed system involved meticulous research, iterative design, and implementation strategies aimed at simplifying fee submissions for students. Initially, extensive research was conducted to understand the intricacies of to pinpoint their limitations, particularly the absence of automation. This laid the foundation for the methodology that primarily focused on creating a seamless, automated payment process.

3.1 Problem Statement

The proposed system presents a centralized payment portal specifically designed to address the challenges prevalent in the existing landscape of college application fee payments. Aiming to streamline the cumbersome process faced by students, our system offers a user-centric, secure, and efficient platform.

3.2 Proposed methodology / Techniques

1. Architecture Design and Customization

The system's architecture was meticulously designed using a layered model consisting of presentation, application, and database layers. Customizations within these layers were focused on improving user interaction and data flow. The presentation layer, utilizing Handlebars (hbs), was fine-tuned to dynamically generate content, ensuring a more responsive and interactive user interface. The application layer, incorporating Node.js and Express.js, underwent specific modifications to handle transaction flows efficiently and manage server-side logic. These alterations were pivotal in addressing user requirements for a more user-friendly payment process.

Database Connectivity:

The system's architecture cantered on seamless database connectivity, leveraging Node.js for efficient data handling and management. Utilizing the inherent capabilities of Node.js, data transactions and interactions with the MySQL database were optimized, ensuring a responsive and reliable platform for users to process their payments.

User Verification:

Tailored user verification protocols were established to ensure secure and authenticated user access. Node.js facilitated the implementation of user authentication methods, ensuring that only authorized users could access and perform transactions within the system. The emphasis on user verification aimed to provide a secure and controlled environment for payment processing.

Integration of PDFKit for Document Generation:

The integration of PDFKit allowed for the efficient generation and manipulation of PDF documents, facilitating the creation of receipts and essential transaction documents for users. This customization addressed the need for comprehensive documentation and provided users with clear records of their payment transactions.

3.3 System Design

The architecture of the system was meticulously engineered to adhere to principles of modularity, scalability, and security. Employing a robust layered architecture model, the design encompasses distinct tiers for presentation, application logic, and data storage layers.

Presentation Layer:
The user interface (UI) is constructed using HTML, CSS, and JavaScript, ensuring a responsive and intuitive design. Leveraging Handlebars (hbs) for templating, the presentation layer dynamically generates content for users, offering a seamless experience while navigating the payment portal.

Application Layer:
Node.js and Express.js form the core of the application layer, managing server-side logic and handling client requests. This layer encompasses the business logic of the payment process, including transaction handling, fee calculation, and user authentication.

Database Layer:
MySQL, a robust relational database management system, houses and organizes the system's data securely. It efficiently stores transaction records, user profiles, and payment details, ensuring data integrity and accessibility.

User Interface (UI) Optimization:
The UI emphasizes simplicity and intuitive navigation, offering students a user-friendly and efficient payment process. Clear and concise interfaces guide users through fee submissions, providing a hassle-free experience.

This meticulously crafted architecture aligns with industry standards, ensuring a robust, scalable, and secure platform for students to manage their college application fee payments effectively.

3.4 Details of Hardware and Software Requirements

The development of the proposed centralized payment portal for college applications utilized a range of technologies and tools to ensure a robust and efficient system. The primary technologies employed in this project include:

- **JavaScript**: Leveraged for both front-end and back-end development to enhance the interactivity and functionality of the portal.
- **MySQL:** Utilized as the relational database management system to store and manage data securely.
- **HTML and CSS:** Employed for creating the user interface, ensuring a responsive and visually appealing design for students accessing the portal.
- **Node.js and Express:** Utilized for server-side scripting, enabling the creation of scalable and high-performance web applications.
- **JSON (JavaScript Object Notation) Parser:** Utilized for data transmission between the server and the client, ensuring seamless communication and data exchange.
- **Axios:** Integrated to handle HTTP requests and manage data transfer between the front-end and back-end systems efficiently.
- **CORS (Cross-Origin Resource Sharing):** Implemented for managing cross-origin requests, ensuring secure and controlled data flow between different domains.
- **Handlebars (.hbs):** Utilized as a templating engine to generate dynamic HTML content, facilitating the presentation of data across the platform.
- **PDFKit:** Integrated for generating and manipulating PDF documents, facilitating the creation of receipts and essential documents for users' payment transactions.

These technologies were carefully selected to address specific project requirements, focusing on security, scalability, and a user-friendly interface to streamline the college application fee payment process for students.

Chapter 4

Results and Discussion

This section provides an overview of the project outcomes, including screenshots and key results derived from the implementation of the centralized payment portal for college applications.

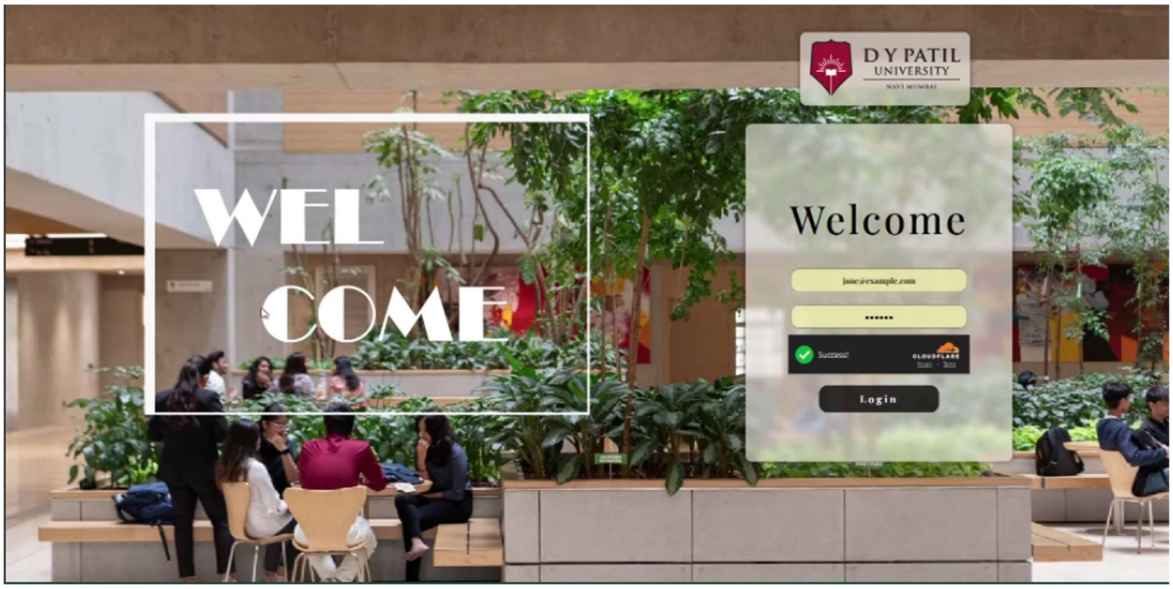


Fig.4.1 Login Page

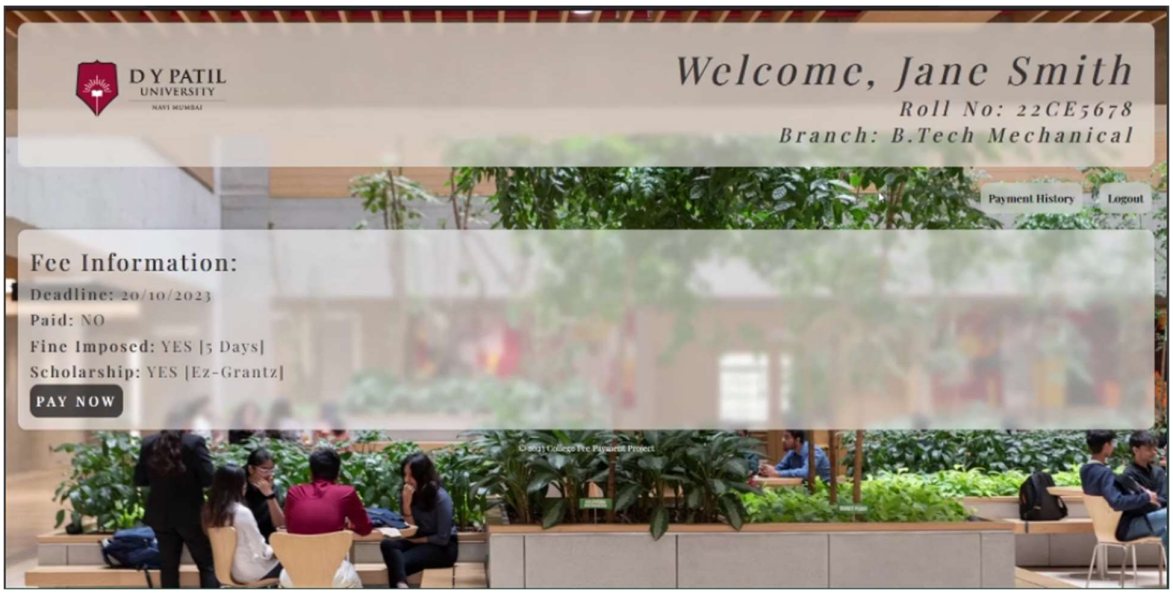


Fig.4.2 User Page

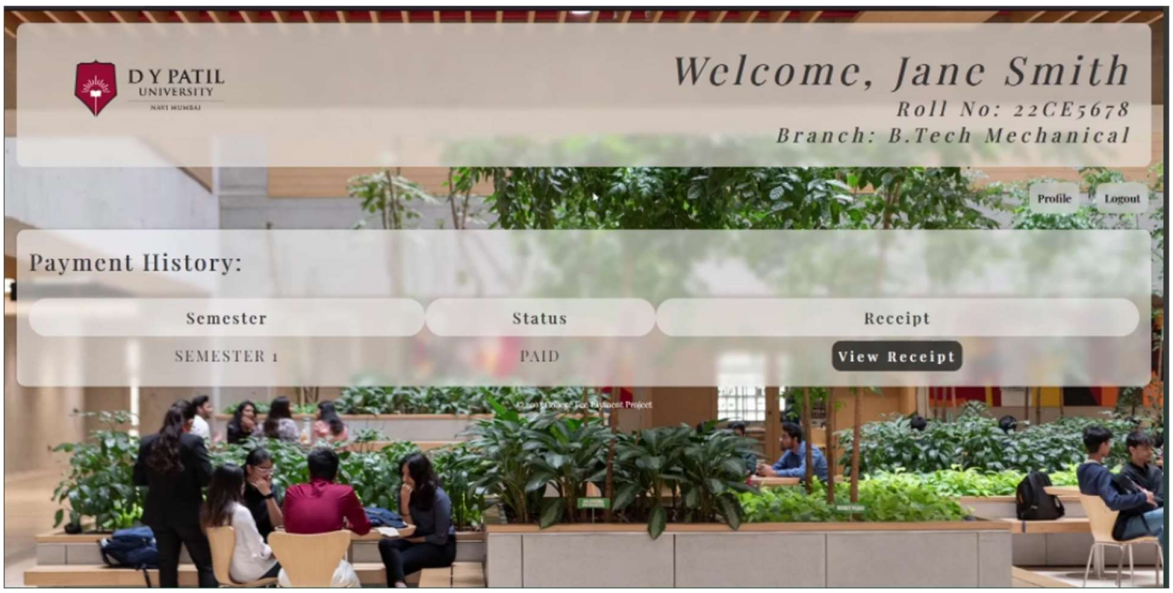


Fig.4.3 Payment History Page

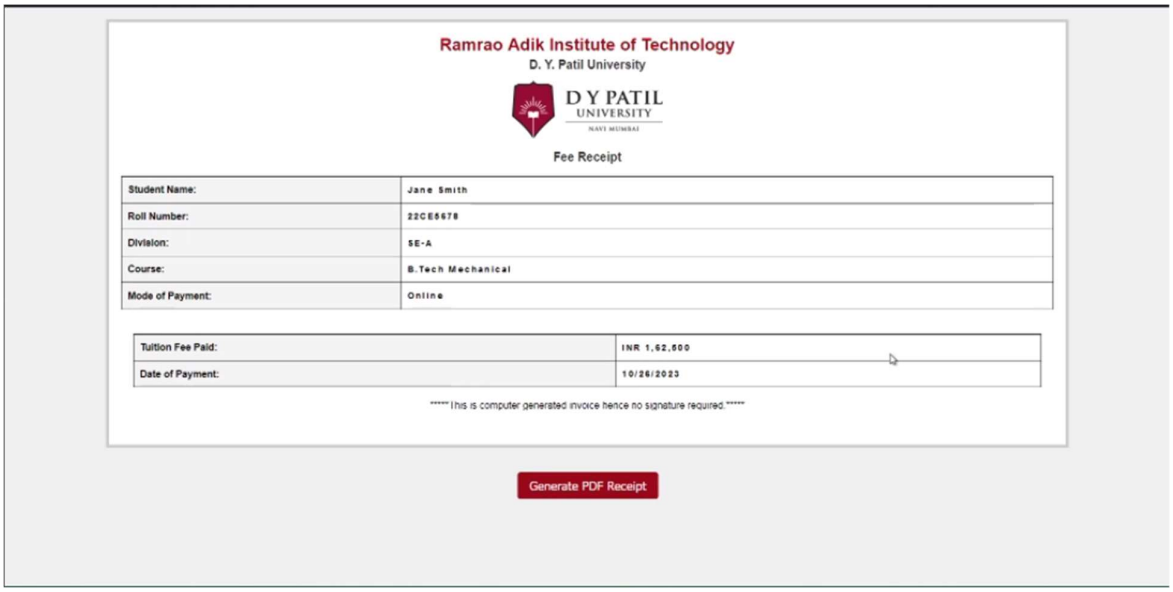
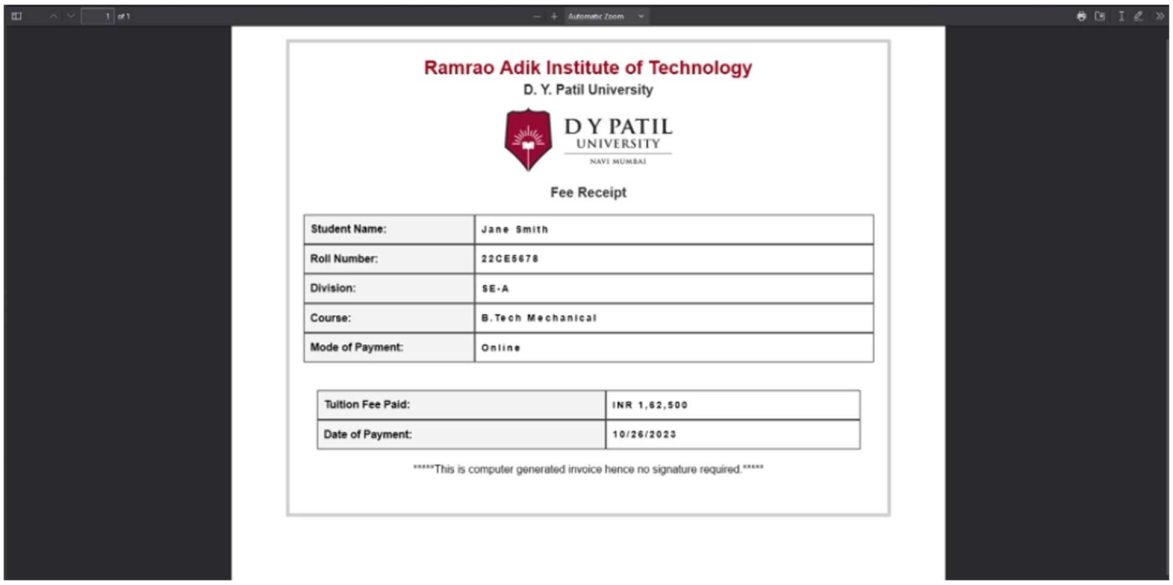


Fig.4.4 Fee Receipt Page



Ramrao Adik Institute of Technology

D. Y. Patil University

D Y PATIL UNIVERSITY
NAVI MUMBAI

Fee Receipt

Student Name:	Jane Smith
Roll Number:	22CE5678
Division:	SE-A
Course:	B.Tech Mechanical
Mode of Payment:	Online

Tuition Fee Paid:	INR 1,62,500
Date of Payment:	10/26/2023

*****This is computer generated invoice hence no signature required.*****

Fig.4.5 Fee Receipt PDF

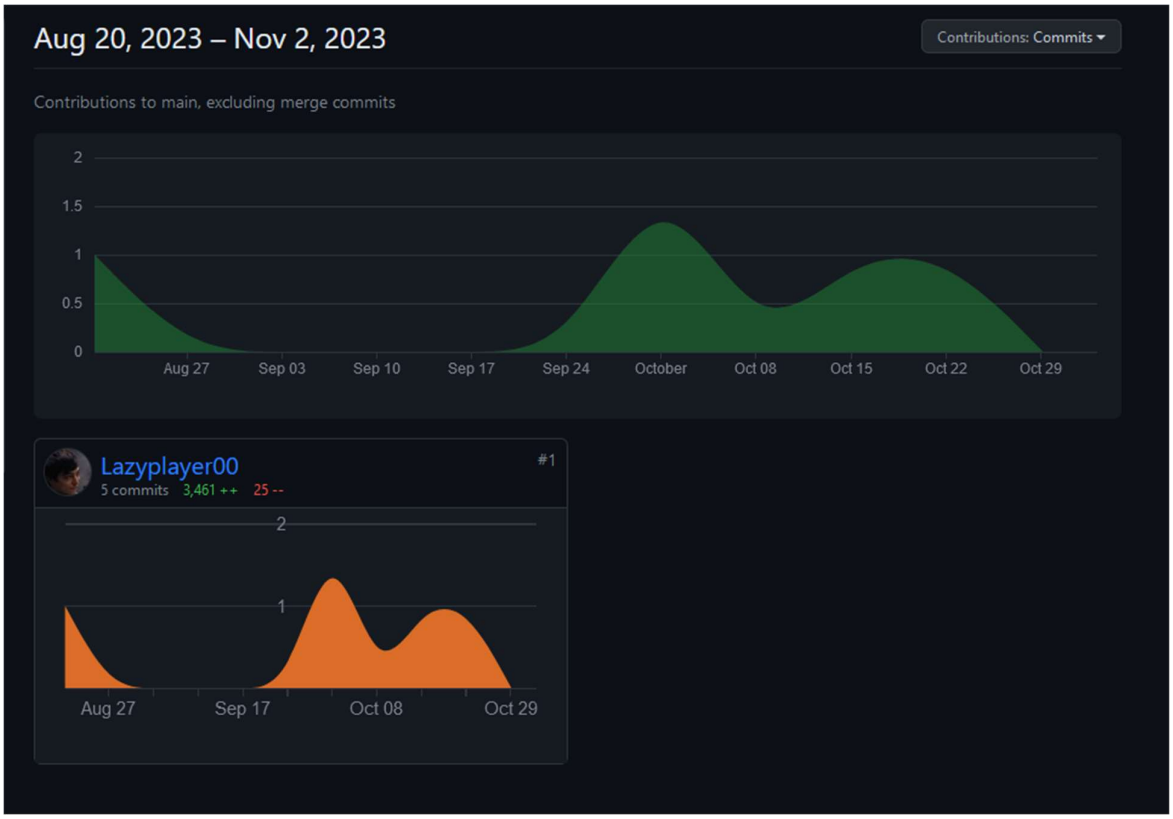


Fig.4.6 GitHub Contribution Page

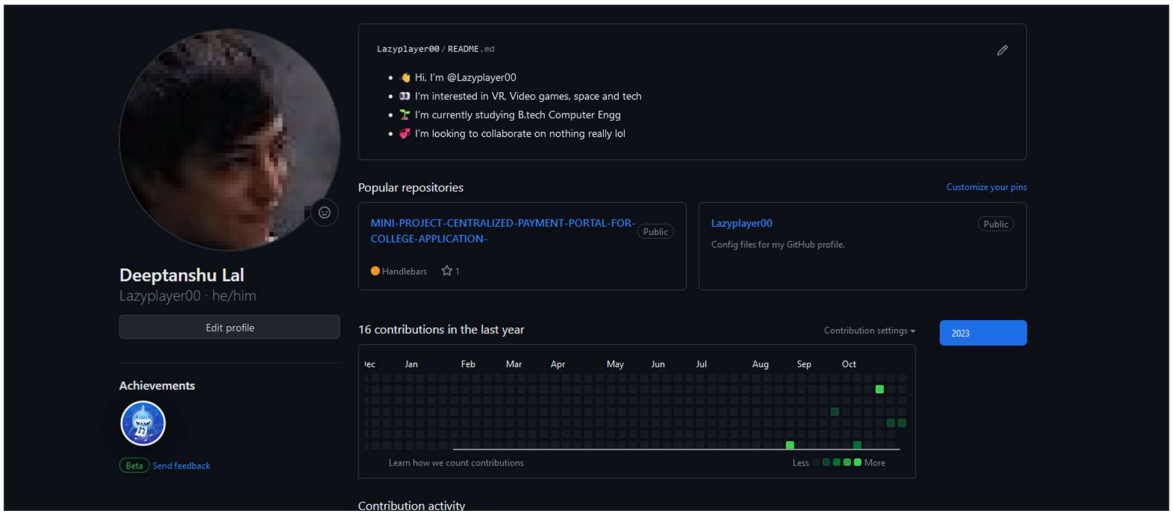


Fig.4.7 GitHub Page Of User Deeptanshu Lal

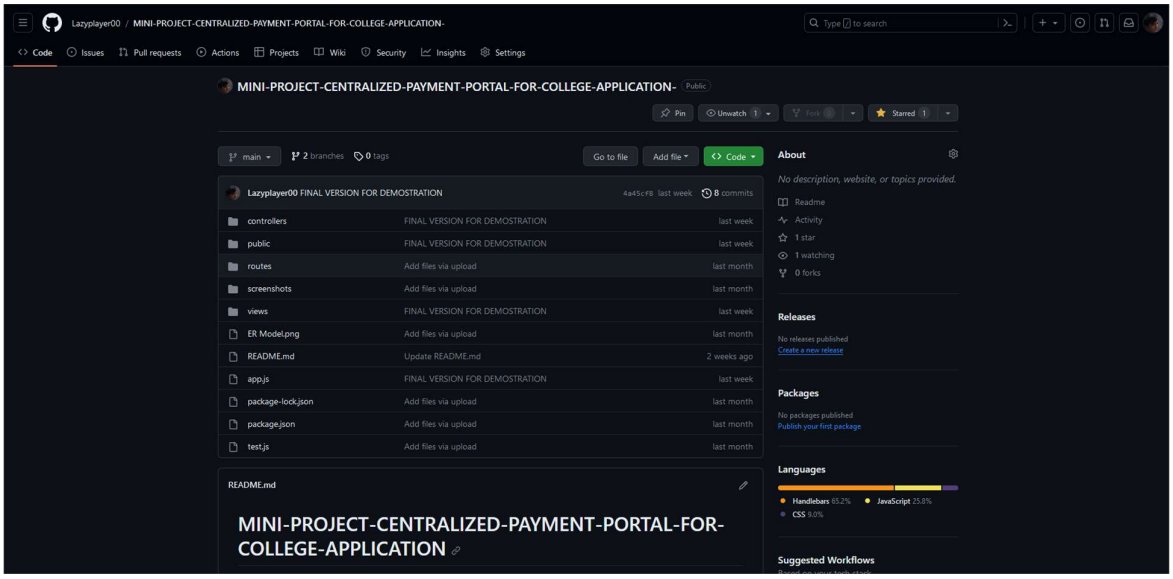


Fig.4.8 GitHub Repository Page

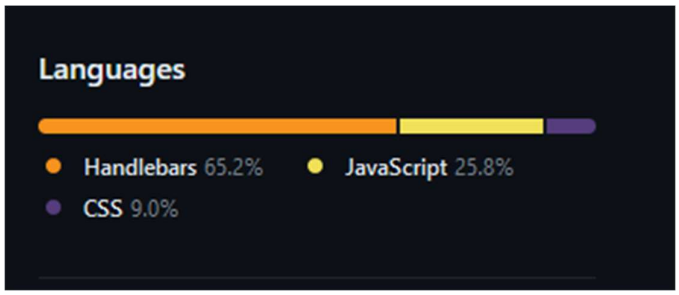


Fig.4.9 GitHub Contribution Page

Chapter 5

Conclusion and Future Work

5.1 Project Purpose and Achievement

Our goal was to simplify how students pay college application fees by creating a single, easy-to-use payment platform. We've succeeded in achieving this goal. Our new payment system makes it much simpler for students to handle their application fees. By combining all payments into one user-friendly platform, we've fixed the issues present in older systems, making the application fee process more straightforward and less stressful.

5.2 Future Scope

There's more we can do. We can add features like personalized notifications for payment deadlines and expand payment options. There's also a chance to use this system in other parts of education or in different fields that need better, more straightforward payment systems.

References

[1] A. Oppel, "SQL: The Ultimate Beginner's Guide," CreateSpace Independent Publishing Platform, 2017..

[2] How to Create a Express/Node + React Project | Node Backend + React Frontend: https://m.youtube.com/watch?v=w3vs4a03y3I

[3] Node.js official website: https://nodejs.org/

[4] Using MySQL With Node.js https://www.youtube.com/watch?v=EN6Dx22cPRI

[5] I built the same app 10 times // Which JS Framework is best? https://www.youtube.com/watch?v=cuHDQhDhvPE

[6] https://github.com/Lazyplayer00/MINI-PROJECT-CENTRALIZED-PAYMENT-PORTAL-FOR-COLLEGE-APPLICATION-

Appendices

Weekly Progress Report

ACKNOWLEDGEMENT

We take this opportunity to express my profound gratitude and deep regards to my guide **Shital Patil** for his/her exemplary guidance, monitoring and constant encouragement throughout the completion of this report. We are truly grateful to his/her efforts to improve my understanding towards various concepts and technical skills required in our project. The blessing, help and guidance given by her time to time shall carry us a long way in the journey of life on which we are about to embark.

We take this privilege to express my sincere thanks to **Dr. Mukesh D. Patil, Principal, RAIT, D. Y. Patil deemed to be University** for providing the much necessary facilities. We are also thankful to **Dr. A. V. Vidhate,** Head of Department of Computer Engineering, **Dr. Siuli Das,** Mini Project Co-ordinator, for their generous support.

Last but not the least we would also like to thank all those who have directly or indirectly helped us in completion of this project report.

Deeptanshu Lal 22CE1285

Krish Pradeshi 22CE1232

Simardeep Lamba 22CE1072