STUDOCS

A MINI PROJECT REPORT

submitted by

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the APJ Abdul Kalam Technological University
in partial fulfillment of the requirements for the award of the degree
of
Bachelor of Technology
in
Computer Science & Engineering

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DECLARATION

We undersigned hereby declare that the mini project report **STUDOCS** submitted for partial fulfillment of the requirements for the award of degree of Bachelor of Technology of the APJ Abdul Kalam Technological University, Kerala, is a bonafide work done by me under supervision of Asst. Prof. Keziya Babu . This submission represents my ideas in my own words and where ideas or words of others have been included, I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other University.

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ABSTRACT

We are in a world where everything is digitalized. Let's consider a college as an example, a lot of procedures like admission, exam registration, certificate requests, etc, requires a lot of manual effort which will need so much time and manpower. At present, students need to go to the respective authorities to get permission for various purposes.

Our project aims to introduce an easy workflow to sort out all these issues and improve the efficiency of the request process for both students and college staff, saving time and resources while providing a better experience for everyone involved. We are implementing a website designed to streamline the process of handling student requests in colleges. The system is easy to use and accessible to all students, allowing them to submit requests online, track their progress, and receive timely updates.

Once the request is submitted, it is forwarded to the relevant department for review and approval. The website also provides real-time updates to students regarding the status of their requests, ensuring transparency and reducing the time and effort required for follow-up. Additionally, the platform is accessible 24/7, allowing students to submit their requests at any time from any location. The website also provides a platform for faculty members and administrators to review and process requests efficiently. For the development of the website, we are using Node.js express framework and MySQL database.

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Chapter 1

INTRODUCTION

In this introductory chapter, we provide the general introduction to the project carried out by the authors of this report as part of the B. Tech. programme of APJ Abdul Kalam Technological University. In the initial part of this chapter, we have introduced the project's general background, providing an overview of the context. Following that, we have clearly outlined the project objectives, stating the specific goals we aim to achieve. Moving forward, we have discussed the project's scope, including its boundaries and limitations. Finally, we have presented a structured outline of the project plan, highlighting the overall scheme that will guide our efforts.

1.1 GENERAL BACKGROUND

Studocs is a centralized request forms management system designed specifically for colleges and universities. It digitizes and automates administrative processes related to request submissions, tracking, and approvals, aiming to enhance efficiency and accessibility. Traditionally, colleges have relied on manual, paper-based systems, leading to delays and inefficiencies. Studocs eliminates the need for physical paperwork by offering a user-friendly online interface for students, faculty, and staff to submit requests. It automates the routing of requests to the appropriate departments, reduces administrative burden, and provides real-time updates for requesters. With robust reporting and analytics capabilities, administrators gain valuable insights into request trends and processing times. Studocs promotes accessibility and inclusivity by offering equal opportunities for individuals with disabilities or mobility limitations to participate fully in the request management

process. Overall, Studocs revolutionizes request forms management in colleges, improving efficiency and user experiences.

1.2 OBJECTIVES OF THE PROJECT

- **Improve efficiency**: Digitize and automate the request management workflow to reduce processing time and administrative burdens.
- **Enhance transparency and accountability**: Provide real-time updates, notifications, and tracking capabilities to foster transparency and ensure accountability in the request management process.
- **Promote accessibility**: Offer a user-friendly online platform that allows all members of the college community to easily submit and track their requests, regardless of disabilities or mobility limitations.
- **Streamline administrative processes**: Eliminate manual paperwork, automate routing and approvals, and streamline operations within colleges and universities.
- **Reduce administrative burdens**: Minimize manual tasks and paperwork, freeing up administrative staff to focus on more strategic activities.
- **Support equal opportunities**: Remove physical barriers and provide equal opportunities for all members of the college community to participate in the request management process.
- **Optimize resource allocation**: Use data insights to identify bottlenecks, allocate resources effectively, and enhance overall efficiency within colleges and universities.

1.3 SCOPE OF THE PROJECT

The scope of the Studocs project is extensive, encompassing various aspects of improvement and expansion. It includes integrating with student portals, devel-

oping a dedicated mobile application, leveraging AI and chatbot assistance, introducing smart form templates, implementing intelligent workflow automation, enhancing analytics and reporting capabilities, integrating with payment gateways, strengthening data privacy and security measures, integrating with communication platforms, and offering customization and configuration options. These advancements contribute to streamlining administrative processes, improving student satisfaction, and promoting efficient request management in colleges and universities.

1.4 SCHEME OF THE PROJECT

The scheme of the Studocs involves the development and implementation of a comprehensive request forms management system for colleges and universities. This entails creating a user-friendly interface for request submission, tracking, and approvals, as well as integrating with existing systems such as student portals and communication platforms. The system incorporates advanced features such as AI and chatbot assistance, intelligent workflow automation, and enhanced analytics and reporting capabilities. Additionally, measures are taken to ensure data privacy and security, including compliance with regulations and regular security audits. The scheme aims to streamline administrative processes, enhance transparency and accountability, improve user experiences, and optimize decision-making through data-driven insights.

Chapter 2

MOTIVATION

2.1 MOTIVATION OF THE PROJECT

The motivation behind this project stems from our observation of the manual and inefficient process of rewriting forms to reject staff members within our college. We have witnessed instances where staff rejection forms are repeatedly rewritten, leading to redundant efforts and delays in handling requests. This cumbersome process not only consumes valuable time and resources but also creates confusion and frustration among both staff and the administrative team. Recognizing the need for a more streamlined and automated approach, our project aims to implement a workflow for request forms that will address these challenges and improve the overall efficiency of the request handling process. By introducing a centralized system, we aim to minimize errors, reduce response times, enhance communication, and ensure that requests are processed promptly and effectively. This project's motivation is rooted in the desire to create a more organized and efficient system for both students and staff, ultimately improving their experience and satisfaction within the college environment.

2.1.1 Mastering Motivation

In the context of this project, mastering motivation refers to understanding the underlying factors that drive individuals and teams to engage actively and wholeheartedly in the implementation and adoption of the proposed workflow for request forms. Motivation plays a crucial role in project success, as it directly influences the level of commitment, enthusiasm, and effort invested by all stakeholders involved. By mastering motivation, we aim to identify and leverage key drivers

that will inspire individuals to embrace the new system and actively participate in its implementation and utilization. This may involve conducting research, surveys, or interviews to gain insights into the specific needs, concerns, and aspirations of students, staff, and administrative personnel. By tailoring the project's messaging, communication, and incentives to align with the identified motivations, we can foster a positive and supportive environment that encourages active engagement and cooperation. Mastering motivation is essential for creating a project environment where individuals are intrinsically motivated to embrace change, contribute their best efforts, and drive the successful implementation and adoption of the workflow for request forms.

2.1.2 M- Testing

M-Testing refers to the process of testing and validating the proposed workflow for request forms in the college environment. Through rigorous testing, we aim to assess the effectiveness and efficiency of the new system, ensuring that it meets the desired objectives and fulfills the needs of students, staff, and administrative teams. This testing phase involves various activities, such as conducting pilot studies, gathering feedback from stakeholders, and analyzing performance metrics.

During the testing phase, we will engage a representative sample of students and staff to participate in the pilot implementation of the workflow. Their experiences and feedback will provide valuable insights into the system's usability, functionality, and overall user satisfaction. We will gather data on response times, error rates, user satisfaction ratings, and other relevant metrics to evaluate the system's performance.

Additionally, we will seek feedback from the administrative team responsible for processing the requests. Their insights will help identify any pain points, areas for improvement, or additional features that can enhance the workflow. By involving key stakeholders in the testing process, we can ensure that the system aligns with their needs and effectively addresses the challenges faced in the current request handling process.

The testing phase will also serve as an opportunity to refine and fine-tune the workflow based on the feedback received. Any necessary adjustments, modifications, or enhancements will be made to ensure a seamless and user-friendly experience. Through this iterative testing process, we aim to optimize the workflow for request forms, ensuring its effectiveness and successful implementation within the college environment.

Chapter 3

LITERATURE SURVEY

There is limited literature available specifically on the use of forms management. Study published in the Journal of Educational Technology Development and Exchange found that online forms can significantly reduce the amount of time and resources required for administrative tasks in higher education. Formstack is a popular online forms platform that offers features for form creation, workflow automation, and data management. JotForm is another widely used online form builder and automation platform. It provides comprehensive form-creation tools and workflow automation features.

In comparison to Formstack and JotForm, Studocs offers a more tailored solution specifically designed for institutions, such as colleges or educational organizations. Studocs emphasis on hierarchical management, institutional workflows, and integration within the institution's management system sets it apart from these existing solutions. By using Studocs, institutions can optimize their forms management, automate workflows, and maintain efficient hierarchical structures, leading to enhanced productivity and improved decision-making processes. However, it is important to consider factors such as data security and privacy, accessibility, and user experience when implementing a forms management website in a college setting.

Feature	JotForm	Formstack	Studocs
User Interface	Intuitive and user-friendly interface	Clean and modern interface	User-friendly and accessible interface
Customization	Extensive customization options for form design	Customizable form templates and branding options	Extensive customization options for form templates and workflows
Integration	Integrates with various third-party apps	Offers seamless integration with popular tools	Integration with student portals and communication platforms
Automation	Workflow automation and advanced conditional logic	Workflow automation capabilities	Intelligent workflow automation and routing
Analytics	Basic analytics and reporting features	Advanced reporting and analytics capabilities	Enhanced analytics and reporting capabilities
Security	Secure data encryption and compliance measures	Robust security measures and data protection	Focus on data privacy and compliance
Collaboration	Limited collaboration features	Collaborative form editing and task management	Collaboration features for request reviews and discussions
Accessibility	Accessible forms for users with disabilities	Accessible forms and compliance with accessibility standards	Ensures equal accessibility and inclusion
Customer Support	24/7 customer support and knowledge base	Extensive support options and help center	Responsive customer support and assistance

Table 3.1: Comparison.

Chapter 4

SYSTEM DESIGN

The system design of Studocs encompasses the architectural and structural aspects of the project. It involves the high-level organization of components, modules, and their interactions, ensuring the system's functionality and performance. The system design phase focuses on defining the overall system architecture, selecting appropriate technologies and frameworks, and establishing the foundation for efficient and scalable development.

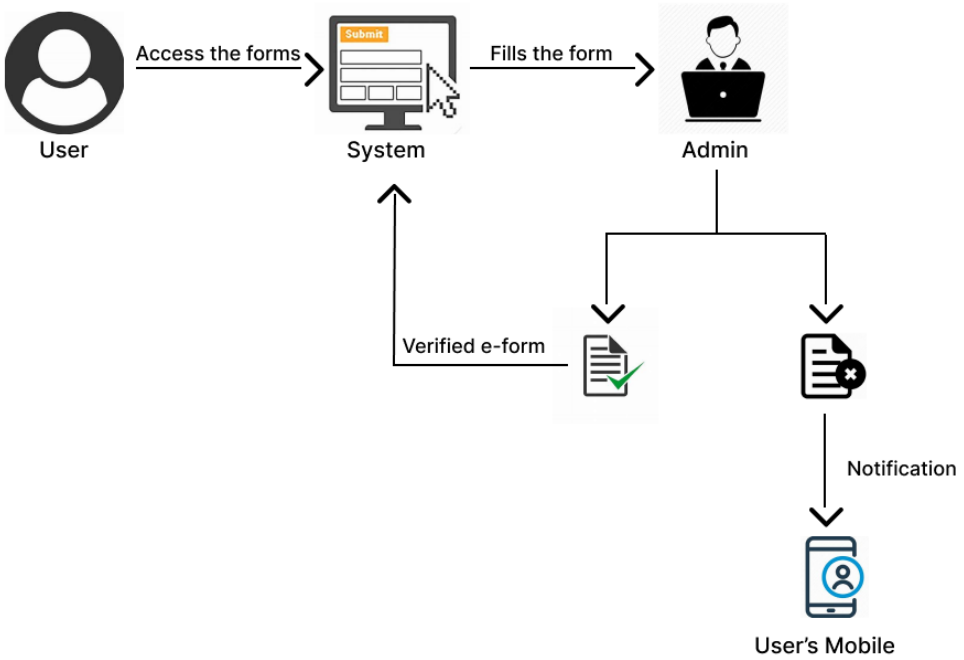

Figure 4.1: System design

Chapter 5

DATABASE DESIGN

The database design in Studocs involves the conceptualization and structuring of the underlying data storage system. It focuses on organizing and defining the relationships between different data entities to ensure efficient data retrieval, storage, and manipulation. The database design phase includes determining the tables, fields, and constraints that will comprise the database schema, and establishing the relationships and dependencies among them.

The entity-relationship (ER) diagram in Studocs provides a visual representation of the database structure and the relationships between various entities. It depicts the entities as tables, their attributes as columns, and the relationships as connectors between tables. The ER diagram helps in understanding the data model, identifying key entities and their attributes, and establishing the associations and cardinalities between different entities. It serves as a blueprint for implementing the database schema and ensures the integrity and coherence of the data stored in Studocs.

Figure 5.1: Database

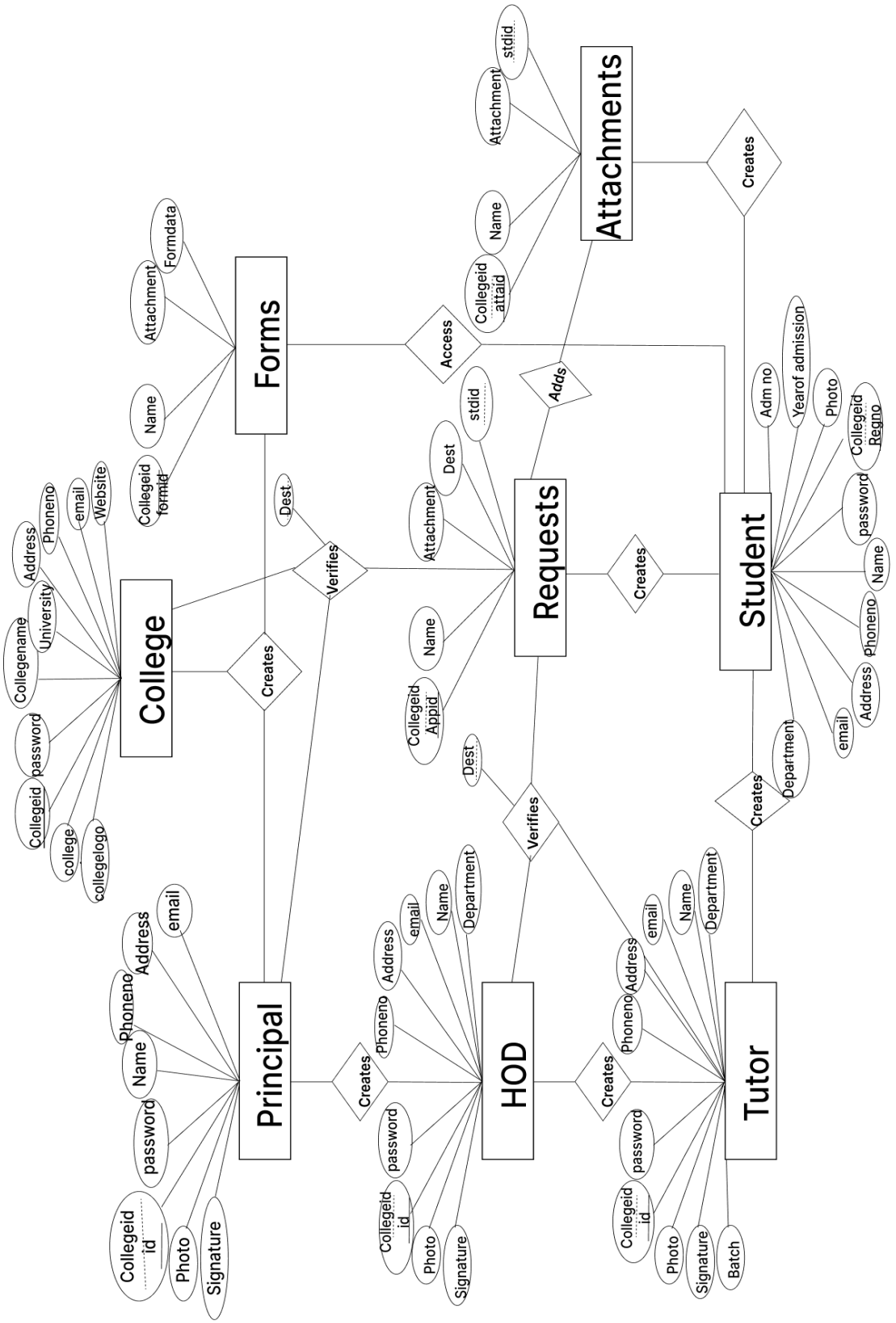

Figure 5.2: ER diagram

Chapter 6

IMPLEMENTATION

6.1 IMPLEMENTATION

The Studocs project was implemented as a web-based application using a combination of technologies including EJS, JavaScript, Bootstrap, MYSQL, and Node.js. The implementation involved the following key components and technologies:

1. Front-end Technologies

    - Bootstrap: Use Bootstrap framework to design and structure the website's front-end components, such as layout, typography, forms, buttons, and navigation bars. Bootstrap provides a responsive and mobile-friendly design.
    - EJS (Embedded JavaScript): EJS is a template engine for generating dynamic HTML pages. It allows embedding JavaScript code within HTML markup, enabling you to dynamically render data on the server-side and generate dynamic web pages.
    - JavaScript: Use JavaScript for client-side scripting to enhance interactivity and provide dynamic functionality to the website. JavaScript can be used for form validation, DOM manipulation, event handling, and making AJAX requests to the server.

2. Back-end Technologies

    - Node.js: Utilize Node.js as the server-side runtime environment for building the back-end of the website. Node.js provides a non-blocking,

event-driven architecture, making it suitable for handling concurrent requests efficiently.

- Express.js: Use Express.js, a web application framework for Node.js, to simplify routing, request handling, and middleware management. Express.js provides a robust set of features for building RESTful APIs and handling HTTP requests/responses.
- MySQL: Integrate MySQL as the relational database management system (RDBMS) for storing and managing data. MySQL is widely used, supports SQL queries, and provides a secure and scalable solution for data storage.

3. OTP Verification using Nodemailer

    - Nodemailer: Nodemailer is a popular email sending library for Node.js that allows you to send emails from your application. We can utilize Nodemailer to send an OTP (One-Time Password) to users for verification purposes.
    - Generate OTP: Use a random number generator or a library like crypto in Node.js to generate a random OTP. The OTP should be unique and securely generated.
    - Email Configuration: Set up the email configuration using Nodemailer. Provide the SMTP (Simple Mail Transfer Protocol) details of the email service provider you are using (e.g., Gmail, SendGrid). Configure the sender's email address and authentication credentials (username and password/API key).
    - Send OTP Email: After generating the OTP and configuring the email settings, use Nodemailer to send an email containing the OTP to the user's registered email address. Construct the email message with the OTP and any additional instructions or branding elements as required.
    - Verify OTP: Once the user receives the OTP via email, implement a verification mechanism on the server-side. Compare the OTP entered

by the user with the one generated and sent via email. If they match, consider the OTP as verified and proceed with the desired actions (e.g., form submission).

Our implementation successfully combined the chosen technologies and libraries to create a functional website with responsive front-end components, dynamic content generation, secure data storage, and OTP verification for enhanced security.

6.2 USE CASE DIAGRAM

The use case diagram in Studocs provides a visual representation of the system's functionality from the perspective of its users. It illustrates the different interactions and relationships between the system and its actors, showcasing the various actions and tasks that can be performed. The use case diagram helps in understanding the system's behavior, identifying user requirements, and defining the scope of functionalities to be implemented in Studocs.

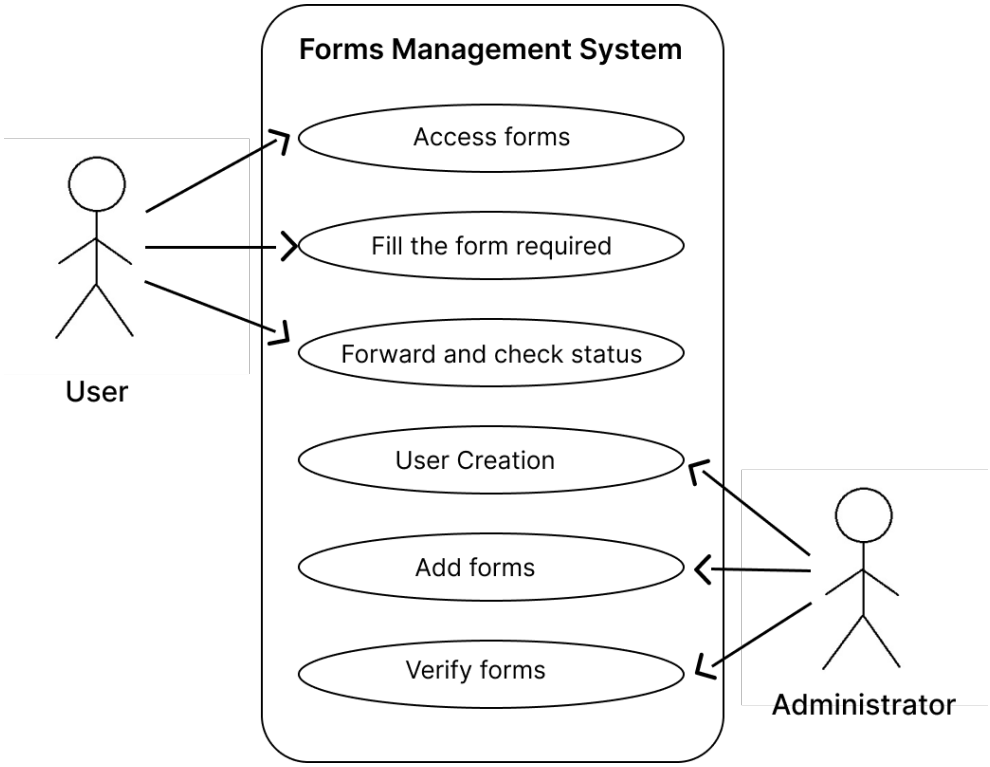

Figure 6.1: Use case Diagram

6.3 SEQUENCE DIAGRAM

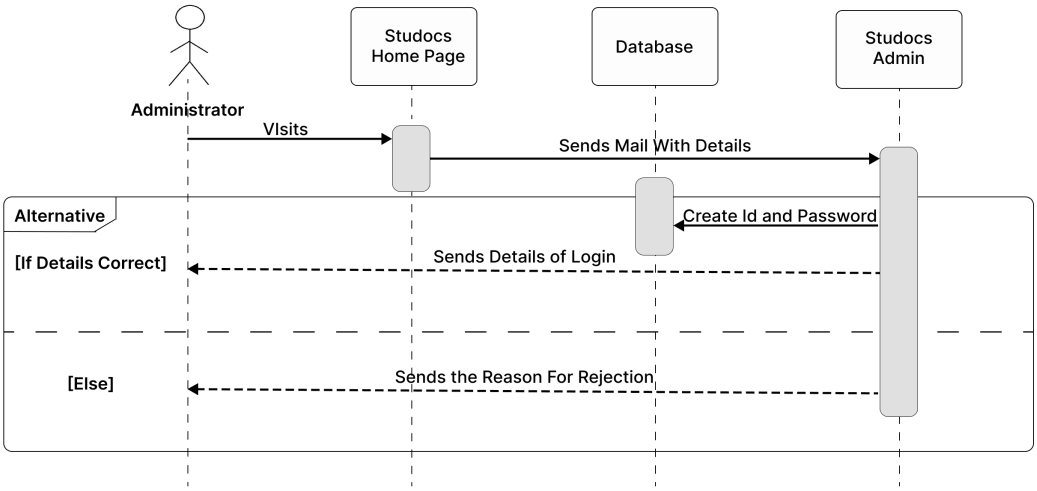

Figure 6.2: College Registration Through Studocs

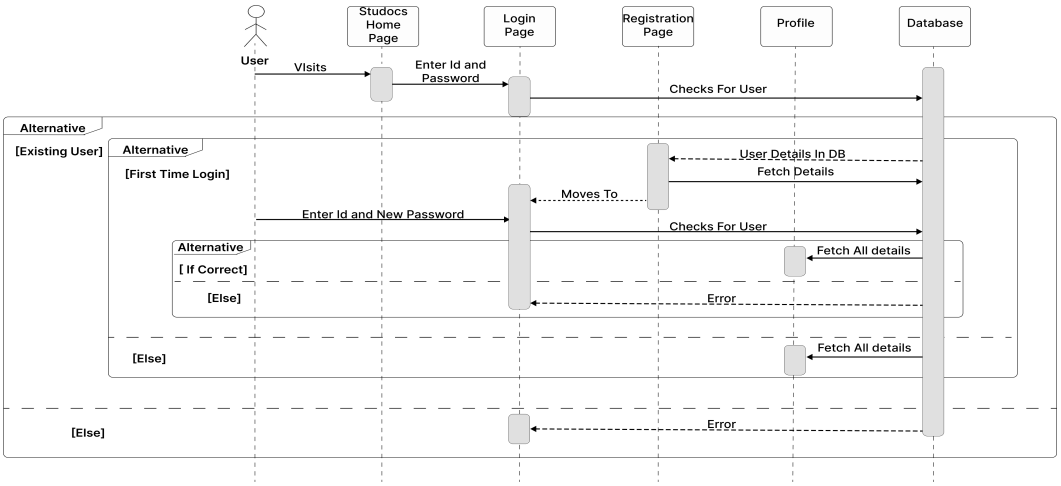

Figure 6.3: User Login

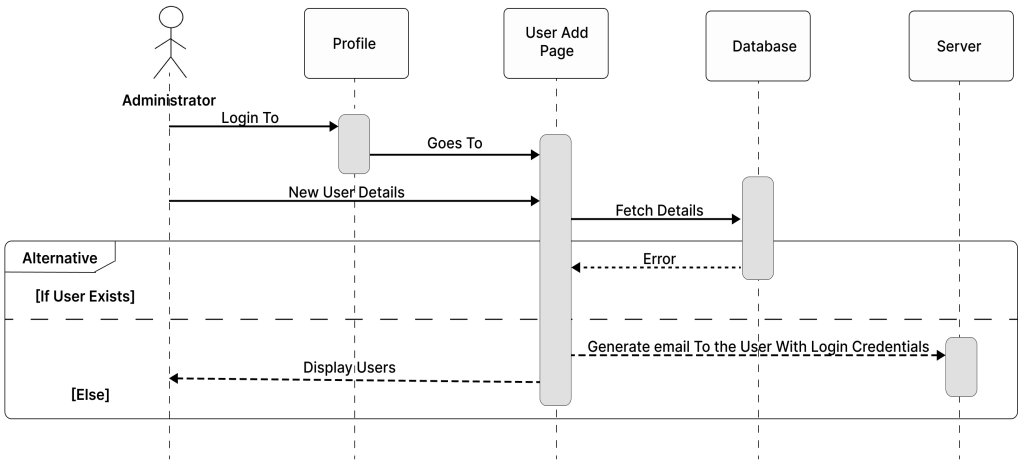

Figure 6.4: User Creation

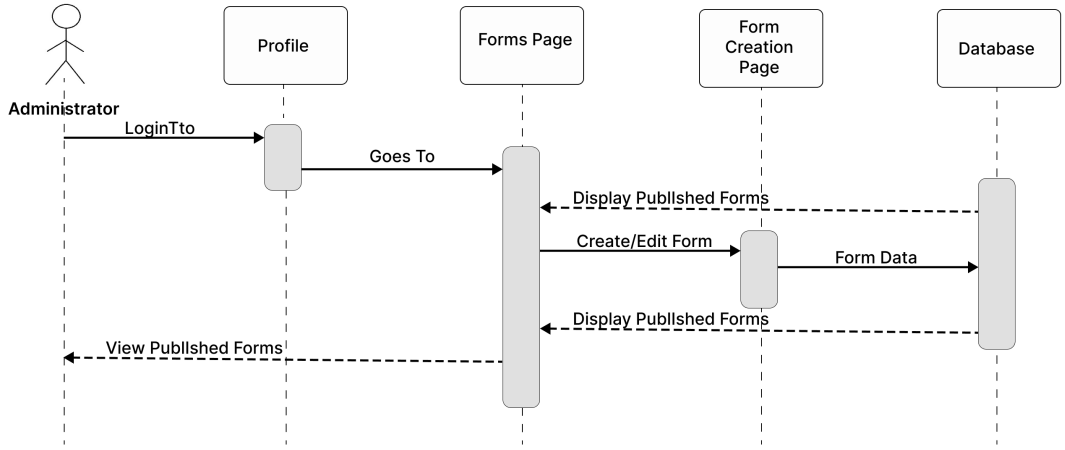

Figure 6.5: Adding New Forms

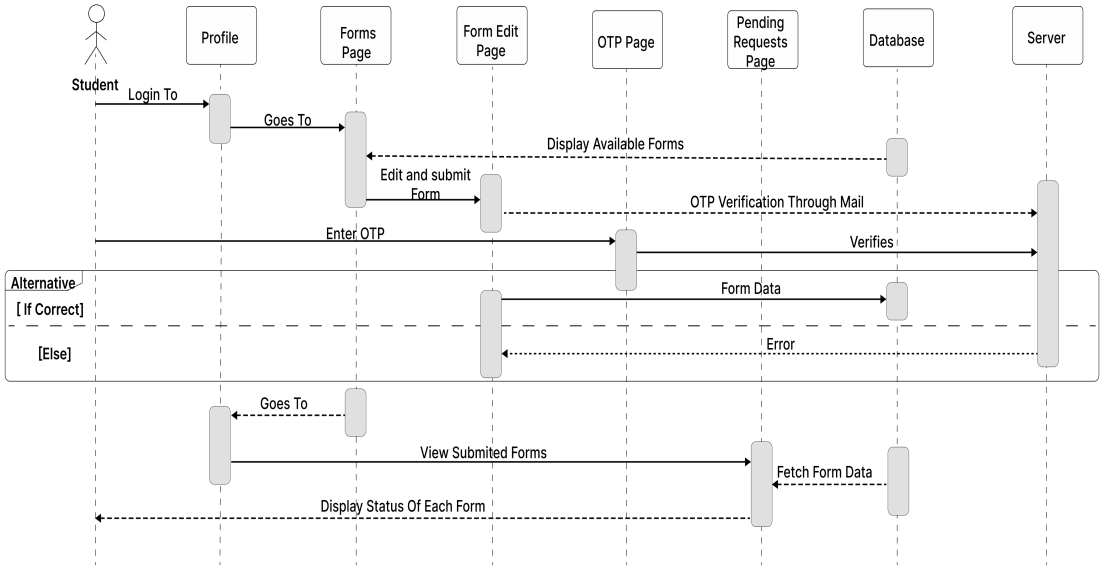

Figure 6.6: Form Submission And Status Tracking

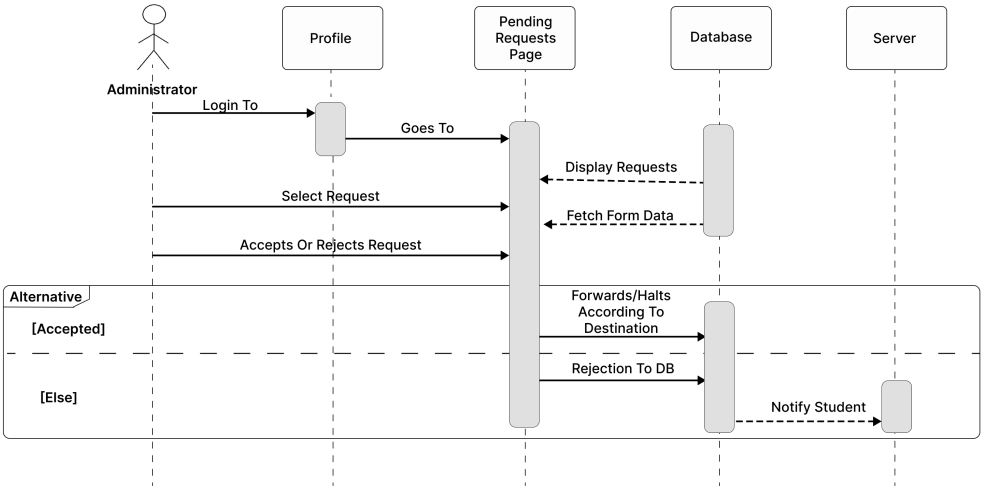

Figure 6.7: Verify Forms

Chapter 7

RESULTS AND CONCLUSIONS

7.1 RESULTS AND CONCLUSIONS

Studocs will be an essential tool for colleges and universities looking to improve their administrative processes and enhance the student experience [2]. A centralized form management website can reduce administrative overheads, improve efficiency and enhance communication with students. From the perspective of students, the website can provide an easy-to-use interface for submitting and tracking requests, such as registration, transcript requests, etc. Moreover, the website can offer 24/7 accessibility, allowing students to make requests at any time, from anywhere. Overall, a request form management website can be a highly effective solution for colleges and universities looking to streamline their processes, reduce paperwork and enhance student satisfaction.

7.2 SCOPE OF FURTHER WORK

The scope for further work on Studocs is vast, encompassing several areas of improvement and expansion. One important aspect to focus on is enhancing the user experience by implementing a modern and intuitive user interface. Through user feedback and usability testing, iterative improvements can be made to ensure a seamless and user-friendly experience. Providing customization options is another area for further development. Colleges should be able to tailor Studocs to their unique requirements by customizing form templates, workflows, notifications, and user roles. This flexibility allows the system to align with specific processes and preferences.

Improving integration capabilities with existing college systems is also cru-

cial. Studocs should seamlessly integrate with student information systems (SIS), learning management systems (LMS), and other relevant platforms, ensuring data consistency and eliminating the need for manual data entry. Expanding the reporting and analytics capabilities of Studocs is essential for administrators to gain valuable insights. Comprehensive reports and analytics dashboards can offer visibility into request volumes, processing times, departmental performance, and other relevant metrics. This data-driven approach enables colleges to make informed decisions and optimize their processes. Facilitating collaboration and workflow management within Studocs is another area to explore. By allowing users to assign tasks, collaborate on request reviews, and track progress collectively, the system promotes efficient teamwork and ensures timely resolutions [3].

Developing dedicated mobile applications for Studocs on iOS and Android platforms is crucial in today's mobile-driven world. Mobile accessibility allows students and administrators to submit and track requests on the go, enhancing convenience and responsiveness. Integration with digital signature solutions can greatly enhance the efficiency and security of the request management process. By enabling electronic signing of forms, Studocs streamlines approval workflows and eliminates the need for physical paperwork. Leveraging AI and machine learning technologies can automate various aspects of request management. AI-powered chatbots can provide instant support and guidance to users, while machine learning algorithms can automate data extraction, intelligent request routing, and predictive analytics for resource allocation.

By addressing these areas, further work on Studocs can enhance usability, customization, integration capabilities, reporting and analytics, collaboration features, mobile accessibility, AI integration, scalability, and continuous improvement. These efforts will contribute to a more efficient, user-friendly, and adaptive request forms management system in colleges.

7.3 SOCIAL RELEVANCE AND APPLICABILITY

The workflow of Studocs, the request forms management system in colleges, holds significant social relevance due to multiple reasons. Firstly, Studocs ensures accessibility and inclusion by providing equal opportunities for all members of the college community to submit and track their requests online. This eliminates physical barriers and enables individuals with disabilities or mobility limitations to participate fully. By fostering inclusivity, Studocs promotes a sense of belonging and equal access to college resources [1].

Secondly, Studocs enhances efficiency and saves time for both requesters and approvers. Through automation and digitization, the system streamlines the request management process, reducing administrative burdens and enabling quicker turnaround times. This efficiency allows colleges to allocate resources effectively and focus on other important tasks, ultimately improving productivity and the overall functioning of the institution.

Moreover, Studocs ensures transparency and accountability by providing a clear view of the request management process. Requesters can track the progress of their requests, know who is responsible for reviewing and approving them, and receive notifications at each stage. This transparency promotes fairness, reduces the likelihood of bias or favoritism, and encourages a culture of accountability among all stakeholders involved.

Furthermore, Studocs facilitates data-driven decision-making by collecting and analyzing request-related data. Administrators can gain valuable insights into request trends, processing times, and resource allocation, enabling them to make informed decisions. This data-driven approach helps identify bottlenecks, optimize resource allocation, and improve overall operational efficiency within the college.

Additionally, Studocs enhances communication and collaboration among requesters, approvers, and relevant stakeholders. By providing a centralized platform for discussions, clarifications, and updates, the system fosters better understanding, coordination, and issue resolution. Improved communication and collaboration contribute to stronger relationships within the college community.

Lastly, Studocs promotes environmental sustainability by reducing paper usage, printing, and physical storage requirements. By embracing digital workflows, colleges contribute to conservation efforts and reduce their ecological footprint.

In summary, the workflow of Studocs holds social relevance by promoting accessibility, efficiency, transparency, accountability, data-driven decision-making, collaboration, and environmental sustainability. By adopting such a system, colleges create a more inclusive, efficient, and student-centric environment, benefiting the entire college community.

Chapter 8

FUTURE DIRECTIONS

Studocs has a promising future scope in colleges, driven by advancements in technology and the increasing need for efficient administrative processes. One direction for evolution is the integration of Studocs with existing student portals, providing a seamless and unified experience for students. By eliminating the need for multiple logins, students can access and submit request forms directly from their portal accounts, enhancing convenience and streamlining the process.

Additionally, the development of a dedicated mobile application for Studocs can further enhance its functionality. This mobile app would enable students to submit and track their requests using their smartphones or tablets. With features such as push notifications and real-time updates, students can stay informed about the progress of their requests. The mobile app would also offer a user-friendly interface optimized for smaller screens, ensuring a smooth user experience.

Furthermore, the integration of artificial intelligence and chatbot technologies can greatly enhance Studocs' capabilities. AI-powered chatbots can provide automated assistance to students, addressing common queries and guiding them through the request process. This self-service feature reduces the need for manual intervention and provides instant responses, improving efficiency and convenience.

In conclusion, the future scope of Studocs in colleges lies in the integration with student portals, the development of a mobile application, leveraging AI and chatbot assistance, customization options, and ensuring robust data privacy and security. These advancements will streamline administrative processes, improve user experience, and promote efficient request management in colleges.

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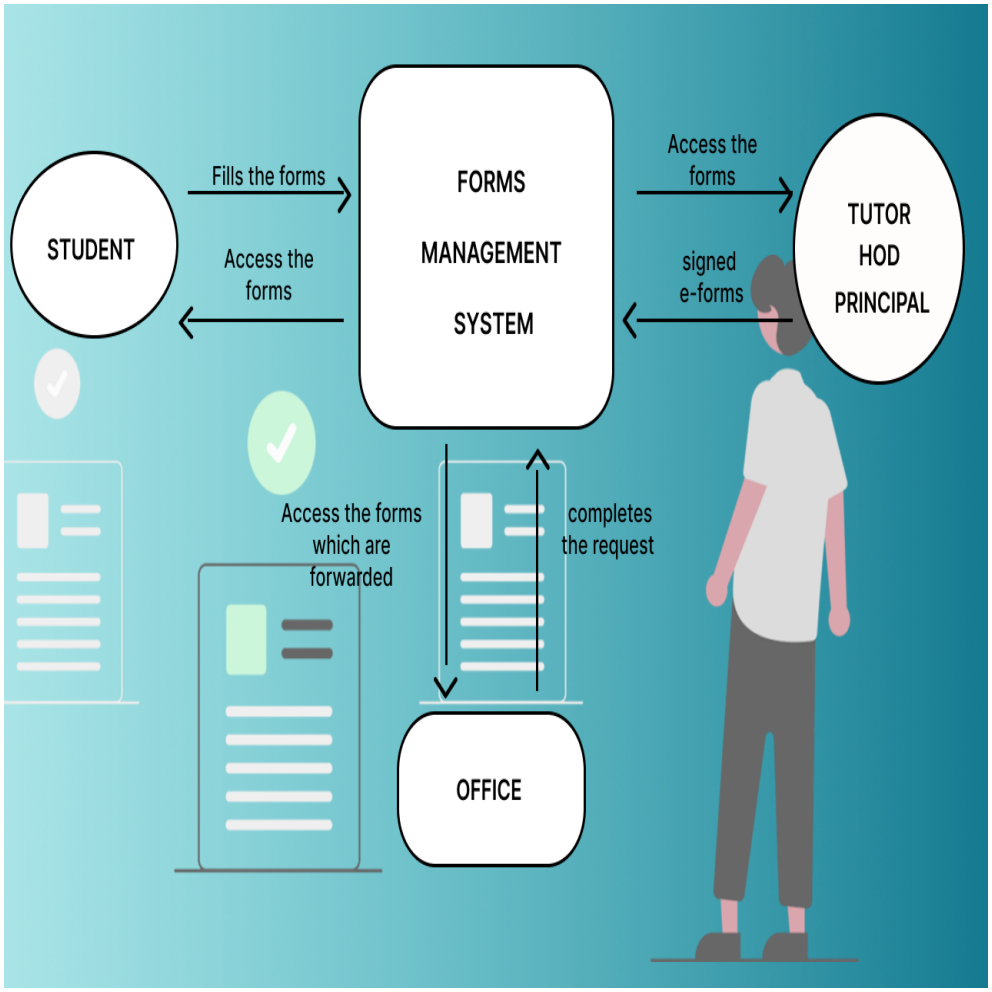
[3] **Lattemann, C., Stieglitz, S.**, (1965)(2012). Workflow systems in higher education institutions—motives, benefits, and risks. *10th Symposium (International) on Combustion*, In Proceedings of the 18th Americas Conference on Information Systems (AMCIS).

APPENDIX I: DATA FLOW DIAGRAMS

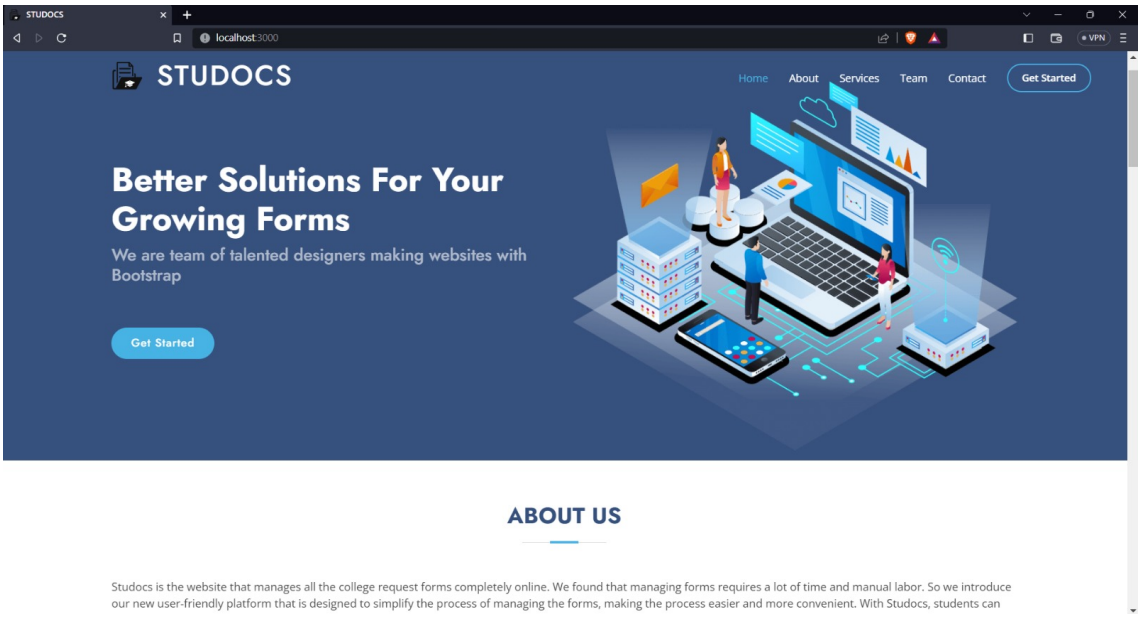
The dataflow diagram in Studocs provides a visual representation of the flow of data within the system. It illustrates how information is captured, processed, stored, and transmitted between different components and external systems. The dataflow diagram serves as a blueprint that highlights the various stages and transformations that occur as data moves through the system, ensuring a clear understanding of how data is handled within Studocs.



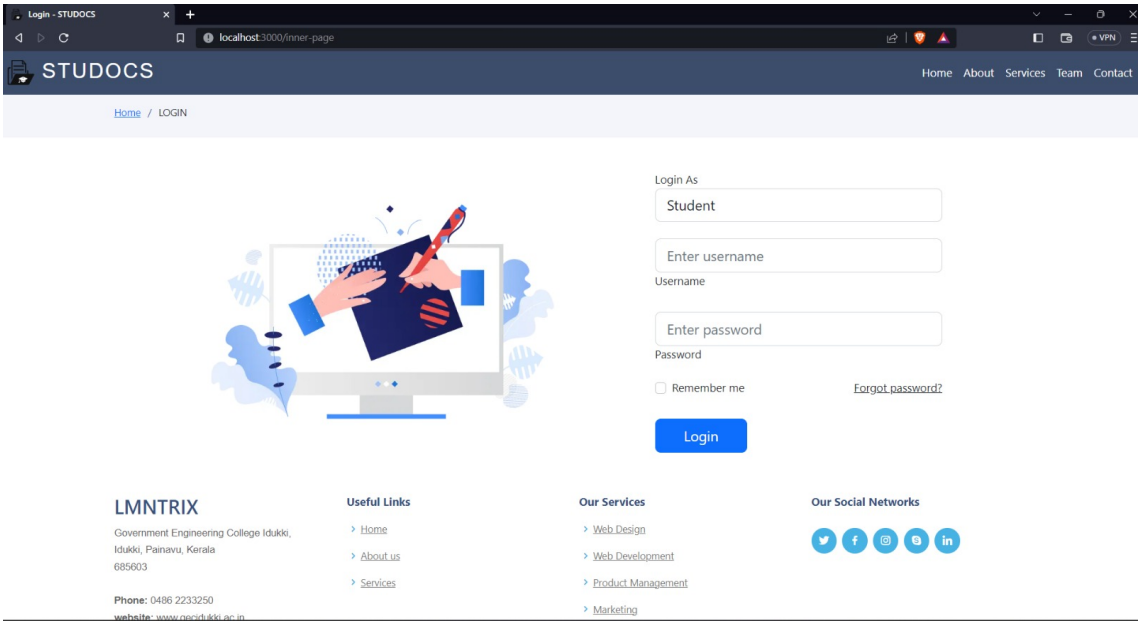
APPENDIX II: SCREENSHOTS

Adding the screenshots of the website below-

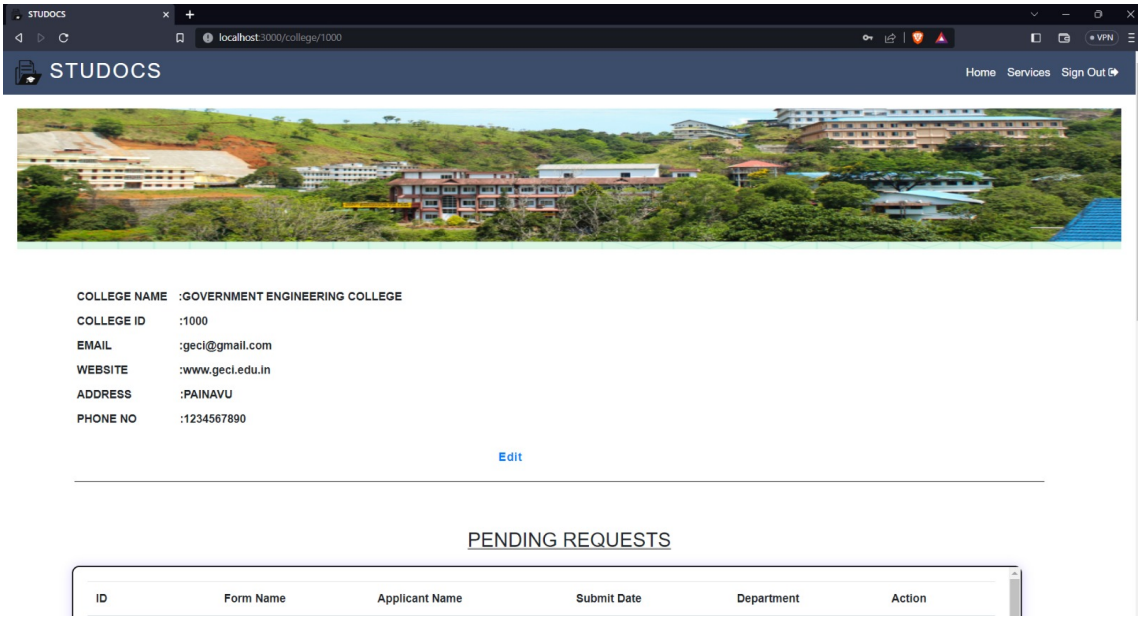
1. Screenshot 1: Home Page



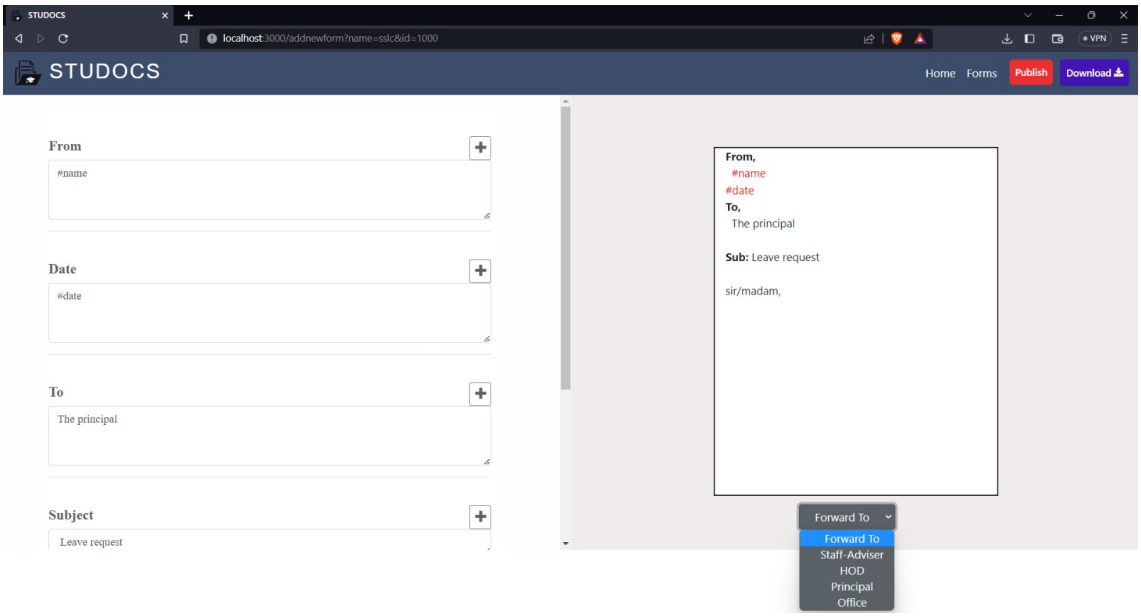
2. Screenshot 2: Login Page



3. Screenshot 3: College Page



4. Screenshot 4: Create Form Page



APPENDIX III: SAMPLE CODE

The 'app.js' file in Studocs contains the main application logic and serves as the entry point for the system. It is a critical component that handles the initialization, configuration, and coordination of various modules and functionalities within the application. By placing the code of 'app.js', the system can effectively manage the routing, middleware, database connections, and other essential aspects of Studocs.

The 'app.js' file typically sets up the server environment, establishes connections to databases, and defines the routes and endpoints for handling incoming requests. It plays a crucial role in orchestrating the different components of Studocs, such as user authentication, form processing, database operations, and API integrations. Placing the code of 'app.js' ensures the proper functioning and smooth execution of Studocs, enabling it to handle user interactions, process data, and deliver the expected functionalities to its users.

```
// Import required modules
const express = require('express');
const session = require('express-session');
const fileUpload = require('express-fileupload');
const bodyParser=require('body-parser');
const flash = require('connect-flash');
const path=require('path');
const db=require('./controller/dbconnect');
const mysqlStore = require('express-mysql-session')(session);

const encoder =bodyParser.urlencoded({extended:true});
require('dotenv').config();

// Create an instance of the Express app
const app = express();
```

```
app.set('view engine','ejs');


//mysql session store
var sessionstore =new mysqlStore({
  expiration :10800000,
  createDatabaseTable: true,
  schema:{
     tableName:'Sessions',
     columnNames:{
        session_id:'session id',
        expires:'expires',
        data:'data'
     }
  }
},db.connection);

//session setup
app.use(session({
  secret:process.env.SECRET_KEY,
  store:sessionstore,
  resave:false,
  saveUninitialized:true,
  cookie: { maxAge: 24 * 60 * 60 * 1000 },
}));


// Serve static files
app.use(express.static(__dirname +  '/public/'));
app.use(express.json({}));
```

```
app.use(flash());
app.use(encoder);
app.use(fileUpload({
  createParentPath:true,
  limits:{
    fileSize:4*1024*1024
  },
  abortOnLimit:true
}
));

//authentication
const isAuth = (req,res,next) =>{
  if(req.session.isAuth){
    next();
  }
  else{
     res.redirect('/inner-page');
  }
}

const route =require('./routes/routes')(app,isAuth,encoder);

// Start the server
app.listen(3000, () => {
  console.log('Studocs app is listening on port 3000.');
});
```