

STUDENT'S ACADEMIC SYNERGY WEB PORTAL

Submitted in partial fulfilment of the requirement for the award of bachelor of Engineer
degree in Electronics and Communication Engineering

by

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
SCHOOL OF ELECTRICAL AND ELECTRONICS**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

CATEGORY-1 UNIVERSITY BY UGC

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APRIL – 2024



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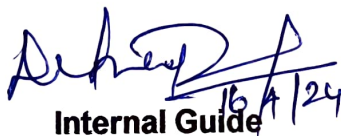
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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **KUSHAL B (40130122)**, **AKSHAT ANAND (40130009)** who carried out the project entitled "**STUDENT'S ACADEMIC SYNERGY WEB-PORTAL**" under our supervision from November 2023 to April 2024.



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DECLARATION

We, **KUSHAL B (40130122)** and **AKSHAT ANAND (40130009)** hereby declare that the Project Report entitled "**STUDENT'S ACADEMIC SYNERGY WEB-PORTAL**" done by us under the guidance of **Dr. T. THAJ MARY DELSY, M.E., Ph.D., Associate Professor at Sathyabama Institute of Science and Technology, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600119** is submitted in partial fulfilment of the requirements for the award of Bachelor of Engineer Degree in **DEPARTMENT OF ELECTRONIC AND COMMUNICATION ENGINEERING.**

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ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to **The Board of Management of Sathyabama Institute of Science and Technology** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. N. M. NANDHITHA, M.E., Ph.D., Professor & Dean School of Electrical and Electronics** and **Dr. T. RAVI, M.E., Ph.D., Professor & Head of the Department, Department of Electronics and Communication Engineering** for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Project Guide **Dr. T. THAJ MARY DELSY, M.E., Ph.D., Associate Professor, Department of Electronics and Communication Engineering**, for her valuable guidance, suggestions, and constant encouragement paved way for the successful completion of my project work.

I wish to express my thanks to all teaching and non-teaching staff members of the Department of Electronics and Communication Engineering who were helpful in many ways for the completion of the project.

ABSTRACT

In our college, junior students often struggle to navigate the complexities of their coursework, seeking guidance and support for their semester projects and studies. Recognizing the wealth of knowledge and experience held by senior students, this project aims to bridge the gap between juniors and seniors, fostering camaraderie and mutual assistance within the student body.

The project entails the development of an innovative online platform designed to facilitate interaction between seniors and juniors. This platform will offer user-friendly functionalities, allowing senior students to provide guidance and assistance to juniors in their respective domains of expertise. Juniors will be able to easily connect with seniors who possess relevant knowledge and experience, seeking advice, clearing doubts, and receiving guidance for their projects.

To incentivize senior students to participate and engage in mentorship roles, various communication channels will be integrated, including real-time chat, discussion forums, and video conferencing options. Additionally, personalized progress tracking and feedback mechanisms will be implemented to evaluate the effectiveness of mentorship relationships and enhance the quality of interactions.

Feedback mechanisms will be token-based, with juniors assigning tokens to seniors based on the level of assistance provided. Seniors will accumulate credit scores based on these reviews, incentivizing their continued involvement in mentorship activities. Furthermore, this platform will serve as a tool for seniors to revisit and reinforce their understanding of previous semester topics, addressing the common issue of knowledge retention over time.

Throughout the development and deployment process, ethical considerations and data privacy will be paramount. The platform will prioritize the protection of user data and uphold ethical standards in all interactions.

In conclusion, the creation of this online platform aims to cultivate a culture of collaboration and support within our college community. By facilitating academic interaction between seniors and juniors, the platform seeks to strengthen the academic environment, empowering juniors to thrive while allowing seniors to leave a positive and lasting impact on their peers' educational journey.

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CHAPTER – 1

INTRODUCTION

In the ever-evolving landscape of higher education, the quest for knowledge is a journey often shared across generations of students. Within the hallowed halls of our collegiate institution, a dynamic narrative unfolds—a tale of juniors embarking on their academic odyssey, seeking guidance through the labyrinth of coursework complexities. These students, with dreams and aspirations, are, at times, in need of a guiding light, a mentor who can illuminate their path through the intricacies of their studies, offer insights into their minor and major projects, and even provide a listening ear during moments of mental turmoil. On the other side of this educational spectrum are the seniors, individuals who have traversed a significant portion of their academic journey. With years of learning, exploration, and discovery behind them, they possess a treasure trove of knowledge, experiences, and insights. They stand as beacons of wisdom, uniquely positioned to extend a helping hand to their junior counterparts.

Recognizing this symbiotic relationship within the student body, we present the culmination of an innovative vision—a project titled "Student's Academic Synergy Web Portal." This project aims to bridge the chasm that often separates juniors and seniors, harnessing the collective wisdom of the latter to guide and support the former. At its core, this endeavour envisions an online platform, meticulously designed and meticulously implemented, that serves as a catalyst for interaction between seniors and juniors within our collegiate community. This digital haven for academic synergy holds a promise to transform the student experience, fostering an environment of shared learning and mutual growth.

The cornerstone of our project rests on user-friendly functionalities, engineered to facilitate seamless communication between students of different academic levels. Central to this endeavour is the objective of enabling senior students to provide invaluable guidance, assistance, and support to their junior counterparts. Whether the need arises for academic tutoring, project mentorship, or simply a comforting conversation during stressful times, the platform aspires to be the bridge that connects students. A critical question arises: What motivates seniors to extend their wisdom and

experience to the juniors? To address this query and ensure the sustained engagement and effectiveness of the 2 platform, we have devised an array of communication channels. Real-time chat, discussion forums, and video conferencing options will seamlessly connect students across different levels.

Additionally, the portal incorporates a system of personalized progress tracking and feedback mechanisms. These mechanisms are not merely tokens of acknowledgment; they hold the power to influence a student's academic journey. Tokens generated by juniors, reflective of the quality and impact of mentorship received, translate into credit scores for the seniors in their respective semesters. In this way, the project not only fosters junior development but also encourages seniors to refresh and reinforce their understanding of the academic fundamentals they've mastered in previous semesters. Throughout the entire development and deployment process, ethical considerations and data privacy remain paramount. The safeguarding of personal information and the maintenance of a secure environment are commitments we uphold unwaveringly. In conclusion, the birth of this online platform embodies the spirit of camaraderie and collaboration within our collegiate community. It heralds a future where the lines between juniors and seniors blur, where knowledge flows freely, and where every student, regardless of their academic journey's stage, finds the support and guidance they seek. The "Student's Academic Synergy Web Portal" aspires to be the tapestry that weaves this narrative—a story of unity, shared learning, and the collective pursuit of knowledge.

1.1 MOTIVATION

The proposed online platform aims to bridge the gap between juniors and seniors in college by facilitating mentorship and academic support. Seniors can share their expertise, while juniors can receive guidance on coursework and projects. Through real-time communication and feedback mechanisms, seniors are motivated to help, fostering a culture of collaboration and support within the college community, ultimately enhancing the academic environment for all students.

1.2 PROJECT INTRODUCTION

Our project aims to address the challenges faced by junior students in navigating their academic coursework by creating an innovative online platform for mentorship and support. By leveraging the wealth of knowledge and experience held by senior students, we seek to bridge the knowledge gap and foster a culture of collaboration within our college community. The platform will feature user-friendly functionalities, including real-time chat, discussion forums, and video conferencing options, enabling seniors to provide valuable guidance and assistance to juniors in their respective domains. Personalized progress tracking and feedback mechanisms will ensure the effectiveness of mentorship relationships, with seniors incentivized through token-based feedback mechanisms. Additionally, the platform will serve to reinforce seniors' understanding of foundational concepts while upholding ethical considerations and data privacy. Ultimately, our initiative aims to cultivate a supportive academic environment where juniors can thrive and seniors can leave a positive and lasting impact on their peers' educational journey.

CHAPTER – 2

LITERATURE SURVEY

The "Students Academic Synergy Web Portal" project represents a significant effort to enhance the academic experience through an innovative online platform. To provide a comprehensive understanding of the project's context and significance, this literature review explores key themes related to educational web portals, technology in education, and the impact of such platforms on learning and collaboration.

2.1 LITERATURE SURVEY & SUMMARY

2.1.1 Literature survey

Santhoshini Sahu, et.al., in 2023 discussed about a study on Microservices and Application Programming Interface vulnerabilities. Microservices is an organizational approach for the development of software, in which programs are subdivided into smaller independent services. Application Programming Interface also known as API, is an interface that allows two programs to communicate with each other. Whenever you operate an app like Facebook, send an urgent message, or check the weather on your phone, you are using an application working with APIs. Nowadays, special styles of computing mechanisms which provide in- depth services inclusive of mechanical, aerospace, civil and environmental engineering, packages are regularly deployed on the cloud. As it offers a handy on-call version for renting sources and clean-to-use flexible infrastructures, these are a part of API. The main advantage of the usage of microservices is the capability to provide security for network- segregated web applications. Microservice architecture is used in an application to design a modular layout, whereby every microservice has single, unique functionality and can be independently controlled and deployed. The overall study comprises the experiences of various authors regarding the vulnerabilities in microservices and APIs. The prime motive is to attain enough knowledge about all the security concerns related to APIs and microservices.

Muruganantham A, et.al., in 2023 discussed about improving library document resource management and data sharing through semantic web technology. This research focuses on the limitations of the original association rule and presents a method for addressing these limitations by dividing the dataset into event sequences. The original association rule has a limited ability to identify references related to a keyword, only focusing on the closest ones, which can lead to incomplete and inaccurate results. The proposed method overcomes this limitation by categorizing different types of references based on the research subject, which enables the identification of relevant references that are not immediately adjacent. The reliability of different categories is calculated based on the event table, and candidate records undergo procedures such as aggregation and screening to eliminate less reliable records. The feasibility of this method is evaluated by comparing it with numerous association rule processes in the marketplace. The results show that the proposed method has a significant advantage over other algorithms, with a data correlation rate that remains stable at 80%. Moreover, this study emphasizes the importance of Linked Data technology in publishing and sharing data online. Linked Data provides a lightweight and incremental data transfer model, which makes it an ideal way to integrate resources into the information flow continuously. Libraries can use this technology to become part of the internet's information resources, thereby facilitating the addition and interoperability of further web resources. The development of Semantic Web technologies allows for easier communication between humans and computers, sharing information perception specifications that greatly facilitate communication between the two parties.

Anurag Rajput, et.al., in 2023 discussed about study of cloud providers (azure, amazon, and oracle) according to service availability and price. Computing in the cloud refers to a model of providing computing and networking resources on a utility-based, pay-as-you-go basis, without the need for a dedicated server or network. Many aspects of life, from medicine and education to the arts and entertainment, and beyond, are increasingly reliant on technological advancements. Here, Technology corporations play a decisive role. Both large and small IT companies have seen tremendous growth in recent years. Due to Cloud-Computing and its wonderful services, this is now

feasible. In the cloud, users have an unrealistic expectation of available resources yet only incur costs in proportion to what they actually use. With the development going rapidly, and each one has expanded its range of services. Cloud users, however, may have trouble determining which service provider is ideal for their specific requirements. We'll be looking at Microsoft Azure, Oracle Cloud, and Amazon Web Services, all of which provide cloud computing services. In order to more accurately assess available cloud computing service providers, readers of this article may benefit from examining the data presented here. Comparisons are made on a wide range of criteria, including the services and tools offered by each provider, the platforms they run on, the languages they support, the level of security and scalability, and the amount of data that can be stored in the cloud.

Fengwei Zou, et.al., in 2023 discussed about design and implementation of SSM-based booking system. With the gradual improvement and development of the tourism industry, the passenger flow of trains is large, and tourists from all over the world continue to increase, so the information management system of railway stations points out higher regulations. With the increasing maturity of computer ticketing technology, design and develop a ticketing system to improve the efficiency of all departments of the entire ticketing system. In view of the construction requirements of the booking system, the development design is mainly divided into front-end and back-end development, with the front-end being the web page and the back-end being the database. The software used in the development of the system is open source and free, using Eclipse as the development environment, JSP as the programming language, and MySQL as the server-side database. The main contents of the background management of the system include login, shift management, authority management, user management, order information management, passenger management, publicity management, message information management, etc. The main contents of the front desk include registration, login, personal information management, ticket information inquiry, my order, password change, etc. The simple and guiding interface design of the system makes it easier for users and managers to accept and use, and helps to carry out efficient business processing and information maintenance.

Wei Zhang, et.al., in 2023 discussed about web-based optimization and expansion of multimodal high school entrance examination data visualization. The reform of the new college entrance examination system makes students and their parents pay more attention to the feasibility and accuracy of the college entrance examination. The college entrance examination informatization can help the local admissions departments to mine and analyze the data rules from the massive college entrance examination data, and provide help and guidance for each link of volunteer application. Therefore, this paper, in order to comply with the development trend of the new college entrance examination information construction, proposes the optimization method of data visualization chart rendering and innovative combination of ideas to improve the Web rendering performance in order to enhance the interactive experience of users and the platform.

Hiuram Antunes, et.al., in 2021 discussed about advanced web methodology for flexible web development. Web development is one of the ways to contribute to the digitization of organizations. However, being a relevant area, it has the contribution of countless companies and people worldwide. This high number of contributions necessarily leads to several trends and forms of development. This article explores one of these trends, namely the use of react on the frontend and nodejs on the backend. In terms of the data flow between the frontend and the backend, the GraphQL specification was used. The database is supported by Postgresql. The architecture and organization of development is crucial to find generic baseline sequences that support cross-cutting development between different information systems. This was the focus of the development in order to easily change the data structure and reflect this change in the frontend, without the need for maintenance in the code. This is a key step to allow the next stage, namely the development supported by advanced techniques based on artificial intelligence (this stage is under development and will be described in a next article by the authors).

Sai Sri Nandan Challapalli, et.al., in 2021 discussed about web development and performance comparison of web development technologies in node.js and python. From the first website being created in 1991 by Tim Berners-Lee to this day in 2021, the world of websites and their development has seen a rapid evolution. Every

business nowadays has a website to make its online presence in this digital age. Website use is not only limited to this, but many people use them to build their online portfolio, apart from that there are many web-based applications/software, etc. This research paper discusses the process involved in developing a website in past and present, development of content delivery over the years, the website uses, a website for mobile devices, and performance comparison between two of the most used web backend development technologies, i. e, Node.js and Python. For comparing performance, we have used Locust – an open-source software and Autocannon and tested both of them under similar conditions.

Pooja Thakur, et.al., in 2023 discussed about Django: Developing web using python. Due to the COVID-19 pandemic situation digitalization gets more popularity. Every sector including education, medical, business, agriculture focuses on the digitalization that results the use of web development. There is the use of various technologies for the web development. Django and flask are the popular python-based framework that redefine the meaning of web development. Due to the rapid development feature, it now demanding in the market. It repeals the demand of other web framework. It is in the demand for the people who want to understand how to develop an elegant website with minimal fuss. Django and flask helps to reduce the repetition of task to make web development code less complex. In this paper the Django and flask web framework with its working at frontend and backend is designed for the development of shorten the URL is discussed.

Nick Glynn, et.al., in 2023 discussed about Full-Stack Web Development with Go: Build your web applications quickly using the Go programming language and Vue.js. Go is a modern programming language with capabilities to enable high-performance app development. With its growing web framework ecosystem, Go is a preferred choice for building complete web apps. This practical guide will enable you to take your Go skills to the next level building full stack apps. This book walks you through creating and developing a complete modern web service from auth, middleware, server-side rendering, databases, and modern frontend frameworks and Go-powered APIs. You'll start by structuring the app and important aspects such as networking, before integrating all the different parts together to build a complete web

product. Next, you'll learn how to build and ship a complete product by starting with the fundamental building blocks of creating a Go backend. You'll apply best practices for cookies, APIs, and security, and level up your skills with the fastest growing frontend framework, Vue. Once your full stack application is ready, you'll understand how to push the app to production and be prepared to serve customers and share it with the world. By the end of this book, you'll have learned how to build and ship secure, scalable, and complete products and how to combine Golang with existing products using best practices.

Kolawole Mangabo, et.al., in 2023 discussed about Full Stack Django and React: Get hands-on experience in full-stack web development with Python, React, and AWS. Django developers often need to rely on frontend developers to build a client-side solution for their web apps. By combining the capabilities of React with Django, this book creates a complete learning path to go from being a backend developer to a full stack developer in no time. This book will help you use React to build state-of-the-art UI layouts and Django to create an immaculate backend. This web development book will help you discover the full potential of combining the dual power of the two most popular frameworks – React and Django. You'll build full stack applications, including a RESTful API in the backend and an intuitive frontend, while exploring the advanced features of both frameworks. You'll also explore how the dynamic functionality of the React framework can be used to build your frontend systems and how the ORM layer of Django helps in simplifying database interactions. This will in turn boost the development process for building the backend and facilitate the building of full stack applications. By the end of the book, you will be able to create a dynamic full stack app starting from scratch on your own.

Akcaoglu, M., et.al., in 2016 discussed about increasing pre-service teachers' self-efficacy for technology integration through mentoring experiences. This study by Akcaoglu and Lee explores the impact of mentoring experiences on pre-service teachers' self-efficacy for technology integration. Through a structured mentoring program, pre-service teachers were provided with guidance and support to enhance their confidence in utilizing technology in educational settings. The findings indicate a significant improvement in pre-service teachers' self-efficacy following the mentoring

intervention, highlighting the importance of mentorship in facilitating the integration of technology into teaching practices. The study underscores the potential of mentoring programs to empower educators and equip them with the necessary skills to effectively leverage technology for enhanced learning outcomes.

Bozionelos, et.al., in 2016 discussed about employability and job performance as links in the relationship between mentoring receipt and career success: A study in SMEs. Bozionelos examine the relationship between mentoring receipt, employability, job performance, and career success in the context of small and medium-sized enterprises (SMEs). Through a comprehensive survey, the study reveals that mentoring receipt positively influences both employability and job performance, which in turn contribute to enhanced career success among employees in SMEs. The findings highlight the instrumental role of mentoring in facilitating career development and success within smaller organizational settings. The study emphasizes the value of mentorship programs in nurturing talent, improving job performance, and fostering career advancement opportunities for employees in SMEs.

Eby, et.al., in 2013 discussed about an interdisciplinary meta-analysis of the potential antecedents, correlates, and consequences of protege perceptions of mentoring. Eby et al. conduct a meta-analysis to comprehensively examine the antecedents, correlates, and consequences of protege perceptions of mentoring across various disciplines. The interdisciplinary approach enables a holistic understanding of the factors influencing proteges' perceptions of their mentoring relationships. The meta-analysis identifies several key factors, including mentor characteristics, relationship quality, and program design, that significantly impact proteges' perceptions of mentoring. The findings contribute to the existing literature by providing valuable insights into the complex dynamics of mentoring relationships and their implications for proteges' outcomes and experiences. The study underscores the importance of considering multifaceted factors in shaping proteges' perceptions of mentoring effectiveness across diverse contexts.

Ragins, et.al., in 2000 discussed about marginal mentoring: The effects of type of mentor, quality of relationship, and program design on work and career attitudes. Ragins et al. investigate the concept of marginal mentoring and its impact on work and

career attitudes among employees. Marginal mentoring refers to mentoring relationships characterized by limited interaction and support from mentors. Through a comprehensive survey, the study examines how different factors, including the type of mentor, quality of the relationship, and program design, influence the effectiveness of mentoring in shaping employees' attitudes towards work and career development. The findings highlight the detrimental effects of marginal mentoring on employee attitudes, underscoring the importance of fostering meaningful and supportive mentoring relationships in organizational settings. The study emphasizes the need for organizations to implement effective mentoring programs that prioritize relationship quality and mentor support to promote positive work and career outcomes for employees.

Sosik, et.al., in 2000 discussed about the role of gender in mentoring: Implications for diversified and homogeneous mentoring relationships. Sosik and Godshalk examine the role of gender in mentoring relationships and its implications for diversified and homogeneous mentoring interactions. Through a qualitative analysis, the study explores how gender dynamics influence the formation and dynamics of mentoring relationships in diverse organizational contexts. The findings suggest that gender can significantly impact the nature and effectiveness of mentoring relationships, with implications for both mentors and protégés. The study highlights the importance of recognizing and addressing gender-related biases and stereotypes in mentoring interactions to foster inclusive and supportive mentoring environments. By acknowledging the role of gender in mentoring dynamics, organizations can promote more equitable and beneficial mentoring relationships that contribute to enhanced career development and success for all individuals involved.

2.2 LITERATURE SUMMARY

The collection of research papers presented here encompasses a diverse range of topics in the realm of technology and development. Each paper delves into specific facets of its respective field, offering valuable insights and discoveries. Here's a comprehensive literature summary highlighting the key takeaways from these research papers.

In the paper by Santhoshini Sahu and her colleagues, they explore the world of Microservices and Application Programming Interfaces (APIs). Microservices, as an organizational approach for software development, involves breaking down programs into smaller, self-contained services. APIs, on the other hand, act as bridges enabling communication between different software applications. The authors stress the ubiquity of APIs in our daily interactions with various applications, from social media to weather forecasts. As a result, the integration of these services into cloud-based platforms has become increasingly common. This study aims to investigate vulnerabilities associated with these technological components, emphasizing the need to understand and address security concerns comprehensively.

Muruganantham and his team take on the challenge of improving library document resource management. Their research focuses on enhancing the original association rule, which is often limited in its capacity to identify relevant references. They propose a method that categorizes references based on research subject, thereby extending the reach beyond immediate connections. This approach, supported by an event table, calculates the reliability of different reference categories. The findings demonstrate the superior performance of this method when compared to existing algorithms. Additionally, the paper underscores the pivotal role of Linked Data technology in facilitating data sharing, which is of great significance, particularly for libraries.

Anurag Rajput and colleagues tackle the ever-expanding world of cloud computing. As our reliance on technology continues to grow, cloud computing has become the backbone of various domains, offering the flexibility of utility-based resource provisioning without the need for dedicated servers. The proliferation of cloud service providers has made it increasingly challenging for users to select the most suitable provider for their specific needs. The paper examines three major players in this field, Microsoft Azure, Oracle Cloud, and Amazon Web Services. They provide a comprehensive comparison of services and features, helping readers make informed decisions.

Fengwei Zou and their team address the information management system for

railway stations, which is increasingly crucial due to the growth in global tourism. They develop a booking system to optimize the efficiency of ticketing and information management, with the system divided into front-end and back-end components. The utilization of open-source software, such as Eclipse, JSP, and MySQL, underscores cost-effectiveness. The paper details various aspects of system management, including user and authority management, passenger management, and information maintenance. An intuitive interface design is highlighted, making the system user-friendly and efficient.

Wei Zhang's research explores data visualization in the context of the new college entrance examination system. As educational systems adapt to digitalization, data-driven decision-making is becoming integral to the admissions process. The paper discusses methods to enhance data visualization, emphasizing the role it plays in aiding students and admissions departments.

Hiuram Antunes delves into web development methodologies, focusing on the use of React on the frontend and Node.js on the backend. The paper underscores the significance of GraphQL and Postgresql for data flow and database support. The development approach advocated here prioritizes flexibility, particularly in adapting to changing data structures.

Sai Sri Nandan Challapalli investigates web development technologies, specifically the performance of Node.js and Python. Their work spans the evolution of website development, emphasizing the importance of web presence in today's digital age. The performance comparison underscores the significance of choosing the right technology stack for web development projects.

Pooja Thakur's paper zeroes in on the demand for web development tools such as Django and Flask. In a digitized world catalyzed by the COVID-19 pandemic, these Python-based frameworks simplify web development and streamline the process. Their efficiency in reducing repetitive tasks is a notable feature discussed.

Moving on to full-stack development, Nick Glynn provides a guide to building web applications using the Go programming language and Vue.js. The book discusses essential aspects of building web services, including security and best practices for both backend and frontend development.

Finally, Kolawole Mangabo explores the combination of React with Django for full-stack web development. This research emphasizes the power of React for creating modern user interfaces and Django for a robust backend. This approach streamlines the development process, ultimately helping developers build full-stack applications more efficiently.

In summary, these research papers collectively present a rich tapestry of contemporary technology and development trends. They address vital issues, such as security in microservices and APIs, data management in libraries, cloud service provider selection, railway ticketing systems, data visualization, web development methodologies, and the selection of the right technology stack.

CHAPTER – 3

AIM AND SCOPE

3.1 AIM

The aim of the investigation for the student's academic synergy web portal encompasses a multifaceted approach aimed at understanding, addressing, and leveraging the dynamics of the educational environment. It involves a thorough exploration of the prevailing needs, challenges, and opportunities within educational institutions. Through comprehensive analysis, the investigation seeks to uncover the underlying requirements and aspirations of students, faculty, and administrators alike. By evaluating existing practices and technologies, the aim is to gauge the potential impact and feasibility of introducing a web portal tailored to enhance academic collaboration, resource sharing, and support mechanisms. Crucially, this investigation aims to define clear objectives and goals, serving as the foundation for the development and implementation of a web portal that not only meets but exceeds the expectations of its diverse user base. In essence, the aim is to foster an environment conducive to academic synergy, where students can thrive through enhanced connectivity, engagement, and access to valuable educational resources and opportunities.

- To identify the specific objectives and goals of the proposed web portal.
- To assess the current state of student collaboration, resource sharing, and academic support within educational institutions.
- To determine the feasibility and potential benefits of creating a web portal for enhancing academic synergy among students.

3.2 SCOPE

○ User Requirements

- Conduct surveys, interviews, or focus groups with various stakeholders, including students, faculty members, academic advisors, and administrators.

- Identify pain points, challenges, and unmet needs in the current academic environment.
- Gather feedback on desired features, functionalities, and user experience preferences for the web portal.
- Explore the unique requirements of different user groups and academic disciplines to ensure inclusivity and relevance.
- **Feature Analysis**
 - Evaluate existing web portals, educational platforms, and collaboration tools to identify best practices and innovative features.
 - Prioritize features based on their potential impact, feasibility, and alignment with the objectives of the web portal.
 - Consider features such as real-time collaboration, personalized recommendations, gamification elements, and integration with social media platforms to enhance student engagement and motivation.
- **Technical Feasibility**
 - Collaborate with IT professionals and software developers to assess the technical requirements and constraints of building the web portal.
 - Evaluate hosting options, programming languages, frameworks, and databases suitable for the project.
 - Consider factors such as data storage, bandwidth requirements, API integrations, and compatibility with different browsers and devices.
 - Conduct a cost-benefit analysis to determine the most cost-effective and scalable technology stack for the web portal.
- **Content Management**
 - Develop strategies for organizing, indexing, and tagging academic resources to facilitate easy navigation and discovery.
 - Implement content moderation mechanisms to ensure the quality and reliability of shared materials.
 - Explore options for crowdsourcing content creation and peer review processes to foster a collaborative learning community.

- **Collaboration Tools**

- Integrate communication tools such as instant messaging, video conferencing, and discussion forums to facilitate peer-to-peer interaction and knowledge exchange.
- Implement features for group projects, study groups, and virtual classrooms to promote collaborative learning experiences.
- Provide tools for tracking progress, scheduling meetings, and managing tasks within collaborative projects.

- **Accessibility and Usability**

- Ensure that the web portal complies with accessibility standards (e.g., WCAG) to accommodate users with diverse needs and disabilities.
- Conduct usability testing with representative users to identify usability issues and refine the user interface design.
- Provide customizable settings and preferences to accommodate individual user preferences and accessibility requirements.

- **Data Privacy and Security**

- Implement robust security measures to protect sensitive user data, including encryption, secure authentication, and access controls.
- Comply with relevant data protection regulations and privacy laws to safeguard user privacy rights.
- Educate users about data privacy best practices and provide transparency regarding data collection, storage, and usage policies.

- **Feedback Mechanisms**

- Establish channels for collecting user feedback, such as surveys, feedback forms, and suggestion boxes.
- Regularly solicit input from users and stakeholders to identify areas for improvement and prioritize feature enhancements.
- Demonstrate responsiveness to user feedback by promptly addressing issues, implementing requested features, and communicating updates to the user community.

- **Integration with Existing Systems**

- Collaborate with IT administrators to ensure seamless integration with existing institutional systems, such as the learning management system (LMS), student information system (SIS), and authentication services.
- Develop APIs and integration protocols to enable data exchange and interoperability between the web portal and other systems.
- Provide documentation and support for system administrators to facilitate the deployment and maintenance of the integrated environment.

- **Scalability and Sustainability**

- Design the web portal architecture with scalability in mind to accommodate future growth in user base and content volume.
- Implement performance monitoring and optimization strategies to ensure smooth operation under heavy load conditions.
- Develop a sustainable business model or funding strategy to support ongoing maintenance, updates, and expansion of the web portal over time.

- **Evaluation Metrics**

- Define key performance indicators (KPIs) and success metrics to measure the impact and effectiveness of the web portal.
- Track metrics such as user engagement, retention rates, academic performance improvements, and user satisfaction scores.
- Conduct regular evaluations and data analysis to identify trends, insights, and areas for continuous improvement.

3.3 EXISTING SYSTEM

The current system lacks a structured platform for seniors to assist juniors, leading to fragmented support and missed opportunities for knowledge sharing. Mentoring often occurs informally, hindering consistent guidance. The absence of a centralized system results in juniors facing challenges alone, while seniors' expertise remains underutilized. This necessitates the development of an organized online mentorship platform to enhance academic support and collaboration within the college community.

3.4 DISADVANTAGES

- **Lack of Consistency:** In the absence of a structured platform, mentoring interactions between seniors and juniors may lack consistency. This inconsistency can lead to varying levels of support and guidance for juniors, resulting in gaps in their academic development.
- **Limited Access to Expertise:** Without a centralized system, juniors may struggle to identify and connect with seniors possessing the specific expertise they require. This limitation can hinder juniors' ability to access comprehensive guidance and assistance for their academic endeavors.
- **Inefficient Communication:** Informal mentoring often relies on ad-hoc communication methods, such as in-person meetings or email exchanges, which can be inefficient and time-consuming. Without streamlined communication channels, juniors may experience delays in receiving timely support and responses to their queries.

3.5 PROPOSED SYSTEM

An online mentorship platform connecting junior and senior students through domain-specific profiles, facilitating academic guidance, project assistance, and mental support. Integrated communication channels including real-time chat, forums, and video conferencing ensure engagement. Token-based feedback mechanisms incentivize mentorship, while also reinforcing seniors' foundational knowledge. Ethical considerations and data privacy are prioritized throughout development and deployment.

3.6 ADVANTAGES

- **Enhanced Academic Support:** The proposed mentorship platform provides juniors with direct access to senior students possessing expertise in various academic domains. This facilitates tailored guidance, assistance, and clarification of doubts, thereby enhancing juniors' understanding of coursework and project requirements.
- **Fostered Mentorship Relationships:** By incentivizing mentorship through token-based feedback mechanisms, the platform encourages seniors to actively engage with juniors, fostering meaningful mentorship relationships. This not only benefits

juniors in their academic pursuits but also allows seniors to leave a positive impact on their peers' educational journey.

- **Strengthened Academic Community:** Through the integration of communication channels and personalized progress tracking, the platform fosters a sense of camaraderie within the college community. By facilitating collaboration and support between juniors and seniors, the platform contributes to a strengthened academic environment where students can thrive and learn from each other's experiences.

3.7 WORK FLOW OF PROPOSED SYSTEM

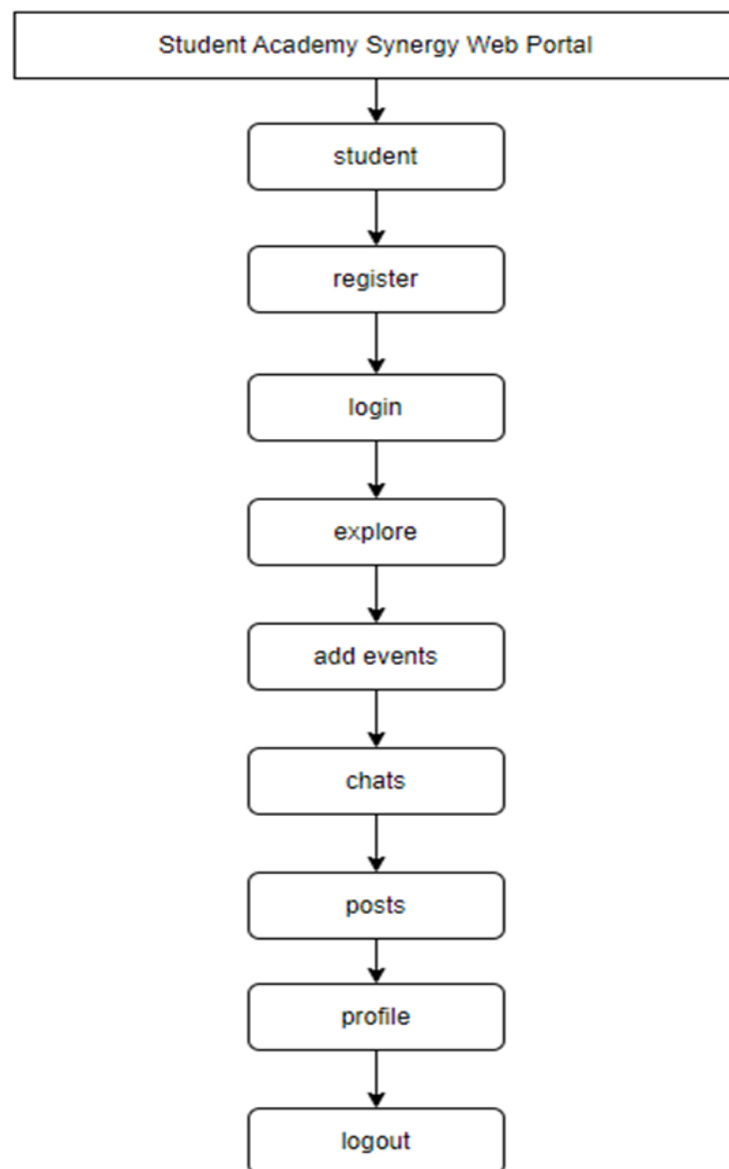


Fig: 3.1 : Work flow of proposed system

CHAPTER – 4

EXPERIMENTAL METHODS

4.1 ARCHITECTURE

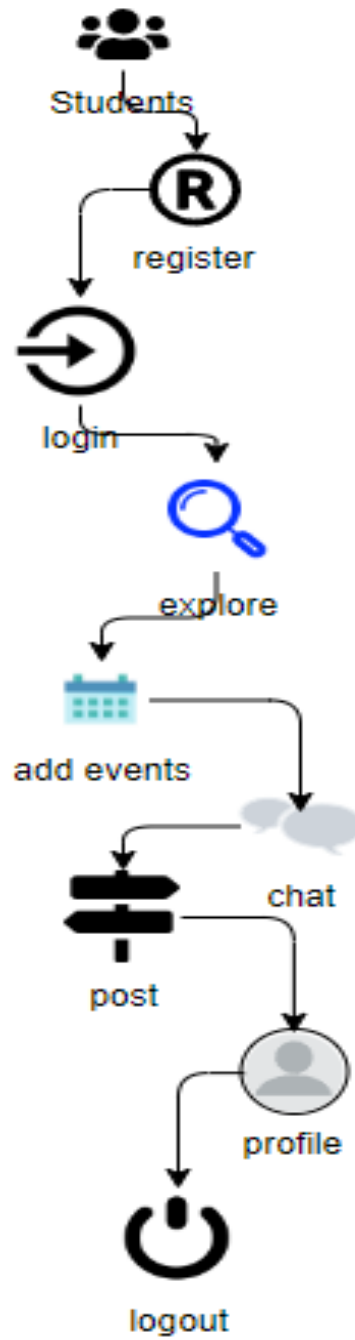


Fig: 4.1: Architecture of proposed system

- **Students:** This component represents the user base of the platform, consisting of both junior and senior students who will interact with the system.
- **Register:** The registration functionality allows students to create accounts on the platform by providing necessary details such as name, email, and password. This step is essential for establishing user identities within the system.
- **Login:** After registering, students can log in to the platform using their credentials. The login process verifies the authenticity of users and grants them access to the platform's features and functionalities.
- **Explore:** Once logged in, students can explore the platform to discover various activities, events, and resources shared by other users. This feature enables students to stay informed about ongoing initiatives and opportunities within the college community.
- **Add Events:** Students, particularly seniors, have the ability to add events to the platform. They can create and publish details about upcoming events such as workshops, seminars, or social gatherings. This allows for the dissemination of information and coordination of activities among students.
- **Chat:** The chat functionality enables real-time communication between students. Students can engage in one-on-one or group chats, facilitating discussions, collaboration, and support among peers.
- **Post:** Students can create and publish posts on the platform to share information, ideas, or announcements with the community. These posts can cover a wide range of topics, including academic discussions, project updates, or general inquiries.
- **Profile:** Each student has a profile on the platform where they can manage their personal information and preferences. This includes updating their profile picture, bio, contact details, and other relevant information such as the projects done by them , subjects of expertise , conferences attended , etc.The profile serves as a personalized space for students within the platform.
- **Logout:** The logout functionality allows students to securely end their session and log out of the platform when they are done using it. This ensures the protection of their account and data from unauthorized access.

4.2 REQUIREMENT ANALYSIS

4.2.1 Functional and non-functional requirements

- **Functional Requirements**

- User Registration and Profile Creation: Allow seniors and juniors to create profiles specifying their academic expertise and needs respectively.
- Real-Time Communication: Provide features such as real-time chat, discussion forums, and video conferencing options for seamless interaction between seniors and juniors.
- Progress Tracking: Enable tracking of mentorship progress and outcomes to assess the effectiveness of the mentorship relationships.
- Feedback Mechanism: Implement a token-based feedback system where juniors can provide feedback to seniors based on the assistance received, with weightage given to the quality of help provided.

- **Non-Functional Properties**

- User-Friendly Interface: Ensure the platform is easy to navigate and intuitive for both seniors and juniors to use.
- Security and Data Privacy: Implement robust security measures to protect user data and ensure compliance with data privacy regulations.
- Scalability: Design the platform to accommodate a growing number of users and interactions over time.
- Reliability: Ensure high uptime and availability of the platform to facilitate continuous mentorship interactions.
- Performance: Optimize platform performance to provide seamless communication and interaction experiences for users.
- Ethical Considerations: Embed ethical guidelines within the platform to promote fair and respectful interactions between seniors and juniors.
- Integration: Ensure seamless integration of various communication channels and feedback mechanisms within the platform for enhanced user experience.

4.2.2 Software requirements

- Operating System : Windows95/98/2000/XP
- Application Server : Tomcat 7.0

- Front End : React JS
- Scripts : JavaScript.
- Backend Language : Java
- Database : MySQL 6.0
- IDE : IntelliJ and Visual Studio Code

4.3 SYSTEM DESIGN

4.3.1 Input design

In an information system, input is the raw data that is processed to produce output. During the input design, the developers must consider the input devices such as PC, MICR, OMR, etc.

Therefore, the quality of system input determines the quality of system output. Well-designed input forms and screens have following properties –

- It should serve specific purpose effectively such as storing, recording, and retrieving the information.
- It ensures proper completion with accuracy.
- It should be easy to fill and straightforward.
- It should focus on user's attention, consistency, and simplicity.
- All these objectives are obtained using the knowledge of basic design principles regarding –

What are the inputs needed for the system?

How end users respond to different elements of forms and screens.

Objectives for Input Design

The objectives of input design are –

- To design data entry and input procedures
- To reduce input volume
- To design source documents for data capture or devise other data capture methods
- To design input data records, data entry screens, user interface screens, etc.
- To use validation checks and develop effective input controls.

4.3.2 Output Design

The design of output is the most important task of any system. During output design, developers identify the type of outputs needed, and consider the necessary output controls and prototype report layouts.

Objectives of Output Design:

The objectives of input design are:

- To develop output design that serves the intended purpose and eliminates the production of unwanted output.
- To develop the output design that meets the end user's requirements.
- To deliver the appropriate quantity of output.
- To form the output in appropriate format and direct it to the right person.
- To make the output available on time for making good decisions.

4.3.3 UML diagrams

Use case diagram

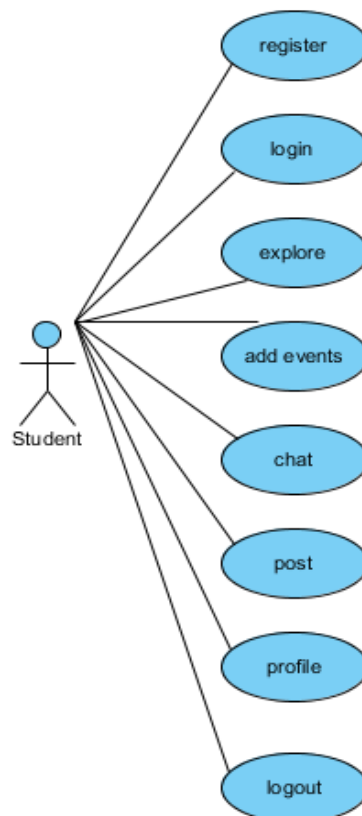


Fig: 4.2: Use case diagram

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

Class diagram

In software engineering, a class diagram in the Unified Modelling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among the classes. It explains which class contains information.

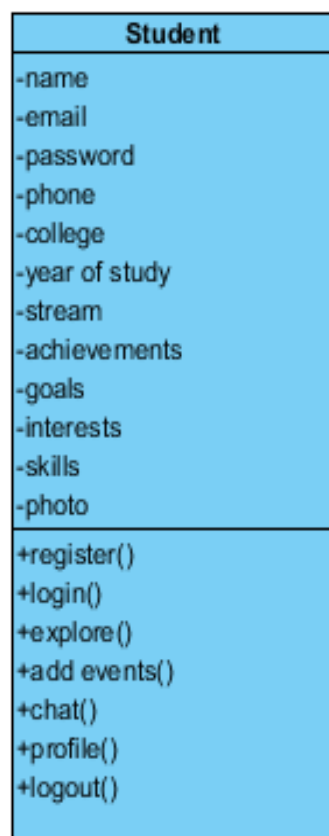


Fig: 4.3: Class Diagram

A plus sign is used to denote that the property or method it is connected to is public. A minus sign is used to denote that the property or method it is connected to is private.

Sequence Diagram

A sequence diagram in Unified Modelling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.

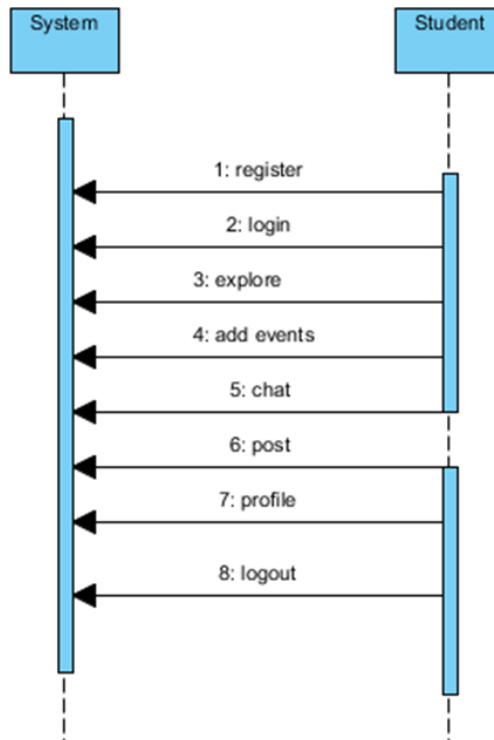


Fig: 4.4: Sequence diagram

Collaboration Diagram

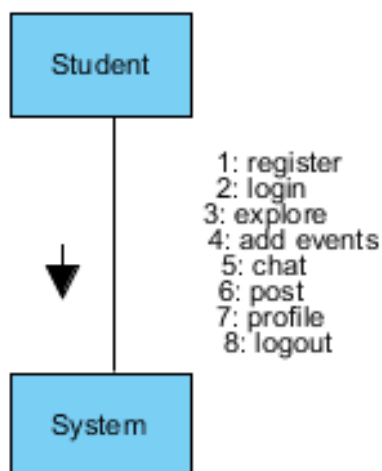


Fig 4.5: Collaboration diagram

In collaboration diagram the method call sequence is indicated by some numbering technique as shown below. The number indicates how the methods are called one after another. We have taken the same order management system to describe the collaboration diagram. The method calls are similar to that of a sequence diagram. But the difference is that the sequence diagram does not describe the object organization whereas the collaboration diagram shows the object organization.

Deployment Diagram

Deployment diagram represents the deployment view of a system. It is related to the component diagram. Because the components are deployed using the deployment diagrams. A deployment diagram consists of nodes. Nodes are nothing but physical hardware's used to deploy the application.

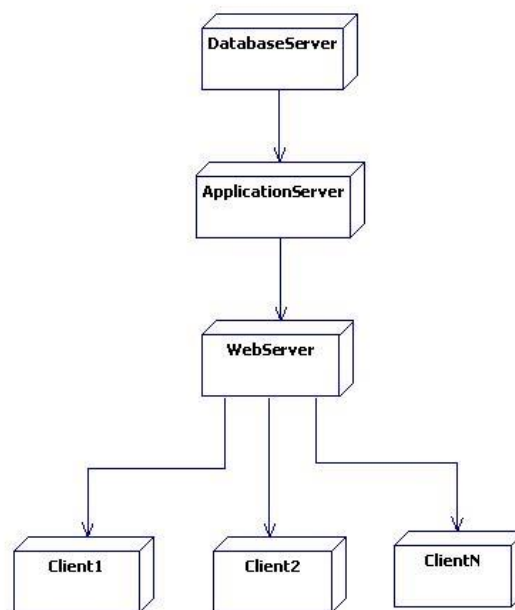


Fig: 4.6: Deployment Diagram

Component Diagram

A component diagram, also known as a UML component diagram, describes the organization and wiring of the physical components in a system. Component diagrams are often drawn to help model implementation details and double-check

that every aspect of the system's required functions is covered by planned development.

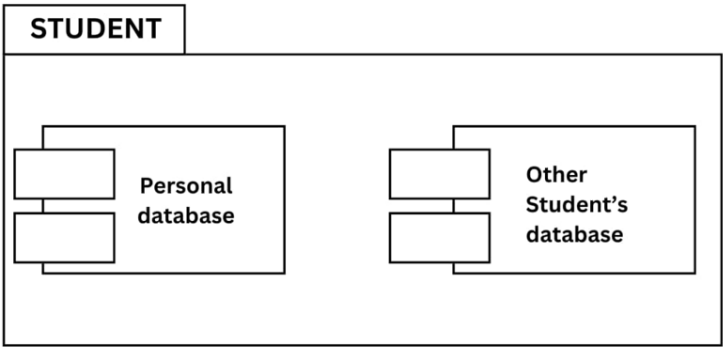


Fig: 4.7: Component diagram

Activity Diagram

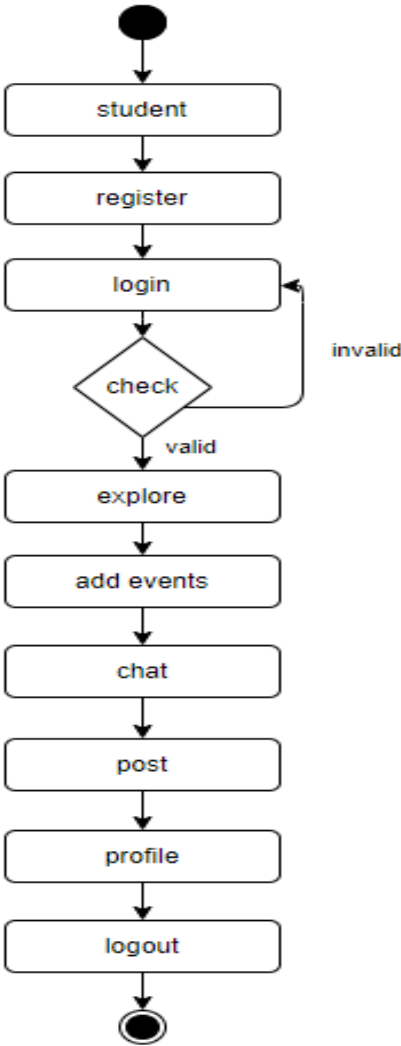


Fig: 4.8: Activity diagram

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modelling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

ER Diagram

An Entity–relationship model (ER model) describes the structure of a database with the help of a diagram, which is known as Entity Relationship Diagram (ER Diagram). An ER model is a design or blueprint of a database that can later be implemented as a database. The main components of E-R model are: entity set and relationship set. An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database. Let's have a look at a simple ER diagram to understand this concept.

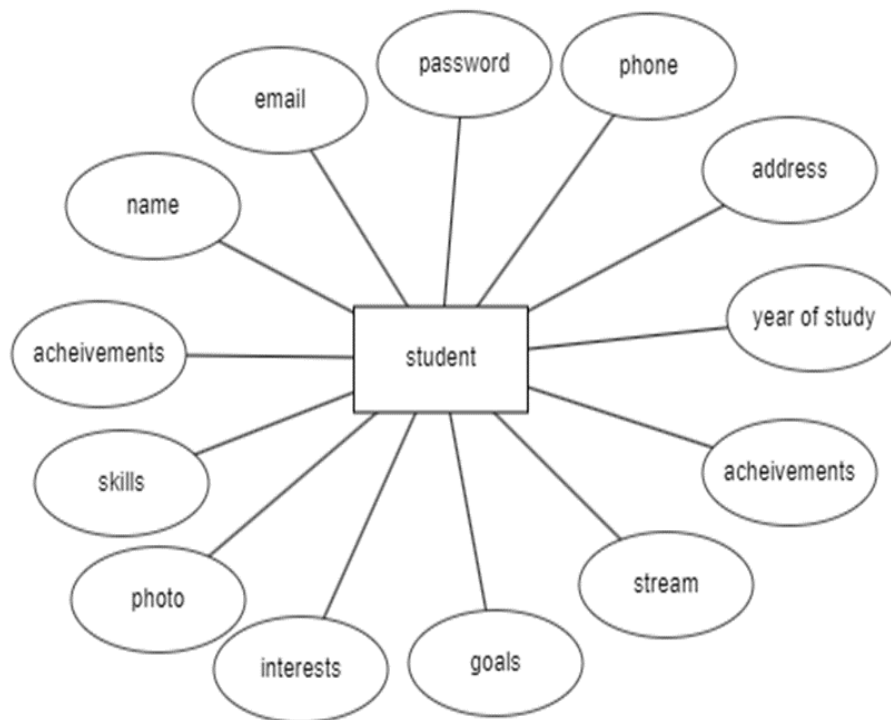


Fig: 4.9: ER diagram

4.3.4 DFD diagram

A Data Flow Diagram (DFD) is a traditional way to visualize the information flows within a system. A neat and clear DFD can depict a good amount of the system requirements graphically. It can be manual, automated, or a combination of both. It shows how information enters and leaves the system, what changes the information and where information is stored. The purpose of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system.

Level 1 diagram:

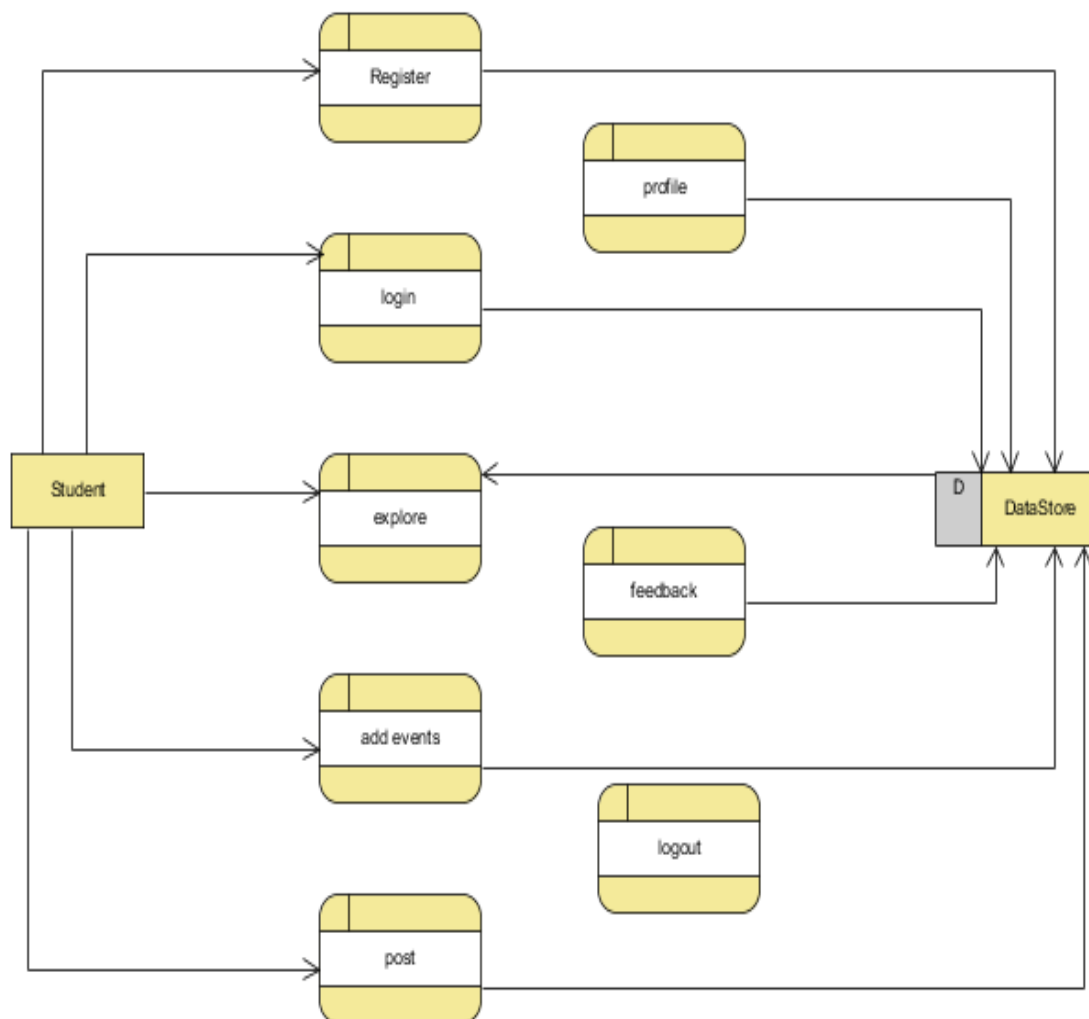


Fig: 4.10: DFD level 1 diagram

Level 2 diagram:

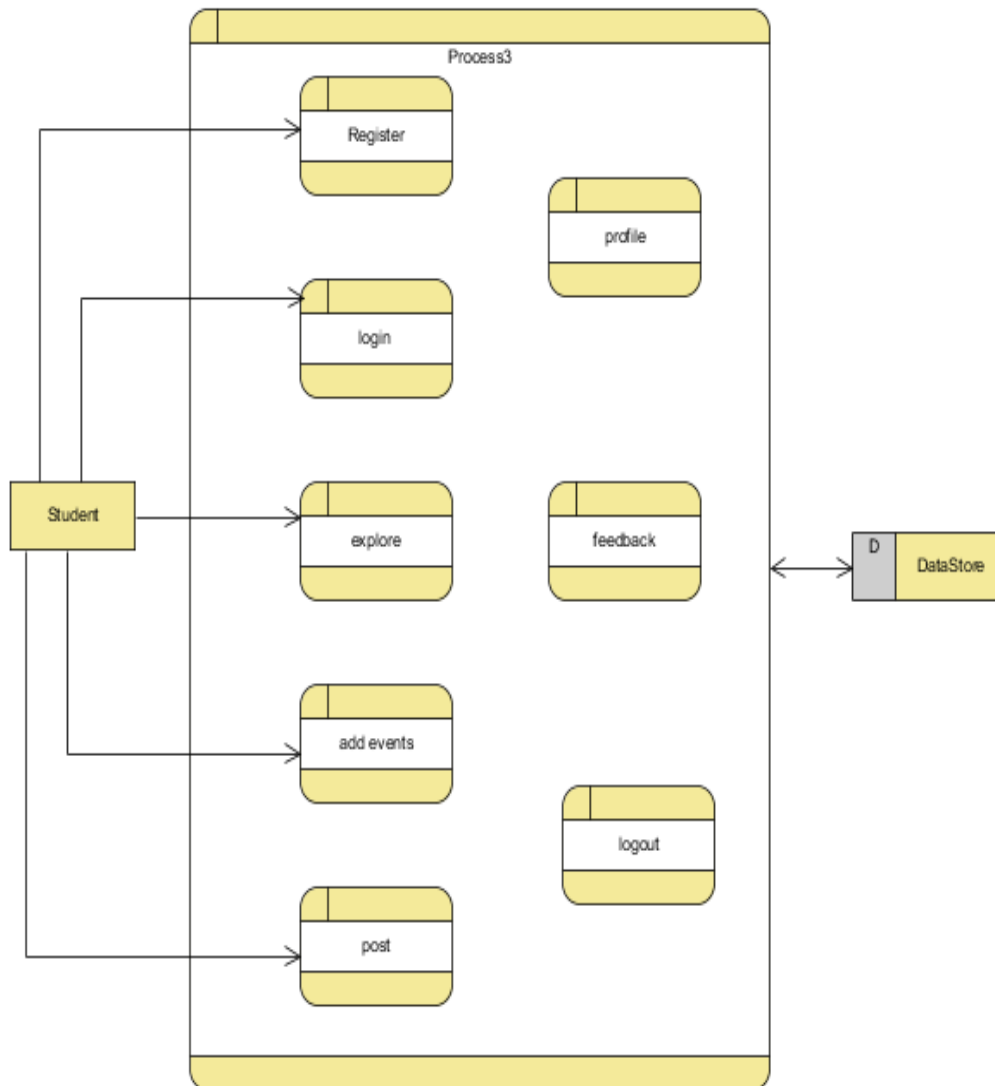


Fig: 4.11: DFD level 2 diagram

4.4 STANDARDS

- **HTML5 (Hypertext Markup Language):**

- HTML5 is the latest version of the markup language used for structuring and presenting content on the World Wide Web.
- It provides enhanced semantics, multimedia support, and improved accessibility features compared to previous versions.
- HTML5 enables the creation of modern and interactive web pages with elements such as video, audio, canvas, and more.

- **CSS3 (Cascading Style Sheets):**
 - CSS3 is the latest version of Cascading Style Sheets used for styling and formatting web pages.
 - It introduces new features such as animations, gradients, shadows, and media queries for responsive design.
 - CSS3 allows developers to create visually appealing and responsive layouts for web applications.
- **JavaScript:**
 - JavaScript is a widely used scripting language for adding interactivity and dynamic behavior to web pages.
 - It runs client-side, allowing developers to manipulate the content, modify the DOM (Document Object Model), and respond to user actions.
 - JavaScript is essential for implementing features such as form validation, interactive forms, and dynamic content loading.
- **React JS:**
 - React JS is a JavaScript library for building user interfaces, commonly used for creating single-page applications (SPAs).
 - It follows a component-based architecture, allowing developers to create reusable UI components.
 - React JS provides efficient rendering and state management, resulting in fast and responsive web applications.
- **Java:**
 - Java is a widely used programming language, especially in enterprise web development.
 - In your project, Java is used for server-side logic, handling requests, processing data, and interacting with the database.
 - Java's platform independence and robust ecosystem make it a popular choice for building scalable and reliable web applications.
- **MySQL 6.0:**
 - MySQL is a relational database management system (RDBMS) used for storing and managing structured data.
 - Version 6.0 of MySQL offers features such as improved performance, scalability, and security.

- It supports SQL (Structured Query Language) for querying and manipulating data, making it suitable for various web applications, including yours.
- **Tomcat 7.0:**
 - Apache Tomcat is an open-source web server and servlet container used for deploying Java-based web applications.
 - Version 7.0 of Tomcat provides enhancements such as improved performance, stability, and support for the latest Java EE (Enterprise Edition) specifications.
 - Tomcat serves as the application server for hosting and running your Java-based web application, ensuring reliable performance and scalability.

4.5 CONSTRAINTS

Constraints for this project can be categorized into various aspects, including technical, ethical, and logistical considerations. Here's a detailed description of constraints for your online platform project:

- **Technical Constraints:**
 - **Compatibility:** Ensure compatibility with various web browsers and devices to reach a wide audience.
 - **Scalability:** Design the platform to handle a growing number of users and interactions over time.
 - **Security:** Implement robust security measures to protect user data, prevent unauthorized access, and ensure privacy.
 - **Performance:** Optimize the platform's performance to provide a seamless user experience, including fast loading times and responsiveness.
 - **Integration:** Integrate communication channels such as real-time chat, discussion forums, and video conferencing seamlessly into the platform.
- **Ethical Constraints:**
 - **Privacy:** Respect user privacy by implementing stringent data protection measures and adhering to relevant privacy regulations.
 - **Confidentiality:** Ensure that discussions between seniors and juniors remain confidential and are not shared without consent.
 - **Impartiality:** Maintain impartiality and fairness in assigning tokens and credit scores based on the quality of assistance provided, avoiding

favoritism or bias.

- Respect: Foster a respectful and supportive environment where all users feel valued and heard, regardless of their academic level.

○ **Logistical Constraints:**

- Timeframe: Adhere to project deadlines and timelines to ensure timely delivery of the platform.
- Resources: Allocate sufficient resources, including manpower, technology, and funding, to develop and maintain the platform effectively.
- Collaboration: Foster collaboration between team members and stakeholders to ensure that project goals are aligned and met.
- User Feedback: Incorporate user feedback and iterate on the platform based on user needs and preferences.
- Training: Provide training and support to users, especially seniors who may be new to mentoring, to maximize the effectiveness of interactions on the platform.

4.6 TRADE-OFFS

○ **Functionality vs. Performance:**

- Balancing the inclusion of advanced features and functionalities with the need to maintain optimal website performance and responsiveness.
- Prioritizing critical features and optimizing resource-intensive functionalities to minimize their impact on overall website performance and user experience.

○ **Customization vs. Standardization:**

- Deciding on the level of customization and personalization options offered to users while maintaining consistency and standardization across the website.
- Striking a balance between providing users with flexibility and control over their experience and ensuring that the website maintains a cohesive and unified look and feel.

○ **Privacy vs. Personalization:**

- Balancing the need to protect user privacy and confidentiality with the desire to provide personalized recommendations and feedback based on user interactions and preferences.

- Implementing privacy-preserving measures such as data anonymization, encryption, and user consent mechanisms to safeguard sensitive use information while still delivering personalized experiences.
- **Complexity vs. Simplicity:**
 - Simplifying the user experience and streamlining complex workflows and features to reduce cognitive load and enhance usability for users.
 - Avoiding unnecessary complexity and feature bloat that can overwhelm users and detract from the overall effectiveness and usability of the website.
- **Feedback Mechanisms vs. User Experience:**
 - Implementing feedback mechanisms to gather user feedback and assess the effectiveness of mentorship relationships and interactions on the platform.
 - Balancing the frequency and granularity of feedback collection to obtain valuable insights without overwhelming users or disrupting their experience on the website.

CHAPTER – 5

RESULT AND DISCUSSION

5.1 IMPLEMENTATION AND RESULTS

5.1.1 Modules of a student-oriented application

- **Register:** This module allows students to sign up for the application by providing their details, such as name, email, and possibly other information required for registration.
- **Login:** Once registered, students can use this module to log in to the application using their credentials (e.g., username/email and password).
- **Explore:** This module enables students to browse through events added by other students. It could include features like searching, filtering, and viewing event details.
- **Add Events:** With this module, students can contribute to the application by adding events. They might input event details like title, date, time, description, location, etc.
- **Chat:** This module facilitates real-time communication between students. It could include features like one-on-one messaging, group chats, multimedia sharing, and more.
- **Post:** Students can use this module to create and share posts within the application. Posts could be related to events, discussions, announcements, or any other relevant topics.
- **Profile:** This module allows students to manage their personal profiles. They can update information such as profile picture, bio, interests, and any other relevant details.
- **Feedback:** With this module, students can provide feedback to other students. Feedback could be related to events, posts, or any other aspect of the application.
- **Logout:** It's important for students to have the option to logout securely from the application when they're done using it. This module ensures that their session is terminated properly.

5.1.2 Output of webpage

- **Home:** Home page consists of 2 options namely : Sign up and Sign in .Students those who're are new to our portal need to sign up their account by clicking on the "sign up" option and students who're already registered on our portal will directly sign in by clicking on the "sign in" option and proceeding ahead.

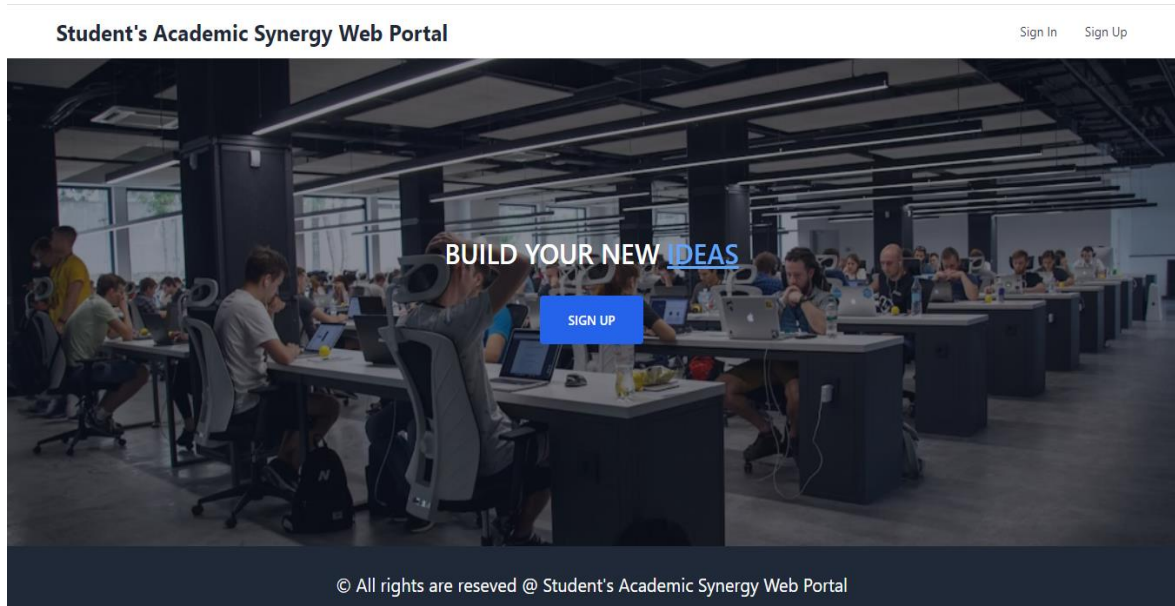
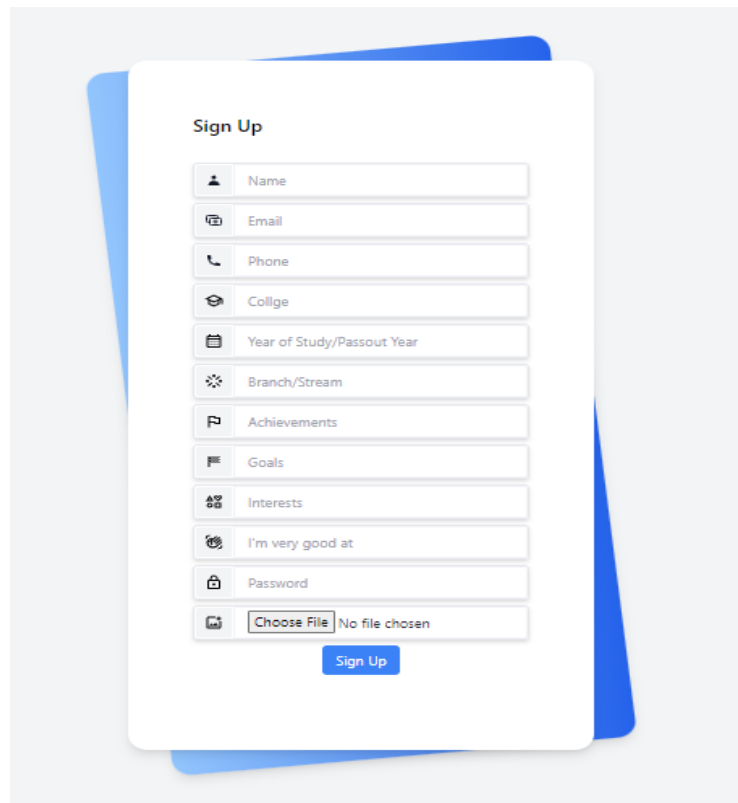


Fig: 5.1: Home page

- **Register:** After clicking on the "sign up" option , the "registration" pages opens and here student's need to register themselves on our portal by providing the required information such as :
 - - Name
 - - Email
 - - Phone no.
 - - College
 - - Year of Graduation
 - - Branch/Stream
 - - Achievements
 - - Goals
 - - Areas of interests
 - - Subjects of expertise

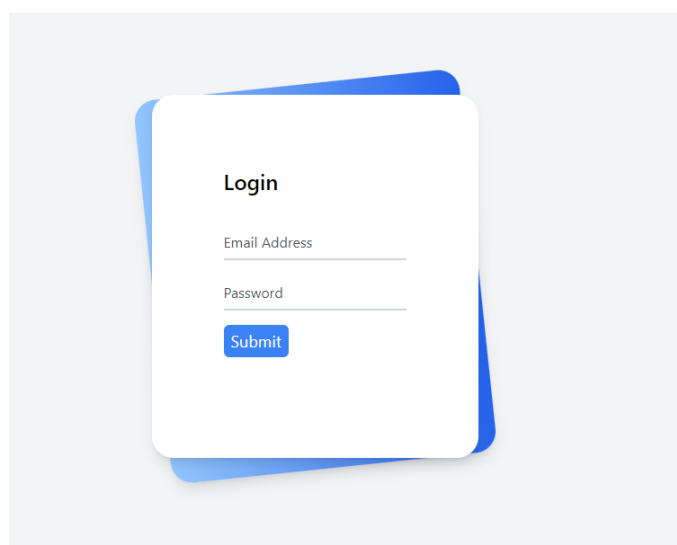
- - Password
- - Profile picture



The registration form is titled "Sign Up" and is presented on a white card with rounded corners, set against a background of overlapping blue and grey rectangles. The form contains the following fields, each with a small icon to its left: "Name" (person icon), "Email" (envelope icon), "Phone" (phone handset icon), "College" (graduation cap icon), "Year of Study/Passout Year" (calendar icon), "Branch/Stream" (gear icon), "Achievements" (trophy icon), "Goals" (flag icon), "Interests" (puzzle pieces icon), "I'm very good at" (trophy icon), "Password" (lock icon), and a file upload section with a "Choose File" button and the text "No file chosen". A blue "Sign Up" button is positioned at the bottom right of the form.

Fig: 5.2: Registration page

- **Login:** Students who're already registered on our website shall login with their credentials after clicking on the "Sign in" option.



The login form is titled "Login" and is presented on a white card with rounded corners, set against a background of overlapping blue and grey rectangles. It contains two input fields: "Email Address" and "Password". A blue "Submit" button is located at the bottom of the form.

Fig: 5.3: Login page

- **Explore:** Students will be able to explore the portal or more precisely , go through the posts of other student's regarding any new events or workshops or conferences to be held in college, any internships available for registration ,etc.

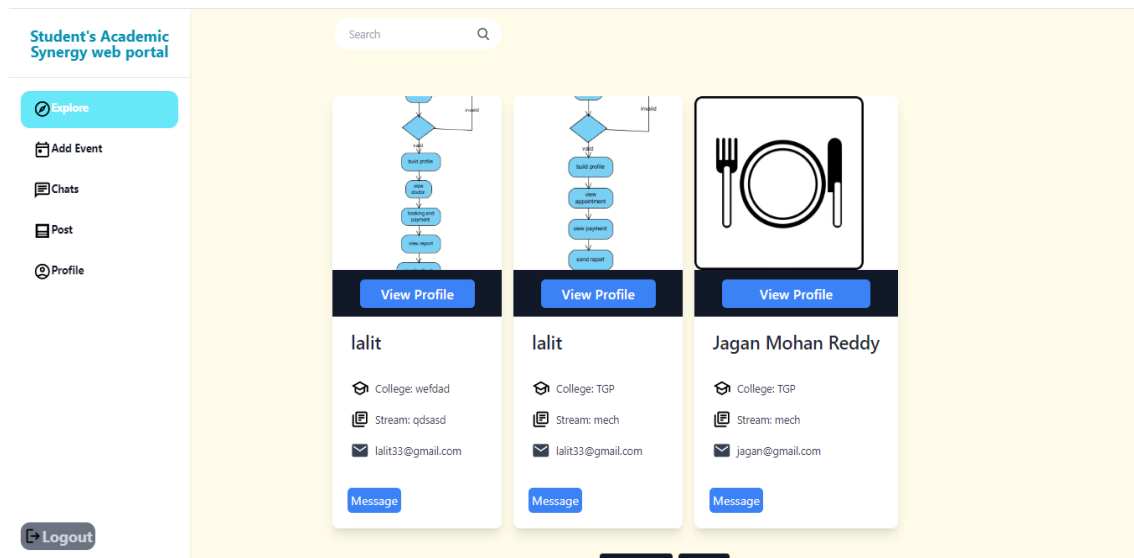


Fig: 5.4: Explore page

- **Add Events:** Students will be able to add about any upcoming academic events in their knowledge or any events to be held by him/her .

Fig: 5.5: Add Event page

- **Chats:** Students shall be able to chat with each other regarding any project related helps required, any queries about specific events , etc.

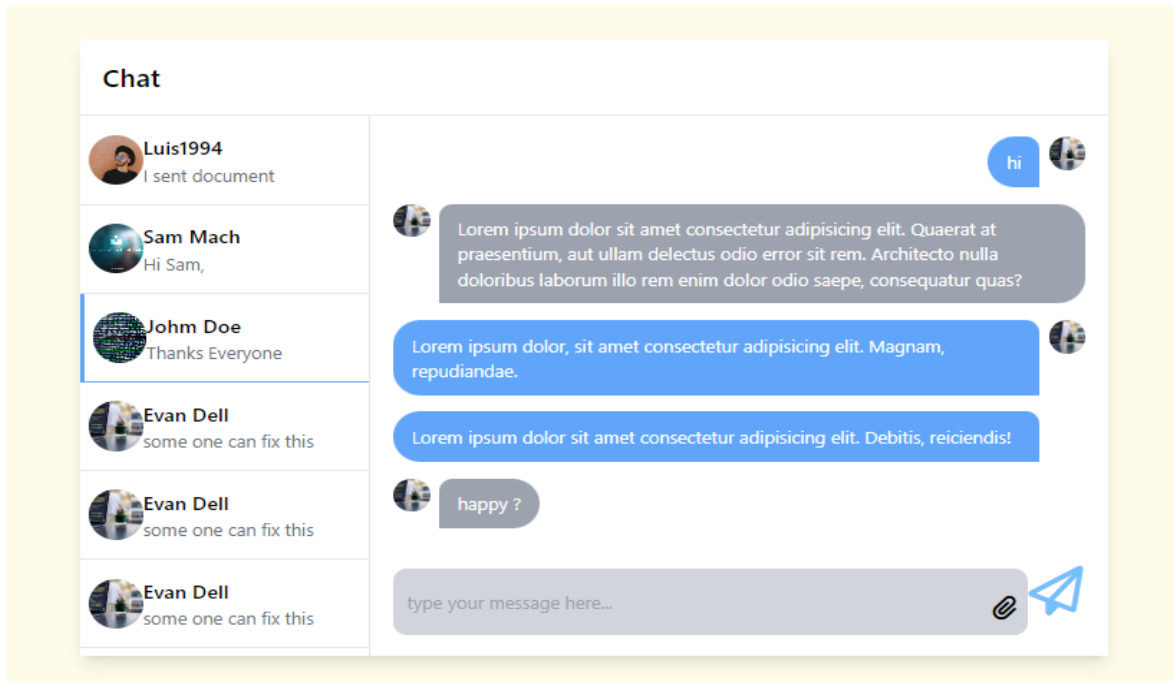


Fig: 5.6: Chat box

- **Add Posts:** Students shall be able to post about any achievements of their known whether be it any workshops , conference, internships or any certification.

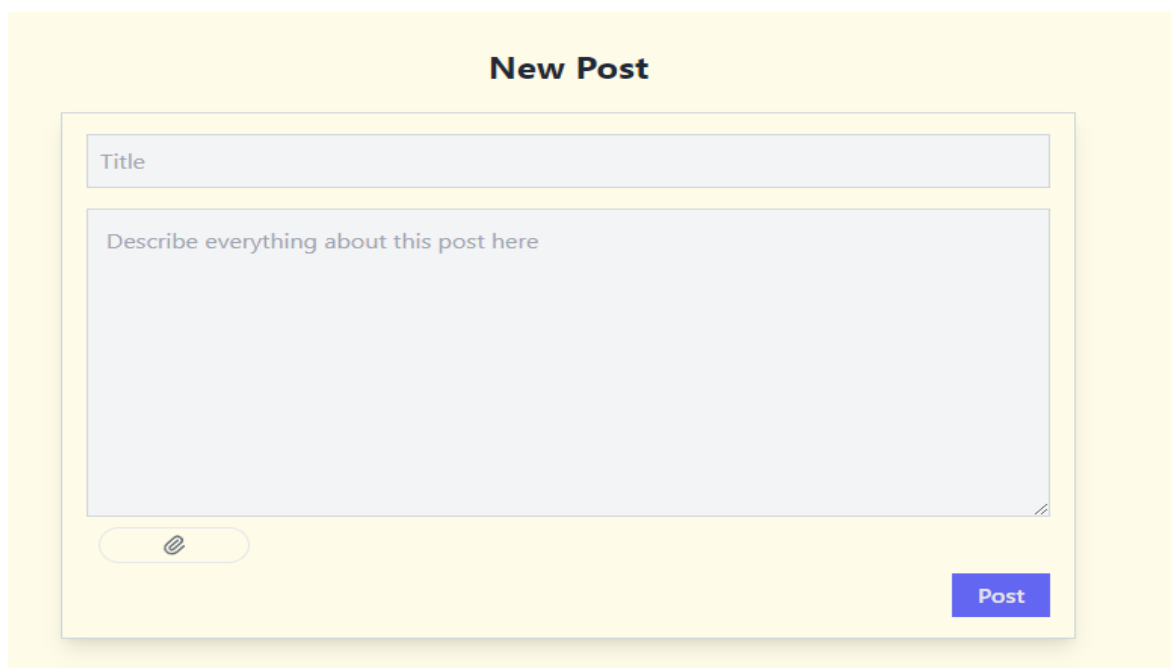


Fig: 5.7: Add posts page

- **View Post:** Students will be able to view each other's posts.

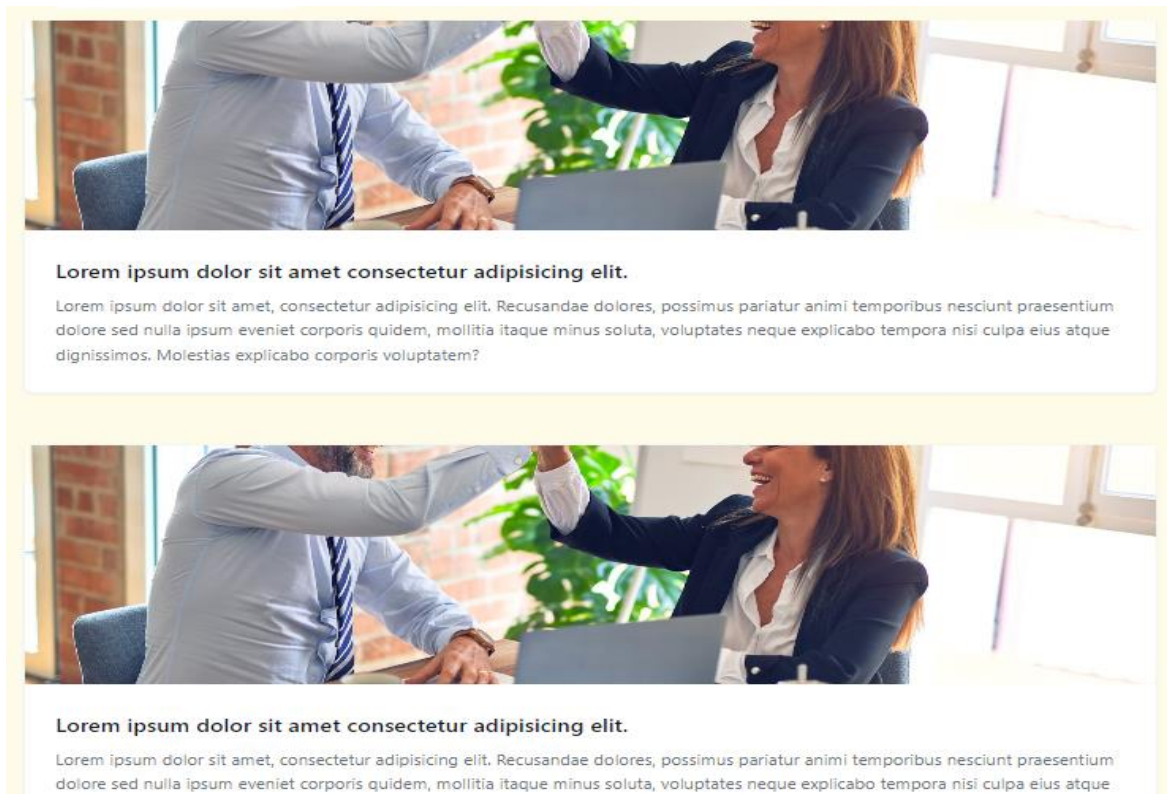


Fig: 5.8: View post

- **Give Feedback:** Students will be able to give feedback to other students who have provided any sort of academic help to them regarding any projects or internships or other things.

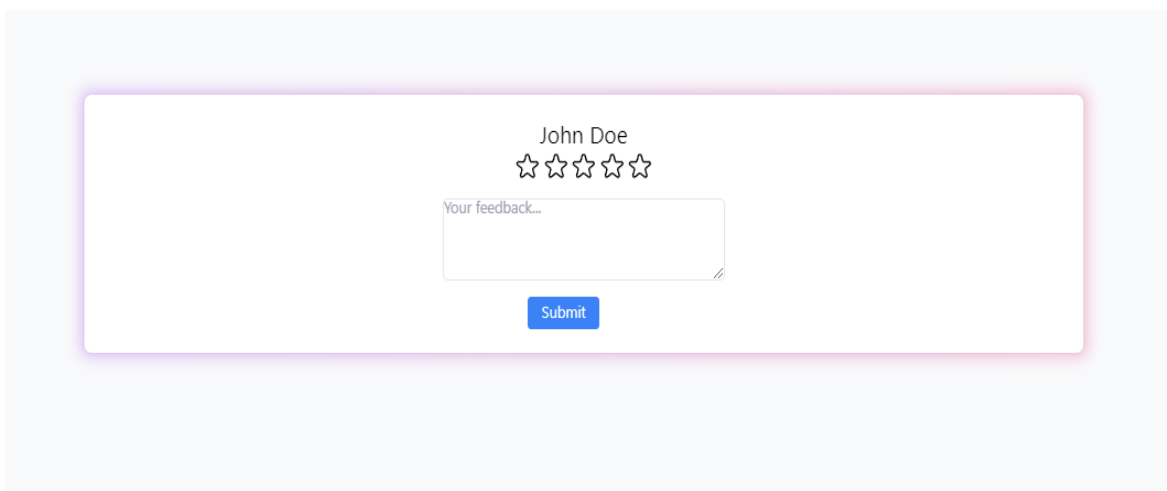


Fig: 5.9: Feedback page

- **View other profiles:** Students will be able to view the profiles of other students which will clearly reflect the areas of expertise of those students and hence students will be able to reach out to the correct person in accordance with the help required.

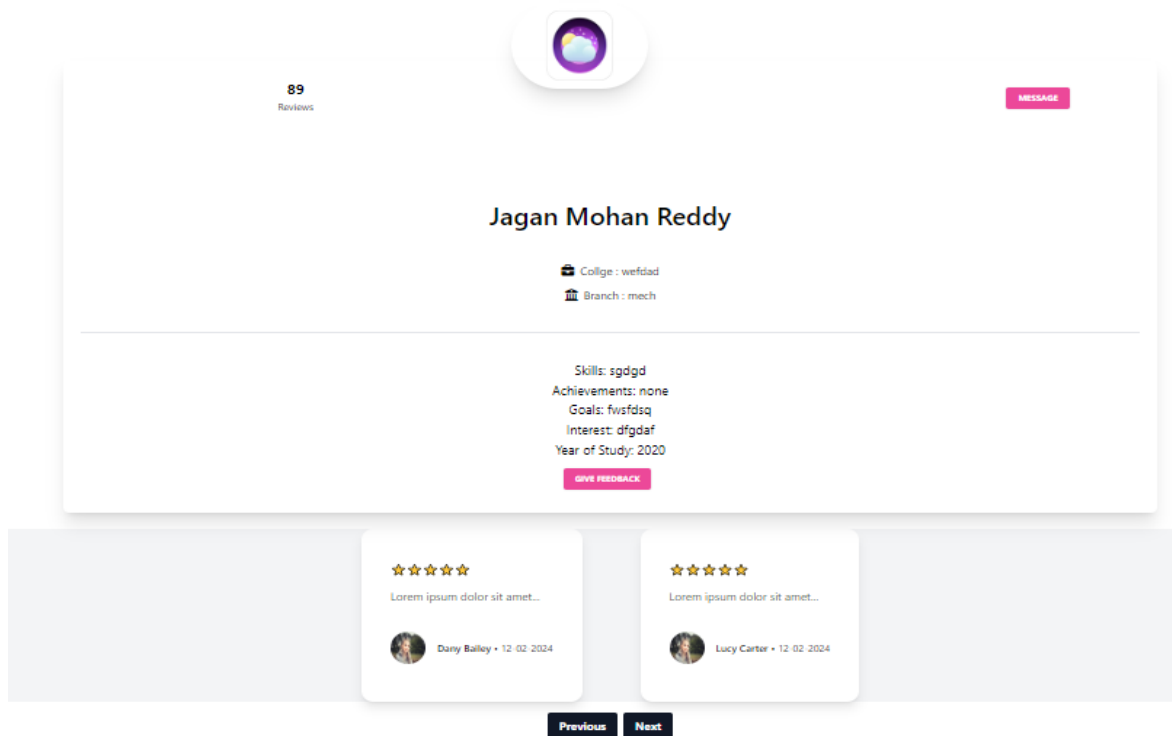


Fig: 5.10: Other profile page

5.2 SYSTEM STUDYING AND TESTING

5.2.1 Feasibility study

The feasibility of the project is analysed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are

- Economic feasibility
- Technical feasibility
- Social feasibility

Economic Feasibility

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus, the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

Technical Feasibility

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

Social Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

System Testing

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the software system meets its requirements and user expectations and does

not fail in an unacceptable manner. There are various types of tests. Each test type addresses a specific testing requirement.

5.2.2 Type of tests

Unit Testing

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

Integration testing

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects.

The task of the integration test is to check that components or software applications, e.g. components in a software system or – one step up – software applications at the company level – interact without error.

Acceptance Testing: User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

Functional testing

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centred on the following items:

Valid Input : identified classes of valid input must be accepted.

Invalid Input : identified classes of invalid input must be rejected.

Functions : identified functions must be exercised.

Output : identified classes of application outputs must exercise.

Systems/Procedures : interfacing systems or procedures must be invoked.

Organization and preparation of functional tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

White Box Testing

White Box Testing is a testing in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is used to test areas that cannot be reached from a black box level.

Black Box Testing

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most

other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box you cannot “see” into it. The test provides inputs and responds to outputs without considering how the software works.

Test objectives

- All field entries must work properly.
- Pages must be activated from the identified link.
- The entry screen, messages and responses must not be delayed.

Features to be tested

- Verify that the entries are of the correct format
- No duplicate entries should be allowed
- All links should take the user to the correct page.

CHAPTER – 6

CONCLUSION AND FUTURE WORK

The culmination of the "Students Academic Synergy Web Portal" project represents a significant achievement in enhancing the academic experience for students, educators, and administrators alike. This web portal has successfully transformed the way these stakeholders interact with academic resources, collaborate, and communicate within the academic community. Throughout the development and implementation phases, the project team prioritized user-centric design and functionality. The web portal offers an array of features, from user authentication to academic resource repositories, all carefully designed to meet the unique needs of its users. User acceptance testing (UAT) revealed that the web portal was met with enthusiasm and approval from its intended audience. Users found it to be intuitive and user-friendly, providing a seamless experience that positively impacted their academic journeys. One of the project's notable achievements is its robust performance. Extensive performance testing and optimization efforts have ensured that the portal can gracefully handle increased user loads without compromising speed or reliability. Furthermore, security has been at the forefront of the project's concerns. A comprehensive security framework has been put in place to safeguard user data and maintain the integrity of the system. Regular security assessments and timely vulnerability remediation have been integral to this effort. Usability enhancements, informed by user feedback, have contributed to an improved user experience. Navigating the portal is now efficient and enjoyable, making it a valuable tool for academic collaboration and resource sharing. The portal's data insights offer valuable information for decision-making and tailoring content to users' preferences and needs. This data-driven approach is set to enhance the portal's functionality and user experience further. Looking ahead, the portal is well-prepared for future enhancements. Ongoing maintenance, performance optimization, and security updates are part of the plan to ensure the portal remains a reliable resource. User feedback will continue to shape the portal's evolution, and opportunities for scaling and expanding its reach will be explored. In conclusion, the Student's Academic Synergy Web Portal

represents a successful endeavour in improving the academic journey. As it evolves and adapts, it stands ready to continue enriching the lives of students, supporting educators, and facilitating efficient academic collaboration for years to come.

Future enhancements could include the integration of AI-driven recommendation systems to match juniors with the most suitable senior mentors based on their academic needs and preferences. Gamification elements can be introduced to incentivize active participation and engagement, such as leaderboard rankings and achievement badges. Furthermore, expanding the platform to offer career guidance and networking opportunities beyond academic support could enhance its utility and long-term impact on students' personal and professional development.

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