SCHOLARSPACE

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SCHOLARSPACE

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by

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CERTIFICATE OF ORIGINALITY

We hereby declare that this report titled "SCHOLARSPACE (Learning Management System)" is our own work to the best of our knowledge. It contains no materials previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any degree or diploma at ITU or any other education institute, except where due acknowledgment, is made in the thesis. Any contribution made to the research by others, with whom we have worked at ITU or elsewhere, is explicitly acknowledged in the thesis.

We also declare that the intellectual content of this report is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic is acknowledged. We also verified the originality of contents through plagiarism software.

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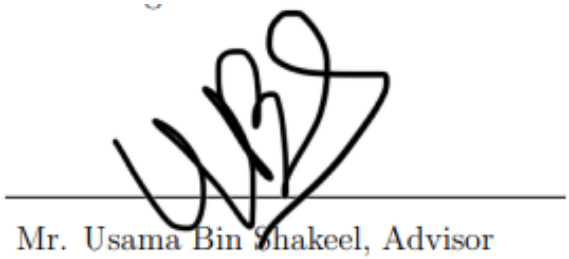
The undersigned hereby certify that they have read and recommended the report entitled "SCHOLARSPACE (Learning Management System) " by Noor ud din Shafique (BSCE20015), Muhammad Abdullah Baig (BSCE20025)and Hammad Kamran (BSCE20029) for the degree of Bachelor of Science in Computer Engineering.



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DEDICATION

I dedicate this project to my exceptional team members, Noor ud din Shafique, Hammad Kamran, and Muhammad Abdullah Baig. Working alongside them has been an incredible journey filled with collaboration, determination, and shared passion. Each member's unique skills and unwavering commitment have contributed to the success of this project. Noor ud din Shafique's dedication, Hammad Kamran's creativity, and Muhammad Abdullah Baig's diligence have been invaluable assets to our team. Together, we have faced challenges head-on, celebrated victories, and grown both personally and professionally.

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Abstract

In today's fast-paced and digital-driven world, the demand for quality education has never been higher. To meet this demand and foster a dynamic learning environment, we propose the creation of "SCHOLARSPACE," an innovative Learning Management System (LMS) coupled with an interactive web portal. SCHOLARSPACE is envisioned as a user-friendly, comprehensive platform that aims to revolutionize the educational landscape.SCHOLARSPACE will serve as an indispensable tool for students, teachers, and administrators alike, offering a seamless and engaging educational experience. With a strong focus on user-friendliness, the system aims to eliminate barriers to accessing high-quality education. It will provide intuitive and interactive interfaces tailored to the unique needs of each user group. For students, SCHOLARSPACE will offer a dynamic and engaging learning environment, enabling them to access educational resources, collaborate with peers, and receive personalized guidance. Teachers will benefit from innovative tools for content delivery, assessment, and communication, fostering effective teaching methods. Administrators will have access to a robust set of features to streamline administrative tasks, ensuring the efficient operation of educational institutions.SCHOLARSPACE's dual application and web portal approach will ensure accessibility from a variety of devices, promoting inclusivity and flexibility. By leveraging the power of technology, it will empower learners of all backgrounds to access quality education, breaking down geographical and logistical barriers.

CHAPTER 1

INTRODUCTION

Introducing SCHOLARSPACE, a visionary Learning Management System (LMS) and an interactive web portal designed to revolutionize how education is accessed and delivered in the contemporary landscape of rapid technological advancements and global connectivity. SCHOLARSPACE is poised to bridge the communication gap that often exists between students and teachers. It aspires to create a seamless and nurturing educational ecosystem where the exchange of knowledge is intuitive, engaging, and responsive. At its core, this innovative platform aims to cultivate an environment where every student's potential can flourish, regardless of their background or location.SCHOLARSPACE goes beyond conventional LMS offerings by actively addressing individual students' weaknesses and learning gaps. Through sophisticated tracking and analysis, the platform will identify areas where students require additional support. Teachers will receive actionable insights, enabling them to tailor their instruction to meet each student's unique needs.Moreover, SCHOLARSPACE will empower students to monitor their own progress, providing them with comprehensive feedback on their weekly performance and attendance. This transparency ensures that students remain accountable for their learning journey and equips them with the tools to make informed decisions regarding their education.Simultaneously, for educators, SCHOLARSPACE offers a range of automation features to streamline administrative tasks. By automating routine processes, teachers can focus more on what truly matters – facilitating learning and inspiring growth in their students.In this proposal, we lay out the vision for SCHOLARSPACE, a platform that seeks to redefine education by fostering robust connections between students and teachers, addressing individual learning needs, and automating administrative tasks. We envision SCHOLARSPACE as a catalyst for a new era of education, where access to quality learning is universal, and the potential for every learner is unlocked. Through this proposal, we seek the necessary support and resources to bring this transformative project to life and contribute to the advancement of global education.

1.1 Motivation

From the inception of our academic journey, we encountered a multitude of challenges that left us feeling disconnected from our instructors and bewildered by the intricacies of our educational system. We grappled with the inability to communicate effectively with our instructors, lacked a clear understanding of concepts such as GPA and CGPA calculations, and were mystified by terms like PLO (Program Learning Outcomes) and CLO (Course Learning Outcomes). Moreover, we found ourselves in the dark when it came to tracking our own progress and understanding where we stood in our academic pursuits.It was these very experiences that ignited a passionate drive within us. Fueled by a desire to ease the path for future cohorts and empower them with the knowledge and tools we wished we had, we embarked on a journey to develop a transformative product for our final year project. Our aim was clear: to create a solution that would bridge the communication gap between students and instructors, demystify complex academic concepts, and provide a comprehensive view of individual progress.Our motivation stems from the belief that education should be a source of empowerment, not confusion. We aspire to help incoming batches navigate their academic

journeys with clarity, confidence, and a sense of purpose. By addressing the challenges we personally encountered, we hope to contribute to a more seamless and enriching educational experience for all.

1.2 Challenges

The scope of this project presents a formidable challenge for our development team. It encompasses intricate aspects that demand meticulous attention and expertise. To embark on this journey, our first milestone entails the meticulous design of a robust and flexible database structure, meticulously crafting tables and relationships that anticipate future expansions without compromising system integrity.Once the database architecture is securely in place, we will initiate the development phase by configuring and implementing the database on our local systems. This crucial step will serve as the foundation upon which we'll build the entire infrastructure of the application.The subsequent phase of this ambitious project involves the creation of APIs (Application Programming Interfaces) that will facilitate seamless communication between the front-end and back-end systems. These APIs will be the linchpin of functionality, enabling data exchange and interactions that drive the user experience. As we progress, our focus will shift to crafting the front-end user interface and user experience (UI/UX) of the product. This phase requires a delicate blend of creativity and technical prowess, ensuring that our application not only functions flawlessly but also offers an intuitive and visually appealing user interface.The critical integration of the back-end and front-end components will follow, merging the technical backbone with the user-facing elements. This harmonious convergence is paramount to ensure a cohesive and responsive application.With development complete, rigorous testing will ensue. Every facet of the application will undergo meticulous scrutiny to identify and rectify any potential issues. Our commitment to quality assurance is unwavering, ensuring that the final product is reliable, secure, and user-friendly.Finally, upon successful testing and validation, the product will find its home on a domain we will procure. This transition to a live environment represents the culmination of our collective efforts, as SCHOLARSPACE's transformative potential becomes accessible to a global audience. The challenges may be formidable, but our dedication to delivering an exceptional educational solution remains steadfast.

1.3 Problem Statement

In today's fast-paced educational landscape, characterized by rapid technological advancements and global connectivity, the complexities and challenges faced by students, teachers, and administrators have reached a critical juncture. These hurdles encompass a wide array of issues, ranging from the communication gap that hampers effective interaction between educators and learners to the need for individualized learning solutions tailored to students' unique needs. Additionally, the labor-intensive task of tracking and ensuring accountability in terms of student progress and attendance places a significant burden on teachers, impeding their ability to provide optimal educational experiences. Furthermore, the ever-increasing administrative workload diverts educators' focus from their primary mission of teaching and mentoring. These multifaceted challenges demand innovative solutions that can transform the educational landscape, and it is in response to this imperative that SCHOLARSPACE, our visionary Learning Management System and interactive web portal, has been conceptualized.

1.3.1 Unmet Need

Amidst the unmet needs in education, numerous challenges await innovative solutions. Among these hurdles is the widespread lack of awareness among university students regarding Course Learning Outcomes (CLOs) and Program Learning Outcomes (PLOs). Our proposed solution involves the strategic mapping of their academic subjects to these learning outcomes. This mapping process serves as an educational compass, guiding students through fundamental engineering problems and equipping them with the skills to navigate and overcome these challenges effectively.In addition, we tackle the persistent issue of plagiarism detection, which often remains unaddressed. Our platform introduces a groundbreaking feature that empowers teachers to scrutinize students' work for plagiarism, not only against their peers but also against senior students who may have previously tackled similar assignments. This enhanced plagiarism-checking capability addresses a long-standing gap in the educational system, promoting academic integrity and fairness.In the context of research, the significance of our CLOs and PLOs mapping solution is twofold. Firstly, it offers a transformative approach to bridging the knowledge gap among students, making them proficient in identifying and solving engineering problems. Secondly, it serves as a vital tool for educators to ensure that their teaching aligns with these learning outcomes, thus contributing to the broader goal of enhancing the quality of education.Furthermore, we recognize the prevalent issues of students lacking insight into their academic progress, teachers struggling to gauge overall class performance, and students grappling with the intricacies of calculating CGPA and SGPA. Our holistic approach aims to address these multifaceted challenges, providing a comprehensive educational solution that empowers both students and educators alike.

1.3.2 Potential Market

In this segment, we delve into the educational landscape, where numerous institutions grapple with the daunting challenge of managing their ever-increasing administrative burdens. Within our university, boasting an extensive student body exceeding 1000 individuals, we are embarking on a transformative journey by offering tailored solutions to alleviate these challenges. Our primary focus is to provide a seamless experience to our university audience, addressing their specific needs comprehensively.Looking ahead, our vision extends beyond the confines of our institution. We aspire to become a beacon of change, setting our sights on assisting other educational establishments encountering similar issues. The hallmark of our approach is flexibility; our application is designed to adapt and evolve in response to the unique demands and requirements of our users.In the realm of research, our platform serves as a valuable instrument to not only mitigate the basic workload placed on teachers and students but also to uncover innovative solutions to fundamental educational challenges. It is poised to be a catalyst for change in the way education is delivered and experienced, both within our institution and in the broader educational landscape. Through this multifaceted project, we aim to contribute to the enhancement of educational quality and efficiency, propelling our collective pursuit of knowledge and growth.

CHAPTER 2

LITERATURE REVIEW

The landscape of Learning Management Systems (LMS) has witnessed significant evolution and innovation over the years. Early developments in computer-assisted instruction systems, dating back to the 1960s, laid the foundation for modern LMS. The emergence of web-based LMS in the 1990s, exemplified by platforms like Blackboard and Moodle, brought educational content and communication tools online. Subsequent research delved into the effectiveness of e-learning and instructional design within LMS, exploring their impact on student outcomes. The rise of mobile learning (m-learning) prompted investigations into adapting LMS for smartphones and tablets. Recent trends include personalized and adaptive learning, open-source LMS solutions, gamification, and social learning integration. Ensuring accessibility and inclusivity within LMS has also gained prominence. This rich tapestry of past work underscores the dynamic nature of LMS development, with researchers continuously exploring ways to enhance digital education and meet the evolving needs of learners and educators.The development of Learning Management Systems (LMS) has been a significant trend in the field of education and academia. As universities and educational institutions seek to enhance the learning experience and streamline administrative tasks, customizing an LMS with smart and automated features has become a focus of research and development. This literature review provides an overview of key components and trends in LMS customization, attendance management, lecture scheduling, class announcements, and assignments.

2.1 Advantages of a Smart and Customized Learning Management System (LMS)

The adoption of Learning Management Systems (LMS) has become ubiquitous in educational institutions worldwide. However, not all LMS platforms are created equal. This literature review explores the advantages of a smart and customized LMS over traditional or less advanced counterparts, focusing on how customization, automation, and intelligent features contribute to an enhanced learning experience.

- **Customization for Tailored Learning**

  Customization is at the core of a superior LMS. Unlike one-size-fits-all solutions, a customized LMS allows educational institutions to align the platform with their unique goals, curricula, and administrative processes [1]. This tailoring ensures that the LMS meets specific needs, resulting in a more engaging and efficient learning experience for both educators and students [2].

- **Efficient Attendance Management** One of the key advantages of a smart LMS is the automation of attendance management. Traditional methods of taking attendance are time-consuming and error-prone. In contrast, a smart LMS leverages technologies such as RFID, biometrics, and mobile apps to streamline the process [3]. Real-time data on student attendance not only saves time but also helps identify at-risk students, allowing for timely interventions and improved engagement.

- **Optimized Lecture Scheduling**

  Automated lecture scheduling within a smart LMS optimizes the allocation of resources. These systems consider factors such as room capacity, faculty availability, and venue suitability [4]. As a result, institutions can minimize conflicts, ensure efficient resource utilization, and create schedules that benefit both students and instructors.

- **Streamlined Assignment Management**

  A smart LMS fosters effective communication through automated features. Announcements, notifications, and discussion forums are seamlessly integrated, facilitating interaction between students and instructors [5]. This real-time communication ensures that important updates, deadlines, and resources are easily shared, enhancing the learning process.

- **Streamlined Assignment Management**

  A smart LMS simplifies assignment management for educators and students. Advanced features include automated assignment tracking, grading, and feedback mechanisms [6]. These streamline administrative tasks and provide transparency in grading, ultimately improving the learning experience.

- **Harnessing Emerging Technologies**

  Smart LMS platforms harness emerging technologies such as Artificial Intelligence (AI) and Machine Learning (ML). AI-powered LMS systems personalize learning pathways based on individual student progress and preferences, enhancing engagement and retention [7]. Predictive analytics within these platforms can identify potential challenges and provide early interventions to prevent dropouts.

- **Mobile Learning (m-Learning) Accessibility**

  In the age of mobile technology, a smart LMS is designed to be responsive and accessible on various devices [8]. This ensures that students can access course materials, assignments, and communication tools conveniently from smartphones and tablets, promoting flexibility in learning.

- **Teacher-Friendly** A Teacher-Friendly LMS is designed with educators in mind, aiming to streamline their tasks and save valuable time. It offers intuitive tools for creating and organizing course content, simplifies the process of grading and assessment, and provides efficient communication channels with students. Additionally, it supports collaborative features that enable teachers to share resources and best practices, fostering a supportive teaching community.

- **Student-Friendly** A Student-Friendly LMS prioritizes the learning experience by offering features that empower students to excel in their studies. One key aspect is the provision of weekly performance metrics, which allow students to track their progress and identify areas for improvement. Interactive content, multimedia resources, and engaging assessments make learning enjoyable and effective. The LMS also encourages peer collaboration, facilitating group projects and discussion forums for knowledge sharing.

- **Admin-Friendly** An Admin-Friendly LMS boasts an exemplary user interface (UI) and user experience (UX) that simplifies administrative tasks. It offers robust analytics

and reporting tools, making it easy for administrators to monitor system performance, user engagement, and resource utilization. The LMS's scalability and customization options ensure it can adapt to the specific needs of educational institutions. Furthermore, it provides straightforward management of user accounts, permissions, and content, reducing the administrative burden and promoting efficient system management.

2.2 Comparison of Advanced LMS with Traditional LMS

Feature	**Traditional LMS**	**Scholarspace**
Customization	Limited options	Extensive customization
Automation	None	Advanced
Intelligent Features	None	AI/ML for learning paths
Accessibility	Standard devices	Mobile-Optimized
User-Friendly	Standard UI,	User-friendly interface
Collaboration Tools	Basic forums	Real-time collaboration
Performance Analytics	None	Student progress tracking
Lecture Scheduling	None	Automated
Assignment Management	Manual tracking	Auto tracking with grading
Emerging Technologies	Limited integration	AI/ML
Mobile Learning	Limited responsiveness	Optimized for mobile
Teacher-Friendly	Basic content tools	Tools for grading
Student-Friendly	Standard features	Interactive content
Admin-Friendly	None	Robust analytics

Table 2.1: Concise Comparison between Traditional LMS and Scholarspace

2.3 Comparison in Approach of Scholarspace with Traditional LMS

Approach	Customization	Accessibility	Lecture Scheduling
Early Computer-Assisted Instruction Systems (1960s)	Limited customization options	Accessible on standard devices	Manual scheduling, potential conflicts
Web-Based LMS (1990s, Blackboard, Moodle)	Standard themes, moderate customization	Accessible on standard devices	Manual scheduling, potential conflicts
Rise of Mobile Learning (m-Learning)	Limited responsiveness on mobile devices	Optimized for mobile devices	Manual scheduling, potential conflicts
Scholarspace	Extensive customization capabilities, personalized themes	Mobile-Optimized, seamless access	Automated scheduling, considering various factors

Table 2.2: Comparison of LMS Approaches

2.4 Pie Graph of Scholarspace with Traditional LMS

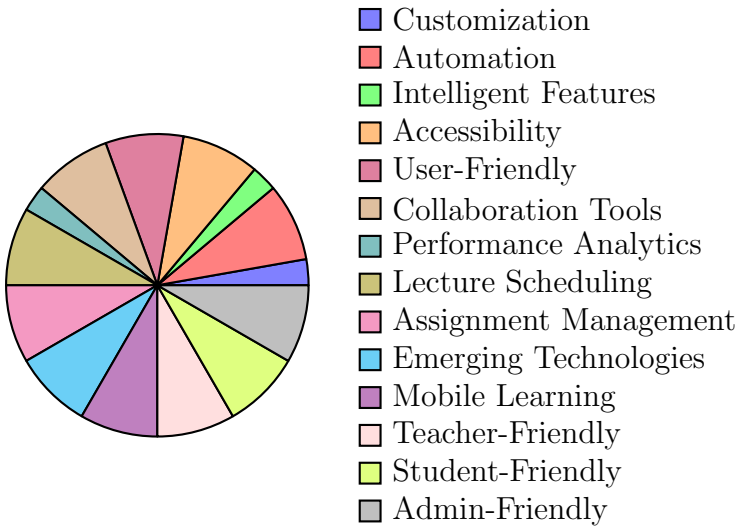


Figure 2.1: Distribution of Features in Scholarspace (Smart LMS)

Conclusion A smart and customized Learning Management System offers distinct advantages over traditional or less advanced LMS platforms. Customization aligns the LMS with institution-specific needs, while automation and intelligent features streamline administrative tasks and enhance the learning experience. The incorporation of AI, ML, and m-learning technologies ensures that the LMS remains innovative and adaptable to evolving educational demands.

Institutions seeking to provide a superior learning environment should consider the benefits of a smart and customized LMS, recognizing that it plays a pivotal role in shaping the future of education.

CHAPTER 3

PROPOSED METHODOLOGY AND ARCHITECTURE

Constructing a mobile application alongside a web portal is achievable through the utilization of React, React Native, and Node.js by adhering to the following procedural guidelines:

3.1 High-Level Architecture Planning

Objective: To define the foundational structure and technologies for the application. Explanation: In this phase, critical decisions will be made regarding technology choices, including database systems and server-side programming languages. The aim is to lay the groundwork for the application's architecture.

3.2 Front-End Development with React

Objective: To create the user interface of the web portal using React. Explanation: This step involves assembling React components to build the application's front-end. It will be integrated with the back-end API developed using Node.js.

3.3 Mobile Application Development with React Native

Objective: To build a mobile application with React Native. Explanation: This phase includes designing the mobile app's user interface using React Native components and seamlessly connecting it to the back-end API, which is also developed using Node.js.

3.4 Back-End API Development with Node.js

Objective: To construct the back-end infrastructure for the application. Explanation: The back-end API is developed using Node.js, which involves creating server-side logic and integrating it with the chosen database system for data storage and retrieval.

3.5 Testing and Debugging

Objective: To ensure the application's functionality and reliability. Explanation: This step involves thorough testing and meticulous debugging of the application, with a focus on utilizing the Jest testing framework to identify and address any issues.

3.6 Deployment to Hosting Platform

Objective: To make the application accessible to users. Explanation: The application will be deployed to a hosting platform, which could be a cloud provider or a dedicated server, making it available for users to access.

3.7 Architectural Strategizing:

In this phase, SCHOLARSPACE's architectural strategy focuses on laying the groundwork for a robust and innovative Learning Management System (LMS) and web portal. The key elements of the architectural strategy include:

1. **Scalability:**
    - **Vertical and Horizontal Scaling:** Evaluate options for both vertical scaling (upgrading existing hardware) and horizontal scaling (adding more servers) to accommodate growing user loads.
    - **Microservices Architecture:** Implement a microservices architecture to ensure modularity and independent scalability of various components.
2. **Performance Optimization:**
    - **Caching Mechanisms:** Introduce caching mechanisms, utilizing in-memory caching for frequently accessed data to enhance SCHOLARSPACE's responsiveness.
    - **Load Balancing:** Implement load balancing to evenly distribute incoming traffic across multiple servers, preventing performance bottlenecks.
3. **Maintainability:**
    - **Codebase Modularity:** Design a modular codebase, adhering to coding standards, and encapsulating functionalities within well-defined modules for ease of maintenance.
    - **Documentation:** Maintain comprehensive documentation covering backend and frontend components, API endpoints, and coding standards.
4. **Security Measures:**
    - **Data Encryption:**Implement encryption mechanisms for data in transit (HTTPS) and at rest in the database to ensure the security of user information.
    - **Authentication and Authorization:**Deploy robust user authentication and authorization mechanisms, incorporating industry-standard protocols such as OAuth
    - **Regular Security Audits:**Conduct regular security audits and vulnerability assessments to identify and address potential threats promptly
5. **User Experience Optimization:**
    - **Responsive Design:**Prioritize responsive design principles for a seamless user experience across various devices and screen sizes.
    - **Usability Testing:**Conduct usability testing to gather feedback on the user interface, ensuring intuitive navigation and interaction.
    - **Real-Time Feedback:**Implement real-time feedback mechanisms for instant responses to user actions, enhancing overall user satisfaction.
6. **Technology Stack:**

- **Database System:**Choose MySQL for structured data storage and reliability.
- **Server-Side Programming Language:**Opt for Node.js for its asynchronous and event-driven architecture, aligning well with SCHOLARSPACE's real-time requirements.
- **Frontend Framework:**Select React.js for building the web portal, ensuring a dynamic and responsive user interface.

7. **Testing Framework:**

   - **Backend Testing:**Utilize Jest for comprehensive and efficient testing of backend components.
   - **Frontend Testing:**Extend Jest to cover frontend components, ensuring unified testing across the application.

8. **Mobile Application Integration (React Native):**

   - **Seamless Integration:**Ensure seamless integration between the web portal and the React Native-based mobile application.
   - **Optimized UI/UX:**Design an optimized user interface for the mobile app, providing a consistent user experience across platforms.

This strategic approach to SCHOLARSPACE's architecture ensures not only the immediate development needs but also positions the system for long-term success, adaptability, and growth in the ever-evolving landscape of education technology.

3.8 Summary

In summary, the paragraph provides a structured approach for creating a mobile application and web portal using React, React Native, and Node.js, emphasizing planning, development, testing, and deployment while highlighting the importance of architecture, security, and user experience.

CHAPTER 4

MILESTONES, WORK DIVISION AND COST

4.1 Milestones

Clear milestones and deliverables should be defined w.r.t time by including a Gantt chart.

- Architect the database.
- Develop Basic frontend and Backend in parallel.
- Implement core features and functionality.
- Perform testing and address any issues in the application.
- Adding AI for Auto chechking.
- Launch the application on a hosting platform
- Continuous maintenance and periodic updates.

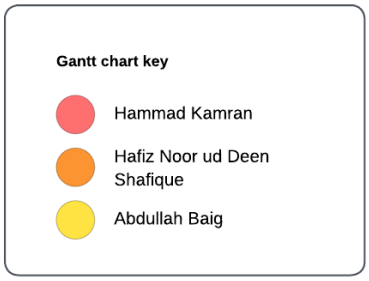
4.2 Work Division

In our dynamic and skilled development team, we have three key individuals contributing their expertise to ensure the success of our project. Noor ud din Shafique, our Backend Developer, spearheads the creation of the application's robust server-side logic, emphasizing data storage efficiency and core functionality. Muhammad Abdullah Baig, our Frontend Developer, takes charge of crafting an intuitive user interface and designing engaging user interactions to make the application visually appealing and user-friendly. Lastly, Hammad Kamran serves as our Database and SQA Engineer, excelling in both roles. In database engineering, he designs and manages the database structure for efficient data storage. Simultaneously, in the role of Software Quality Assurance, Hammad meticulously conducts testing to identify and resolve any issues or bugs, ensuring the application's reliability and functionality. Together, this team is committed to delivering a high-quality, seamlessly functioning application.

- Noor ud din Shafique - Backend Developer: Noor ud din Shafique will primarily focus on the development of the back-end of the application. This includes creating the server-side logic, handling data storage and retrieval, and ensuring that the application's core functionality is robust and efficient. The back-end developer plays a critical role in making sure the application's server-side components are functional and secure..
- Muhammad Abdullah Baig - Frontend Developer: Muhammad Abdullah Baig will take the lead in designing and developing the front-end of the application. This involves creating the user interface, designing user interactions, and ensuring that the application is visually appealing and user-friendly. The front-end developer is responsible for the look and feel of the application, making it accessible and engaging for users

- Hammad Kamran - Database and SQA Engineer: Hammad Kamran will have a dual role in the project. As a Database Engineer, he will be responsible for designing and managing the database structure, ensuring that data is stored efficiently and can be retrieved as needed. Additionally, Hammad will also take on the role of a Software Quality, responsible for conducting thorough quality assurance of the application to identify and resolve any issues or bugs. Software Quality is a critical phase in ensuring the application's reliability and functionality.

4.3 Ganntt Chart



Tasks	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
DataBase Developnment & optimization						
Frontend Learning						
Backend Learning						
Backend Automation Testing Learning						
Frontend Development with dummy data						
Backend Development						
Backend Black Box Testing						
Frontend & Backend Integration						
Frontend & Backend Integration						
Frontend UI/UX						
Frontend problems resolving						
Backend problems resolving						

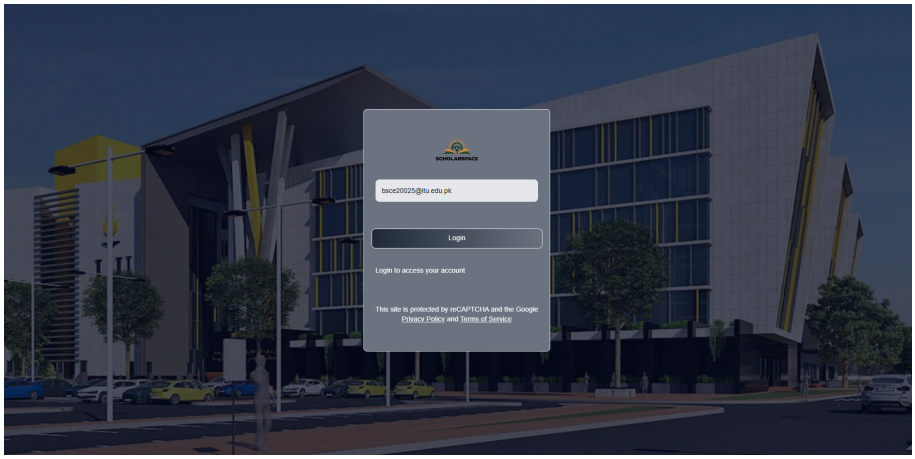
4.4 Cost

Cost breakdown of the project to be shown, estimating the total cost of the final product.

Item	**Cost (PKR)**
Stipend for Three People (8 months)	360,000
Laptops (100,000 PKR)	100,000
Third Party Integrations	50,000
Miscellaneous Expenses	50,000
Total	560,000

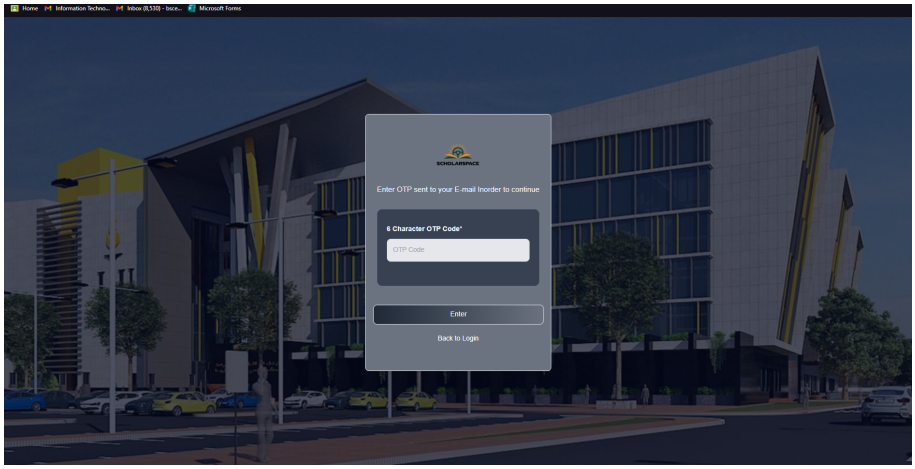
4.5 Results

- **Admin Login View:**



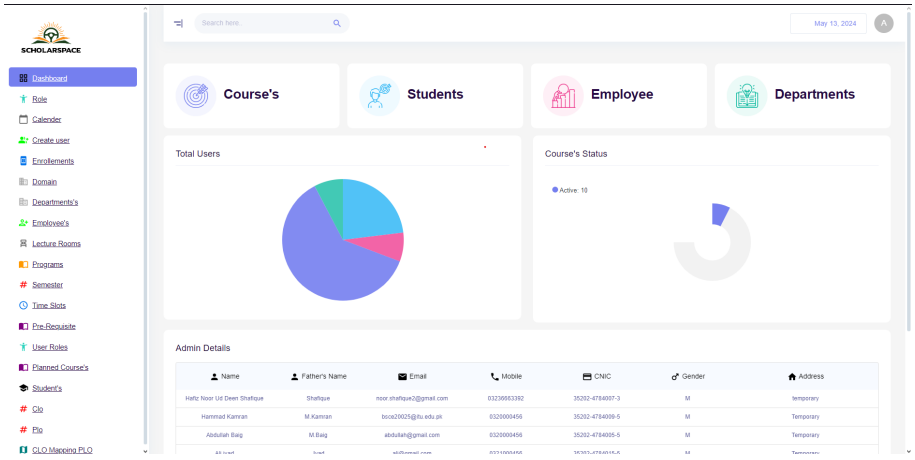
Screenshot of the user login interface where users securely log into their accounts.

- **Admin OTP View:**



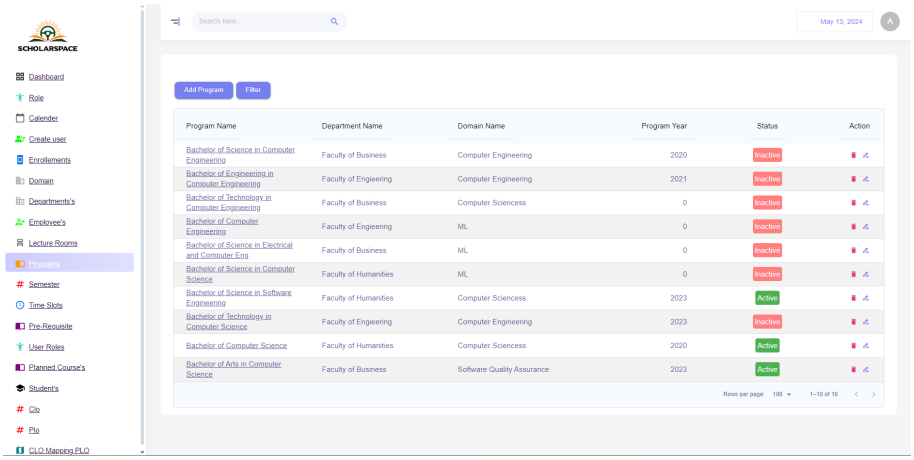
To enhance LMS security we have added **two-factor authentication** .When user login , they receive an OTP via email for added security . The screenshot show the OTP page.

- **Admin Dashboard:**



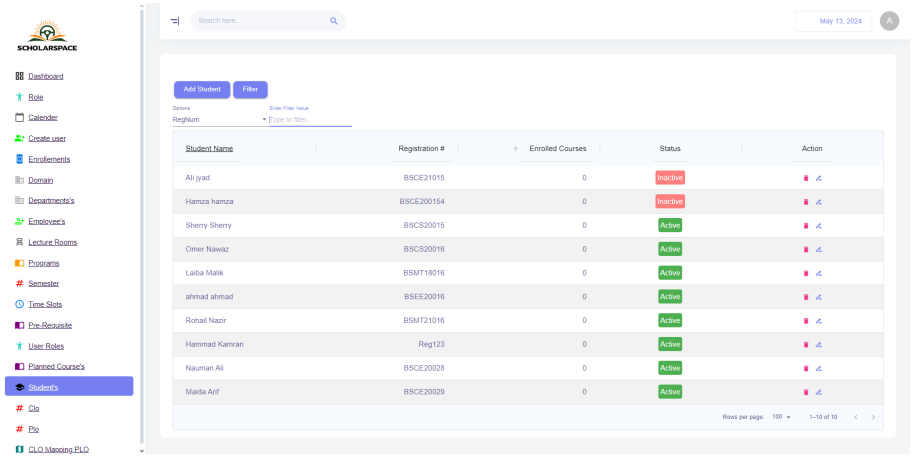
After two-way authentication ,users are directed to the Admin Dashboard where various views are available ,such as Student, Department and Programs, among others .Admin can efficiently manage task like Updating ,Deleting ,Viewing and Adding respective items , creating a seamless and user-friendly control hub for educational operations.

- **Admin Dashboard - Program View:**



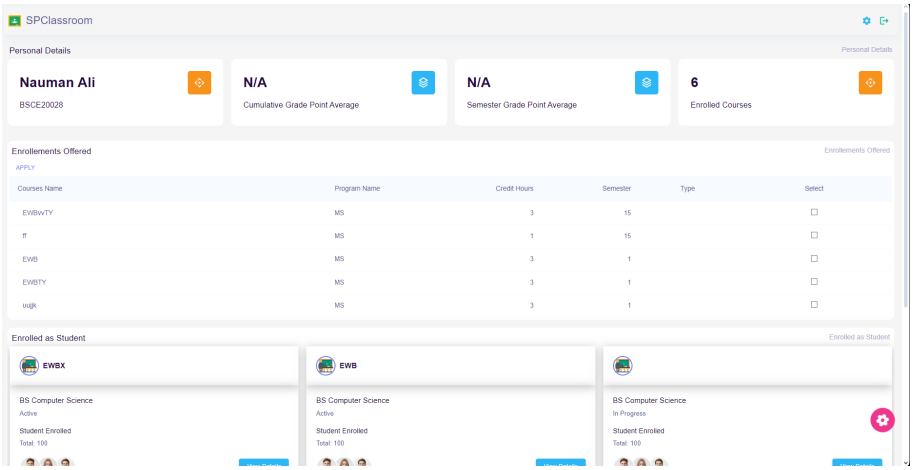
In the Program View section, administrators can update, delete, add and view programs.They have the authority to determine which program are offered by the university , assign them to specific department and specify the domain to which each program belongs.

- **Admin Dashboard - Student View:**

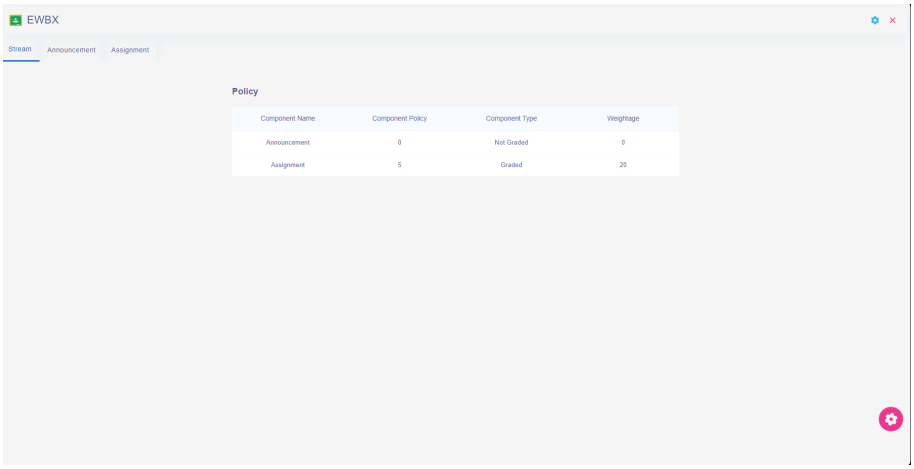


In the Student View section, administrators can access student details, including student names, registration number and number of courses in which each student is enrolled.

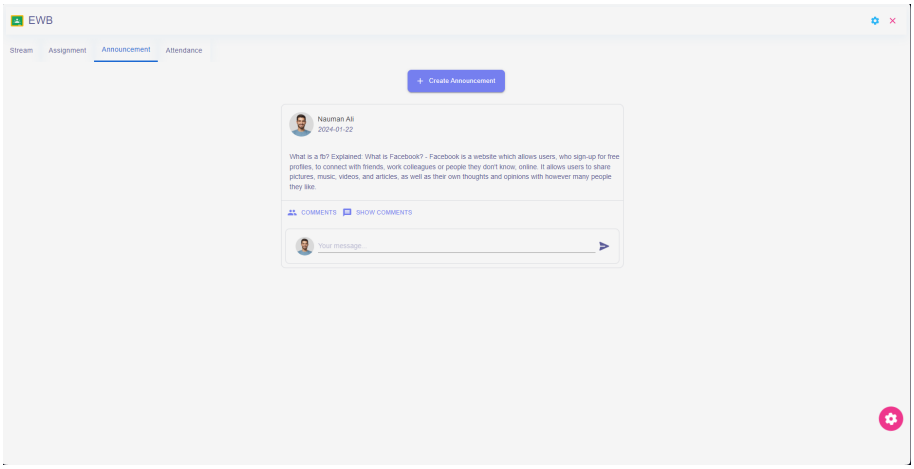
- **Student Portal:**



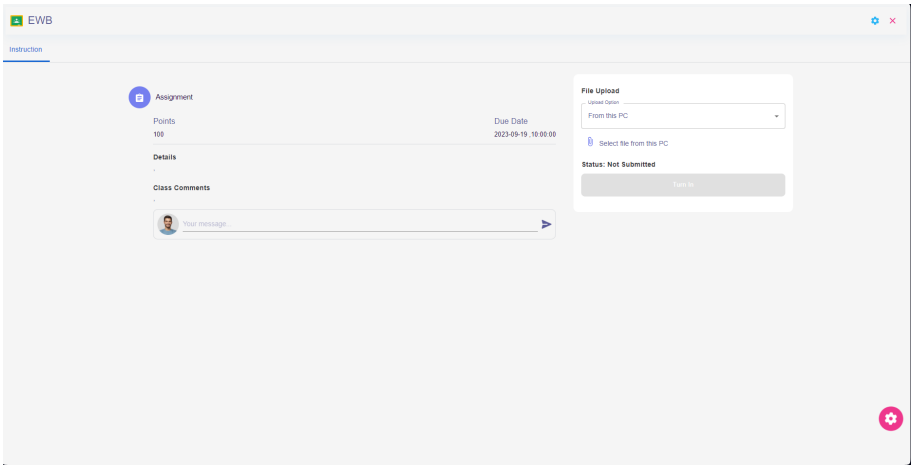
Snapshot of the **student portal dashboard** displaying personal details and enrolled courses for both students,teacher assistant's and teachers. Users can securely access and manage their accounts, gaining insights into their academic journey.



Snapshot of the Classroom .Here user will see course content .



Snapshot of the Announcement .



Snapshot of the Assignment .

4.6 Summary

In Chapter 4, the project's key milestones were clearly defined with a time-oriented approach, visualized through a Gantt chart. The outlined milestones included the architectural design of the database, concurrent development of basic frontend and backend, implementation of core features, testing, integration of AI for auto-checking, application launch on a hosting platform, and continuous maintenance with periodic updates.
The work division within the development team was presented, emphasizing the pivotal roles of three key individuals. Noor ud din Shafique, the Backend Developer, focused on creating a robust server-side logic. Muhammad Abdullah Baig, the Frontend Developer, led the design and development of the user interface for a visually appealing and user-friendly application. Hammad Kamran, the Database and SQA Engineer, excelled in managing the database structure and conducting thorough software quality assurance.
A Gantt chart was provided to visually represent the timeline and duration of each milestone, aiding in project management and progress tracking.
The cost breakdown of the project was detailed, estimating a total cost of 560,000 PKR. The breakdown included stipends for three people over eight months, laptop expenses, third-party integrations, and miscellaneous expenses.
Results were showcased through various snapshots, including the Login View, Admin View in Light and Dark Modes, and Teacher/Student Views, offering insights into the application's interfaces and functionalities.

CHAPTER 5

CONCLUSION

5.1 Conclusion

• The potential advantages that ScholarScape could offer to education systems and stakeholders, such as increased efficiency, enhanced communication, and enriched student learning.
• The merits of employing a digital education platform, including heightened convenience, precision, and accessibility.
• An exploration of the possible limitations or hurdles that ScholarScape might encounter and strategies for addressing them in the future.
• An examination of prospective developments and expansions for the platform, encompassing the addition of novel features or services to further enhance the educational experience for students.
• The pivotal role played by ScholarScape in fostering collaborative learning and nurturing a sense of community among stakeholders.

5.2 Future Work

It appears that the overarching objective of ScholarScape is to construct a comprehensive platform suitable for all education stakeholders, streamlining services, and facilitating communication and record-keeping while eliminating the need for paperwork.
Regarding future work, it remains crucial to continuously develop and enhance the platform to meet evolving stakeholder needs and to remain aligned with emerging technologies and education best practices. This may entail incorporating fresh features or functionalities, integrating with other systems or platforms, and conducting rigorous user testing and feedback mechanisms to ensure that the platform consistently addresses user requirements. Furthermore, it is imperative to address concerns related to security, privacy, and accessibility throughout the platform's ongoing development and maintenance.

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