BIRENDRA MEMORIAL COLLEGE

(Affiliated To Tribhuvan University)

Final Year Internship Report
On
Backend Developer of
"School Management System"
At
Prooey Pvt. Ltd.
(Course Code: CSCC-462)

Internship Report Submitted in the Fulfillment of the Requirement for the
Bachelor of Science in Computer Science & Information Technology under Tribhuvan University, Nepal

Submitted By:
Santosh Shrestha (24609/076)
TU Registration No.:5-20459-0010-2019

Submitted To:
Department of Computer Science and Information Technology
Birendra Memorial College
Dharan-1, Sunsari, Nepal

June 2024

SUPERVISOR'S RECOMMENDATION

I hereby recommend that this project be prepared under my supervision by **Santosh Shrestha (24609/076)** entitled **"School Management System"** in partial fulfillment of the requirements for the degree of for the degree of Bachelor of Science in Computer Science and Information Technology (B.Sc.CSIT) be proceed for evaluation.

Supervisor
Pravin Sangroula

EXAMINER'S APPROVAL LETTER

This is to certify that the internship report carried out by **Santosh Shrestha (24609/076)** in partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Information Technology has been well studied. In our opinion, it is satisfactory in scope and quality as a project for the required degree.

……

Asst. Prof. Mukesh Shah

Head of Department

CSIT Department

Birendra Memorial college

……

Asst. Prof. Pravin Sangroula

Supervisor

CSIT Department

Birendra Memorial college

……

Asst. Prof Pradip Khatiwoda

External Examiner

Central Department of CSIT

TU, IOST

ACKNOWLEDGEMENT

The internship wouldn't be possible without the kind support and assistance of many individuals and organizations. I'm immensely honored to have had this all along the duration of my internship. I would like to extend my deep-felt appreciation to every one of them.

I am profoundly indebted to **Birendra Memorial College** for constant guidance and supervision, as well as for providing all the necessary support and a friendly atmosphere for the successful completion of the internship. I am also appreciative of the efforts of B.Sc. CSIT HOD **Er. Mukesh Shah**, without his supporting character, the internship would have been nowhere near completion.

I would like to express my heartfelt gratitude and sincere appreciation to my wonderful and respected, **Mr. Pravin Sangroula** for his invaluable guidance, unwavering support, and mentorship throughout our project. I greatly appreciate his helpful suggestions throughout this project and his cooperative appearance.

I want to express my sincere thanks to **Mr. Jivan Prasad Chaudhary**, CEO of Prooey Pvt. Ltd. for giving me this opportunity to undertake this project and for his valuable guidance and supervision during this internship program.

In the end, I would like to express my sincere thanks to all my friends and others who helped me directly or indirectly during this project work.

Sincerely,
Santosh Shrestha
(T.U. Roll No.: 24609/76)
BSc. CSIT
Birendra Memorial College
Dharan-4, Sunsari

ABSTRACT

This report documents my internship journey as a Django backend developer at Prooey Pvt. Ltd., where I worked from 18th March 2024 to 14th June 2024 on the development of a School Management System. The primary objective of the project was to create a sophisticated web application aimed at enhancing efficiency in administrative and academic processes within educational institutions. Key phases of the project included in-depth requirement analysis, meticulous system design, comprehensive front-end and back-end development, rigorous testing, and successful deployment. Working at Prooey Pvt. Ltd. provided me with the opportunity to actively engage in collaborative efforts with team members, ensuring seamless coordination and alignment with project timelines and deliverables. This experience provided invaluable insights into backend development methodologies, navigating practical challenges in software development, and mastering the intricacies of teamwork dynamics within a professional setting. The School Management System project proved instrumental in bridging theoretical knowledge with practical application, significantly enhancing my technical proficiency and equipping me with essential skills for future career pursuits in software development.

Keywords: *Django, Internship, Prooey Pvt. Ltd., Web Development*

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ACID	Atomicity Consistency Isolation Durability
APA	American Psychological Association
CSS	Cascading Style Sheets
CURD	Create Update Read Delete
HTML	Hyper Text Markup Language
IT	Information Technology
Lt	Limited
MVC	Model View Controller
ORM	Object Relational Mapping
Pvt	Private
SMS	School Management System

CHAPTER 1: INTRODUCTION

1.1. Introduction

An internship is a period of work experience offered by an organization, often without pay, to help trainees gain practical experience or fulfill qualifications. Interns work either part-time or full-time for a specific period, typically ranging from two to four months. Internships are most common among undergraduate or graduate students seeking to gain practical work experience related to their field of study.

According to the B.Sc. CSIT syllabus, an internship in the 8th semester must last at least 45 days to 3 months. During this time, interns have the opportunity to explore their areas of interest, understand the potential career paths available to them, and assess whether their skill sets align with their chosen profession (Careers Portal. (n.d.)).

In today's evolving education sector, technology is crucial in improving how schools operate and enhancing academic quality. This report outlines my experience as a Django backend developer during my internship at Prooey Pvt. Ltd., where I worked on developing a School Management System. From 18th March 2024 to 14th June 2024, I had the opportunity to contribute to creating a web application that simplifies school administration and academic tasks.

The School Management System project aimed to solve common challenges faced by schools. It involved analyzing requirements carefully, designing the system, and developing both the front-end and back-end of the application. I also integrated external tools, conducted thorough testing, and ensured the system was deployed effectively. I collaborated directly with my team, to coordinate efficiently.

During this internship, I learned a lot about practical software development. I applied theoretical knowledge to solve real problems, improved my technical skills, and gained insights into agile project management. This introduction sets the stage for exploring my internship experience in detail, covering project goals, methods used, and how they shaped my career aspirations.

1.2. Problem Statement

During my Prooey Pvt. Ltd. internship, we focused on developing a School Management System to address these problems.

- Schools face common issues such as managing student records, communication between staff, and organizing administrative tasks efficiently.
- These challenges often result in errors, inefficiencies, and difficulty keeping everyone informed.
- The system aimed to:
    - Streamlined tasks like enrolling students, tracking attendance, and managing grades.
    - Improve communication among teachers, students, and parents.
    - Eliminate errors caused by manual processes.
    - Enhance the accuracy of data.
    - Facilitate effective collaboration in education.
- This problem statement outlines the specific challenges within educational management that our project aimed to address.
- It sets the stage for explaining our approach and achievements in subsequent sections of this report.

1.3. Objectives

During my internship at Prooey Pvt. Ltd., the School Management System project was guided by specific goals to improve educational administration and efficiency. These objectives were designed to:

- To develop a Django-based web application to centralize administrative and academic tasks, improving operational efficiency.
- To enhance communication and data management capabilities for administrators, teachers, students, and parents, ensuring accurate reporting and informed decision-making.
- To create a user-friendly interface to simplify navigation and usability for all stakeholders in the educational process.

1.4. Scope and Limitations

1.4.1 Scope

This report details the work I performed during my internship period at Prooey Pvt. Ltd. The primary project I worked on was the development of a School Management System. This report includes the following aspects:

- Detailed analysis and design of the School Management System, outlining the architecture, data flow, and key components.
- It encompasses a comprehensive approach to managing various aspects of school operations.
- Integrated solution aims to enhance operational efficiency and improve the overall educational experience.
- Description of the development process using Django, including front-end and back-end development, database integration, and user interface design.

1.4.2 Limitations

There are some limitations to this internship report. They are listed as follows:

- Every part of the organization's functioning has not been described as there are restrictions due to its privacy policies.
- Economic details of the project have not been mentioned due to confidentiality issues.

1.5. Report Organization

The internship project report is organized into the following sections to provide a comprehensive overview of the development of the School Management System using Python, Django, Postgres, HTML, Bootstrap, JavaScript, and CSS:

i. Chapter 1 Introduction: Includes the introduction of the project, problem statement, objectives, and scope and limitations of the project.
ii. Chapter 2 Organization Details: Provides an introduction to Prooey Pvt. Ltd., its hierarchy, and the working domain of the organization.

iii. Chapter 3 Internship Activities: Details the roles and responsibilities of the intern, including a weekly log and a detailed description of the School Management System project.

iv. Chapter 4 Conclusion and Learning Outcomes: Summarizes the overall system and discusses the lessons learned from the internship experience.

Appendix: Contains additional supplementary materials such as diagrams, code snippets, user guides, or project documentation.

At the end, all references are listed in APA format.

CHAPTER 2: ORGANIZATION DETAILS AND LITERATURE REVIEW

2.1. Introduction to Organization

Prooey Pvt. Ltd., established in 2069 B.S., is more than just a software company; it is a dedicated partner in navigating the ever-evolving digital landscape. Prooey Pvt. Ltd. specializes in web development and offers a comprehensive range of services designed to propel businesses forward.

With a talented team of developers and designers, Prooey Pvt. Ltd. crafts bespoke solutions tailored to each client's unique needs and goals. From intuitive user interfaces to robust backend systems, the company leverages cutting-edge technologies and industry best practices to deliver high-quality websites and web applications that drive results.

At the heart of Prooey Pvt. Ltd.'s approach is a commitment to collaboration, innovation, and excellence. The team works closely with clients every step of the way, ensuring that projects not only meet but exceed expectations. Whether working with startups, SMEs, or enterprises, Prooey Pvt. Ltd. has the expertise and creativity to help clients succeed in the digital realm.
"Transforming Ideas into Digital Success"
Prooey Pvt. Ltd.'s approach to web development is rooted in collaboration and innovation. The company works closely with clients to understand their goals, challenges, and target audience, enabling the creation of custom solutions that drive results. From intuitive user interfaces to robust backend systems, Prooey Pvt. Ltd. leverages the latest technologies and best practices to deliver scalable, secure, and high-performance websites and web applications.

At Prooey Pvt. Ltd., the focus is not just on building websites but on creating experiences. The company understands that every pixel, every line of code, and every interaction matters. Striving for excellence in every project, Prooey Pvt. Ltd. ensures that each undertaking exceeds expectations and delivers measurable value.

Figure 1: Logo of Company

Table 1: Contact Details

Organization	Prooey Pvt. Ltd
Organization Type	Private Limited
Address	Sanepa-2, Lalitpur, Nepal
Email	jivanchau@icloud.com
Website	www.prooey.com.np
Contact Number	+977 9823802242

2.2. Organizational Hierarchy

At Prooey Pvt. Ltd., the organizational structure is designed to facilitate efficient operations and effective management. The team is led by a Founder/Team Lead who oversees strategic initiatives and project execution. Sales and Marketing are managed by another key role, focusing on business growth and client relations. The HR/Admin team handles hiring, employee relations, and administrative tasks. A Team Lead oversees the senior programmer and developer team, while a Backend developer contributes expertise in application development. Backend Developers, who focus on the server side and database. Frontend Development focuses on enhancing user interfaces. Full-stack developer focuses on overall application development.

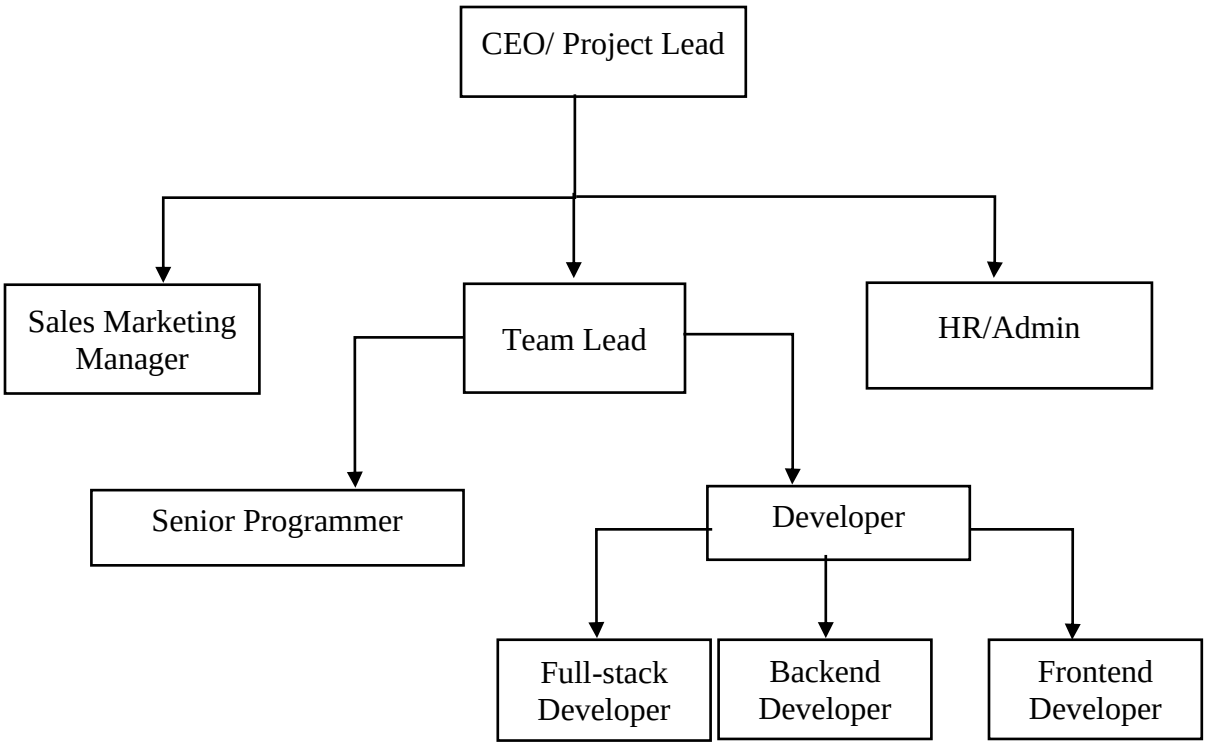

Figure 2: Organizational Hierarchy

2.3. Working Domains of Organization

Prooey Pvt. Ltd. is committed to delivering excellence in every service it offers, empowering businesses to thrive in the digital age. During my internship, I was exposed to various working domains of the company, which include:

- **Custom Software Development**

  Prooey Pvt. Ltd. specializes in creating tailored software solutions built from scratch according to the specific requirements of clients. This includes web applications, mobile apps, and enterprise software, ensuring that each solution is optimized to meet the unique needs of businesses.

- **Website Development**

The company has strong expertise in website development, creating websites and web applications using cutting-edge technologies such as HTML, CSS, JavaScript, and web frameworks like Angular, React, and Vue.js. The focus is on building responsive, user-friendly, and high-performance websites that enhance user experience and engagement.

- **Maintenance and Support**

  Prooey Pvt. Ltd. provides ongoing maintenance, updates, and technical support for software products to ensure smooth operation and timely resolution of any issues. The dedicated support team ensures that digital assets remain up-to-date and perform at their best.

- **IoT (Internet of Things) Solutions**

  The company builds applications and systems that leverage IoT technology to connect and control physical devices over the Internet. IoT solutions are designed to enhance operational efficiency, provide real-time data insights, and enable seamless device management.

- **Search Engine Optimization (SEO)**

  Prooey Pvt. Ltd. offers SEO services aimed at optimizing websites for search engines to improve rankings, attract organic traffic, and enhance online visibility. They use strategic SEO techniques and content optimization to ensure that websites stand out in search results and effectively reach target audiences.

- **Consulting and Strategy**

  The company provides consultancy services to businesses on software development methodologies, technology selection, digital transformation, and IT strategy. Their experts offer valuable insights and guidance to help businesses make informed decisions and achieve their objectives.

2.4. Description of Intern Department/Unit

I was assigned to a Web Development unit of the organization. This unit is composed of many teammates with different roles. This unit or department builds and maintains all the web applications and web services. As an intern, I worked as a Backend Developer for an organization total of 11 weeks at Prooey Pvt. Ltd. The details of my internship period in the organization are summarized in the following table:

Table 2: Duration of Internship

Start Date	18th March 2024
End Date	14th June 2024
Total Duration	11 weeks
Intern Position	Backend Developer
Mentor	Mr. Jivan Prasad Chaudhary
Office Hours	10:00 AM-04:00 PM
Weekdays	Monday-Friday
Weekends	Saturday and Sunday

2.5. Literature Review

A School Management System (SMS) is an integrated platform designed to streamline administrative and academic processes in educational institutions. The adoption of such systems aims to enhance efficiency, improve data management, and facilitate communication among stakeholders. This literature review explores the development, implementation, and impact of school management systems, focusing on key themes such as technological integration, user acceptance, system effectiveness, and challenges faced during implementation.

This model proposes that changes in governance structure, the decision-making processes, and the way the school operates will predict changes in the school culture, which will then lead to changes in behaviors (e.g., student attendance) and attitudes of actors involved (e.g., teachers' attitudes, parent involvement). These changes in behaviors and attitudes should lead to improved school quality and ultimately improved academic achievement (Koc, A., & Bastas, M. (2019)).

The implementation of a School Management System can significantly impact school operations and student outcomes. SMSs automate routine tasks, thereby freeing up administrative staff to focus on more strategic activities. Studies show that automation leads to improved operational efficiency and better resource management (Garg, S., & Garg, D. (2013)). By providing real-time access to academic data, school management systems enable timely interventions for students at risk. Research suggests that the use of SMS contributes to improved student performance and enhanced teacher effectiveness (Murillo, F. J. (2014)). Enhanced communication channels between teachers, students, and parents foster a collaborative learning environment. Studies highlight the role of SMS in building stronger school-community relationships and increasing parental involvement (Beveridge, L. (2011)).

Despite the benefits, implementing a School Management System presents several challenges. The initial cost of purchasing and installing an SMS, along with the need for adequate IT infrastructure, can be a barrier for many schools. Research indicates that financial constraints and a lack of technical infrastructure are common issues (Asadullah, S. (2017)). Resistance from staff due to fear of change or lack of confidence in using new technology can hinder successful implementation. Studies suggest that involving staff in the planning process and addressing their concerns can mitigate resistance (Kotter, J. P. (1996)). Ensuring the security and privacy of student and staff data is a critical concern. Research emphasizes the importance of robust security measures and compliance with data protection regulations (Alwi, N. H. M., & Fan, I. S. (2010)).

CHAPTER 3: INTERNSHIP ACTIVITIES

3.1. Roles and Responsibilities

During the internship at Prooey Pvt. Ltd., I gained valuable experience as a Backend Developer intern. Working in the office allowed me to collaborate closely with the team through meetings to grasp project requirements and contribute effectively to the School Management System's (SMS) development. As an intern in the company, I undertook the following roles and responsibilities:

Roles:

- **Learning and Development**

  Actively learned the Python programming language and related technologies, while also gaining an understanding of software development methodologies and best practices.

- **Supporting Development**

  Assisting in coding tasks, including writing, testing, and debugging Python code, while collaborating with team members to deliver solutions that meet project requirements and contributing to design and architecture discussions under supervision.

- **Documentation and Reporting**

  Documenting code, processes, and procedures, as well as regularly updating supervisors and team members on progress.

- **Research and Problem Solving**

  Conducting research on technical issues to provide innovative solutions and assisting in resolving software defects and issues through troubleshooting and debugging.

Responsibilities:

- **Code Implementation**

  Writing Python scripts, modules, and applications while adhering to coding standards and best practices.

- **Testing and Quality Assurance**

  Writing unit tests to ensure code quality and participating in code reviews to enhance software quality.

- **Project Support**

  Assisting in deploying and maintaining software applications, as well as providing support to end-users or clients as required.
- **Learning and Growth**

  Actively seeking opportunities to enhance knowledge of Python and related technologies, while remaining open to feedback and continually refining skills.
- **Team Collaboration**

  Collaborating effectively with team members across various roles, including developers, designers, and project managers, to foster a supportive and productive team environment.
- **Adherence to Guidelines**

  Adhering strictly to company policies, procedures, and coding standards to ensure consistency and reliability in software development practices. Maintaining utmost confidentiality and security of proprietary information at all times.

Throughout the internship, our Project head guided and supervised me, receiving support and feedback to enhance my skills and knowledge in software development, testing, deployment, coding ethics, security protocols, and intranet technologies.

3.2. Weekly Log

I work as an intern at Prooey Pvt. Ltd., for 11 weeks starting from 18th March to 14th June. During my internship period, I performed various tasks as mentioned in the weekly log of tasks mentioned below.

Table 3 Weekly Log

Week	Topic	Activities
Week 1	Introduction, Basic Python	Introduction to the team. Learned basic Python and compared it with C++. Setting up the development environment (installing Python, Django, and necessary libraries). Solved various Python coding problems.
Week 2	Learn about CRUD Operations, Architecture, and Database	Learned about CRUD (Create, Read, Update, Delete) operations in Django. Continued learning Python focusing on OOP and data structures. Studied Django architecture and its components (MVC). Created a basic Django application. Understood Django models and how they interact with the database. Installed Git for version control and set up Git repositories for project management.
Week 3	Customizing Admin Panel, Git Operations	Learned to customize the Django Admin Panel using AdminLTE3. Explored Django ORM. Practiced Git operations (init, add, commit, status, branch, merge, pull, push, reset, rebase, cherry-pick). Used Git for collaborative development: resolving merge conflicts, rebasing branches, and maintaining a clean commit history.

Week	Topic	Activities
Week 4	Setting up projects, Django Codebase, and AdminLTE3 Integration	Explored the Django codebase and implemented AdminLTE3 in the project. Defined project requirements and created a project plan. Understood DB diagrams. Set up the School Management System (SMS) project in Django. Performed basic CRUD operations for the defined modules.
Week 5	Login and Signup Pages	Developed the login and signup pages, including user authentication functionality. Understood authentication and authorization. Implemented user authentication and role-based access control. Implemented Git workflows: feature branches, pull requests, and continuous integration.
Week 6	Email Verifications	Implemented email verification for new user registrations. Added an eye button for the password fields on the login and signup pages.
Week 7	School Management CRUD Operations	Worked on CRUD operations for managing school-related data. Installed and set up PostgreSQL. Understood relational databases and SQL queries. Connected the Django application to PostgreSQL.
Week 8	User CRUD Operations	Implemented CRUD operations for user management. Debugged and fixed bugs in the existing codebase.
Week 9	Student, Subject, Exam, and Marksheet Operations	Developed functionalities for managing students, subjects, exams, and marksheets. Reviewed new project requirements.

		Analyzed the requirements of the project. Performed CRUD operations for these modules.
Week 10	Testing the Operations	Conducted testing for all implemented operations to ensure functionality and performance. Improved application dashboard design. Fixed minor bugs in the application.
Week 11	Finalization and Documentation	Finalized development, performed final testing, and bug fixing. Prepared detailed technical documentation for all features and modules. Used Git for documentation updates: managing wiki pages, updating README files, and documenting procedures.

3.3. Description of the Project Involved During Internship

School Management System

The School Management System is a web-based application designed to streamline various administrative and academic processes within educational institutions, enhancing stakeholder efficiency and communication. The primary objective of the School Management System project was to create an intuitive and user-friendly platform that could manage critical aspects of school administration. The system was designed to handle functionalities such as student enrollment, attendance tracking, grade management, library management, account management, and communication channels between administrators, teachers, and students. Users can access the system to carry out several activities, such as:

- **User Login**

  New users can create an account in the system using the appropriate credentials while existing users can log in using their information. CSRF protection and authentication

middleware help to secure sessions and prevent illegal access. Overall, the login module increases SMS usability, security, and functionality, allowing for seamless interaction and control across various user profiles and responsibilities.

When a user login, the system checks whether they are an administrator or a student. Administrators are directed to a special admin dashboard where they can manage the system and users, while students are directed to their own student portal to access their personal information and educational resources. This way, each user sees only the features they need and have permission to use, ensuring that administrators and students have the right tools and access without any confusion.

- **Working Modules**

  In this SMS project, various modules such as Users, School, School Management, School Management Schools, Student, Subjects, Student Exams, Student Marks, and Marksheet are designed to streamline various administrative and academic processes within educational institutions, enhancing stakeholder efficiency and communication. This module can be used by the user when they login to the dashboard. The School modules contain the details of the school and the management module contains the details of the management. These two modules were linked to school management school modules. Similarly, other modules contain the details of the specific information. We implemented rigorous authentication mechanisms, including email verification during the user registration process. User roles and permissions were carefully managed to ensure that only authorized users could access specific functionalities within the system.

- **Tool Used**

  Following are the set of tools and technologies used while implementing the system.

a) Languages

Table 4: Programming languages used in the project

Python	The primary language used to develop the server side of the web application.
JS	The primary language used to develop interactive components of the website.
HTML	The markup language used to create the website.
CSS	Styling language used to style the website.

b) Frameworks

Table 5: Frameworks used in the project

Django	Web Framework to build large-scale applications.
Bootstrap	Primarily aimed at creating responsive and visually appealing user interfaces.

c) Database

Table 6: Database used in the project

Postgres	The database is used to store all the data in production.
SQLite	The database is used for testing the application on the local machine.

3.3.1. DB Diagram

Database diagrams play a crucial role in database design and management by providing a visual representation of the database schema, including its entities, relationships, and dependencies. These diagrams are essential tools that enhance communication among stakeholders, such as developers, designers, and stakeholders, by offering a clear blueprint of the database structure.

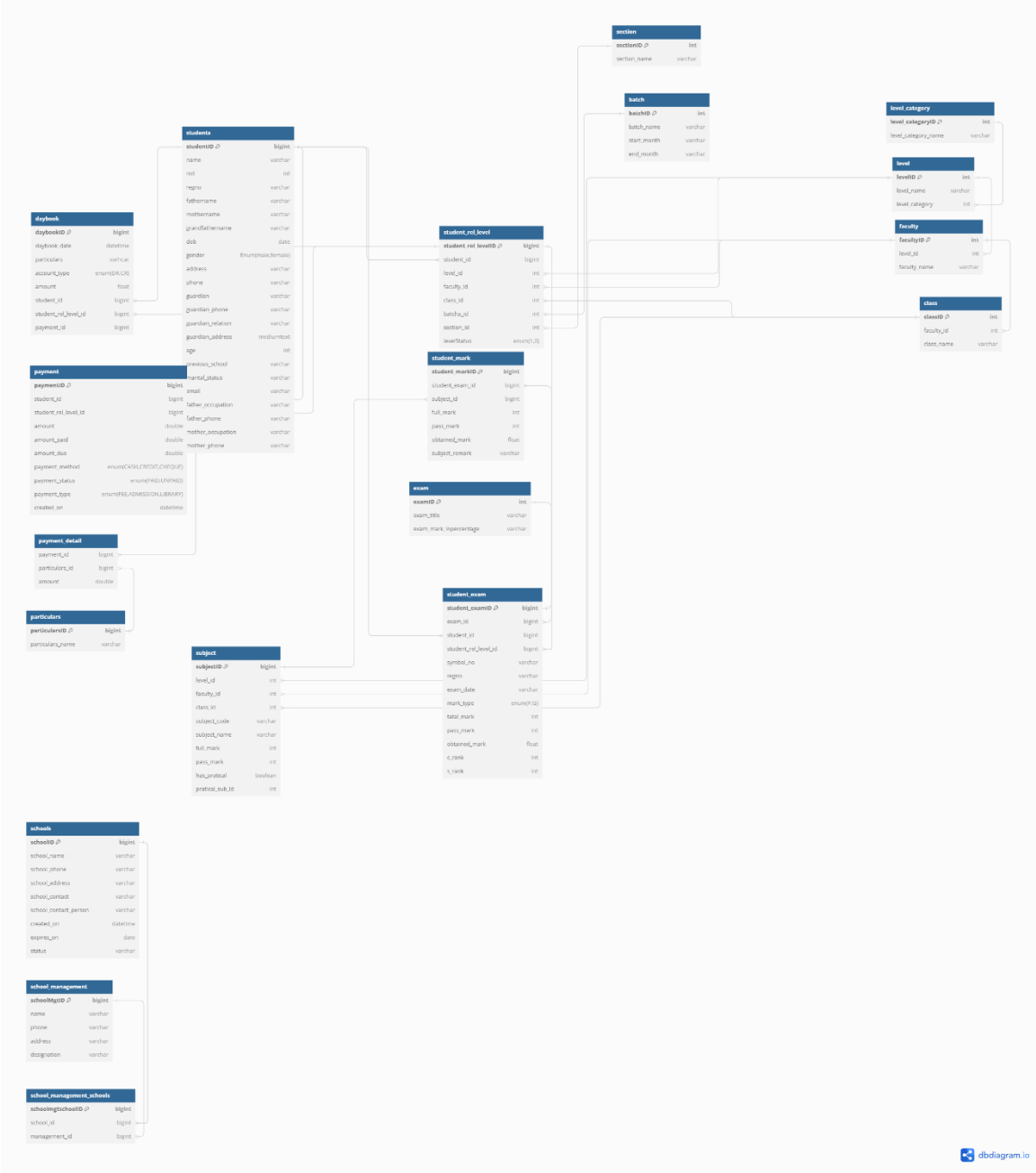

Figure 3: Initial DB Diagram of the SMS project

The above figure shows the initial DB diagram for the School Management System. I worked only on particular modules.

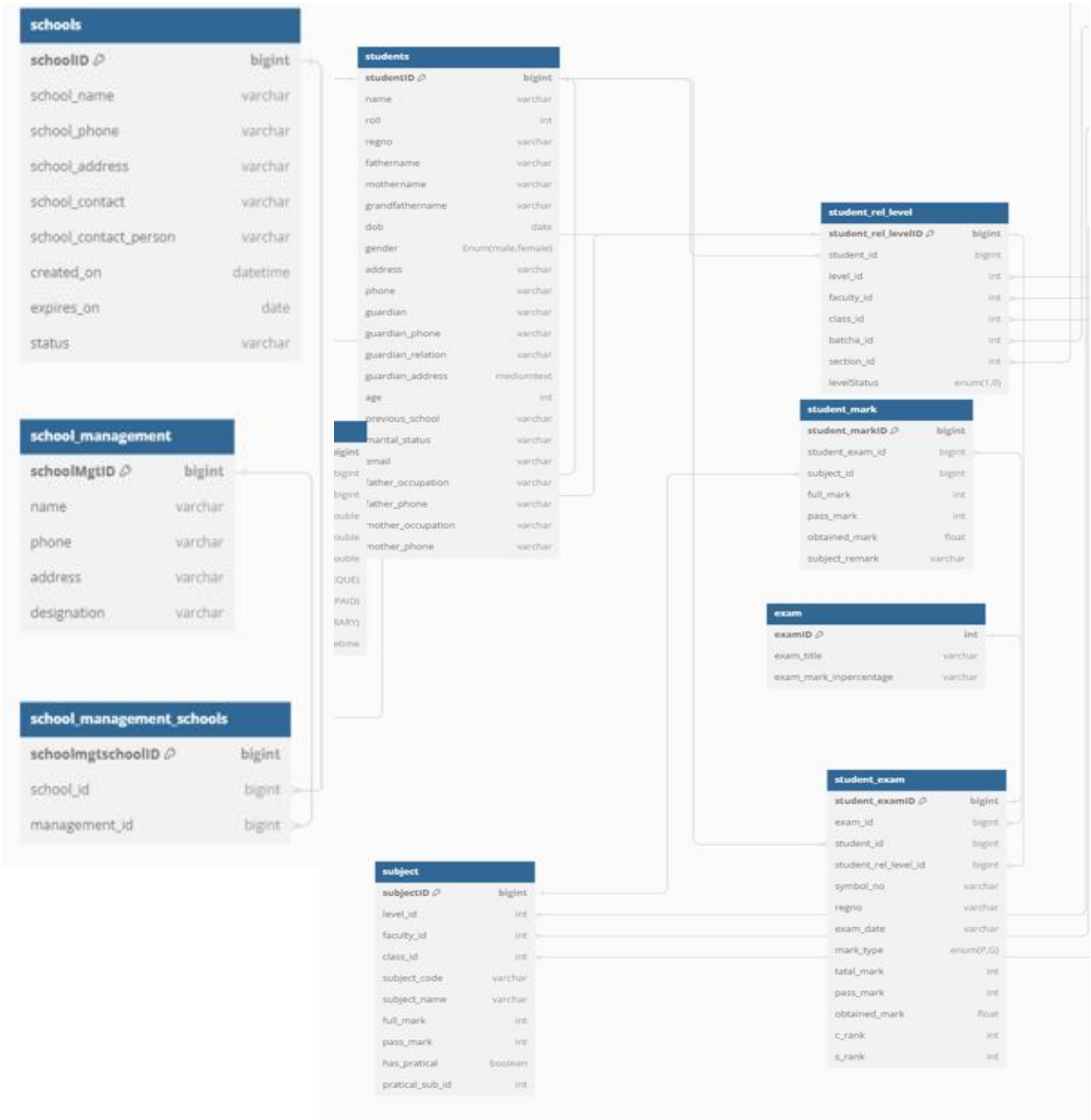

Figure 4: Working Modules of DB diagram

As part of developing the School Management System database, my part was designing and implementing several core modules to effectively manage different aspects of school operations. The primary module I worked on was the School Module, where I structured the

database to handle essential organizational elements. This involved defining tables like school details and ensuring a clear hierarchy and management structure that supports efficient school administration.

Additionally, I contributed to the School Management Module, which deals with administrative functions within the system. Here, I defined roles such as teachers and administrators, establishing their attributes and relationships to streamline operational tasks and responsibilities across the platform.

Moreover, I played a key role in developing the Student Module, a comprehensive repository for student information. This module captures and manages essential details such as student profiles, attendance records, disciplinary history, and their association with specific classes and sections. Implementing this module required careful consideration of data structure and relationships to ensure accurate tracking and reporting of student-related activities.

Furthermore, my involvement extended to modules like the Student Marks, Student Exam, and Subjects Module. In the Student Marks Module, I designed tables to track academic performance by recording marks, and subject-specific details. Meanwhile, in the Student Exam Subjects Module, I facilitated the management of subjects and exam scheduling, ensuring that students were adequately assessed based on curriculum requirements.

Lastly, I contributed to the Marksheet Module, which consolidates data from the Student Marks and Exam Subjects modules to generate comprehensive reports like mark sheets. This module provides educators and administrators with insights into students' academic progress and performance trends.

Overall, my role in developing these database modules aimed to create a cohesive and efficient system that supports school management, academic assessment, student tracking, and administrative decision-making within educational institutions.

3.4. Tasks / Activities Performed

I worked as a backend developer under the guidance of Mr. Jivan Prasad Chaudhary for the academic requirement of B.Sc. CSIT 8th semester, at Prooey Pvt. Ltd. And major activities I performed in my 11 weeks internship program are given below:

Throughout the internship, I engaged in various tasks and activities to ensure a productive and insightful experience. I started by researching and learning about Python and C++ fundamentals differences, CRUD operations using Django, and customizing the Django Admin Panel with AdminLTE3.

My development activities included designing user interfaces by implementing Adminlte for the custom dashboard, setting up the initial project codebase, creating secure login and signup pages, implementing email verification, and developing CRUD operations for school, school management, school management school, user accounts, and creating modules for managing students, subjects, exams, and mark sheets.

In our project, I utilized PostgreSQL to design and manage the database, ensuring efficient data storage, retrieval, and overall management. PostgreSQL served as the foundational database management system, supporting the backend infrastructure of our School Management System. This robust relational database played a pivotal role in storing and managing a wide array of data critical to school operations. It facilitated the storage of student records, faculty information, class schedules, and academic performance data with high reliability and data integrity through its ACID compliance. PostgreSQL's performance optimizations, including efficient indexing and query planning, ensured swift retrieval and manipulation of information, which was essential for tasks like student enrollment, attendance tracking, and exam result processing.

In the integration and finalization phase, I connected the front end with the server (Django), handled file uploads and storage, and implemented authentication and authorization mechanisms to ensure data security. I optimized the portal for speed and responsiveness and thoroughly tested the application to identify and fix bugs.

In terms of documentation, I created comprehensive technical documentation for the frontend and backend codebases to facilitate future maintenance and development. Throughout the internship, I maintained effective communication with my team and regular updates, ensuring a smooth and productive work experience.

In summary, I performed tasks related to research, back-end development, authentication, performance optimization, user experience, error handling, security, and testing and debugging. I gained hands-on experience in backend development and collaborated with my team to contribute to the project for successful completion of the School Management System project. As an intern, I actively participated in the School Management System project, primarily focusing on backend development tasks.

CHAPTER 4: CONCLUSION AND LEARNING OUTCOMES

4.1. Conclusion

My internship as a backend developer at Prooey Pvt. Ltd. has been an enriching and transformative experience, offering profound insights into the dynamic world of web development and software engineering. Throughout this period, I had the opportunity to delve deep into various facets of frontend and backend development, guided by experienced mentors and collaborating closely with a talented team.

The internship commenced with a comprehensive immersion into Python and Django, which laid a solid foundation for understanding web application development. As the internship progressed, I advanced my skills in Django's MVC architecture, honed my ex in PostgreSQL database management, and adeptly integrated frontend designs using tools like AdminLTE to create responsive dashboard interfaces.

I actively engaged in agile methodologies throughout the project lifecycle, contributing to project planning, implementation, and continuous improvement through iterative development cycles. Hands-on experience in user authentication, performing CRUD operations, and optimizing application performance significantly sharpened my technical abilities.

Working presented unique challenges that underscored the importance of effective communication, proactive teamwork, and disciplined time management. Being physically present in the office allowed me to seamlessly integrate into the team, facilitating regular communication and collaboration to ensure project success.

4.2. Learning Outcome

During my 11-week internship as a backend developer at Prooey Pvt. Ltd., I achieved significant learning outcomes that have profoundly enriched my skills and knowledge in web development and software engineering. I developed a comprehensive understanding of backend development, also learning frontend languages such as HTML, CSS, and JavaScript,

and backend frameworks like Django. This included proficiency in Django's MVC architecture, ORM, and database integration with PostgreSQL, enabling me to create robust and scalable web applications. Additionally, I enhanced my collaboration and agile methodology skills by participating in sprint planning and every two days stand-up to submit and assign tasks, benefiting from direct interactions and real-time feedback from team members.

This internship helped me grow professionally by pushing me to learn and use new technologies on real projects. It taught me to keep learning and adapting, which is essential in the fast-changing field of web development. Overall, my remote internship at Prooey Pvt. Ltd. was a valuable experience, giving me the technical skills and professional abilities needed for a successful career in web development.

REFERENCES

Careers Portal. (n.d.). Internships: Advantages and challenges. Retrieved from https://www.careersportal.com/internships/advantages-and-challenges.html

Koc, A., & Bastas, M. (2019). Project schools as a school-based management model. *International Online Journal of Education and Teaching (IOJET)*, 6(4), 923-942. Retrieved from http://iojet.org/index.php/IOJET/article/view/679

Garg, S., & Garg, D. (2013). Benefits of implementing ERP in organizations. *International Journal of Engineering Research & Technology (IJERT)*, 2(12), 1-6.

Murillo, F. J. (2014). The impact of school management on educational outcomes in Latin America. *Revista de Educación*, (365), 98-126.

Beveridge, L. (2011). Parent involvement: The key to improved student achievement. *Journal of the National Association for the Education of Young Children*, 66(3), 30-34.

Asadullah, S. (2017). Barriers to implementing e-government: A district-level study. *Information Systems Management*, 34(1), 42-56.

Kotter, J. P. (1996). *Leading change*. Harvard Business Review Press.

Alwi, N. H. M., & Fan, I. S. (2010). Information security and privacy in e-learning systems: Survey of issues, problems and solutions. In *Proceedings of the International Conference on Education and Management Technology*.

APPENDIX

Appendix A

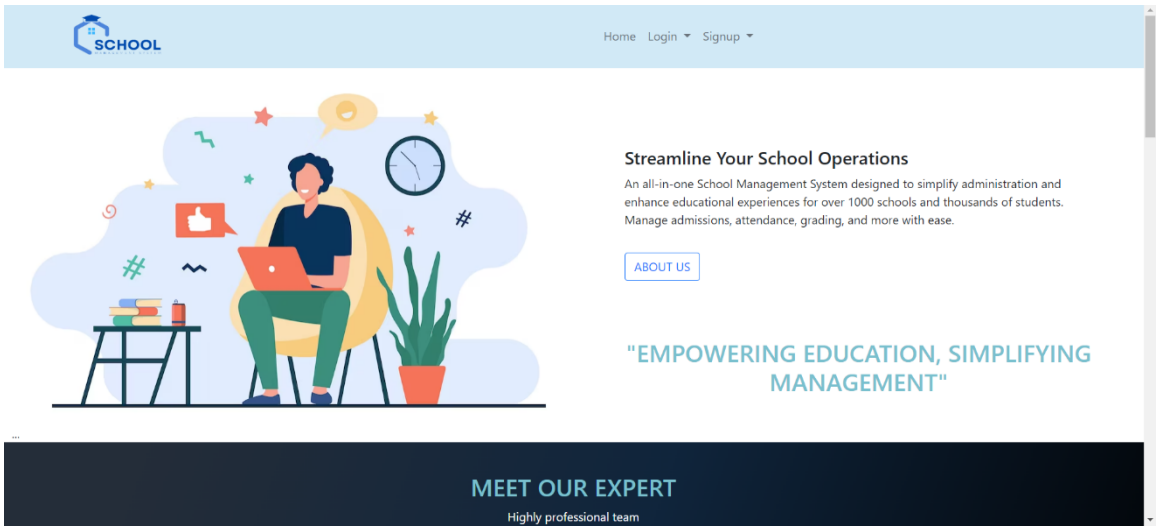

Figure 5: Landing Page of SMS

Appendix B

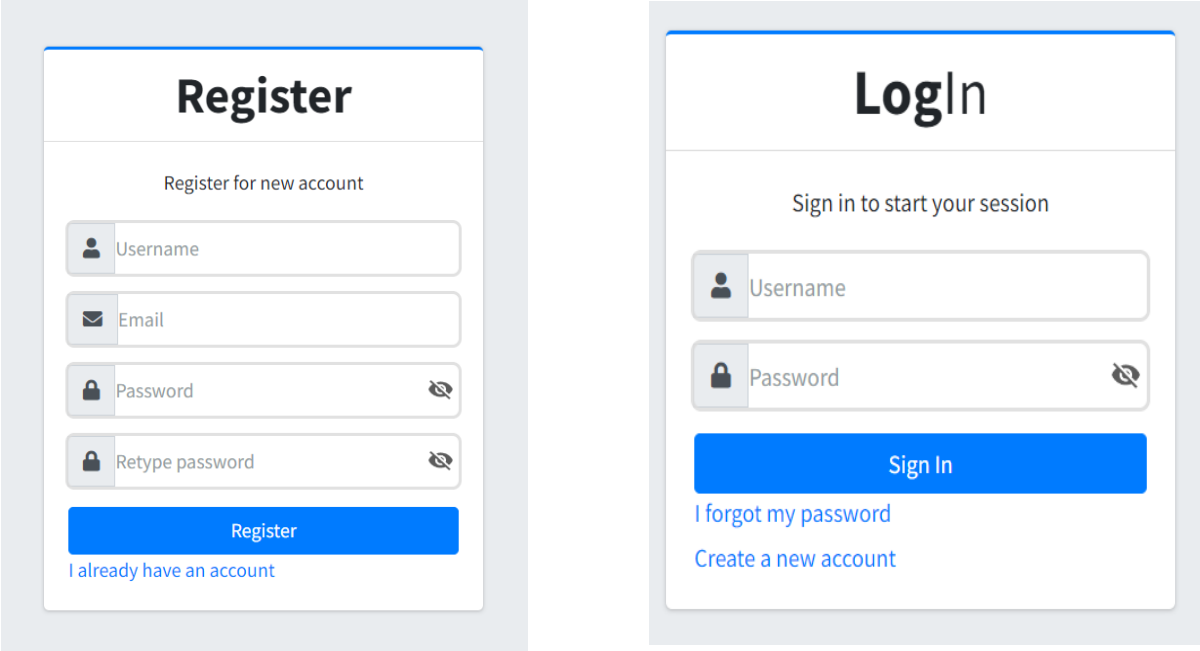

Figure 6: Admin Login and Register page

Appendix C

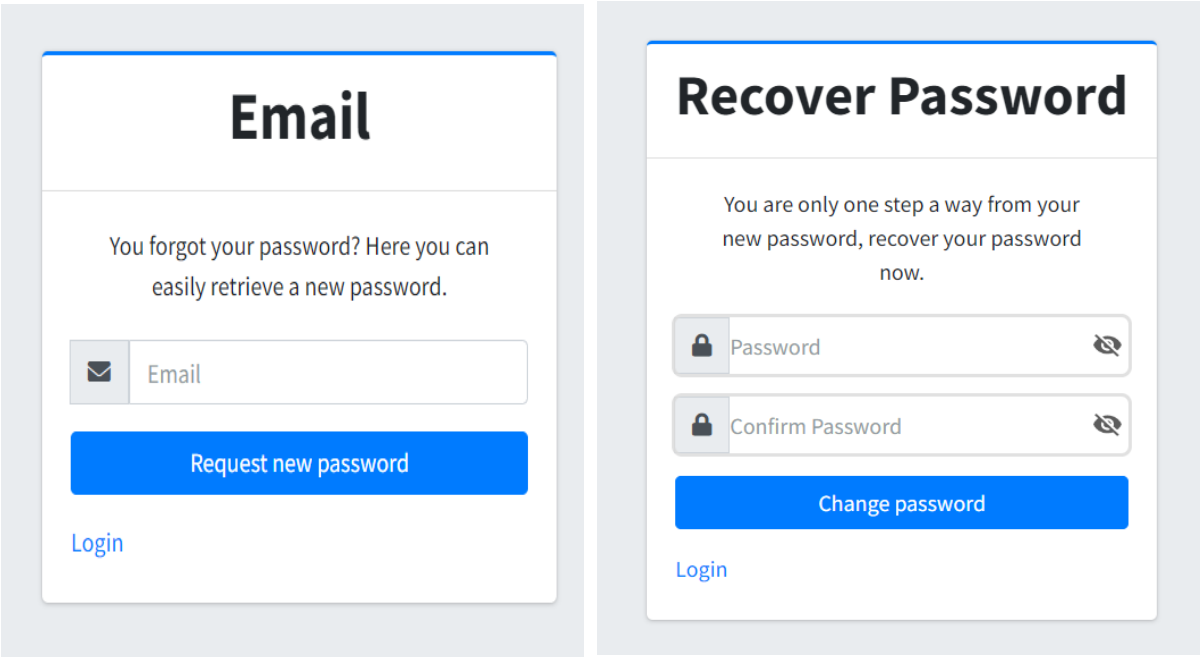

Figure 7: Recovery Password through email verification

Appendix D

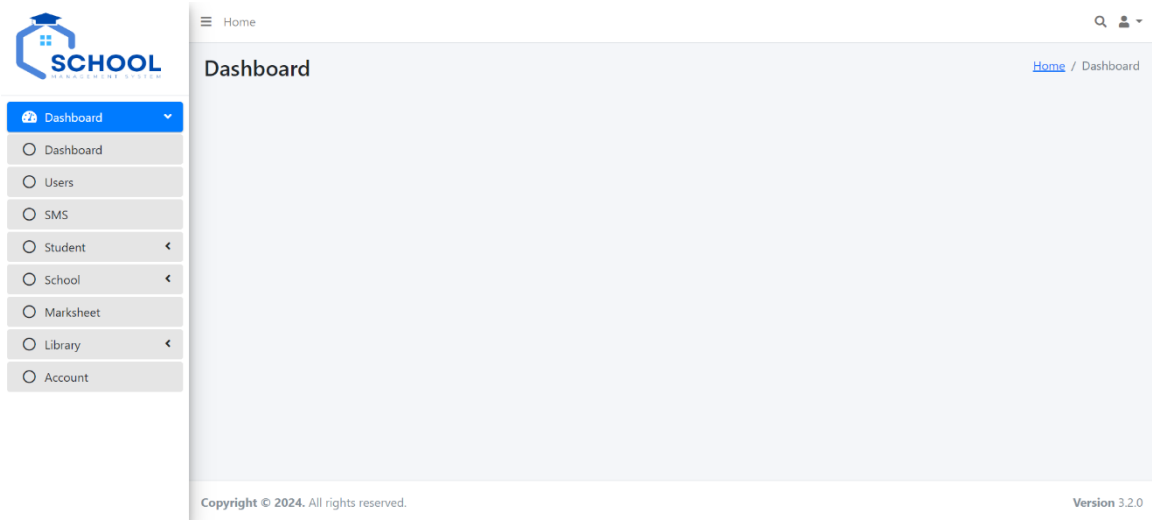

Figure 8: Dashboard page for Admin

Appendix E

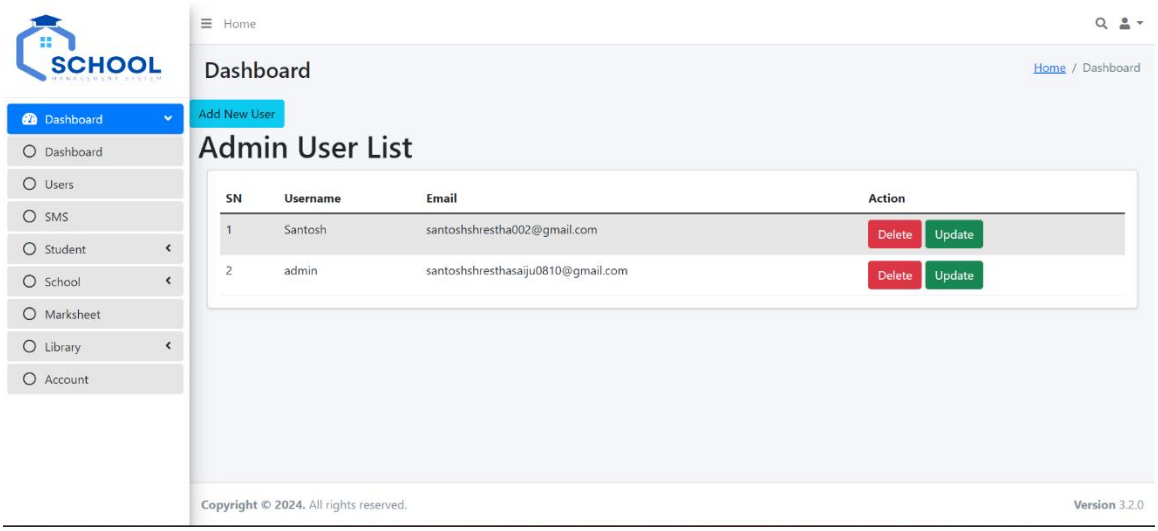

Figure 9: Dashboard pages for Admin User list

Appendix F

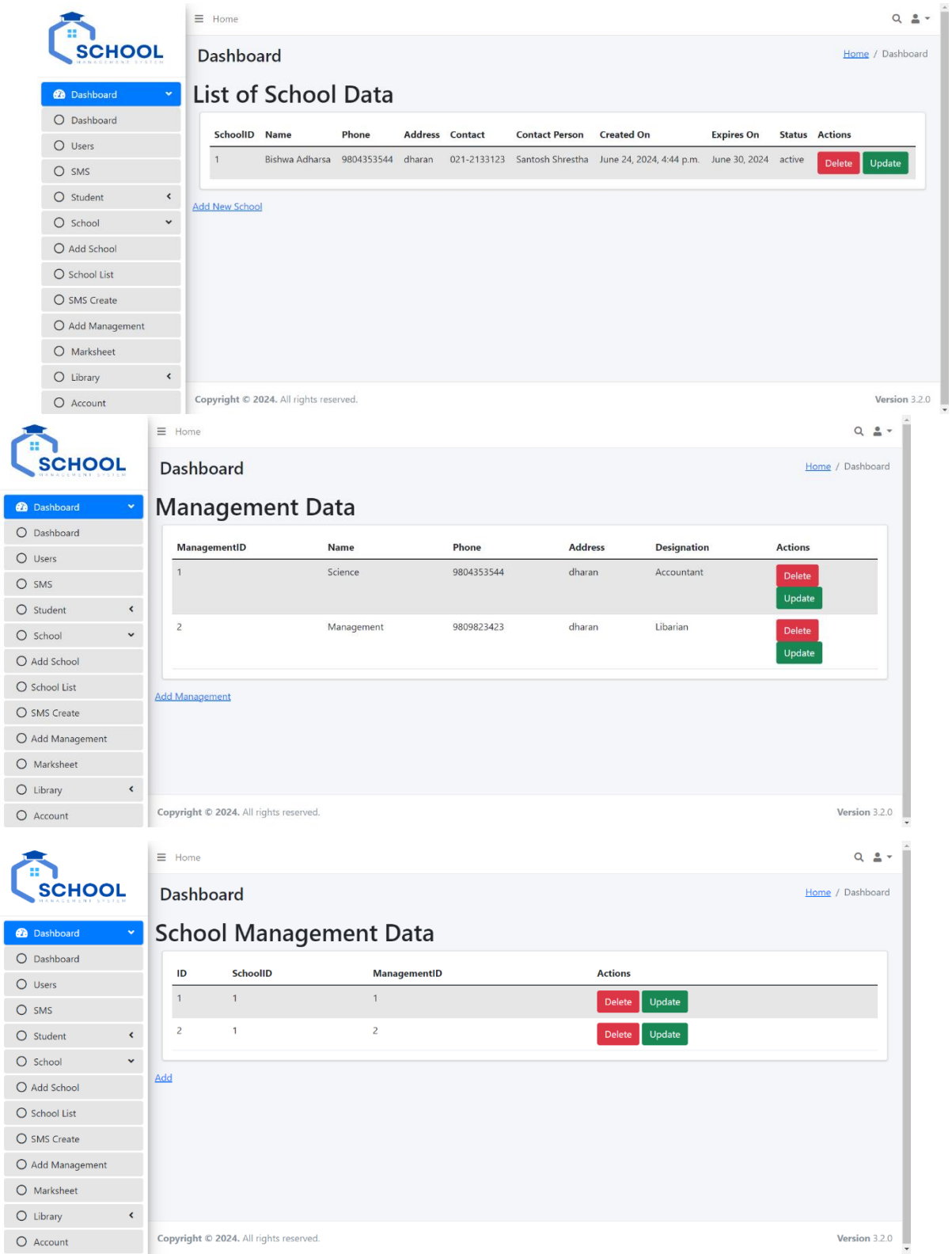

Figure 10: Dashboard Page for School, Management, and School Management

Appendix G

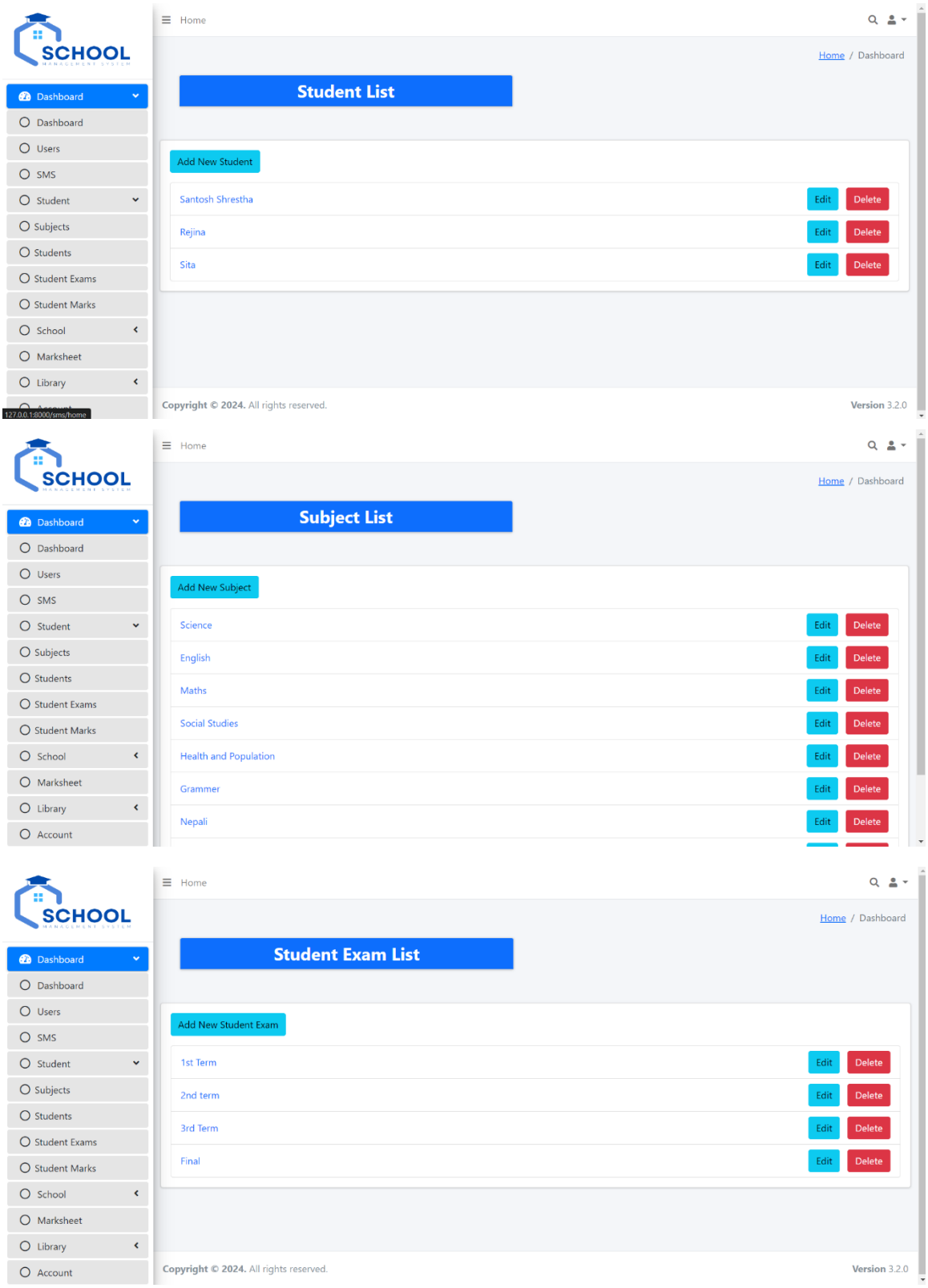

Figure 11: Dashboard page for Student, Subject, and Student Exam

Appendix H

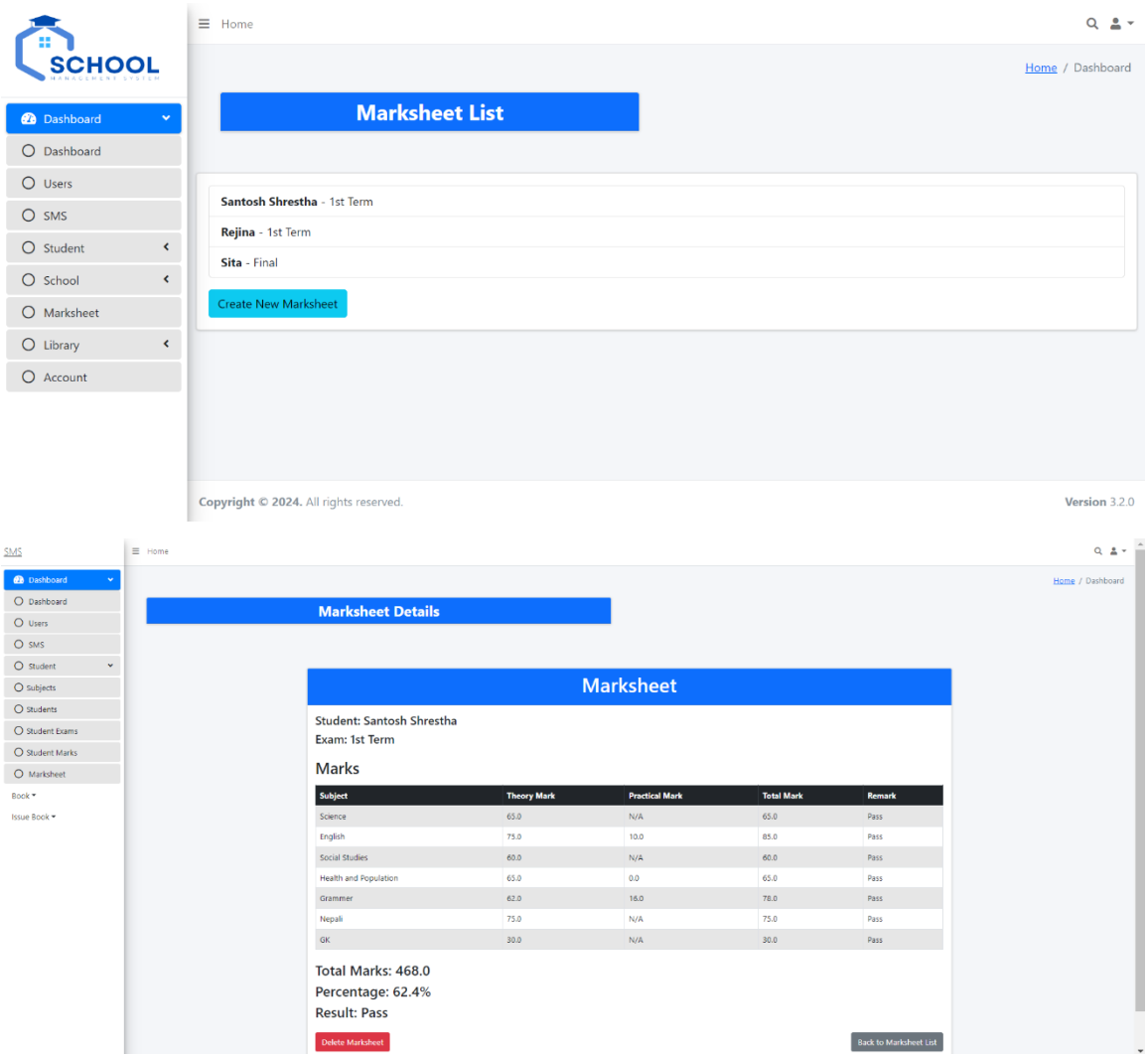

Figure 12: Dashboard page for Marksheet list and Marksheet Details