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Primary School Management System (PSMS)

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*A project submitted to the Department of Computer Science & Engineering
for the partial fulfillment of the degree of
Bachelor of Science in Computer Science & Engineering*

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Declaration

We hereby declare that, this project has been done by us under the supervisor of Ms. Babe Sultana, Lecture Department of CSE in Green University of Bangladesh. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree.

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Certificate

This is to certify that the project entitled **Primary School Management System (PSMS)** has been prepared and submitted by **MD Mamun Ur Roshid, Md Mahmudul Hasan and Ananto Chandra Dey** in partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Engineering on June 17, 2023.

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Abstract

The primary school management system is a large-scale initiative created to improve and streamline the operational and instructional procedures in a primary school environment. This system intends to provide effective management of tasks linked to students, teachers, staff, and parents, as well as monetary matters including revenue, expenses, and budgeting. The project encompasses various modules, including student management, teacher and staff management, parent engagement, financial management, examination management, event coordination, and a comprehensive dashboard for academic and administrative oversight. The student management module enables the efficient management of student records. The teacher and staff management module facilitates the allocation of teaching assignments, tracking professional development, and managing employee records. The parent engagement module enhances communication between the school and parents by providing updates on student progress, attendance, and school events. The financial management module enables accurate tracking and reporting of income, expenses, and budgeting, ensuring financial transparency. The examination management module automates exam scheduling. The event coordination module streamlines the planning and execution of school events. The dashboard provides a centralized view for administrators to monitor academic performance, financial status, and overall school operations. Through the implementation of this primary school management system, educational institutions can achieve improved efficiency, increased communication, enhanced financial control, and better academic performance tracking. With the help of primary school management system, all activities of primary school can be handled through software system.

TABLE OF CONTENTS

Declaration	i
Certificate	ii
Acknowledgments	iii
Abstract	iv
List of Figures	ix
1 Introduction	1
1.1 Motivation	2
1.2 Aims and Objectives	2
1.3 Research Questions	2
1.4 Research Contribution	3
1.5 Project Outline	3
2 Literature Review	5
2.1 Introduction	5
2.2 Background Study	5
2.3 Biddyan	6
2.4 Digital Pathshala	6
2.4.1 My Class Campus	7
2.5 Proposed Idea	7
2.6 Work Flow Diagram	8
2.7 Conclusion	8
3 The Design Methods and Procedures	9

3.1	Introduction	9
3.2	Features of the project	9
3.2.1	Role base Authentication	10
3.2.2	Descriptions Features	10
3.2.3	Resource	11
3.2.4	Use- case Diagram	12
3.2.5	Data Flow Diagram(DFD)	13
3.2.6	Level 0 DFD	13
3.2.7	Level 1 DFD	14
3.2.8	Tools and Techniques	15
3.3	Financial Planning for the Project	20
3.4	Gantt Chart (Around 11 months)	21
3.5	Conclusion	21
4	Evaluation of the Developed System	22
4.1	Introduction	22
4.2	Development Process	23
4.3	Front-end Design	23
4.4	Backend Development	24
4.4.1	User Login Interface	25
4.4.2	Home Page	26
4.4.3	Class interface	27
4.4.4	Add class interface	28
4.4.5	Section interface	29
4.4.6	Student interface	30
4.4.7	Add Student interface	31
4.4.8	Teacher interface	32
4.4.9	Add Teacher interface	33
4.4.10	Parents interface	34
4.4.11	Add Parents interface	35

4.4.12 Fees interface	36
4.4.13 Waiver	37
5 Conclusion	39
5.1 General Discussion	39
5.2 Limitation of the research	40
5.3 Practical Implications	40
5.4 Future Works	40
References	41

List of Figures

2.1	Biddyan	6
2.2	Digital Pathshala	6
2.3	My Class Campus	7
2.4	Work Flow Diagram	8
3.1	Use Case Diagram	13
3.2	Level 0 Data Flow Diagram	14
3.3	Level 1 Data Flow Diagram	15
3.4	Project Budget Estimate	20
3.5	Gantt Chart	21
4.1	Front end Design Coding	24
4.2	Backend Design	25
4.3	User Login Interface	26
4.4	Home Page	27
4.5	Class interface	28
4.6	Add Class interface	29
4.7	Section interface	30
4.8	Student interface	31
4.9	Add Student interface	32
4.10	Teacher interface	33
4.11	Add Teacher interface	34
4.12	Parents interface	35
4.13	Add Parents interface	36

4.14	Fees interface	37
4.15	Waiver	38

Chapter 1

Introduction

The Primary School Management System is a comprehensive software project aimed at streamlining and enhancing the administrative and academic processes of a primary school. Primary School Management System is a program that we have created. This project is intended for use in classrooms. Most primary schools in our country are not digitalized. Primary schools continue to use the outdated practice of manually recording data. We therefore made an effort to determine what needed to be done in order to create a primary school management system that would be beneficial for all relevant users of any school. We have conducted field research and used the internet to learn about numerous elements that must be included in the project. This system offers so many features for all the primary schools to make them digital and modern. Individuals connected to this system as users. Students have access to their subject grades, instructor contact information, and current percentage. They can also stay current on any school news or posts made by other users. The administrator has complete control over the system and may add new teachers, students, and courses, as well as assign subjects to teachers and send emails to everyone with notices. Teachers have the ability to take attendance, view attendance records, upload and download student assignments, and add or modify student grades for only their own topics.

1.1 Motivation

Primary school management systems are currently largely analog technologies. As a result of using an analog system, many documents appear to be duplicates. To ensure that resources are not lost or destroyed, every document should be preserved in a ledger. Consequently, duplicate data will not be produced, and data redundancy will be decreased if a software system is able to be constructed so that these papers can be saved on an internet server. This is why we wish to create software that has the capabilities needed for the primary school category.

1.2 Aims and Objectives

The primary objective of this project is to streamline and simplify school administration. There are certain users and task lists in the school system. Our goal was to make sure every component of the system was touched and made correctly. Our system can manage administrative, instructional, and student tasks. After school, it will continue to foster relationships between teachers and students. With an internet connection, it is accessible from anywhere in the world and has a simple user interface. System is created. Users can access it from any size device because of its responsiveness. Overall, the focus was only on security, usability, and effectiveness. The system was unique because of all these. A school management system's main goal is to fully automate the manual system that is currently in place. It does this by using computerized hardware and sophisticated computer software. so that easy access can be provided to their valuable information for a longer period of time. All primary school activities can be managed using a software system with the assistance of the primary school management system.

1.3 Research Questions

The primary school management system project seeks to research and pinpoint the critical elements that are crucial to a primary school's efficient and effective functioning.

Exploring the elements that contribute to the efficacy and efficiency of the current management system is the main goal of the study question. The project's goal in performing this research is to better understand the crucial elements that increase the general effectiveness and efficiency of the primary school management system. In order to better serve the requirements of students, staff, parents, and the larger school community, it attempts to identify potential improvement areas and offer insights into how schools might optimize their management systems. Research methods will likely involve a combination of qualitative and quantitative methods. Interviews with school officials, teachers, parents, and students, as well as questionnaires and observations, may all be used to collect data. The acquired data will be evaluated to spot any trends, patterns, or recurring ideas that relate to good management techniques. As primary schools and other educational institutions work to create strong and effective management systems, the study's findings will have real-world repercussions for them. The findings can guide the creation and enhancement of primary school management software as well as the formulation of policies and procedures for making management-related decisions.^{2–3}

solid research questions you would like to answer in your project

1.4 Research Contribution

The primary school management system project's research contribution is essential to making sure the system is user-friendly, safe, and flexible enough to accommodate future developments while still meeting the unique demands of elementary schools. It establishes the framework for a productive, integrated, and technologically driven management system that enables teachers, administrators, and parents to work effectively together for the benefit of elementary school pupils.

1.5 Project Outline

The outline of this project is as follows:

- Chapter 2: In this chapter, we describe the literature review for the project. Where

we describe the related works and work flow diagram about our project idea.

- Chapter 3: In this page,we show the designs,methods,and procedures of the project.We will show a DFD diagram,a use-case diagram,a budget,and a grant chart for the project.
- Chapter 4: In this chapter,we show how we developed our project and also show some snapshots of it.
- Chapter 5: In addition to the above discussion,the limitations of our project and future work will be discussed in this chapter.

Chapter 2

Literature Review

2.1 Introduction

This chapter provides a general overview of the primary school management system. Here we will discuss background studies from three websites. The primary goal of the Primary School Management System project is to create a complete and effective software solution that will streamline a variety of administrative and academic responsibilities in a primary school environment. It is necessary to undertake a thorough literature review in order to build and develop a system that satisfies the unique demands and requirements of primary schools. Understanding current research, best practices, and technical advancements in the area of school management systems is based on this survey of the literature.

2.2 Background Study

There are various school management platforms online. Among them, we have studied some web applications. Notable among them are Bidyaan, Digital Pathshala, and My Class Campus. We have thoroughly studied their features and limitations. We have also studied more web applications that are similar to our project; they are discussed in order below.

2.3 Biddyan

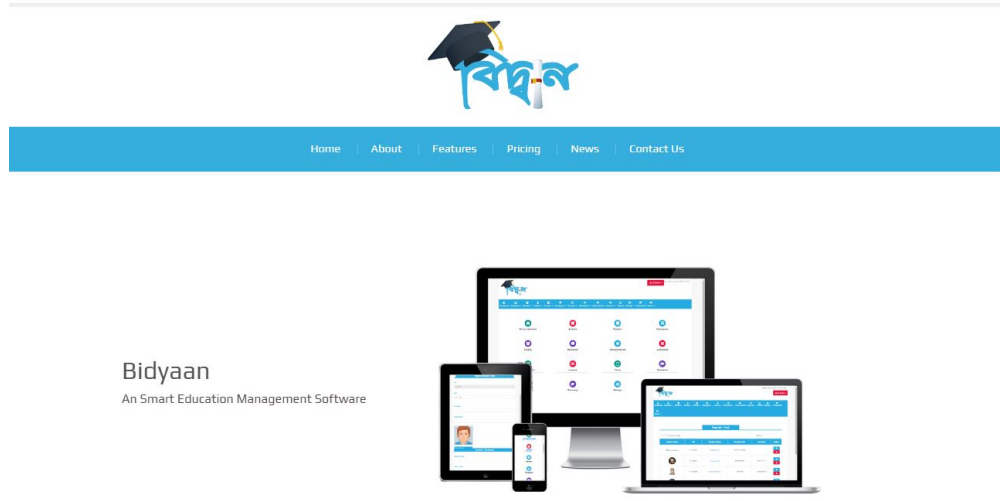


Figure 2.1: Biddyan

In Bangladesh, Bidyaan is a cutting-edge education management system. It is the ideal method for automating management processes in educational institutions of all kinds. It streamlines communication between the administrator, human resources, exam control, teacher, students, and parents [1].

2.4 Digital Pathshala



Figure 2.2: Digital Pathshala

The ability to conduct student, academic, and accounting tasks using Digital Pathshala software makes them quick, simple, efficient, and correct. Other tasks include student subscription, examination, certification, report creation, result generation, fee counter, library, payroll system, and many more [2].

2.4.1 My Class Campus

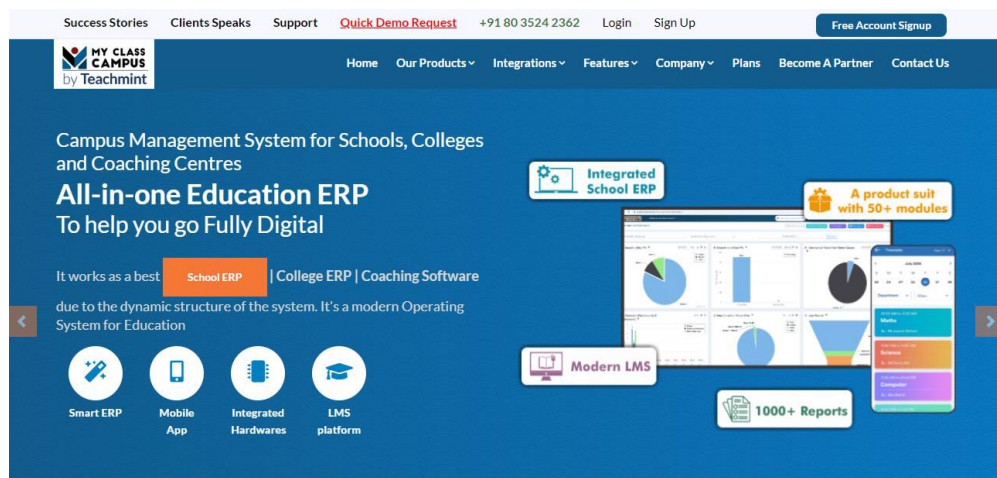


Figure 2.3: My Class Campus

With the help of My Class Campus, school administration will become more sophisticated and digital. Parents can access the platform at any time and from any location to examine the profiles of their children [3].

2.5 Proposed Idea

The objective of this project is to establish a top-notch website with a record- and identity-management system that is specifically designed to manage users, parents, staff, teachers, and students in compliance with student exams. Control the entire academic year, including all of its sections, classes, classrooms, subjects, revenues, and outgoings. Teachers will have access to the system online and be able to print their results from any location using their personal computers, tablets, or smart phones.

2.6 Work Flow Diagram

Work Flow Diagram

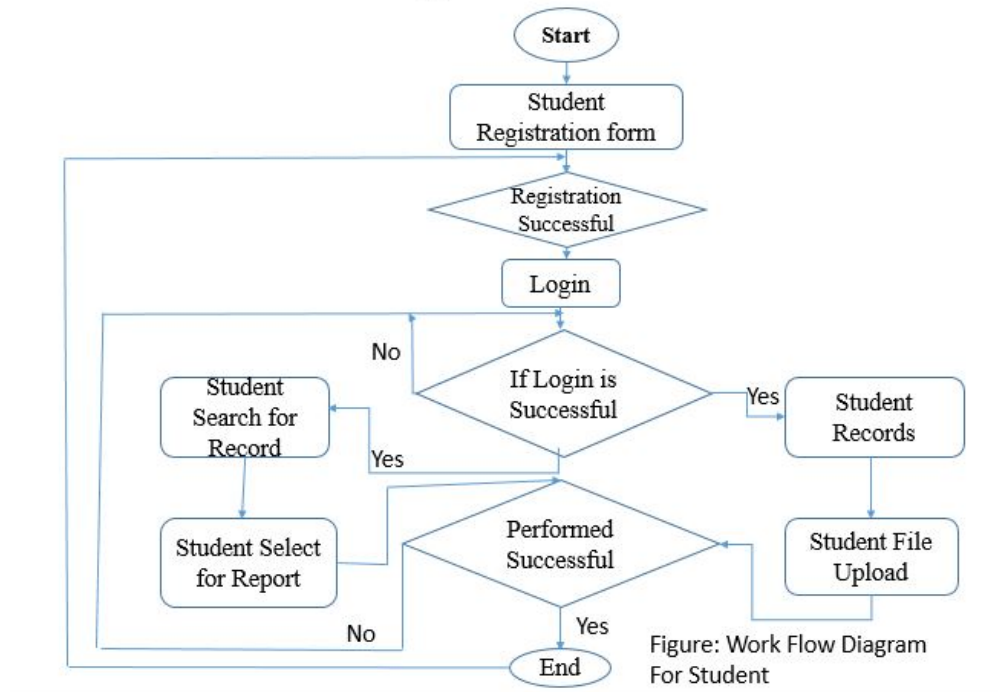


Figure 2.4: Work Flow Diagram

2.7 Conclusion

We have identified the theoretical underpinnings of our system as well as the technological advancements made in primary school management systems. A comparison between our system and the other systems, as well as information about related systems and their benefits and drawbacks.

Chapter 3

The Design Methods and Procedures

3.1 Introduction

The primary school management system is a comprehensive software solution aimed at efficiently managing various aspects of a school's operations. The design methods and procedures for this project encompass a wide range of functionalities to cater to the needs of students, teachers, staff, parents, and administrators. The system incorporates modules for student and teacher management, staff administration, parent communication, income and expense tracking, exam management, event organization, and academic dashboard creation. By employing user-centered design principles, intuitive interfaces, and seamless integration of departments, the system streamlines administrative tasks, enhances communication, and provides a holistic view of the school's operations through a centralized dashboard.

3.2 Features of the project

- Search
- Manage students, teachers, staff, parents, and users.
- Manage Academic Year, Sections, Classes, Class Rooms, Subjects, Incomes, Expenses,

- Reports: Students, Teachers, Parents, Staff, Users, Incomes and Expenses, Student and Staff Attendance, Visitors Log, Student Records, Class Lists, Events
- User Access Role

3.2.1 Role base Authentication

In this project, authentication based on roles is utilized. A rapid way to create a functional but unfinished model of the information system is through prototyping. In this case, as well as with users who are teachers and students, the administrator plays a crucial role. The administrator will confirm the student and teacher data. When you register, it will indicate if the person is a teacher or a student. One can only view the student data and the search results without registering.

3.2.2 Descriptions Features

This section covered all the functionalities of the features. Such as

- Search: Here users can search for their teacher and student information. Student Information
- Management: The system enables administrators to keep complete student profiles, which include contact information, academic background, and enrollment information.
- Teacher Information Management: The system enables administrators to build and keep up-to-date profiles for each teacher. Personal information, contact information, educational background, professional experience, and any other pertinent data are included.
- Incomes and Expenses: The system monitors and records money from a variety of sources, such as tuition, exam fees, and other sources of income. It creates statistics on the money received over a given time period and offers a central location for handling transactions linked to income.

- **Event:** Using the system, administrators or event planners can arrange a variety of events, including workshops, field excursions, parent-teacher conferences, sporting events, and cultural events. In order to see event dates and prevent conflicts, it offers a calendar or timeline view.
- **Class List:** The Student Management System's Class List module offers a thorough overview of all classes that a school offers. It enables instructors and staff to handle information about classes, such as class names, class divisions, instructors, and student enrollments. The module makes it simple to link particular classes and subjects, and it also allocates teachers to the appropriate classes.
- **User Access Role:** According to their duties and needs, users are given particular roles and permissions via the Student Management System's User Access Role module. It enables separate access for employees, faculty, and students. The administrator has complete authority over the system, is able to manage user accounts, and has access to all modules. Depending on their positions, teachers and staff have access to specific modules and functionalities, such as class list administration. The Student Management System's User Access Role module guarantees proper access control, data protection, and efficient operations.

3.2.3 Resource

Resources are any of the different assets, tools, or materials that are used to support and improve the performance of a student management system project. In addition to software tools like the database management system, programming languages, and development frameworks, these resources might also comprise hardware elements like servers, PCs, and networking hardware. For the student management system to be implemented and run successfully and to be efficient, dependable, and salable, adequate resource allocation and management are essential.

3.2.4 Use- case Diagram

Actors:

- Admin
- Account

Use Cases:

- **Admin**

Academic

Add Class

Class Manage

Section

Student

Add Student

Parent

Add Parent

- **Account**

Expense

Expense Type

Fees

Fess Type

Invoice

Waiver

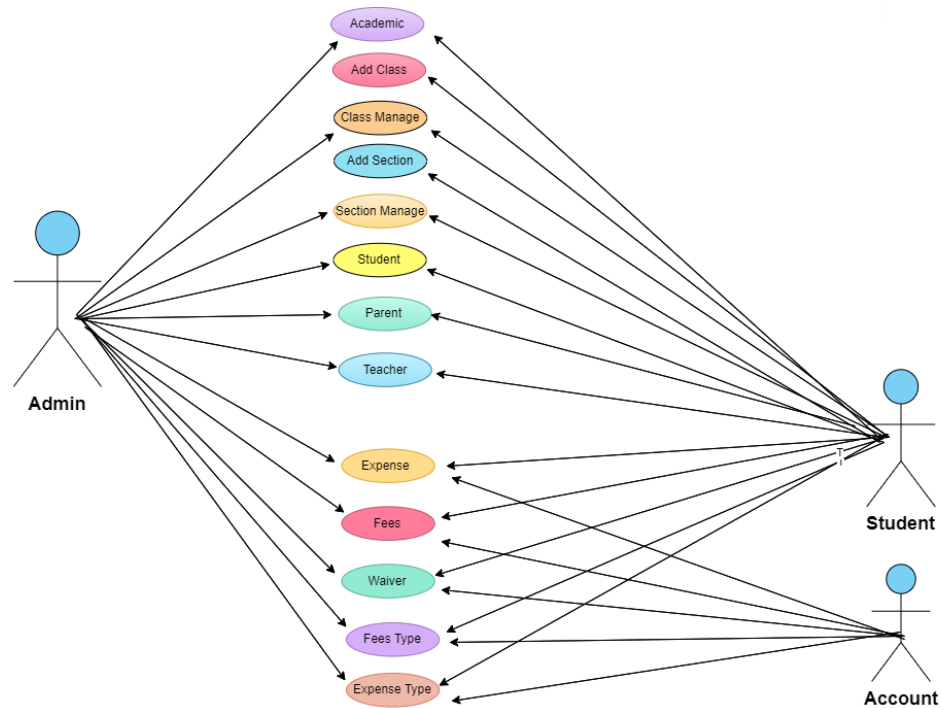


Figure 3.1: Use Case Diagram

At first, we describe admin work. Admins control all of the functions of this system. The use case diagram provides a clear understanding of how the system is meant to be used and the roles of various users by showcasing the relationships and dependencies between actors and use cases. It is a useful tool for comprehending and expressing the needs and functionality of the system.

3.2.5 Data Flow Diagram(DFD)

3.2.6 Level 0 DFD

A context data flow diagram created for a primary school management system is depicted in the figure below. The "primary school management system" is the model system that is represented by the process (shape) in this document. The high-level operations and data flows within the Student Management System project are highlighted at Level 0 of the Data Flow Diagram (DFD). It gives an outline of the key elements and how they work together. Teachers, staff, and students are the key players. The DFD

illustrates the information flow between these entities and the system. For instance, teachers can enter student data, class information, and timetables. Students' attendance and grades are accessible to teachers and staff, who can also update them. The Level 0 DFD aids stakeholders in comprehending the key interactions and processes that take place within the Student Management System by succinctly illustrating the data flow of the system.

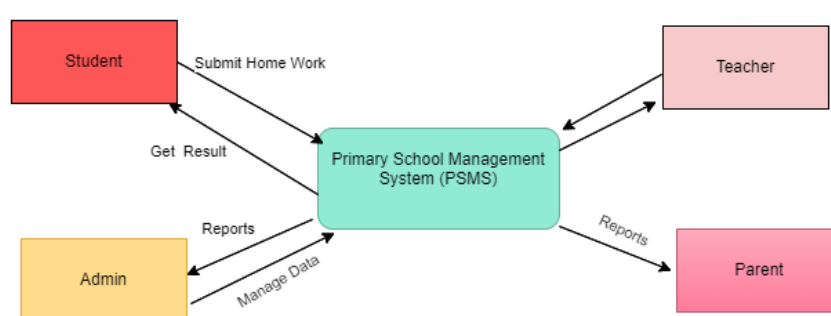


Fig: Data Flow Diagram Level 0

Figure 3.2: Level 0 Data Flow Diagram

3.2.7 Level 1 DFD

The primary school management process is depicted in the context of DFD in the picture below as a Level 1 DFD. At Level 1 of the Data Flow Diagram (DFD) for a Student Management System project, the focus shifts to more detailed processes and data flows within the system. Level 1 of the Data Flow Diagram (DFD) for a Student Management System project moves the emphasis to the system's more intricate processes and data flows. The key processes are divided into more manageable subprocesses, and the data flows between them are illustrated, building on the Level 0 DFD. As an illustration, the Level 1 DFD might show subprocesses like "Manage Student Information," "Record Attendance," and "Generate Reports." It displays how information moves between these

subprocesses and the associated parties. The Level 1 DFD offers a more detailed look into the functionality of the system and aids stakeholders in comprehending the particular procedures and data interactions found inside the Student Management System.

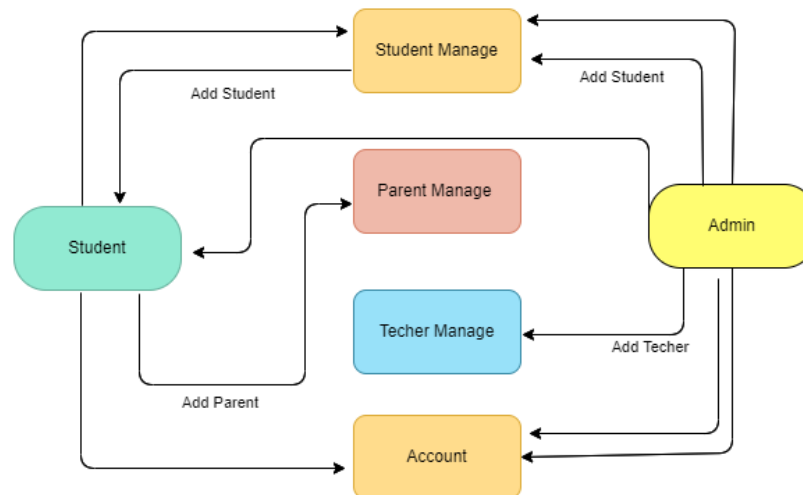


Figure 3.3: Level 1 Data Flow Diagram

3.2.8 Tools and Techniques

3.2.8.1 Frontend

The primary school management system project's frontend combines well-known tools like React.js, Next.js, and Tailwind CSS to produce a simple and user-friendly user interface. A reliable and effective frontend framework for the management system is provided by the smooth integration of these technologies.

- **React.js** : React.js is a powerful JavaScript library that enables the creation of reusable UI component. It adopts a component-based methodology, enabling programmers to divide intricate user interfaces into more digestible chunks. React.js

effectively updates and renders only the required components when data changes, resulting in a fluid and interactive experience. Additionally, it makes it simple to integrate with other libraries and frameworks.

- **Next.js :** On top of React.js, the Next.js framework gives the application server-side rendering (SSR) capabilities. By rendering the HTML on the server and transmitting it to the client, SSR decreases the initial page load time. Additionally, Next.js has capabilities like pre-rendering, dynamic routing, and smart code splitting that improve performance and the user experience. It makes server-rendered application development easier, which makes it the perfect choice for a primary school management system where responsiveness and performance are crucial.
- **Tailwind CSS :** Tailwind CSS is a highly customizable CSS framework that provides a utility-first approach to styling. Developers may quickly style the interface using its vast selection of pre-built utility classes that are simple to apply to HTML components. By removing the necessity for authoring unique CSS code, Tailwind CSS offers a quicker and more effective solution to produce consistent and aesthetically pleasing designs. Its utility-first methodology encourages reuse and aids in the upkeep of a scalable codebase.

These technologies are used in the frontend of the primary school management system project to produce an aesthetically pleasing and flexible interface. React.js's use makes it possible to create modular components that are simple to reuse across the entire application, improving code maintainability and speeding up development. While this is going on, Tailwind CSS offers a simple and effective approach to style the interface, guaranteeing consistency and design flexibility.

overall, the combination of React.js, Next.js, and Tailwind CSS empowers the frontend development of the primary school management system, allowing for a smooth and intuitive user experience while delivering efficient performance and maintainable code.

3.2.8.2 Backend

The server-side logic and data administration for a primary school management system project are handled by the backend. In this instance, the backend is created using GraphQL and Node.js, two well-liked tools for creating scalable and effective web applications.

- **Node.js** : Node.js is a run time environment that allows developers to build server-side applications using JavaScript. It is well-known for having an event-driven, non-blocking I/O strategy that makes it practical for managing several requests at once and creating fast web servers. Additionally, Node.js includes a large ecosystem of frameworks and tools that make the development process simpler.
- **GraphQL**: GraphQL is an open source query language that describes how a client should request information through an API. It eliminates over- and under-fetching of data by enabling clients to specify exactly what data they require and only receive that. With GraphQL, clients may query and modify data using a single endpoint, and the backend can build a schema that explains the available data and processes.

Backend built with Node.js and GraphQL would have several key components:

Server: Incoming HTTP requests must be handled by the Node.js server, which is also in charge of carrying out any necessary GraphQL operations depending on those requests. To process the requests and deliver the right responses, it engages with a number of modules and components.

Schema: The data structure and the possible operations are described in the backend's definition of a GraphQL schema. The types of objects, their fields, and the connections between them are all specified by the schema. Between the client and the server, it serves as a contract to ensure that the data model is understood clearly.

Resolves: For each GraphQL field, resolvers are the functions that carry out the logic to fetch or modify data. They are in charge of obtaining data from databases, external APIs, or other sources, altering it, and then returning it to the client in the proper manner. In order to connect the schema with the real data, resolvers are essential.

Database Integration: To store and retrieve data for the primary school management system, the backend communicates with a database system like MongoDB or PostgreSQL. It efficiently establishes the connection, defines schemas, and executes database operations using libraries or ORMs (Object-Relational Mappers).

Authentication and Authorization: The backend implements authentication and authorisation procedures to guarantee secure access to the system. This might entail methods like role-based access control (RBAC) for controlling user permissions and JSON Web Tokens (JWT) for authentication. Depending on their responsibilities and permissions, it enables administrators, teachers, and parents to access various portions of the system.

Error Handling and Logging: To catch and gracefully handle exceptions, the backend has error handling capabilities. To format and provide the client with the proper error replies, it could make use of middleware or custom error handlers. Additionally, logging is used to document significant occasions and debug data, assisting in troubleshooting and system development.

Integration with External Services: The primary school management system's backend may link with external services, such as payment gateways, email services, or SMS providers, to make room for new features. These interfaces enable functions including fee payment, notifications, and staff and parent contact.

Overall, a primary school management system project's Node.js and GraphQL backend offers a scalable, adaptable, and effective solution for handling data management, authentication, and other server-side functionalities. It offers a fast and dependable backend for the elementary school management system while facilitating simple expansion and interaction with other systems.

3.2.8.3 Database

A reliable and effective database is necessary for the primary school management system project in order to store and handle many parts of the school's data. For creating and maintaining the database for this project, PostgreSQL and Prisma ORM are a fantastic combination.

- **PostgreSQL:** PostgreSQL is a powerful, open-source relational database management system known for its stability, scalability, and extensive feature set. It provides ACID (Atomicity, Consistency, Isolation, Durability) transaction support, ensuring the accuracy and dependability of data. PostgreSQL is appropriate for complicated data operations since it provides advanced features including indexes, views, stored procedures, and triggers.
- **PrismaORM:** Prisma ORM is a modern database toolkit that simplifies database access and management. It offers a type-safe and simple query builder that facilitates interacting with the database in the preferred programming language. Developers may create database models using a declarative syntax and automatically construct effective SQL queries thanks to Prisma's smooth integration with PostgreSQL.

The database for the primary school management system project can be structured to have several tables to hold various kinds of data. Among the crucial tables are some of the following:

Student: Each student's unique identification, name, date of birth, address, phone number, and any other pertinent information would be stored in this table.

Teacher: This table would include information on teachers, such as their individual identification number, name, contact information, the subjects they instruct, the number of years of experience, and other pertinent information.

Classes: Different classes or section levels within the school might be represented by this table. It would contain details like the class identifier, the assigned teacher, the academic year, and any other pertinent data.

Subject: Information regarding the many disciplines covered by the school curriculum will be kept in this table. It would have attributes like the topic name, subject identifier, and other information about the subject.

Attendance: Students' attendance records would be tracked in this table along with the date, student ID, class ID, and attendance status (present, absent, or late).

These are just a few examples of the tables that might be used in the database design. The primary school management system project's specific criteria would determine the tables to be used and their properties.

The database for the primary school management system project can be effectively created using PostgreSQL and Prisma ORM, enabling seamless data storage, retrieval, and manipulation. These technologies work together to provide data consistency, scalability, and the capacity to handle challenging queries and transactions, ultimately laying the groundwork for the project as a whole.

3.3 Financial Planning for the Project

No.	Requirements	Unit Cost	Estimated cost (Tk.)
1.	Jr. Web Developer (3 persons) (4 Months)	5,000/month	60,000
2.	Sr. Web Developer (1 Month)	20,000	20,000
3.	Domain Cost	-	5,000
4.	Deployment Cost	--	20,000
5.	Miscellaneous	--	9,000
	Total		114,000

Figure 3.4: Project Budget Estimate

3.4 Gantt Chart (Around 11 months)

Here we describe the timing and activities of our project launch. First Planning time details, work design period, and coding part period then Examination period and final period of project delivery.



Figure 3.5: Gantt Chart

3.5 Conclusion

This chapter describes how to create the project. We have an analysis. Use case diagrams and DFD diagrams are frequently included in project design. Finding out the architecture, needs, need, and internal and external structure is important for creating a strong project document. It is therefore simple to develop.

Chapter 4

Evaluation of the Developed System

4.1 Introduction

Effective management systems are essential for the efficient operation of elementary schools in the rapidly changing educational landscape. These solutions not only simplify administrative procedures but also improve stakeholder communication, simplify academic planning, and guarantee the institution's overall success. In order to create and execute a complete system specifically suited to the demands of elementary schools, the elementary school management system project was started in response to this need. The evaluation of the system created for the Primary School Management System project is the main subject of this report. The evaluation process tries to judge the system's efficiency, usability, and overall success in achieving its goals. We can decide on system rollout and upcoming improvements by completing a complete assessment that identifies strengths, flaws, and potential improvement areas. The system's functionality, user interface, dependability, scalability, security, and integration capabilities are all covered in the review. In order to guarantee that their needs and expectations are properly met, it takes into account the perspectives of several stakeholders, including administrators, teachers, parents, and students.

4.2 Development Process

Requirement Gathering: Determine the important parties, such as the instructors, administrators, students, parents, and any other parties who may be important. To gather requirements and comprehend their needs and expectations, do interviews, questionnaires, and meetings. Clearly define the project's scope and its aims and objectives.

System Analysis and Design: Make a thorough system specification document by analyzing the requirements that have been gathered. Determine the features and functionality needed for the elementary school management system. Based on the requirements, create the system architecture, data models, and user interface. For a visual representation of the system's design and user interactions, create wireframes or prototypes.

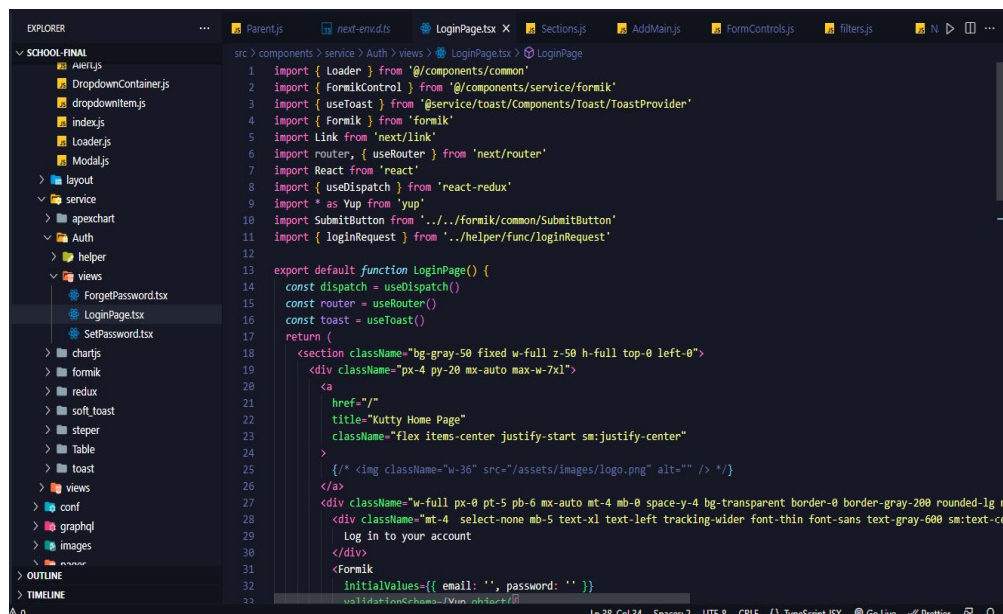
Development: Break down the system design into smaller modules or components. Choose an appropriate programming language and development framework. Develop the core functionality of elementary school management systems, including student enrollment, student information, teacher information, and communication tools.

User Interface Design and Development: Design an intuitive and user-friendly interface that meets the needs of different user roles (e.g., teachers, administrators, and parents). Implement the designed interface using appropriate front-end technologies, such as React js, Next js, and Tailwind CSS. Continuously gather feedback from users during the development process to make necessary adjustments.

4.3 Front-end Design

For primary school management system projects, an efficient frontend design using React.js, Nest.js, and Tailwind CSS proves essential. React.js allows for component-based development, ensuring modularity and reusability. Its virtual DOM facilitates smooth updates, enhancing the user experience. Nest.js, a TypeScript framework, provides a scalable backend API framework, promoting clean code organization. Additionally, Tailwind CSS offers a utility-first approach, enabling rapid UI development through its

extensive set of pre-designed elements and customizable styles. The combination of these technologies empowers developers to create a visually appealing and responsive frontend, ensuring an intuitive user interface for administrators, teachers, parents, and students within elementary school management systems.



```
1 import { Loader } from '@components/common'
2 import { FormikControl } from '@components/service/formik'
3 import { useToast } from '@service/toast/Components/Toast/ToastProvider'
4 import { Formik } from 'formik'
5 import Link from 'next/link'
6 import router, { useRouter } from 'next/router'
7 import React from 'react'
8 import { useDispatch } from 'react-redux'
9 import * as Yup from 'yup'
10 import SubmitButton from '../../formik/common/SubmitButton'
11 import { loginRequest } from '../../helper/func/loginRequest'
12
13 export default function LoginPage() {
14   const dispatch = useDispatch()
15   const router = useRouter()
16   const toast = useToast()
17   return (
18     <section className="bg-gray-50 fixed w-full z-50 h-full top-0 left-0">
19       <div className="px-4 py-20 mx-auto max-w-7xl">
20         <a
21           href="/"
22           title="Kutty Home Page"
23           className="flex items-center justify-start sm:justify-center"
24         >
25           </>  </>
26         <div className="w-full px-0 pt-5 pb-6 mx-auto mt-4 mb-0 space-y-4 bg-transparent border-0 border-gray-200 rounded-lg">
27           <div className="mt-4 select-none mb-5 text-xl text-left tracking-wider font-thin font-sans text-gray-600 sm:text-ce">
28             Log in to your account
29           </div>
30           <Formik
31             initialValues={{ email: '', password: '' }}
32           >
```

Figure 4.1: Front end Design Coding

4.4 Backend Development

In primary school management system projects, backend design plays an important role in ensuring efficient data handling and seamless communication between various components. Node.js, a powerful JavaScript runtime, is an ideal choice for building backends due to its asynchronous and event-driven nature. With Node.js, we can build a scalable and high-performance backend server. Additionally, integrating GraphQL, a query language for APIs, enables flexible data retrieval and eliminates over-fetching or under-fetching issues. By designing the backend using Node.js and GraphQL, we can create a robust and structured system that efficiently manages student information, and other essential aspects of elementary school management.

You are here: Data > postgres > public > student > Browse Rows

student Try GraphQL

Browse Rows Insert Row Modify Relationships Permissions

Filters No filters present Add

Sort No sort conditions present Add

Run query Export data

Prev 10 rows Next

	id	sectionid	gender	dateOfBirth	admissionCode	image	parentid	currentCourses	waiverId	class
<input type="checkbox"/>	1	3		2023-03-08	1000		1	NULL	1	2
<input type="checkbox"/>	5	5		1979-06-07	1003		2	NULL	1	3
<input type="checkbox"/>	2	1		2023-03-09	1001		1	NULL	1	4
<input type="checkbox"/>	6	4		2015-02-05	1004		3	NULL	3	3
<input type="checkbox"/>	13	4		2023-03-23	1005		3	NULL	5	3
<input type="checkbox"/>	14	4		2019-02-25	1006		4	NULL	7	3
<input type="checkbox"/>	15	4		2015-04-04	1007		6	NULL	5	3
<input type="checkbox"/>	16	4		2019-02-03	1008		7	NULL	8	3
<input type="checkbox"/>	17	4		2016-03-02	1009		8	NULL	1	3
<input type="checkbox"/>	20	6		2016-04-04	1010		9	NULL	5	4

Figure 4.2: Backend Design

4.4.1 User Login Interface

At first, we see our user login interface. Here, users have to login to the page through email and password.

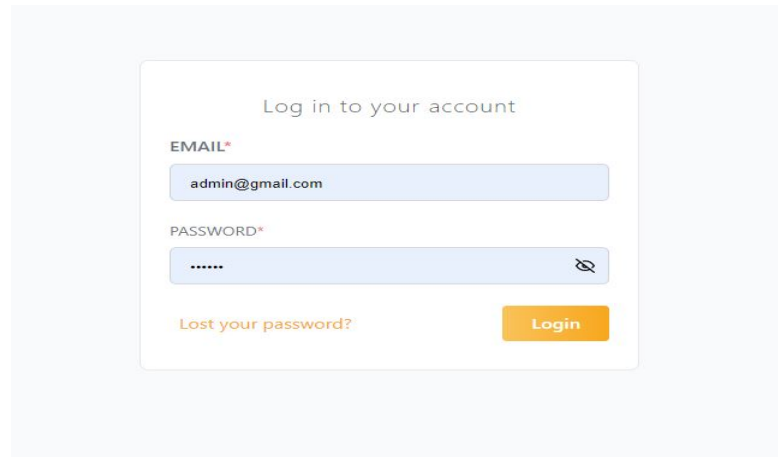


Figure 4.3: User Login Interface

4.4.2 Home Page

We see our homepage. The home page shows all the functionalities of our website all functionalities. Our Primary School Management System project home page serves as a central hub for all users. It provides a user-friendly interface with quick access to essential features such as parent communication and event notifications. It aims to streamline tasks and enhance collaboration between teachers, students, and parents.

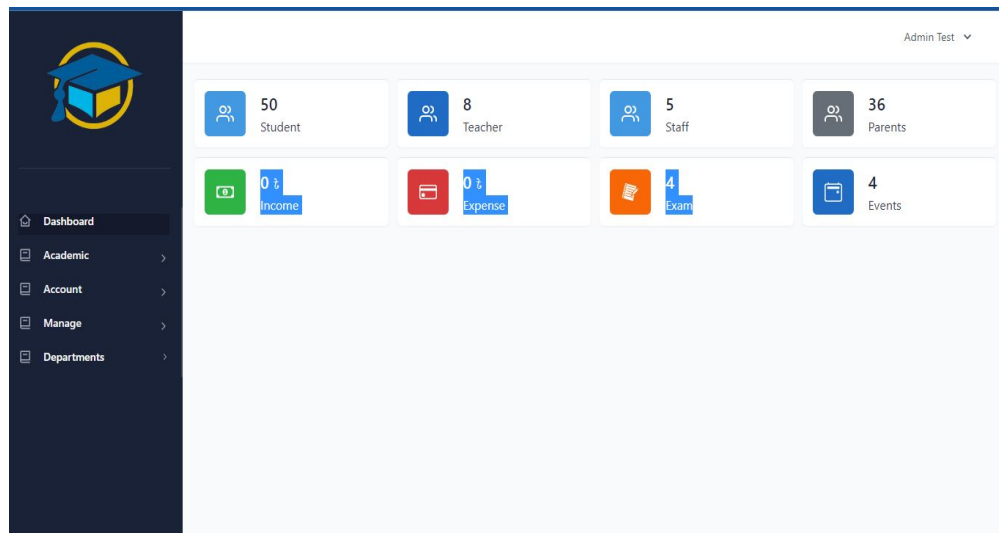


Figure 4.4: Home Page

4.4.3 Class interface

Class Name: This represents the class name in the primary school.

Category: indicates the specific category or section of the category.

Total Students: This indicates the total number of students enrolled in the class.

Status: Shows the current status of the class, such as active, inactive, or complete.

Class Interface is a component of the Primary School Management System project that manages class-related information.

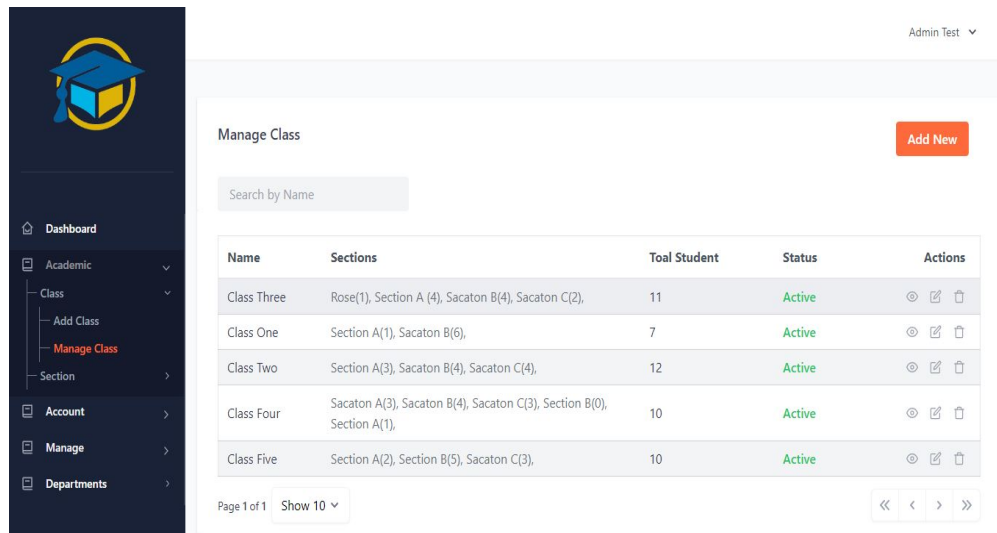


Figure 4.5: Class interface

4.4.4 Add class interface

The "Add Class" interface for the Primary School Management System project allows users to create a new class by providing a class name and selecting a teacher. This feature enables administrators to easily organize and assign teachers to specific classes, streamlining overall school management.

The screenshot displays the 'Add Class' interface. On the left is a dark sidebar with a logo at the top and a navigation menu containing 'Dashboard', 'Academic' (with a dropdown arrow), 'Class' (with a dropdown arrow), 'Add Class' (highlighted in orange), 'Manage Class', 'Section' (with a right arrow), 'Account' (with a right arrow), 'Manage' (with a right arrow), and 'Departments' (with a right arrow). The main content area has a light gray background. At the top right of this area is a user profile 'Admin Test' with a dropdown arrow. Below this is a white box titled 'Add Class' with an orange 'Manage Class' button in its top right corner. Inside the box, there is a 'Name*' label above a text input field containing the placeholder 'Name'. Below that is a 'Select Teacher*' label above a dropdown menu showing 'Select an option' and a search icon. At the bottom of the box are two buttons: an orange 'Submit' button and a dark gray 'Reset' button.

Figure 4.6: Add Class interface

4.4.5 Section interface

The "Add Section" interface allows users to create new sections in the Primary School Management System. It includes fields to enter department name, class, class teacher, and status. This feature enables efficient organization and tracking of classes, teachers, and their respective departments within the school system.

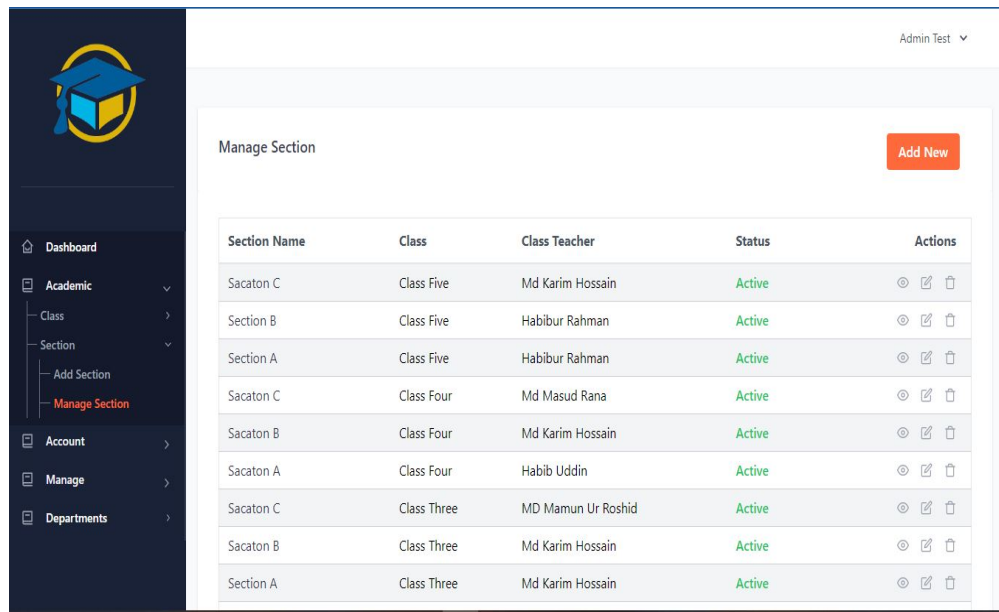


Figure 4.7: Section interface

4.4.6 Student interface

The Student Interface for Primary School Management System Project includes essential features like code, profile, name, parent information, class, department, and admission date. It facilitates efficient student data management and enables easy access to relevant information for teachers, administrators, and parents.

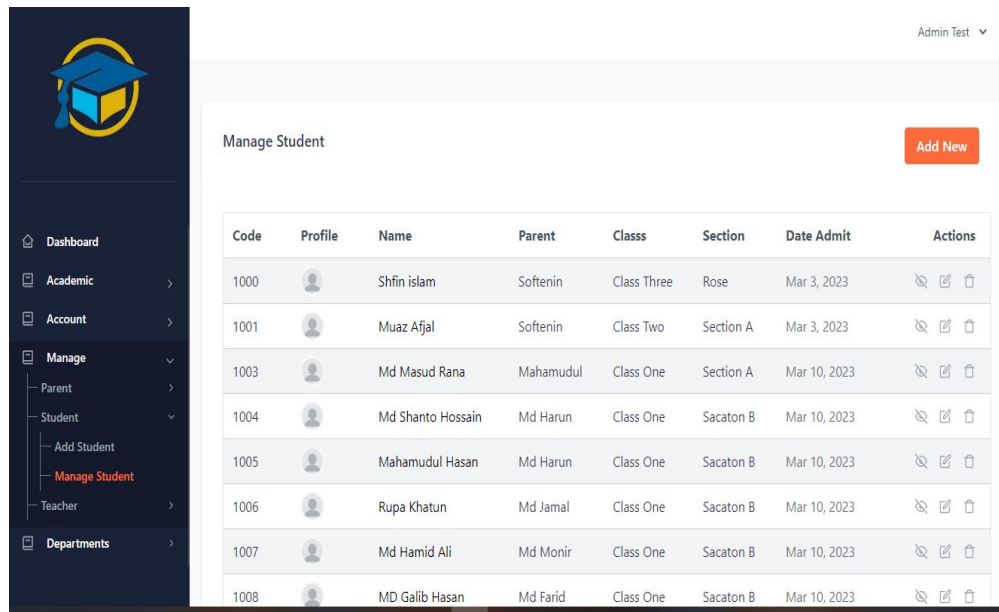


Figure 4.8: Student interface

4.4.7 Add Student interface

The Add Student interface allows administrators to add new students to the Primary School Management System project. It includes the Admit Code, First Name, Last Name, Class Selection, Parent Selection, Waiver Selection, and Date of Birth fields. This interface facilitates the process of enrolling students in the system efficiently and accurately.

Admin Test ▾

Add Student Manage Student

Admit Code

1051

Fast Name* Last Name* Select a Class* + -

Fast Name Last Name Select an option ▾

Select Parent* + - Select Waiver* + - Date Of Birth* mm / dd / yyyy

Select an option ▾ Select an option ▾

Submit Reset

Figure 4.9: Add Student interface

4.4.8 Teacher interface

The teacher interface of our Primary School Management System project has a user-friendly dashboard that displays the teacher's picture, name, email, date of birth, and status. It provides easy access to attendance records, grade submissions, and communication with parents. Streamlined and efficient, it enhances the teaching experience and encourages effective classroom management.

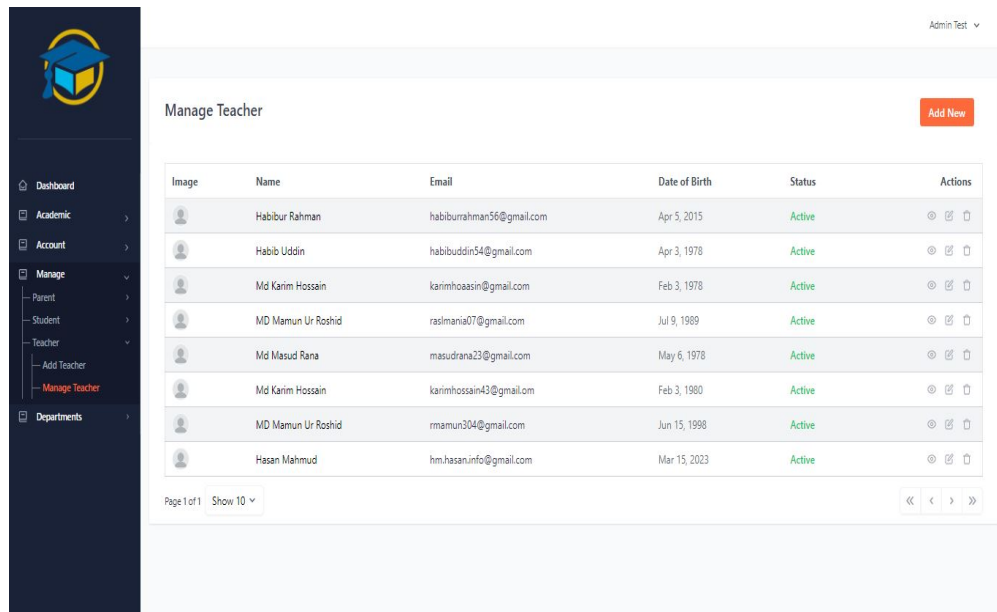


Figure 4.10: Teacher interface

4.4.9 Add Teacher interface

The Primary School Management System project has an intuitive and user-friendly teacher interface. It allows administrators to input necessary details like the teacher's first name, last name, email, and date of birth. This streamlined process ensures proper record-keeping and efficient management of the school's teaching staff.

The screenshot displays the 'Add Teacher' interface within a school management application. On the left is a dark sidebar with a logo at the top and a list of navigation items: Dashboard, Academic, Account, Manage (expanded to show Parent, Student, Teacher, Add Teacher, and Manage Teacher), and Departments. The main content area is titled 'Add teacher' and contains a form with four input fields: 'First Name*', 'Last Name*', 'Email*', and 'Date Of Birth*' (which includes a calendar icon). Below these fields are 'Submit' and 'Reset' buttons. In the top right corner of the form area, there is a 'Manage Teacher' button. The top right of the page header shows 'Admin Test' with a dropdown arrow.

Figure 4.11: Add Teacher interface

4.4.10 Parents interface

Parent interface, which includes necessary details like name, email, contact number, and profile information. This interface aims to improve communication between parents and schools, enable efficient information sharing, and promote collaborative involvement in their child's education.

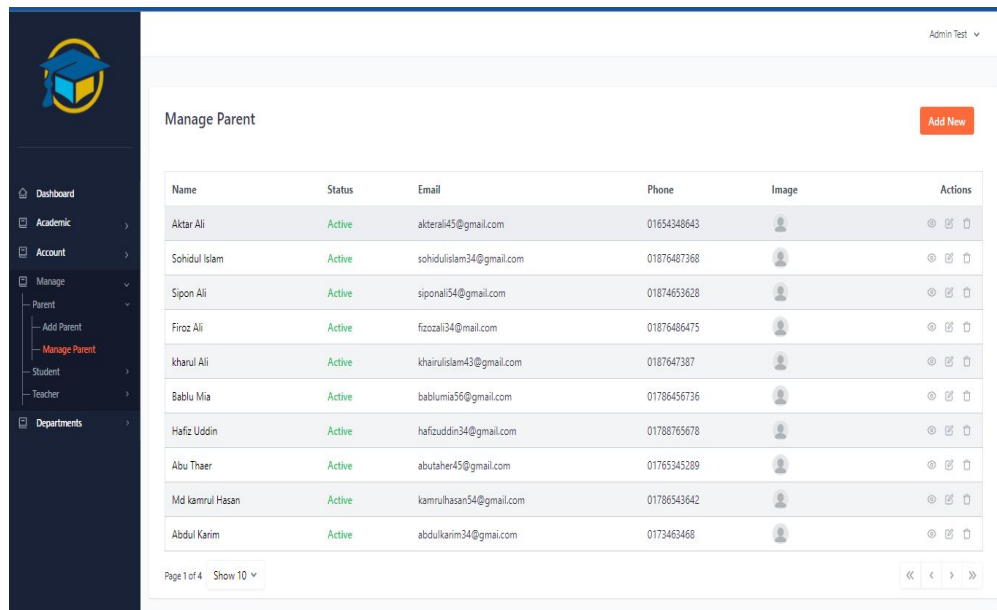


Figure 4.12: Parents interface

4.4.11 Add Parents interface

The "Add Parent" interface is implemented, which allows administrators to input required information such as the parent's first name, last name, email, and phone number. This feature facilitates effective communication and parental involvement in their child's academic journey.

Admin Test ▾

Add parent Manage Parent

FirstName*
FirstName

LastName*
LastName

Email*
Email

Phone*
Phone

Submit Reset

Figure 4.13: Add Parents interface

4.4.12 Fees interface

The fee interface of the Primary School Management System project includes fields for student code, student name, class, category, issue details, amount, and issue date. It allows easy tracking and management of student fees, ensuring efficient financial administration within the school.

Manage Fees

Search by Code Search by Name Filter ↑ Add New


Code	Student name	Class	Section	Issue	Amount(BDT)	Due(BDT)	Date Issued	Status	Add to Invoice
#1024		Class Three	Section A	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1039		Class Four	Sacaton C	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1032		Class Four	Sacaton A	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1036		Class Four	Sacaton B	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1028		Class Three	Sacaton B	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1042		Class Five	Section A	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1020		Class Two	Sacaton C	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1022		Class Three	Section A	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1013		Class Two	Sacaton B	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+
#1044		Class Five	Section B	Safin Islam (Exam Fee)	500	500	Mar 22, 2023	PENDING	+

Page 1 of 6 Show 10 << < > >>

Figure 4.14: Fees interface

4.4.13 Waiver

The Waiver Interface module of the Primary School Management System Project allows parents or guardians to request and manage waivers for their child’s activities. It ensures efficient communication between schools and parents and streamlines the process by providing a user-friendly interface for the submission, review, and approval of waivers.



Dashboard

Academic

Account

Expense

Expense_type

Fees

Fees_type

Invoice

Pay_issue

Waiver

Add Waiver

Manage Waiver

Manage

Departments

Admin Test

Add Waiver

Manage Waiver

Name*

Name

percentage*

percentage

Description*

Description

Submit

Reset

Figure 4.15: Waiver

Chapter 5

Conclusion

The development and implementation of a primary school management system is a significant achievement. The aim of this project was to store all the documents on an online server so that duplicate data would not be created, data redundancy would be reduced, and all the activities of the primary school would be done through it. The system has empowered teachers and staff to focus more on the individual needs of students, creating a conducive learning environment. Additionally, parents appreciated the increased transparency and access to their child's progress and school updates. Overall, the Primary School Management System has proven to be a valuable tool in improving school operations and promoting a collaborative and engaging educational experience for all involved.

5.1 General Discussion

The primary school management system project aims to store all the documents on an online server so that duplicate data will not be created, data redundancy will be reduced, and all the activities will be done through it. It will greatly benefit the school community and foster a more organized and collaborative learning environment.

5.2 Limitation of the research

A limitation of the Primary School Management System project research is the lack of a diverse and representative sample. If research data is collected from only a few schools or a specific geographic region, it may not capture the unique challenges and needs of elementary schools in different settings. This limitation may affect the generalizability and applicability of the findings and recommendations from the study. To mitigate this limitation, it is crucial to include a wide range of schools from different backgrounds and locations to ensure a broad understanding of the needs of primary school management systems.

5.3 Practical Implications

Implementing a primary school management system project has several practical implications. First, it streamlines administrative tasks, allowing for efficient student enrollment, attendance tracking, and report generation. This enables teachers to focus more on instruction and student support. Second, it enhances communication between parents, teachers, and school administrators by providing a platform for real-time updates, progress reports, and event notifications. It encourages parental involvement and fosters a collaborative environment. Third, the system facilitates data-driven decision-making by providing insights into student performance and trends. This empowers school management to identify areas for improvement and implement targeted interventions. Ultimately, elementary school management systems optimize operations, enhance communication, and support data-driven decision-making, benefiting all stakeholders involved.

5.4 Future Works

Some ideas and features can be considered future work for this project. These are The features can be summarized in the following points:

- Let the student take the exam online.

- Question bank per subject.
- Let the teacher add questions to the question bank.
- Allow admin to add new classes.
- Add a medical examination section to the system with a medical supervisor as a new one the user

The future of primary school management looks promising, with advances in technology revolutionizing the way educational institutions are run. These systems will provide seamless integration of administrative functions, student records, and communication between teachers, parents, and students. Artificial intelligence algorithms will facilitate personalized learning experiences, adaptive assessments, and real-time progress tracking. The use of biometrics for attendance, advanced analytics for data-driven decision-making, and virtual reality for immersive learning will be commonplace. Additionally, the implementation of block chain technology will ensure secure and transparent record-keeping. Future work on primary school management systems will focus on harnessing the power of emerging technologies to enhance the user experience, optimize efficiency, and create truly holistic learning environments.

References

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[2] <http://extreme.com.bd/Software/school-student-software-chittagong>

[3] <https://myclasscampus.com/home>

List of Acronyms

DFD	Data Flow Diagram
SDLC	Software Development Life Cycle
JS	Java script
CSS	Cascading Style Sheets
ORM	Object Relational Mapping