CREATION GURUKOOL STUDENT'S BOOKLET

The Project submitted to

Sant Gadgebaba Amravati University, Amravati

Towards partial fulfilment of the Degree of

Bachelor of Engineering

In

Information Technology

Guided by
Prof. A. G. Sharma

Submitted by
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DEPARTMENT OF INFORMATION TECHNOLOGY
SHRI SANT GAJANAN MAHARAJ COLLEGE OF
ENGINEERING, SHEGAON (M.S.)
2022- 2023

SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGINEERING, SHEGAON

2022-2023

CERTIFICATE

This is to certify that **Aadarsh Kumar, Shreyash Chavan, Vaishnavi Agrawal, Yoshi Nawange** students of final year B.E. (Information Technology) in the year 2022-2023 of the Information Technology Department of this institute have completed the project work entitled **"Creation GuruKool Student's Booklet"** based on syllabus and has submitted a satisfactory account of his/her work in this report which is recommended for the partial fulfilment of the degree of Bachelor of Engineering in Information Technology.

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Principal
SSGMCE, Shegaon

SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGINEERING, SHEGAON

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<u>CERTIFICATE</u>

This is to certify that the project work entitled "**Creation GuruKool Student's Booklet**" submitted by **Aadarsh Kumar, Shreyash Chavan, Vaishnavi Agrawal, Yoshi Nawange**, students of final year B.E. (Information Technology) in the year 2022-2023 of the Information Technology Department of this institute, is a satisfactory account of his work based on the syllabus which is approved for the award of the degree of Bachelor of Engineering in Information Technology.

Internal Examiner   External Examiner

Date: Date:

ACKNOWLEDGEMENT

It is our proud privilege and duty to acknowledge the kind of help and guidance received from several people in preparation for this report. It would not have been possible to prepare this project in this form without their valuable help, cooperation and guidance.

First and foremost, our wish to record our sincere gratitude to the Management of this college and to our beloved Principal, Dr. S. B. Somani, for their constant support and encouragement in the preparation of this project and for making available internet connectivity, library and laboratory facilities needed to prepare this project and report.

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We express our sincere gratitude to our guide, Prof. A. G. Sharma for guiding us in investigations for this project and in carrying out relevant work. Our numerous discussions were extremely helpful. We received his esteem guidance, encouragement and inspiration.

We sincerely thank Prof. F. I. Khandwani, project coordinator for supporting this project work. His contribution and technical support in preparing this project is greatly acknowledged.

Last but not the least, we wish to thank our parents for financing our studies in this college as well as for constantly encouraging us to learn. Their sacrifice in providing this opportunity to learn engineering is gratefully acknowledged.

Student Names :

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ABSTRACT

In the latest rapid-paced world, handling the instructional records of students has come to be a hard project for academic establishments. With the arrival of technology, dealing with the instructional information of students has come to be more convenient green, and effective. The aim of this assignment is to expand a student management system that permits admin, students, and teachers to get entry of academic records, which include grades, attendance, fees details, and profiles, and so on., through a person-pleasant website. The proposed system is designed to make sure easy accessibility, statistical accuracy, and statistical security. The student management system is built with HTML, CSS on the front-end and Django on the returned end. The forum lets students access their instructional data, add pictures of events taking place within the schools, and examine different important details related to their academic life. Teachers can upload marks, fees details, attendance information, and pictures of events at the internet site and get admission to the academic data of their students. The device is designed with a consumer-pleasant interface, making it easy for all customers to navigate and get entry to the specified facts. The usage of Django programming language for the lower back-cease guarantees the efficient and powerful management of instructional statistics. The proposed device's objectives to beautify the efficiency of educational report control, lessen manual work, and make sure records accuracy and safety. This research paper ambitions to spotlight the significance of student control structures in instructional establishments and the benefits that may be done through the implementation of such systems. The paper can even talk about the technique, architecture, and implementation of the proposed device. Moreover, the paper will highlight the capability demanding situations and barriers of the proposed system and offer suggestions for future studies on this area.

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1. INTRODUCTION

1.1 Preface

The current system was more manual, requiring that data be written on various papers and sent to various departments. Because it was paper based, this system was prone to human error, and retrieving files required time-consuming manual searching for files, some of which were even lost, making it difficult to find specific information. According to the statistics, 90% of users were not satisfied with the system because it was not secure in terms of security and storage and was vulnerable to damages like the loss of crucial information, deteriorated paper, and fire outbreak [16]. It is no longer acceptable or cost-effective to continue using the outdated paper-based techniques to manage processes in today's information technology culture. Therefore, it is not unexpected that substantial efforts were made to use the Information Technology (IT) that was available at the time to automate repetitious processes from the beginning. When compared to the file-based method, the latest combination of web technologies offers many benefits [15].

The world of education is evolving, and so are the technologies used to manage it. With the advent of the internet and the increasing use of digital tools in education, it has become more critical than ever to develop robust systems for managing student-related activities. The Student Management Website project aims to address this need by providing a comprehensive platform that facilitates the management of various aspects of the education system. This project is the result of a collaboration between educators and developers who share a common vision of providing an effective solution to the challenges faced by educational institutions. The project team has worked tirelessly to design a website that is user-friendly, efficient, and reliable.

An effective and user-friendly student management system is necessary for educational institutions in the current digital era to handle student information, academic records, attendance, and other crucial data. A secure and user-friendly web application called the Student Management System gives students and teachers access to vital data about students' academic achievement, attendance, and other pertinent information. The design, development, and deployment of a student management system that offers

students, admin, and teachers a user-friendly interface to manage their academic records are the main topics of this research paper. For the front end of the proposed system, HTML, CSS, and for back-end Django is used. The system is made to give students a complete picture of their academic achievement, including information about their grades, attendance, etc. The grades, attendance, and pictures of activities taking place in class are all accessible to teachers. This study intends to highlight the system's distinctive qualities and functionalities and assess its efficiency in handling student data. A thorough analysis of current student management systems will be given in addition to a detailed discussion of the system's design, development, implementation, and evaluation.

In this project, we will be creating a web application that will allow administrators to manage student records such as their personal information, grades, and attendance records. The website will have a login system that will differentiate between administrators and regular users, and only administrators and teachers will be able to add, edit, and delete student records.

The front-end of the website will be designed using HTML and CSS. We will create a user-friendly interface that is easy to navigate and provides all the necessary functionalities to manage student records.

For the back end, we will be using Django, a high-level Python web framework that simplifies web development by providing built-in functionalities for handling tasks such as routing, authentication, and database management. With Django, we will be able to create a scalable and robust web application that can handle large amounts of data and traffic.

1.2 Statement of problem

- The students at the school have to visit the teacher or office most of the time if they need any kind of information they require which takes time and also human interaction. The Student Management System will eliminate these kinds of problems by providing an automated platform for students where they can view different kinds of information.

- This management system will also help administrators and teachers to provide information to the students, which they can directly access from anywhere. The platform will also be able to fetch information about students directly from a database, which is very time-consuming if done manually.

- Furthermore, the lack of a centralized platform for managing student-related activities can lead to miscommunication, delays, and other issues. Students may struggle to access their grades, course materials, and other academic resources, while teachers may find it challenging to track attendance, create lesson plans, and communicate with students effectively.

- To address these challenges, the Student Management Website project aims to develop a comprehensive platform that facilitates the management of student-related activities. The website will provide a centralized hub for managing academic information and resources, making it easier for students, teachers, and administrators to access and manage data.

1.3 Objectives of Project

The primary objective of the Student Management Website project is to provide a comprehensive platform that facilitates the management of student-related activities in educational institutions. This objective will be achieved through the following sub-objectives:

- To develop a user-friendly website that enables students, teachers, and administrators to access academic information and resources easily.

- To create a centralized platform for managing student data, including enrollment, grades, attendance, and communication.

- To provide an efficient solution for managing academic resources, including lesson plans, study materials, and assessments.

- To provide a platform for effective communication between students, teachers, and administrators, improving collaboration and reducing miscommunication.

- To create a system for generating reports and analytics, providing insights into student performance and other aspects of the education system.

- To ensure that the website is secure, reliable, and scalable, meeting the needs of educational institutions of all sizes.

1.4 Scope and Limitations of the Project

1.4.1 Scope:

The scope of the Student Management Website project includes the development of a comprehensive platform for managing student-related activities in educational institutions. The website will be designed to meet the needs of students, teachers, and administrators and will include the following features:

Student Management: The website will allow students to enroll in courses, view their grades and attendance, and can give feedback.

Teacher Management: The website will enable teachers to manage student data, track attendance, and generate reports.

Administrator Management: The website will provide administrators with the tools to manage student data, generate reports and analytics, and communicate with students and teachers effectively.

Academic Resources Management: The website will provide a platform for managing academic resources.

Communication Management: The website will provide a platform for effective communication between students, teachers, and administrators, improving collaboration and reducing miscommunication.

Security and Scalability: The website will be designed to be secure, reliable, and scalable, meeting the needs of educational institutions of all sizes.

1.4.2 Limitations:

While the Student Management Website project aims to provide a comprehensive platform for managing student-related activities, there are certain limitations to consider, including:

- Technical Limitations: The website's functionality will depend on the availability of internet connectivity and the performance of the user's device.

Technical issues such as server downtime or system failures could limit the website's availability and performance.

- User Adoption: The success of the website will depend on the willingness of students, teachers, and administrators to adopt and use it. If users are resistant to change or unfamiliar with the technology, adoption rates may be lower than expected.

1.5 Organization of the Project

When organizing a project on a student management system using HTML, CSS, and Django, it's essential to plan the structure and organization of your files and directories. Here's a suggested way to organize your project:

1. Project Setup: Create a new Django project using the command `Django-admin startproject projectname`. This will create a project directory with the name `projectname`.

2. Application Setup: Inside the project directory, create a new Django application using the command `python manage.py startapp appname`. This will create an application directory with the name `appname`.

3. HTML and CSS: Create a separate folder inside the app's directory named `static` to store your static files like CSS, JavaScript, and images. Inside the `static` folder, create subdirectories such as `css` for CSS files, `js` for JavaScript files, and `images` for images used in your templates.

4. Templates: Create a folder named `templates` inside the app's directory to store your HTML templates. Place a base template, such as `base.html`, in the `templates` folder, which will serve as the main layout for other templates. Create individual HTML templates for each page of your student management system inside the `templates` folder.

5. Django Files: Add necessary code to `models.py` to define your models, such as `Student`, `Course`, etc. Define your views in `views.py`, including functions for rendering templates, handling form submissions, and processing data. Configure URLs in `urls.py` to map URLs to appropriate views.

6. Django Administration: Customize the Django administration interface by registering your models in `admin.py`.

7. Database and Migrations: Run database migrations using `python manage.py makemigrations` and `python manage.py migrate` to create and apply necessary database tables and fields.

This is a suggested organization structure, and you can customize it based on the specific requirements and complexity of your student management system.

2. LITERATURE SURVEY

The Student Management Website project aims to develop a web-based platform for educational institutions to manage their student-related activities. The website will provide a centralized platform for administrators, teachers, and students to access and manage information related to student enrollment, attendance, grades, assignments, and other related activities. The project recognizes the growing importance of technology in education and the need for educational institutions to adopt innovative solutions to improve their operations and outcomes. The Student Management Website project seeks to address the limitations of traditional paper-based or manual systems, which can be time-consuming, error-prone, and inefficient. A strong tool for streamlining communication, enhancing school administration procedures, and providing students with access to educational resources is the school management website. The website offers a user-friendly design, real-time data, and an attendance management system that makes it easy for teachers to record attendance rapidly and properly, and analytics, making it possible for instructors, students, and school administrators to access and control a variety of educational activities. The website was created using HTML, CSS, JavaScript, and Django Python and is available through any web browser. It has a user-friendly interface and a number of functions, attendance tracking, grading, and schedule scheduling. The website is a great illustration of how technology can enhance education and streamline school administration. Integration with existing systems will minimize disruption and improve efficiency, ensuring a seamless experience for users.

The development of student management websites is grounded in several theoretical frameworks and concepts, which provide guidance on the design and implementation of such websites.

The success of the Student Management Website project will depend on the project team's ability to design and implement a website that meets the needs and expectations of its users. The project team will need to engage with stakeholders, gather user feedback, and incorporate best practices and industry standards to develop a website that is user-centered, effective, and efficient.

Paper 01:

Xiangcheng Wu;Bowen Feng;Wenmin Qi "Design and Implementation of a Novel Student Information Management System"

DOI: 10.1109/ICISCAE51034.2020.9236801

Description:

With the continuous development of information technology, the means of information technology in the student management system continue to popularize and promote. It can make management efficient, fast, and convenient. In view of the problems existing in the current student information management system, such as long development cycle, difficult maintenance, and poor user experience. The author designs and implements a novel student information management system. Based on the mode of Client/Server, the design of mobile terminal is added that WeChat mini program is used for development. At the same time, Development of client based on Qt Quick. The interface is simple and easy to implement, and also easy to transplant in different operating system platforms. The system is simple to implement, the system developers only need to be familiar with QML, JavaScript, CSS, and other front-end development technologies to complete the development of the system. The practice shows that the system is more scientific and institutionalized student information management, reducing the labor intensity of the management personnel, with low cost, easy maintenance, low development threshold, short development cycle and other advantages, with a certain promotion value.

Findings:

The author designs and implements the student information management system. Based on the traditional C /S mode, the client design is modified. In the front-end design, the client uses QML programming. At the same time, the design of mobile terminal is added. It is implemented by the popular WeChat applet. The simple design method reduces the coding number of developers and the maintenance work of maintenance personnel and provides better user experience for users. The practice shows that the student information management system is more scientific and institutionalized, which

reduces the labor intensity of the management personnel. It has the advantages of low cost, easy maintenance, low development threshold, short development cycle and so on. It has a certain promotional value.

Paper 02:

Liangqiu Meng "College Student Management System Design Using Computer Aided System".

Description:

The author proposes a design for college student management system utilizing computer aided systems, which can play an important role in college management. Firstly, we organize our proposed college student management system via a hierarchical structure, which contains (1) Web display layer, (2) Business logic layer, (3) Data access layer, and (4) Database layer. Secondly, ER diagram of the college student management system is described, and several elements are included in it, such as teacher information, department information, major information, class information, student information, course information, manager, employment information, comprehensive score, and course type. Thirdly, functional module design for college student management system is provided, in which three types of users are designed in the system, that is, students, teachers and managers.

Findings:

This paper proposes a design for college student management system based on computer aided system. The proposed college student management system is organized in a hierarchical way, including Web display layer, Business logic layer, Data access layer, and Database layer. ER diagram of the college student management system is described as well. In the end, functional module design for college student management system is discussed.

Paper 03:

Amal Al Qahtani; Sara Al Utaibi; Reem Al Ghamdi; Samar Al Ghamdi; Maqsood Mahmud " A Novel Feedback Knowledge Management System (FKMS) in Educational Perspective".

Description:

The paper introduces a novel knowledge management system: it describes the process of developing a feedback system for schools where we connect students, school administration, and the ministry of education all together in order to facilitate the learning process and make sure that the students get the proper teaching; it is also a chance for them to have a voice and for their requests to be answered. We believe that this system could fill in the gap that schools in Saudi unfortunately have between students and the people in the administration. This paper further illustrates the details about the system itself and how it came. The paper discusses knowledge application systems in general and describes them components and the different types of technologies and mechanisms that are used for each different type to serve a distinct purpose. Different types are explained with supplementary figures and diagrams. The paper describes the proposed system in depth beginning with an overview of the idea itself and presents the initial architecture of the system as well as a complete prototype of its functionality. This section is supplemented with a survey we conducted targeting middle and high school students as well as all the patterns and tables needed for creating the system. It also presents a comparison between our system and an existing one that is similar but applied in another field. Limitations and benefits of the proposed systems are also described comprehensively. The last part summarizes the work we have done as well as list some of the challenges and lessons learned for future growth and improvement.

Findings:

This system was created to help our society and take an effective role in giving back to our community. This system will create better education for our children in the future,

by having a complete insight into the educational process and detecting any most of the abnormal behaviors. Through this system we can provide suitable training courses that can effectively increase the teacher's qualifications and skills. This system provided a complete linkage between students, school, and the ministry of education. The project idea can be applied in any industry, but we selected the educational field because the youth are the future of this country and the power that Saudi Arabia.

Paper 04:

Shima Beigzadeh; Mazdak Zamani; Suhaimi Ibrahim " Development of a Web-Based Community Management Information System".
DOI: 10.1109/icic.2011.52

Description:

This paper presents the development of a web-based system customized to serve the need of a community, named Taman Keramat Permai (TKP) in Malaysia. The system is designed to replace a paper-based process that gradually becomes unmanageable due to the increasing large volume of data. Features of the new system include online recording of forms, database query functions, electronic authorization, update, manage and monitor the progress data and activities included in TKP. We describe the design principles and introduce a functional component diagram for the system. The system is implemented on Windows platform using opensource software such as PHP4, MySQL, and Apache. Performance of the developed system is assessed practically, and an efficient, and user-friendly operation is demonstrated. In today's information technology society, it is no longer acceptable nor is cost conscious to keep to the old paper-based approaches in managing business processes. Therefore, it is not surprising that from early on, serious efforts were directed at utilizing whatever technologies were available at the time, to automate repetitive tasks using Information Technology (IT).

Findings:

As a result of paper-based and decentralized system, current system has the following weaknesses:

• Lack of control for activities like donations; being always informed about new activities or incidents, which happen in community.

• Disability to update their own personal data; currently community leaders can just view or manage their own portfolio by refereeing to the files, which is kept in Surah department of community.

• Lack of responsibility for keeping safe data and backups of paper-based data; some of leader's profiles have been lost due to lacking a centralized and manageable process in the system.

• Difficulty to prepare reports; with the paper- based system, it could be tough to prepare a variety of reports or queries. In addition, there is a possibility for the secretary to make mistakes while he/she is making the report.

Paper 05:

Wenyu Zhang "Research on the Design of International Student Management System". DOI: 10.1109/iccsnt.2017.8343675

Description:

With the increase in the number of international students, the quality of management of international students' needs to be improved. So that the management system for international students was developed. We use information technology to improve management efforts. In this paper, the demand and design process of the students' management system are described. First, the demand for international students is analyzed, the demand acquisition is carried out, the various functional requirements of the student management system is identified, and the function modules are designed in detail by using the classification chart and timing diagram, finally System achieves five functions, including the school management, educational administration, daily management, communication, and system management. Student information is a very important data resource of colleges and universities, is an indispensable part of an

educational institution. Recently, the adjustment of national policy and the increasing number of international students have brought challenges for universities on the parts of teaching management, student management, and logistics management. The large amount of data, the wide range of people, and the requirement to update on time, all of this work is very complex and difficult to achieve by artificial. The traditional manual management is not easy to standardize, and the management efficiency is low. This kind of traditional management mechanism is unable to adapt the development of the times, its management methods will waste a lot of time and manpower. With the continuous improvement of science and technology, the popularity of computer applications has entered the field of human social life and plays an increasingly important role. The traditional manual management model must be replaced by a computer-based information management approach. As a part of the computer application, the use of international student management system for the student's management, educational administration, and daily management has a great advantage. The system has more advantages than the manual management such as: search quickly, easy to find, high reliability, large storage capacity, low cost and so on.

Findings:

The student management system adopts the B / S structure model, uses the JSP technology, uses the open-source framework Struts, realizes the MVC framework, fully meets the international student management work demand, causes the higher education information management reform to realize the network, so that the network teaching career will develop to a new level. This paper makes a deep and comprehensive analysis on the contents of international student management. After the system is finished and tested, the system can realize the demand of the management of the international students through the unified access platform.

Paper 06:

Di Sun, Yunnan, China "Design and Realization of College Student Management System Based on Information Technology under Big Data Technology"

Description:

With the popularization of education informatization, colleges and universities generally have information management systems, which can manage school information, teacher information, student information, and performance information, and are equipped with special databases or data clusters to store this information. How to effectively use these data to extract and mine valuable information from these data, so as to provide schools and teachers with auxiliary decision-making, and truly improve the level and quality of school running has become an issue worthy of attention. The purpose of this paper is to design and implement the university management system based on big data technology. This paper firstly summarizes the basic theory of big data and derives the core technology of big data data mining and other core technologies, combined with the current university student management system in our country. The status quo, analysis of its problems and shortcomings, on this basis, combined with big data technology to design and analyze the college student management system. This article systematically explains the design and use of the database, function modules and related technologies of the management system. And conduct research through research methods such as comparison and field investigation. Experimental research shows that compared with the traditional college student management system, the college student management system based on big data technology is more practical and more powerful.

Paper 07:

Cang Qingshan, Zeng Xianli, Zhang Mingying "Design and implementation of college student management information system based on .Net three-layer structure".

Description:

This paper explores the design and implementation of college student management information system to promote the systematization, standardization, information, and

scientific process of college student management, to improve management and service level of college student management. In the system implementation, it uses the three-layer B / S structure and the modular design concept, which greatly improve system security and maintainability.

Findings:

With the improvement of computer, hardware and software environment, the network has gradually gained popularity in the college, the traditional student information systems management cannot meet current needs. This paper explores the design of student information management system which is combined with modem information technology, proposes the design concept, system construction and program implementation, builds a network platform involving management and services, so as to promote a systematic, standardized, and information-based college students work system, and improve the management and service level of college student management.

Paper 08:

Wiangcheng Wu, Bowen Feng, Wenmin Qi, School of Physics and Information Engineering, Jianghan University, Wuhan, China "Design and Implementation of a Novel Student Information Management System"
DOI: 10.1109/ICISCAE51034.2020.9236801

Description:

With the continuous development of information technology, the means of information technology in the student management system continue to popularize and promote. It can make management efficient, fast, and convenient. In view of the problems existing in the current student information management system, such as long development cycle, difficult maintenance, and poor user experience. This paper designs and implements a novel student information management system. Based on the mode of Client/Server, the design of mobile terminal is added that WeChat mini program is used for development. At the same time, Development of client based on Qt Quick. The

interface is simple and easy to implement, and also easy to transplant in different operating system platforms. The system is simple to implement, the system developers only need to be familiar with QML, JavaScript, CSS and other front-end development technologies to complete the development of the system. The practice shows that the system is more scientific and institutionalized student information management, reducing the labor intensity of the management personnel, with low cost, easy maintenance, low development threshold, short development cycle and other advantages, with a certain promotion value.

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This paper designs and implements the student information management system. Based on the traditional C / S mode, the client design is modified. In the front-end design, the client uses QML programming. At the same time, the design of mobile terminal is added. It is implemented by the popular WeChat applet. This simple design method reduces the coding number of developers and the maintenance work of maintenance personnel and provides better user experience for users. The practice shows that the student information management system is more scientific and institutionalized, which reduces the labor intensity of the management personnel. It has the advantages of low cost, easy maintenance, low development threshold, short development cycle and so on. It has a certain promotional value.

Paper 09:

Zhibing Liu, Huixia Wang, Hui Zan, College of Educational science and Technology, Huanggang Normal University, Huangzhou, China, "Design and Implementation of Student Information Management System"

Description:

Student Information Management System realization including establishment and maintenance of the database and front-end application development. This paper

describes the system functional and architecture design, and emphasizes the system's functionality, database design and functional modules, etc. Fully functional, flexible and convenient application and friendly interface provide a good guarantee for student information management.

Findings:

Public functions and global variables etc. could be stored in public module throughout projects in Visual Basic, and you can greatly improve the efficiency of the code by calling module functions and variables in the project. As the system modules use varieties data in the database frequently it requires a public data manipulation function to perform a variety of SQL statements. The paper focuses on the function description and analysis of the system, and program access to the database through ODBC (Open Database Connectivity,), due to space constraints, the specific implementation process, and program code give examples only.

Paper 10:

Wang Yanxia, Fundamental Education College, Beijing Polytechnic, Beijing, China, "Student Information Management Decision System Based on Decision Tree Classification Algorithm"
DOI: 10.1109/ICISCAE55891.2022.9927597

Description:

In recent years, the school enrollment scale has expanded explosively, and massive student information data sets have brought a lot of troubles to student information management decision-making. Data mining, especially the continuous optimization of decision tree classification algorithms, can effectively manage student data. Therefore, the study of student information management decision system based on decision tree classification algorithm has practical significance. This paper calculates the decision support degree for attributes that are not easily distinguished and optimizes the decision tree classification algorithm. This article will introduce the modules of student

registration management, student status management, examination management and so on in the optimized decision tree classification algorithm application system. In order to verify the feasibility of the system, this article tested and used the basic functions of the system. The test results show that when the number of concurrent users is 100, the actual response time of the system is 0.43s; when the number of concurrent users is 600, the actual response time of the system is 1.56s, which is less than 2s, which verifies that the system functions have reached the expected use effect.

Paper 11:

Xinwen Li,, Jiangxi Vocational Technical College of Industry and Trade, Nanchang, Jiangxi, China, "Student Management Information System Based on Data mining"

Description:

Colleges and universities are places for cultivating talents for society. Building a high-quality and high-culture college student team has become the focus of student management in colleges and universities. The basis of managing students lies in the full understanding and understanding of students, although the current college student information system records the information of enrolled students, but there are many drawbacks such as a large number of data, a simple management platform and a lack of intuitive embodiment, in order to solve this problem, give full play to the advantages of massive student information, and provide more meaningful decision-making basis for managers. Based on the data mining algorithm, this paper designs and researches the student management information system. This paper first describes the background significance of the student management information system and the current research status of the system and builds the system framework according to the related technologies of Data mining algorithms. After the system is completed, the system is debugged. The debugging results can accurately reflect the feasibility of the system.

Paper 12:

Zihan Ma, Sydney Smart Technology College, Northeastern University, Qinhuangdao, China; Jinhuan Zhu, School of Computer Science & Information Engineering, Shanghai institute of technology, Shanghai, China, "Design of Student Information Management System for Chinese University in Epidemic"
DOI: 10.1109/ICFTIC57696.2022.10075291

Description:

The Student Information Management System in the epidemic includes developing front-end applications and setting up and maintaining the database, which was created with HTML, PHP, MySQL, and other languages, combined with the web front-end and database. The architecture and the capabilities of the system are described in this paper. And the function modules of the system, the design idea of the database and the implementation of the front-end interface are shown in this paper emphatically. The fully functional and concise interface can effectively prevent the spread of the epidemic while providing a good experience for students while ensuring their health and satisfaction of students. This system is very in line with the current epidemic prevention measures of Chinese universities, which can help schools better manage students in the epidemic environment, curbing the spread of the epidemic and protecting students' health. Simultaneously, this system has good scalability, so if there is another epidemic situation in the future, this system can be used to this system can be a basis for secondary development. Other similar systems can be designed based on this system according to specific purpose application.

Paper 13:

Feng Cheng, Yunnan Institute of Business Administration, Yunnan, China, "Application of decision tree in student information management system"
DOI: 10.1109/AIE57029.2022.00068

Description:

The application of decision tree in student information management system is a method of data mining using decision process. Decision trees are used to classify and predict the results of events using a set of rules or patterns. Using this technique, you can extract certain features from the data and then predict how each feature will affect the results. This technique is very useful for predicting future events based on past experience. Student information management systems cover a wide range, including educational administration management system, financial system, teaching arrangement system, performance management system and other subsystems. These subsystems are managed by different institutions of the school. The system is relatively independent, and the information resources cannot be shared, resulting in confusion in management and waste of resources due to insufficient utilization of information. From school departments, information management systems also need to have certain decision-making functions to help leaders and teachers complete their daily decision-making functions. Therefore, should establish a scientific and perfect student information management system, and apply advanced data mining technology to the existing student information management system to make up for its shortcomings. In today's severe employment situation, it is of great significance to rely on data mining technology, make use of existing data resources, comprehensively analyze the employment results, find out the internal relationship between College Students' own quality and enterprise needs and college courses, and then provide targeted guidance for students.

Paper 14:

M.A. Norasiah, Faculty of Electrical Engineering, University Technology MARA, Shah Alam, Malaysia; A. Norhayati, Faculty of Electrical Engineering, University Technology MARA, Shah Alam, Malaysia, "Intelligent student information system"

Description:

This project is aimed at designing software to manage the students' academic data such as their status (pass, fail, probation, 'cuti khas', dismiss) so that their GPA and CGPA can be generated. This information is useful for students to plan their academic performance in the next semester. The system will also enable the Head of Programs, the Academic Advisors as well as other faculty's management teams to easily simulate the students' study plan through user friendly menu driven interface forms. The system is designed using Visual Basic Programming and Microsoft Access database program.

Findings:

Intelligent Student Information System is the solution for the inefficient manna1 student's data and study planning in Faculty of Electrical Engineering. This method will increase the efficiency of Faculty's student's academic management as well as improving the current manual student's data management. For the Head of Program and Academic Advisors, the system enables them to advise students better and most of all saves a lot of time calculating the GPA and CGPA manually.

Paper 15:

Almahdi Alshareef, Department of Computer Science, Scbha University Libya; Ahmed Alkilany, Department of Computer Science, Scbha University Libya; Mohammed Alweshah, Department of Computer Science, Al-Balqa Applied University; Azuraliza Abu Bakar, Center for Artificial Intelligence Technology, University Kebangsaan Malaysia, Bangi Selangor, Malaysia, "Toward a student information system for Sebha University, Libya"
DOI: 10.1109/INTECH.2015.7173362

Description:

A student information system provides a simple interface for the easy collation and maintenance of all manner of student information. The creation and management of accurate, up-to-date information regarding students' academic careers is critical students and for the faculties and administration of Sebha University in Libya and for

any other educational institution. A student information system deals with all kinds of data from enrollment to graduation, including program of study, attendance record, payment of fees and examination results to name but a few. All these data need to be made available through a secure, online interface embedded in a university's website. To lay the groundwork for such a system, first we need to build the student database to be integrated with the system. Therefore, we proposed and implemented an online web-based system, which we named the student data system (SDS),to collect and correct all student data at Sebha University. The output of the system was evaluated by using a similarity (Euclidean distance) algorithm. The results showed that the new data collected by the SDS can fill the gaps and correct the errors in the old manual data records.

Findings:

The system consists of three main processes, students registering via their department, students paying them fees at the finance counter and students signing in and filling in an application. All SUL faculties could use the system and complete the student information with a low error rate. The output of the system was evaluated by using an ED algorithm, which showed that there was a high similarity between the previous student records and the new student records

Paper 16:

Cannur Gürkut, Department of Management Information Systems, Cyprus International University Haspolat, Nicosia, Turkey; Müesser Nat, Department of Management Information Systems, Cyprus International University Haspolat, Nicosia, Turkey, "Student Information System satisfaction in Higher Education Institutions"

Description:

This paper aims to find out the satisfaction level of faculty coordinators who use Student Information System (SIS) to manage classrooms in Higher Education

Institutions (HEIs). Considering the purpose of this study a survey is applied to the faculty coordinators of a developing HEI in Northern Cyprus. The reliability test, factor analysis and Bartlett's test has been applied to interpret the survey results. Results reveal that the system quality and information presentation have impact on decision-making satisfaction, and the information quality is an intervening variable between the system quality and decision-making satisfaction.

Findings:

As commonly known HEIs use SIS to collect, organize and manage all student data to produce meaningful information that affects decision-making process. Reports that are taken from SIS are used as a decision-making supporter by faculty coordinators in order to manage classrooms to arrange weekly schedules for courses.

Paper 17:

Fanindia Purnamasari, Department of Information Technology, Universitas Sumatera Utara, Medan, Indonesia; Surya Hardi, Department of Electrical Engineering, Universitas Sumatera Utara, Medan, Indonesia, "A Study on Usability Requirement for Redesigning Student Information System"

Description:

In web-based student information system development, usability requirements are the most important of non-functional requirements since they determine the acceptability of systems. Nevertheless, usability requirements are usually unconsidered in early stage of system development. Mostly the developers consider the functional requirement with expected to develop system with high function and technology. But high function without usability is not the main of the aims of system development. This paper aims to propose a requirement to assist and support the development process of student information system. This study conducts in-depth interview method to capture usability requirement which involves administrator, programmer, lecturer, and students. By

using several tasks to guide the user to operate the system, some issues are discovered. Based on study, the result discovers that interactive design, task completion efficiency and interactivity is impact to usable system. It means the study need investigate which elements that influence task completion efficiency and interactivity.

Findings:

Usability results revealed ten important requirements relevant to layout interface, content information presentation, additional function, completion task efficiency. The recommendation of the usability requirement is part of the existing usability guideline. This study only suggested some usability requirements must be considered redesigning. This could not be denied that adapt existing usability guideline still need to improve them usability requirement. In further, usability metric and evaluation should be performed to ensure the usability requirement is fulfill of the user need of the system.

Paper 18:

Fu Yue, Chongqing Institute of Technology, "A study of student information management software"
DOI: 10.1109/ICOACS.2016.7563123

Description:

As a man-machine system that utilizes computer software & hardware resources and database, MIS (Management Information System) can provide information to support the operation, management and decision-making functions of enterprises or organizations. With the continuous scale expansion of colleges and universities, the number of students has increased. Dramatically and various students-related information contents are also doubled. In the face of huge amount of information, it is required to possess the student information management system to improve the efficiency of student management. Through this system, standardized management, scientific statistics and fast query of student information can be realized, and thus the workload of management can be reduced. In this paper, a typical student information

management system will be established to realize the systematization, standardization, and automation of student information relationship.

Findings:

The system has basically realized the function requirements in demand analysis. The user can enter into the system interface after successfully logging. The student's information management module is composed of student achievement management, class management, test subject management and user management. Logging is permitted only after the validation is passed. The whole system is easy to access and easy to maintain

3. ANALYSIS

3.1 Detailed Statement of the Problem

In today's educational system, managing student information is a crucial aspect of ensuring academic success. However, the existing systems for managing student information, such as manual or paper-based systems, have several limitations that make them inefficient and ineffective. One of the main challenges with manual systems is that they are prone to human errors, such as data entry mistakes, transcription errors, or calculation errors. These errors can have significant consequences, such as incorrect information being communicated to students or parents, leading to confusion or dissatisfaction. Additionally, manual systems are time-consuming, with administrators and teachers having to spend significant amounts of time on repetitive tasks such as recording attendance, grading, or updating student records. This can detract from their ability to focus on higher-level tasks, such as curriculum development or student engagement.

Furthermore, manual systems lack scalability, which can be a significant issue for larger educational institutions. These institutions often have to manage vast amounts of student data, which can be overwhelming to manage manually. This can lead to errors, delays in decision-making, or difficulties in tracking student performance over time.

- Finally, manual systems are also prone to data loss or theft, as paper records can be misplaced, damaged, or stolen. This can result in critical information being lost or compromised, leading to errors or delays in decision-making. Therefore, there is a need for a more efficient and effective system for managing student information. A student management website project that leverages technology to automate and streamline these processes could provide a solution to these challenges. Such a system could improve accuracy, save time, enhance scalability, and provide greater security and accessibility to student data. Managing student information effectively is crucial for ensuring academic success in educational institutions. However, traditional manual or paper-based systems have significant limitations that can hinder their efficiency and effectiveness. These limitations include human errors, time consumption,

scalability issues, and data security concerns. To address these challenges, the Student Management Website project aims to develop a comprehensive platform that facilitates the management of student-related activities. The website will provide a centralized hub for managing academic information and resources, making it easier for students, teachers, and administrators to access and manage data.

3.2 System Analysis

A student management system is an application that is designed to manage the various tasks and processes associated with student information and management. The system allows educational institutions to efficiently manage their student data, including admissions, enrollment, attendance, grades, and more. In this article, we will discuss how to perform system analysis for a student management system project using HTML, CSS, and Django.

System analysis is the process of analyzing and understanding a system in order to identify its requirements and specifications. In the case of a student management system project, system analysis involves the following steps:

1. Requirement Gathering:

The first step in system analysis is to gather all the requirements for the student management system. This includes gathering information about the various functionalities required by the system, such as student registration, enrollment, attendance tracking, grades management, and more. It is important to involve stakeholders, such as teachers, administrators, and students, in this process to ensure that all their requirements are met.

2. Use Case Analysis:

After gathering all the requirements, the next step is to analyze the use cases for the student management system. Use cases are scenarios that describe how users interact with the system to accomplish their goals. Use case analysis helps to identify the key features and functionalities of the system and how they relate to each other.

3. Data Modeling:

The next step in system analysis is to model the data that will be used by the student management system. This involves identifying the various data entities, such as students, teachers, classes, and courses, and the relationships between them. Data modeling helps to ensure that the system is designed to efficiently manage and store the required data.

4. System Architecture Design:

Once the data model is finalized, the next step is to design the system architecture. This involves identifying the various components that will be required to build the system, such as servers, databases, web servers, and more. The architecture design should consider the scalability and performance requirements of the system.

5. UI/UX Design:

The user interface (UI) and user experience (UX) are critical components of any web application. In the case of a student management system, the UI/UX design should be intuitive, easy to use, and accessible to all users. This involves designing the layout, colors, fonts, and other visual elements of the system using HTML and CSS.

6. System Implementation:

Once the system analysis and design are completed, the next step is to implement the system using the Django web framework. Django is a powerful web framework that provides a high-level, scalable, and secure development environment. It includes a range of built-in features and tools for developing web applications, such as templates, forms, models, and more.

7. Testing and Deployment:

The final step in the system analysis process is to test and deploy the student management system. This involves testing the system to ensure that it meets all the functional and non-functional requirements and deploying it to a production environment. It is important to ensure that the system is secure, scalable, and performs well under different load conditions.

In conclusion, system analysis is a critical process in the development of a student management system project using HTML, CSS, and Django. It involves gathering requirements, analyzing use cases, modeling data, designing the system architecture, UI/UX, implementing the system, and testing and deploying it. A well-designed and

implemented student management system can help educational institutions to efficiently manage their student data and improve the overall education experience for students.

3.3 Requirement Specifications

In this section we will look at the Software and Hardware required for the implementation of the project. We have divided the requirements in two parts Software requirement and Hardware requirement.

3.3.1 Software Requirement

- ❖ Windows 10 or higher
- ❖ PyCharm
- ❖ MySQL
- ❖ Visual Studio Code

3.3.2 Hardware Requirement

- ❖ Laptop/PC
- ❖ System: Intel Processor i5/above
- ❖ Hard Disk: 500GB
- ❖ RAM:4-8GB

3.4 Functional Requirements

Functional requirements are the features or functions of software system to accomplish the tasks. It basically explains how the system must work. They are the statements that describe what a system needs to do in order to provide a capability. A description of each major software function, along with data flow (structured analysis) or class hierarchy (Analysis Class diagram with class description for object-oriented system) is presented.

3.4.1 Data Flow Diagram

Figure 3.1: DFD Diagram for Student Management System

DFD level – 1

Here. Figure 3.1 shows DFD indicates the basic flow of data in the system. In this System Input is given equal importance as that for Output.

A data flow diagram (DFD) is a graphical representation of the flow of data in a system. In the context of a student management website project, a DFD could illustrate the flow of data between different components of the system, such as the front-end user interface, the back-end database, and the server-side application logic.

In the context of a student management website project using HTML, CSS, and Django Python, the DFD would illustrate how data flows between the front-end user interface, which would be developed using HTML and CSS, and the back-end database, which would be developed using Django Python. The DFD would also show how the server-side application logic, also developed using Django Python, interacts with the user interface and the database to manage and process the data.

Overall, the data flow diagram for a student management website project would be a crucial component of the project design, as it would provide a visual representation of how the system works, which can be useful for both developers and stakeholders.

3.5 Non-Functional Requirement

Non-functional requirements are the software specifications that describe the qualitative aspects of a software. It lists the desired qualitative features of a software or application, which don't fall under the category of any function/use-case. Non-

functional features do not perform any action, instead they help in enhancing the software performance (efficiency).

3.5.1 Supporting Technologies

Implementation should be feasible using technologies that are accessible to the end users. The development of a student management website project using HTML, CSS, and Django Python would require the use of several supporting technologies. Some of the essential supporting technologies for this project are:

- HTML: HTML stands for Hypertext Markup Language, which is the standard markup language used to create web pages. HTML provides the structure and content of web pages.

- CSS: CSS stands for Cascading Style Sheets, which is a style sheet language used for describing the presentation of a web page. CSS defines how HTML elements are displayed on a web page, including layout, colors, and fonts.

- JavaScript: JavaScript is a programming language that is used to create interactive web pages. It can be used to add dynamic functionality to the user interface, such as pop-up windows, form validation, and animations.

- Django Python: Django is a high-level Python web framework that enables the rapid development of web applications. Django provides many built-in features, including URL routing, templating, and database management.

- Relational Database Management System (RDBMS): An RDBMS is a software system used to manage and store data in a structured manner. Django Python supports several relational database management systems, including MySQL.

Overall, these supporting technologies play a critical role in the development of a student management website project using HTML, CSS, and Django Python, and developers should be familiar with them to ensure the successful implementation of the project.

- Device Software Compatibility: The minimum requirement of the Student Management System for device capability is a minimum of 4GB RAM.

- Accessibility: The "Student Management System" has an interactive user interface so that Admin or any new person can easily understand it and able to access the different features of the project.

- Maintainability: If some error occurred during execution of system then the system can resolve all errors by restarting or debugging of system.

- Usability: Usability is a crucial aspect of any website project, and the student management website project using HTML, CSS, and Django Python is no exception.

The following are some ways to ensure usability for this project:

1. Responsive design: The website should be designed to be responsive, which means that it should be accessible on multiple devices, including mobile phones and tablets. This ensures that users can access the website from any device they choose, which enhances the usability of the site.

2. Clear and consistent navigation: Navigation is a critical aspect of any website, and the student management website should have a clear and consistent navigation system. Users should be able to easily find the information they are looking for, and the navigation should be consistent throughout the site.

3. Simple and intuitive user interface: The user interface of the website should be simple and intuitive to use. The site should have a clean and uncluttered design, with easy-to-use forms and buttons.

4. Effective feedback: The website should provide feedback to users when they perform actions, such as filling out forms or submitting information. Effective feedback ensures that users know that their actions have been successful and helps to prevent errors.

3.6 Feasibility Study

Feasibility study is an un-biased evaluation of an App idea, conducted for the purpose of determining whether the idea is viable and worth pursuing. The feasibility study is undertaken to determine merits and demerits of each alternative and recommended system that will be most appropriate. All are feasible given unlimited resource and

identified infinite, so it is essential to evaluate and estimate the advantage of one system over another.

3.6.1 Market Feasibility

- Assessment of the overall appeal to the market for the Desktop based software solution.

- Market timeliness: best suitable time for release

- Identification of the target audience

- Comparing with other similar competing software solutions.

- Past and present supply position.

- Imports and exports

- Structure of competition

- Administrative, technical, and legal constraints

- Production possibility and constraints

- User behavior, intentions, motivations, attitude, preferences, and requirements

- Consumption trends in the past and the present consumption level

3.6.2 Economical Feasibility

- In economic feasibility, we study the cost of developing our system. The software and hardware requirements are at affordable costs. This project is economically feasible.

- This refers to whether the project is financially viable. This includes estimating the project's budget, costs associated with development, deployment, maintenance, and ongoing support. It is essential to ensure that the benefits of the system outweigh the costs.

3.6.3 Technical Feasibility

- This refers to the technology needed to develop the system and whether it is available, affordable, and appropriate for the project. Assess if the necessary hardware and software resources are available, or if they need to be acquired.

- It also includes assessing if the system can be integrated with other existing systems in the school.

- Technical feasibility also involves the evaluation of the hardware, software, and other technical requirements of the proposed system.

- To check the selected scale of operation is optimal or not.

- Choose suitable production process.

- Appropriate equipment and machines

- The technology proposed to be employed appropriate from the social point of view.

3.6.4 Behavioral Feasibility

- Behavioral feasibility refers to the system to see whether the data input is readily available or collectable.

- This project is easy to access and for understanding to people.

- System performs all functionality correctly and in a fraction of time.

3.6.5 Operational Feasibility

- Operational feasibility is mainly concerned with issues like whether the system will be used if it is developed and implemented.

- This system interacts with the user and is user-friendly and it will benefit the organization.

- The accessibility of the information will not be lost. User information will be secured and no loss of integrity.

- This refers to whether the system can be easily integrated into the current operations of the school.

- The school's administrative staff should be able to operate the system effectively and efficiently with minimal training and support.

- This also includes assessing whether the system can accommodate the school's current and future needs.

3.6.6 Legal Feasibility:

- This refers to whether the system complies with local and national laws and regulations.
- Ensure that the system adheres to data protection and privacy regulations, such as the General Data Protection Regulation (GDPR) and Family Educational Rights and Privacy Act (FERPA).

3.6.7 Schedule Feasibility:

- This refers to the timeline for the project, including the development, testing, and deployment phases.
- Assess if the timeline is realistic and if the system can be deployed within the school's timeframe.

3.7 Use Case Diagrams

The purpose of a use case diagram is to capture the dynamic aspect of a system. Use case diagrams are used to gather the requirements of a system including internal and external influences. These requirements are mostly design requirements. Hence, when a system is analyzed to gather its functionalities, use cases are prepared and actors are identified as shown in Figure 3.2.

In the Unified Modelling Language (UML), a use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system. To build one, you'll use a set of specialized symbols and connectors. An effective use case diagram can help your team discuss and represent:

- Scenarios in which your system or application interacts with people, organizations, or external systems.
- Goals that your system or application helps those entities (known as actors) achieve.
- The scope of your system.

3.8 Use Case Specifications

Actor: An actor is represented by a stick figure and represents a person, system, or device that interacts with the system. In this case, the actors could include students, teachers, and administrators.

Use case: A use case is represented by an oval shape and describes a specific action or task that the system performs. Here, these could include check grades, feedback, check attendance, update attendance, update grades, update password.

Relationship: Relationship is represented by an arrow and describes the relationship between the actor and use cases. Draw arrows between the actors and the use cases to represent the interactions between them. For example, an arrow from the student actor to the check attendance use case would indicate that students can use the system to check his attendance.

Figure 3.2: Use case for Student Management System
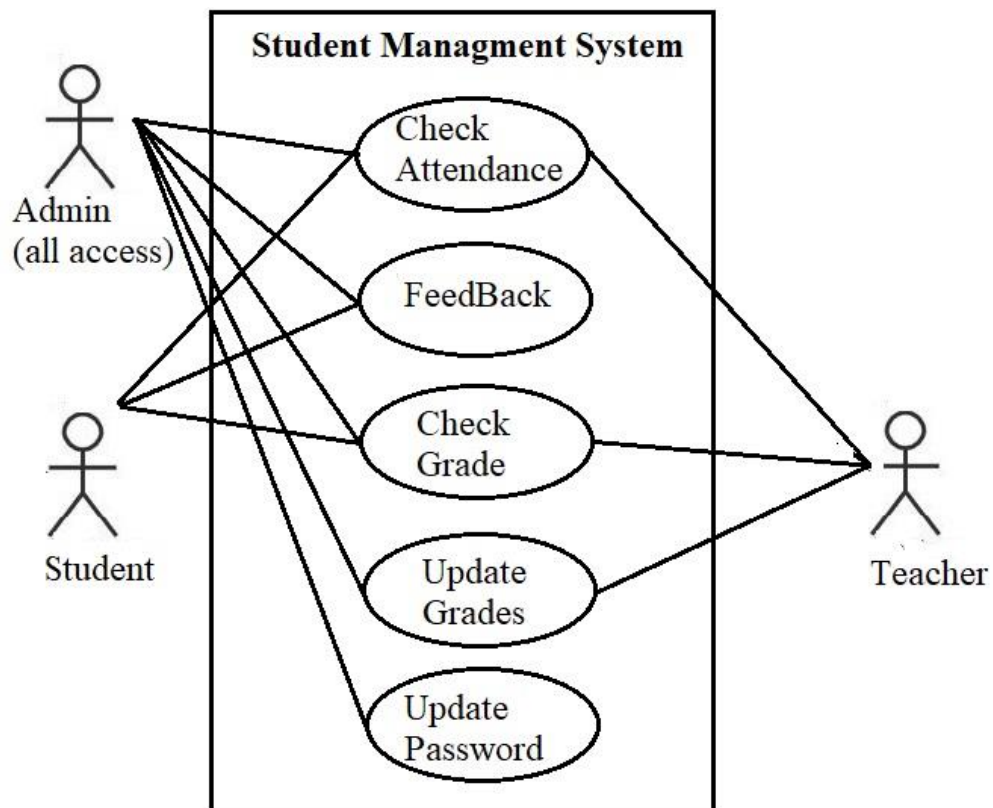
3.9 Entity - Relationship Diagram

An entity-relationship diagram (ERD) is a visual representation of the relationships between entities in a database. In the case of a student management system project using HTML, CSS, and Django, an ERD can be used to model the various entities and their relationships, such as students, teachers, classes, courses, and more. In this article, we

will discuss how to create an ERD for a student management system project using HTML, CSS, and Django.

Step 1: Identify Entities:

The first step in creating an ERD for a student management system project is to identify the various entities. Entities are the objects or concepts that will be represented in the database. In a student management system, the entities may include students, teachers, classes, courses, grades, attendance, and more.

Step 2: Identify Relationships:

Once the entities have been identified, the next step is to identify the relationships between them. Relationships are the connections between the entities. In a student management system, the relationships may include students taking classes, teachers teaching classes, courses having students enrolled, and more.

Step 3: Create the ERD:

After identifying the entities and relationships, the ERD can be created using a tool such as Lucid chart or Microsoft Visio. The ERD consists of entities represented by rectangles and relationships represented by lines connecting the rectangles.

In the case of a student management system, the ERD may look like the following:

In this ERD, there are five entities: Student, Teacher, Class, Course, and Attendance. The relationships between the entities are as follows:

- A student can take many classes, and a class can have many students. This is represented by a many-to-many relationship between Student and Class, with a join table called Enrollment.
- A teacher can teach many classes, and a class can have one teacher. This is represented by a one-to-many relationship between Teacher and Class.
- A course can have many classes, and a class can have one course. This is represented by a one-to-many relationship between Course and Class.

- Attendance is related to both Student and Class, indicating which students are present in which classes. This is represented by two one-to-many relationships between Student and Attendance, and between Class and Attendance.

Step 4: Implement the ERD in Django:

Once the ERD has been created, it can be implemented in Django using models. Models are Python classes that represent the entities and their relationships in the database. In Django, models are defined in the models.py file of the application.
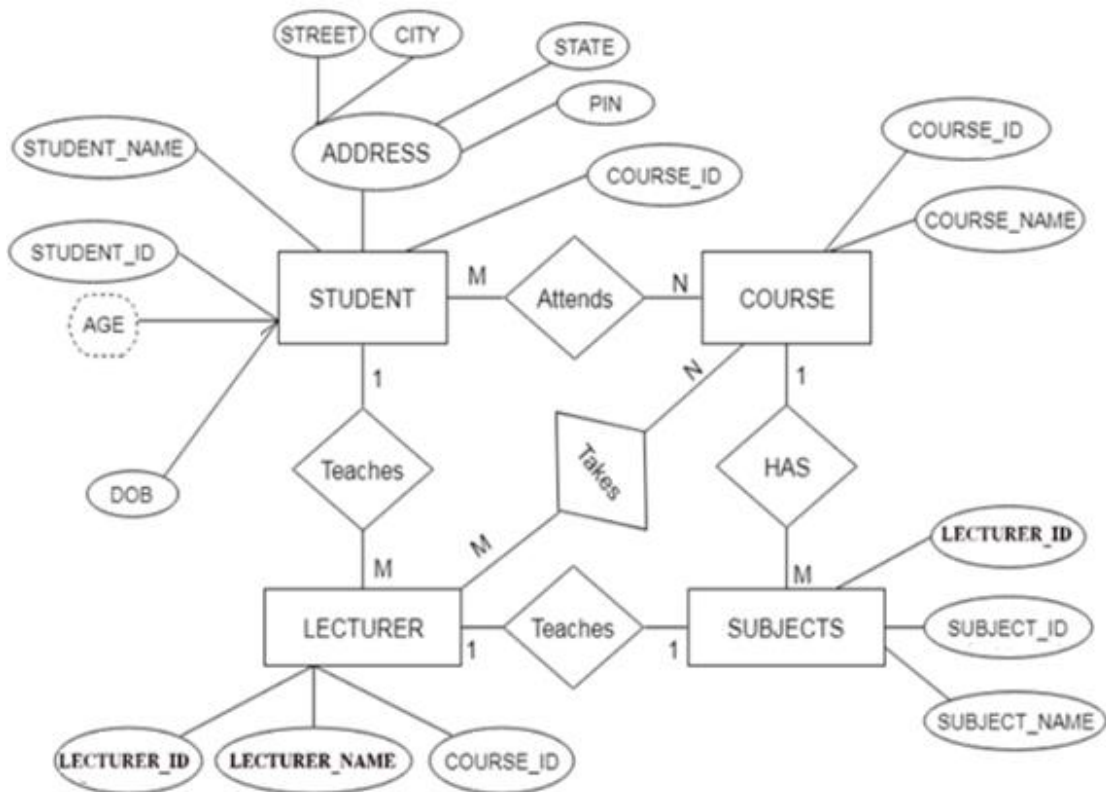

Figure 3.3: ER Diagram for Student Management System

4. DESIGN

4.1 System Design

System design is the process of creating a high-level architectural plan for a software application. In the case of a student management system project using HTML, CSS, and Django, system design involves defining the structure of the application, identifying the necessary components, and mapping out how they will work together to achieve the desired functionality. In this article, we will discuss how to design a student management system using HTML, CSS, and Django.

Step 1: Define the Requirements:

The first step in designing a student management system is to define the requirements. This involves identifying the functionality that the system needs to provide, as well as any constraints or limitations that need to be considered. For example, the system may need to allow teachers to record attendance for their classes, students to view their grades, and administrators to add or remove users.

Step 2: Identify the Components:

Once the requirements have been defined, the next step is to identify the components that will be needed to implement the system. This includes the user interface, the database, and the backend functionality. For a student management system using HTML, CSS, and Django, the components may include:

- User interface: The user interface will be created using HTML and CSS and will allow users to interact with the system. This may include forms for adding or editing user information, tables for displaying class and grade information, and navigation menus for accessing different parts of the system.

- Database: The database will store the information needed for the system to function, such as user information, class schedules, and attendance records. This will be implemented using Django's built-in Object-Relational Mapping (ORM).

- Backend functionality: The backend functionality will handle the business logic of the system, such as calculating grades or generating reports. This will be implemented using Python code written in Django.

Step 3: Design the User Interface:

The next step is to design the user interface. This involves creating mockups or wireframes of the various screens and components that will be used in the system. The user interface should be intuitive and easy to use, with clear navigation and labeling. For example, the interface for adding a new student might include fields for the student's name, email address, and phone number, with a submit button to save the information to the database.

Step 4: Design the Database Schema:

Once the user interface has been designed, the next step is to design the database schema. This involves defining the tables and relationships that will be used to store the data. For example, there may be tables for students, teachers, classes, courses, and attendance records, with relationships between them to link the data together. The database schema should be designed to be efficient and scalable, with appropriate indexes and data types.

Step 5: Implement the Backend Functionality:

Once the user interface and database schema have been designed, the next step is to implement the backend functionality. This involves writing the Python code that will handle the business logic of the system. For example, there may be functions to calculate grades based on attendance and assignment scores, or to generate reports on student performance.

Step 6: Integrate the Components:

The final step in designing a student management system is to integrate the various components. This involves connecting the user interface to the backend functionality and mapping the data between the database and the user interface. For example, when a user enters information into a form on the user interface, the data should be validated and saved to the database using the appropriate backend function.

4.2 Logical Design:

Logical design is a crucial aspect of building any software application, including a student management system using HTML, CSS, and Django. In this article, we will discuss the process of logical design for a student management system and the key considerations that need to be considered.

Step 1: Identify the Entities:

The first step in logical design is to identify the entities that will be represented in the system. In the case of a student management system, the entities might include students, teachers, classes, courses, and attendance records. Each entity should have a unique identifier, such as a student ID or a class code, and a set of attributes that describe the entity.

Step 2: Define Relationships Between Entities:

Once the entities have been identified, the next step is to define the relationships between them. For example, a student may be enrolled in multiple classes, and each class may have multiple students enrolled. There may also be relationships between teachers and classes, courses and classes, and attendance records and students.

Step 3: Normalize the Data Model:

The next step is to normalize the data model to eliminate redundancies and inconsistencies. This involves organizing the data into tables and establishing rules for how the tables can be modified. For example, in a normalized data model, each table should have a primary key that uniquely identifies each record, and each attribute should depend only on the primary key.

Step 4: Define Data Integrity Rules:

Once the data model has been normalized, the next step is to define data integrity rules. This involves establishing constraints on the data to ensure that it is accurate and consistent. For example, there may be rules to ensure that students cannot be enrolled in the same class more than once, or that attendance records cannot be added for classes that have not yet started.

Step 5: Create Entity-Relationship Diagrams:

Entity-relationship diagrams (ERDs) are graphical representations of the entities and relationships in a data model. Creating an ERD can help to visualize the data model and identify any potential issues or inconsistencies. For a student management system, the ERD might include entities such as students, classes, teachers, courses, and attendance records, with relationships between them such as students enrolled in classes, teachers teaching classes, and courses associated with classes.

Step 6: Define User Interfaces:

The final step in logical design is to define the user interfaces that will be used to interact with the system. This involves identifying the screens and forms that will be used to input and retrieve data, as well as any reports or dashboards that will be used to display information. The user interfaces should be designed to be intuitive and easy to use, with clear labeling and navigation.

Once the logical design is complete, it can be used to guide the physical design of the student management system. This involves implementing the data model using a database management system such as MySQL or PostgreSQL, and developing the user interfaces using HTML, CSS, and Django.

4.3 Physical Design

The physical design of a student management system involves implementing the logical design in a concrete, tangible form. This involves creating the database schema and writing the code to build the user interfaces using HTML, CSS, and Django. In this article, we will discuss the key considerations for the physical design of a student management system using HTML, CSS, and Django.

Step 1: Choose a Database Management System:

The first step in the physical design of a student management system is to choose a database management system (DBMS) to store the data. Popular options include MySQL, PostgreSQL, and SQLite. The DBMS should be chosen based on the requirements of the system, such as the size of the data, the number of concurrent users, and the level of security needed.

Step 2: Create the Database Schema:

Once the DBMS has been chosen, the next step is to create the database schema. This involves translating the logical data model into a physical database schema, with tables, columns, and relationships between them. The schema should be designed to minimize redundancies and inconsistencies, and to enforce data integrity constraints.

Step 3: Write the Backend Code:

The backend code of a student management system is responsible for managing the data and implementing the business logic of the system. This typically involves writing code in Python using the Django framework. The backend code should be designed to be scalable, robust, and easy to maintain, with a clear separation of concerns between different components.

Step 4: Build the User Interfaces:

The user interfaces of a student management system are responsible for providing an easy-to-use, intuitive interface for users to interact with the system. This typically involves building HTML and CSS templates and using Django's template language to generate dynamic content. The user interfaces should be designed to be responsive and accessible, with clear labeling and navigation.

Step 5: Implement Security Measures:

Security is an important consideration in the physical design of a student management system, especially when dealing with sensitive data such as student records. Measures should be taken to ensure that the system is secure from unauthorized access and that data is stored and transmitted securely. This may involve implementing encryption, using secure protocols such as HTTPS, and implementing authentication and authorization mechanisms.

Step 6: Optimize Performance:

Performance optimization is another important consideration in the physical design of a student management system. The system should be designed to be efficient and scalable, with measures taken to reduce latency and improve response times. This may involve optimizing database queries, using caching mechanisms, and using load balancing to distribute the load across multiple servers.

Step 7: Test and Debug:

Once the physical design of the system is complete, it should be thoroughly tested and debugged to ensure that it works correctly and meets the requirements of the users. This may involve using automated testing tools to test different parts of the system, and using manual testing to ensure that the system is easy to use and meets the needs of the users.

4.4 Design Goals

Agile technique of modelling is used for the designing process of the complete application. Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release. Agile methods are being widely accepted in the software world recently. However, this method may not always be suitable for all products. Here are some pros and cons of the agile mode.

The advantages of the Agile Model are as follows -
- A very realistic approach to Software Development.
- Promotes teamwork and cross training.
- Functionality can be developed rapidly and demonstrated.
- Resource requirements are Minimum.
- Suitable for fixed or changing requirements
- Delivers early partial working solutions.
- Good model for environments that change steadily.
- Minimal rules, documentation easily employed.
- Enables concurrent development and delivery within an overall planned context.
- Little or no planning required.
- Easy to manage.
- Gives flexibility to developers.

4.5 Design Strategy

Design is a meaningful engineering representation of something that is to be built. It can be traced to a customer's requirements and at the same time assessed for quality against a set of predefined criteria for good design. In the software engineering context, design focuses on four major areas of concern: data, architecture, interfaces, and components. The design process translates requirement into representation of software that can be accessed for a quality before core generation. Design is the process through which requirements are translated to blueprint for constructing into software. Initially the blueprint depicts the holistic view of software. This is the design represented at the high level of abstraction. During various stages of system development and design following strategy have been setup for a complete architecture

- Planning
- Analysis
- Design
- Implementation
- Testing
- Deployment

Planning
- Identification of problem
- Requirement Analysis
- Team involvement
- Cost Estimation

Analysis
- Existing Systems and their drawbacks
- Tasks/Module Estimation
- Solving Problem

Design
- Android Application

Implementation
- Mobile device based application with Java, XML and Embeded C
- BLE to transmit data with Edistone Protocol

Testing & Integration
- Unit Testing
- Regression Testing
- Integration Testing
- System Testing

Deployment
- Sends alert to patient's relative and aware nearby people
- Generation of Analysis of patient i.e fall history of patient

Figure 4.1: SDLC for Epilepsy Patient Fall Detection System

4.6 Module Diagram

Module diagrams are used to show the allocation of classes and objects to modules in the physical design of a system, that is module diagrams indicate the partitioning of the system architecture. Through these diagrams it is possible to understand the general physical architecture of a system. The two essential elements of a module diagram are modules and their dependencies. The first three icons denote files specification and the body icon denote files containing the declaration and definition of entities.

Module diagram defines the logic of the model. The following Figure. 4.2 shows the convolution layers at different stages and how they are concentrated and diverged between different layers.
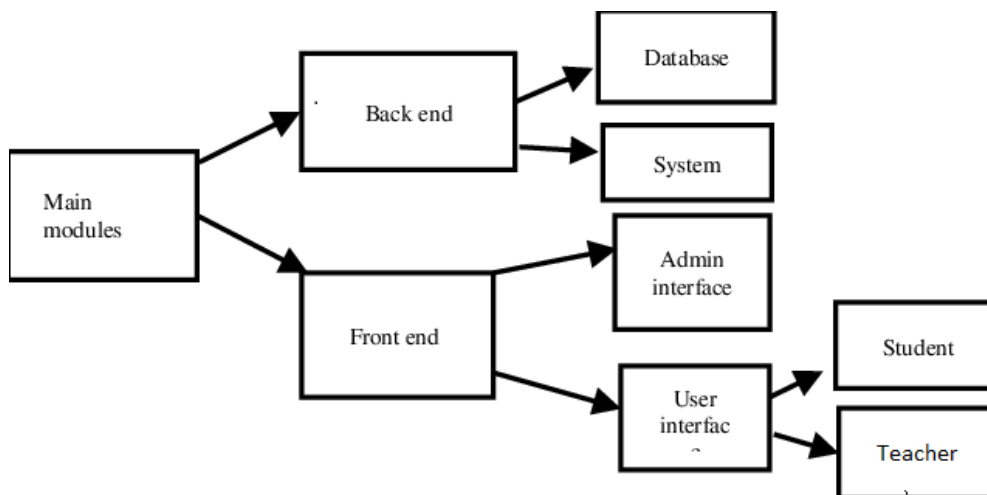
Figure 4.2: Module Diagram for Student Management System

4.7 Architecture diagram

Architecture Diagram Definition - On Dragon an Architecture Diagram is: A graphical representation of the concepts, their principles, elements and components that are part of Architecture. Architecture is a coherent set of concepts for a structure these concepts are often visualized at four levels of abstraction. These are

- Conceptual Level-showing an overview of concepts
- Logical Level showing a logical design of one or more concepts, containing at least the key elements of concepts and showing the principles of the concepts (i.e. how the concepts work)

- Physical Level - showing a component design depicting the elements
- Implementation Level - showing the vendors and products with which the components will be implemented.
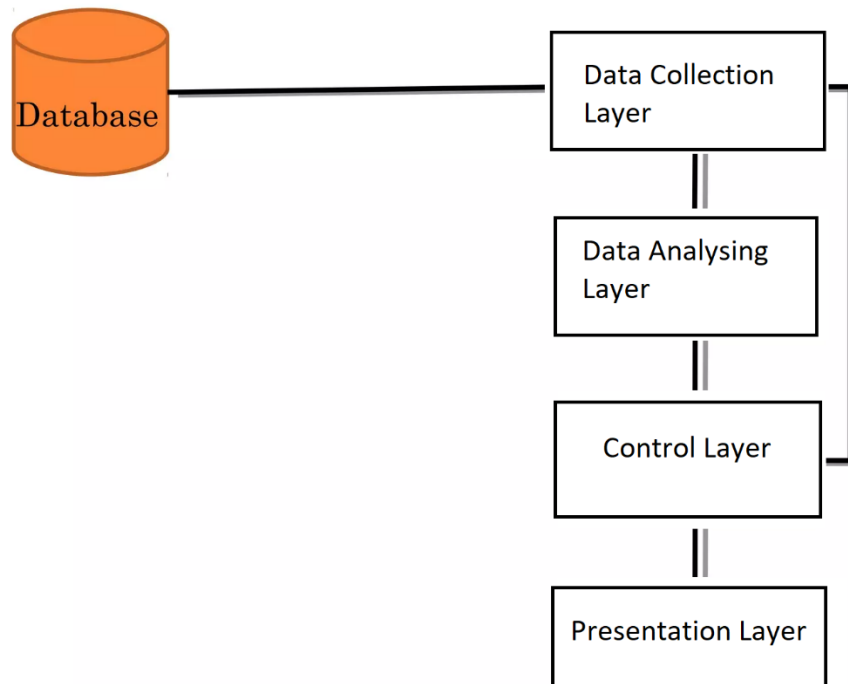
Figure 4.3: Architecture Diagram for Student Management System

4.8 Class Diagram

The class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualization describing and documenting different aspects of a system but also for constructing executable code of the software application. The class diagram describes the attributes and operations of the class and also the constrain imposed on the system. The class diagrams are widely used in the modelling of the object-oriented system because they are the only UML diagram which can be mapped directly with object-oriented languages. UML provides mechanism to represent class members, such as attributes and method and additional information about them.

Here is a more detailed explanation of the elements of a class diagram:

1. Class: A class is a blueprint for creating objects that share common attributes and behaviors. It is represented as a rectangle with the class name written inside.

2. Attribute: An attribute is a piece of information that describes the state of an object. It is represented as a variable inside the class.

3. Method: A method is a function or procedure that can be called on an object to perform a specific action or to return a value. It is represented as a function inside the class.

4. Association: An association is a relationship between two classes that shows how they are connected. It is represented by a line connecting the classes, with an arrow indicating the direction of the relationship. The arrow can be labeled to indicate the type of association, such as "one-to-one," "one-to-many," or "many-to-many."

5. Inheritance: Inheritance is a mechanism by which one class can inherit the properties and methods of another class. It is represented by an arrow with an open triangle pointing from the subclass to the superclass.

6. Aggregation: Aggregation is a type of association that represents a "has-a" relationship between two classes. It is represented by a line with a diamond shape on the end that points to the class that is being aggregated.

7. Composition: Composition is a type of aggregation that represents a strong ownership relationship between two classes. It is represented by a line with a filled diamond shape on the end that points to the class that is being composed.

Overall, a class diagram provides a powerful visual representation of the relationships and structure of a system's classes, helping software developers to understand the architecture of the system and to design efficient, effective software.

Purpose of Class Diagrams

The purpose of class diagram is to model the static view of an application. Class diagrams are the only diagrams which can be directly mapped with object-oriented languages and thus widely used at the time of construction.

UML diagrams like activity diagram, sequence diagram can only give the sequence flow of the application, however class diagram is a bit different. It is the most popular UML diagram in the coder community.

The purpose of the class diagram can be summarized as −

- Analysis and design of the static view of an application.

- Describe responsibilities of a system.

- Base for component and deployment diagrams.

- Forward and reverse engineering

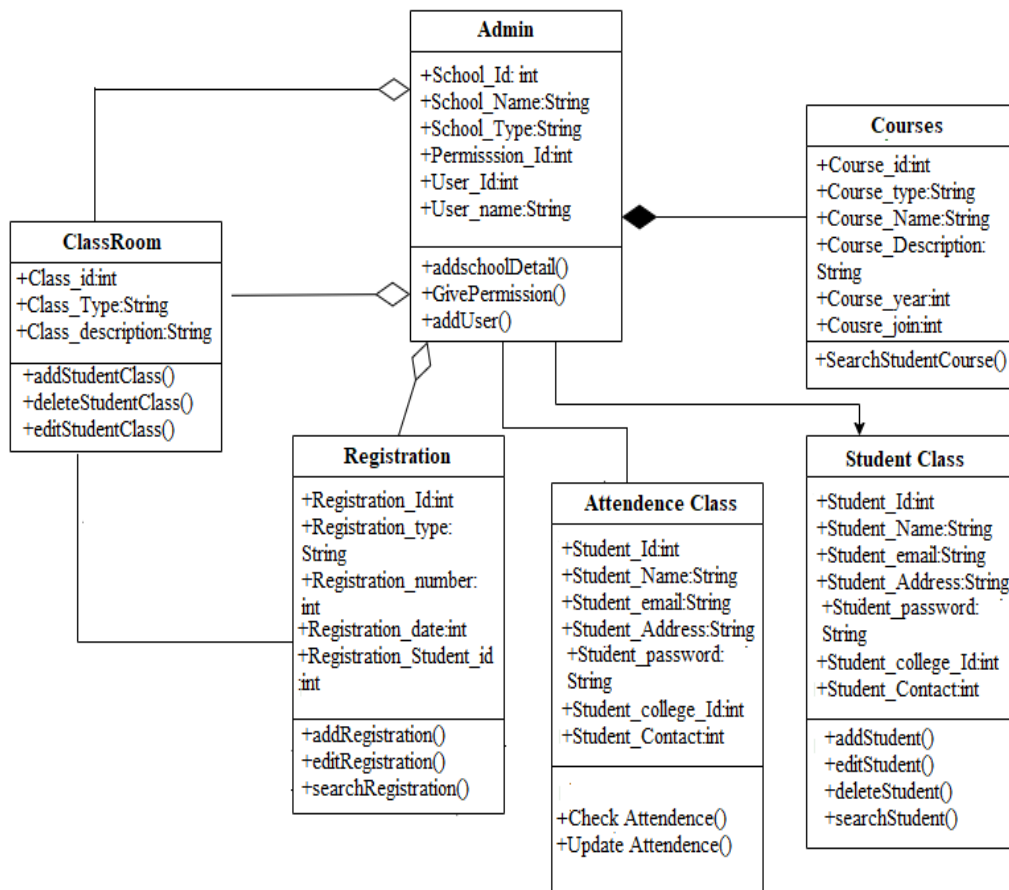Figure 4.4: Class Diagram for Student Management System

4.9 Sequence Diagram

Sequence diagrams in UML are used to illustrate the sequence of messages between objects in an interaction. A sequence diagram consists of a group of objects that are

represented by lifelines and the messages that they exchange over time during the interaction.

Admin can offer courses with all the information like subjects, faculty, days, etc. Admin can View and Add new faculty and student into the system. Admin can View and Add new subjects into the system. Admin can manage subjects, students, and faculty members. Admin can assign faculties to a particular subject accordingly.

Users can access the Attendance and other information anytime. Students can view subject details, attendance details, etc. Students can view results and subject details.

Sequence diagrams are a type of interaction diagram that show how objects interact with each other in a particular system or process. They are a visual representation of the flow of messages between objects in a system, illustrating the order in which those messages are sent and received.

In a sequence diagram, each object is represented as a rectangular box with its name or class at the top. The messages between objects are represented as arrows between the boxes, with the messages labeled to indicate what type of interaction is taking place. The vertical ordering of the boxes represents the timeline of the system, with time flowing downwards on the diagram.

In addition to showing the order of messages between objects, sequence diagrams can also show various types of interactions and scenarios. These include:

1. Conditional branching: If a certain condition is met, a different message will be sent. This is represented by a diamond-shaped box in the diagram.

2. Iteration: A message may be sent multiple times in a loop. This is represented by a loop box in the diagram.

3. Parallelism: Multiple objects may be sending messages concurrently. This is represented by a vertical dotted line on the diagram, with the boxes for each object appearing on separate horizontal lines.

4. Return messages: Some messages may return a value to the sender. This is represented by a dotted arrow pointing back to the sender.

Sequence diagrams can be used to model a wide range of systems, from simple software applications to complex business processes. They are particularly useful for understanding the interactions between different objects in a system and identifying potential issues or bottlenecks. They can also be used to communicate system designs to stakeholders, helping to ensure that everyone has a clear understanding of how the system is intended to function.

Purpose of Sequence Diagrams

- To model high-level interaction among active objects within a system.
- To model interaction among objects inside a collaboration realizing a use case.
- It either model's generic interactions or some certain instances of interaction
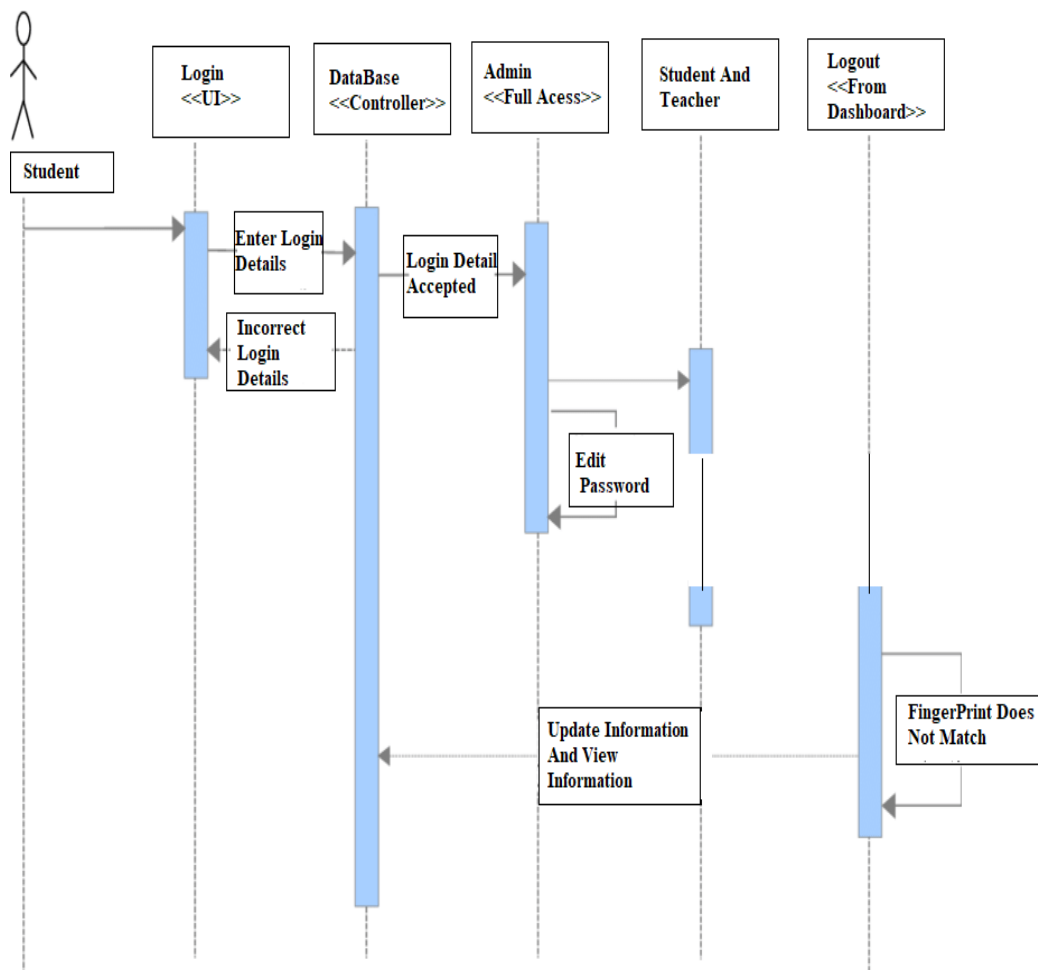

Figure 4.5: Sequence Diagram for Student Management System

4.10 Collaboration Diagram

Collaboration Diagram depicts the relationships and interactions among software objects. They are used to understanding the object architecture within a system rather than the flow of a message as in a sequence diagram.

As per Object-Oriented Programming (OOPs), an object entity has various attributes associated with it. Usually, there are multiple objects present inside an object-oriented system where each object can be associated with any other object inside the system. Collaboration Diagrams are used to explore the architecture of objects inside the system. The message flow between the objects can be represented using a collaboration diagram.

A collaboration diagram, also known as a communication diagram, is a type of UML diagram that illustrates the interactions between objects in a system or application. The main purpose of a collaboration diagram is to show the relationships and interactions among the objects involved in a particular use case or scenario.

Collaboration diagrams are useful for designing and documenting complex systems, especially those that involve multiple objects and interactions. They can help developers and stakeholders to better understand how different objects in a system work together to accomplish specific tasks and can be used to identify potential problems or areas for improvement.

Collaboration diagrams typically include the objects involved in a particular scenario or use case, as well as the messages or interactions between those objects. The diagram may also include information about the order in which messages are sent and received, as well as any conditions or constraints that apply to the interactions between objects.

Overall, the purpose of a collaboration diagram is to provide a clear and concise visualization of the interactions between objects in a system, helping to improve communication and understanding among developers, stakeholders, and other members of a project team.

Purpose of Collaboration Diagrams
- The collaboration diagram is also known as Communication Diagram.

- It mainly puts emphasis on the structural aspect of an interaction diagram, i.e., how lifelines are connected.

- The syntax of a collaboration diagram is similar to the sequence diagram; just the difference is that the lifeline does not consist of tails.

- The messages transmitted over sequencing is represented by numbering each individual message.

- The collaboration diagram is semantically weak in comparison to the sequence diagram.

- The special case of a collaboration diagram is the object diagram.

- It focuses on the elements and not the message flow, like sequence diagrams

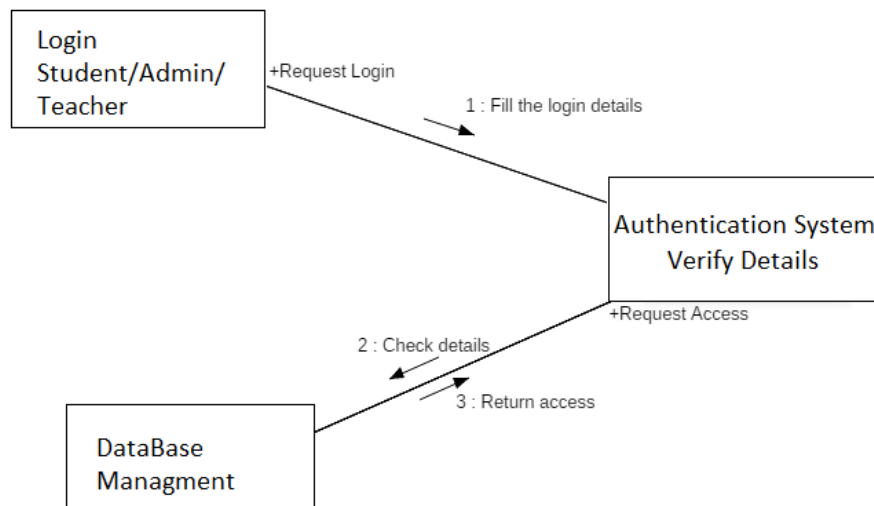Figure 4.6: Collaboration Diagram for Student Management System

4.11 State Chart Diagram

A state chart diagram, also known as a state machine diagram, is a type of behavior diagram in UML that depicts the various states and transitions of an object. In the context of a student management system, a state chart diagram can be used to model the various states and transitions that a student can go through in the system.

In the state chart diagram, the student object has three states: enrolled, check profile, and login/logout. The transitions between these states are triggered by events such as "complete work" or "violate academic integrity."

Purpose of State Chart Diagrams

State chart diagram is one of the five UML diagrams used to model the dynamic nature of a system. They define different states of an object during its lifetime and these states are changed by events. State chart diagrams are useful to model the reactive systems. Reactive systems can be defined as a system that responds to external or internal events. State chart diagram describes the flow of control from one state to another state. States are defined as a condition in which an object exists and it changes when some event is triggered. The most important purpose of State chart diagram is to model lifetime of an object from creation to termination.

State chart diagrams are also used for forward and reverse engineering of a system. However, the main purpose is to model the reactive system.

When a student is enrolled, they can either complete their coursework and move to the graduated state or violate academic integrity and move to the suspended state. When a student is suspended, they can either serve their suspension and move back to the enrolled state or violate academic integrity again and move to the expelled state. Finally, when a student is in the graduated state, they cannot transition to any other state.

This state chart diagram can be useful in the design and implementation of a student management system, as it provides a clear and concise way to model the behavior of the system's student objects.

Following are the main purposes of using State chart diagrams –

- To model the dynamic aspect of a system.
- To model the lifetime of a reactive system.
- To describe the different states of an object during its lifetime.
- Define a state machine to model the states of an object.
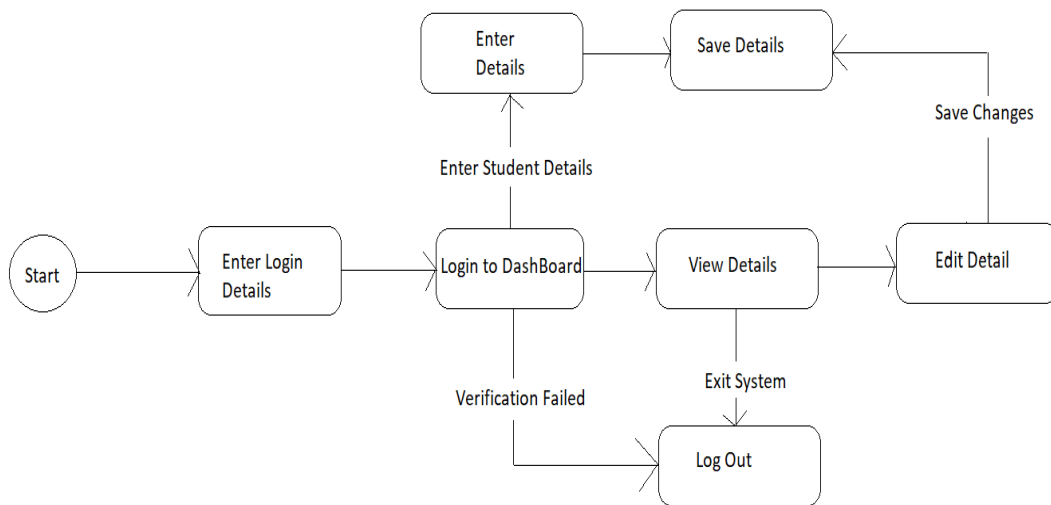
Figure 4.7: State Chart Diagram for Student Management System

4.12 Activity Diagram

The activity diagram starts with the Monitoring state, where the system continuously monitors the user's movements an activity diagram is a type of behavior diagram in UML (Unified Modeling Language) that shows the flow of activities and actions within a system. In the context of a student management system, an activity diagram can be used to represent the different processes and interactions that take place between the system and its users (students, teachers, administrators, etc.) in order to manage student data, academic records, and other related tasks.

The diagram begins with the start activity, which represents the start of the student management system. From there, the diagram shows several different activities and decision points:

Login: This activity represents the process of logging into the system. The system prompts the user to enter their login credentials (username and password) and then verifies them before granting access to the system. If the credentials are invalid, the user is prompted to try again.

View student list: Once logged in, the user can view a list of all students enrolled in the system. This activity retrieves the student data from the system and displays it to the user.

Add new student: If the user wants to add a new student to the system, they can choose this activity. The system prompts the user to enter the student's information (name, ID, etc.) and then adds the student to the system.

Edit student information: If the user wants to edit the information for an existing student, they can choose this activity. The system prompts the user to select the student they want to edit and then displays their current information. The user can then make changes to the information and save the updated data.

Delete student: If the user wants to remove a student from the system, they can choose this activity. The system prompts the user to select the student they want to delete and then removes their data from the system.

View student details: If the user wants to view the detailed information for a specific student, they can choose this activity. The system prompts the user to select the student they want to view and then displays their full academic record and other related information.

Logout: Finally, the user can choose this activity to log out of the system and end their session.

Purpose of Activity Diagrams

The basic purpose of activity diagrams is similar to other UML diagrams. It captures the dynamic behavior of the system. Other UML diagrams are used to show the message flow from one object to another, but the activity diagram is used to show message flow from one activity to another. Activity is a particular operation of the system.

Activity diagrams are not only used for visualizing the dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in the activity diagram is the message part. It does not show any message flow from one activity to another. Activity diagram is sometimes considered as the flowchart. Although the diagrams look like a flowchart, they are not. It shows different flows such as parallel, branched, concurrent, and single.

The purpose of an activity diagram can be described as:

- Draw the activity flow of a system.

- Describe the sequence from one activity to another.

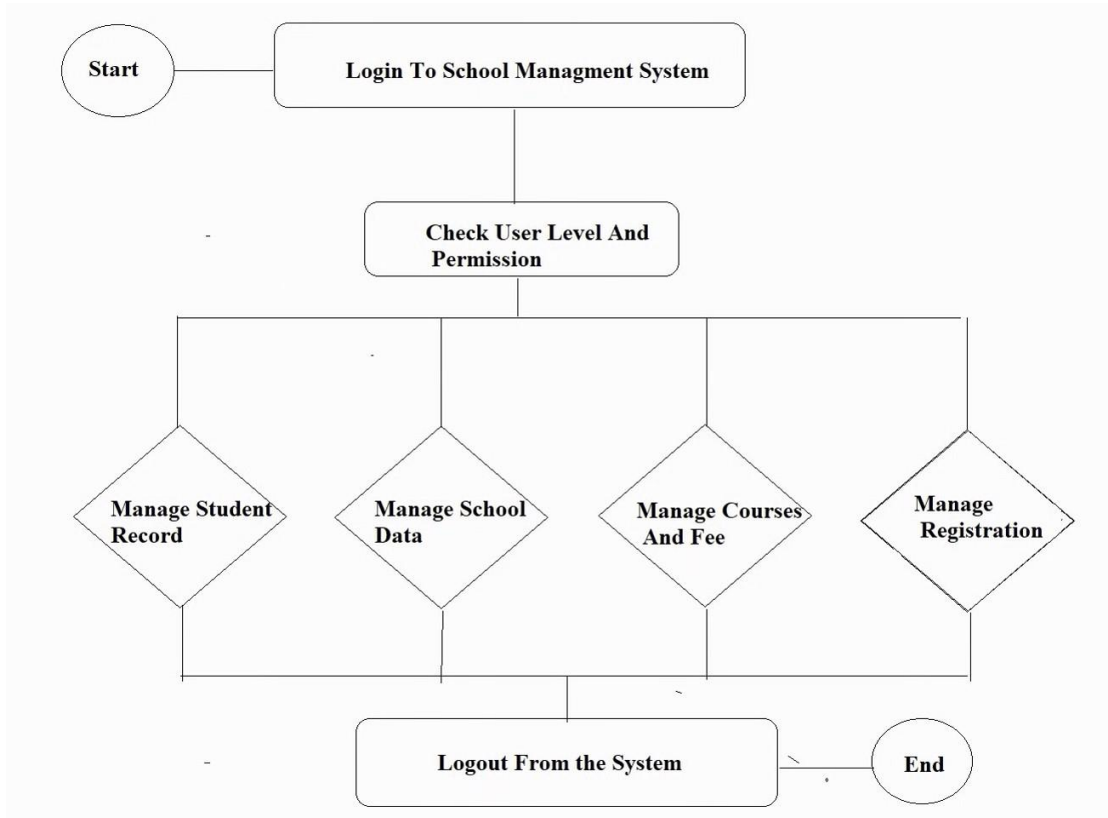- Describe the parallel, branched, and concurrent flow of the system

Figure 4.8: Activity Diagram for Student Management System

5. IMPLEMENTATION

5.1 Implementation Strategy

There are various processes involved in creating a school management website utilizing HTML, CSS, JavaScript, and Django Python:

Requirement Evaluation:

Step one inside the improvement of the pupil management device is to accumulate the necessities from the stakeholders (college students, instructors, and admin). Interviewing teachers, students, and administrators to learn about their needs and preferences is one way to do this. This consists of identifying the functions and functionalities required via every stakeholder, such as get marks, attendance, charge information, and so on.

1. Machine Layout: After reading the necessities, the subsequent step is to design the machine architecture. This consists of designing the front-quit interface the usage of HTML and CSS and the lower back end the use of the Django programming language. This makes it easier to understand the website's structure and guarantees that it is user-friendly and simple to use. The layout of the database and user authentication mechanism should additionally be taken into consideration to this degree.

2. Implementation: The implementation degree entails the real development of the pupil control gadget. The front-end interface should be developed with the use of HTML and CSS, at the same time as the returned cease needs to be advanced using the Django programming language. The headings, paragraphs, and links that make up the webpage are all created using HTML tags. To increase the website's usability and SEO, semantic HTML elements are crucial. Then add visual styling and layout to the website by applying CSS styles to the HTML elements. Determining typefaces, colors, margins, padding, and element placement falls within this category. Additionally, CSS may be used to build responsive designs that change according to the screen size and device being utilized. then use JavaScript to incorporate dynamic behavior and interactivity

into the webpage. Then use Django Python to implement the website's backend. The database ought to be set up and related to the system.

3. Testing: As soon as the device is evolved, it desires to be tested thoroughly to ensure that it meets the necessities of the stakeholders. This involves trying out the machine for functionality, usability, security, and overall performance. Any insects or troubles must be fixed earlier than the gadget is deployed.

4. Deployment: Once the device has been tested and is deemed ready to be used, it may be deployed to the production environment. This involves putting the device on a server and making sure that it is handy to the collaborators.

5. Maintenance and Guide: After the device is deployed, it requires ongoing maintenance and assistance to ensure that it keeps meeting the needs of the collaborators, including new features as required, and presenting assistance to the collaborators in case of any problems or issues. This includes establishing the project's parameters, developing a schedule, delegating duties to team members, and keeping an eye on development.

5.2 Hardware Platform Used

For making this project we need many hardware platforms without which this project is impossible.

- Laptop/PC
- System: Intel Processor i5/above
- Hard Disk: 500GB
- RAM:4-8GB

5.3 Software Platform Used

- Operating System
- VS Code
- PyCharm
- MySQL

5.4 Deployment Diagram

Deployment diagrams are used to visualize the topology of the physical components of a system, where the software components are deployed as shown in the Figure below. Deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consist of nodes and their relationships.

Here is a more detailed explanation of the elements of a deployment diagram:

Node: A node represents a physical element that can host software components, such as a server, PC, or mobile device. It is represented as a box with the node name written inside.

Component: A component is a modular unit of software that can be deployed and executed independently. It represents a part of the system's functionality and can be developed, tested, and deployed separately from other components. It is represented as a rectangle with the component name written inside.

Artifact: An artifact is a physical file that is deployed to a node. It can be a software executable, a configuration file, a script, or any other type of file that is required to run the system. It is represented as a rectangle with the artifact name written inside.

Deployment: A deployment is a relationship between a component or artifact and a node that represents the physical deployment of the component or artifact on the node. It is represented by a dashed line that connects the component or artifact to the node.

Dependency: A dependency is a relationship between two components or artifacts that indicates that one component or artifact depends on another to function correctly. It is represented by an arrow that points from the dependent component or artifact to the independent component or artifact.

Association: An association is a relationship between a component or artifact and a node that represents an interaction between the component or artifact and the node, such as a communication or data exchange. It is represented by a solid line that connects the component or artifact to the node.

Interface: An interface is a contract between a component or artifact and its environment that defines the methods or services that the component or artifact

provides or consumes. It is represented by a circle with the interface name written inside and is connected to the component or artifact by a dashed line.

Overall, a deployment diagram provides a powerful visual representation of the physical deployment of a system, helping software developers and system administrators to understand how the system is deployed and how it interacts with the hardware and network infrastructure. This can be invaluable in optimizing the system's performance and identifying potential deployment issues.

Figure 5.1: Deployment Diagram of Student Management System
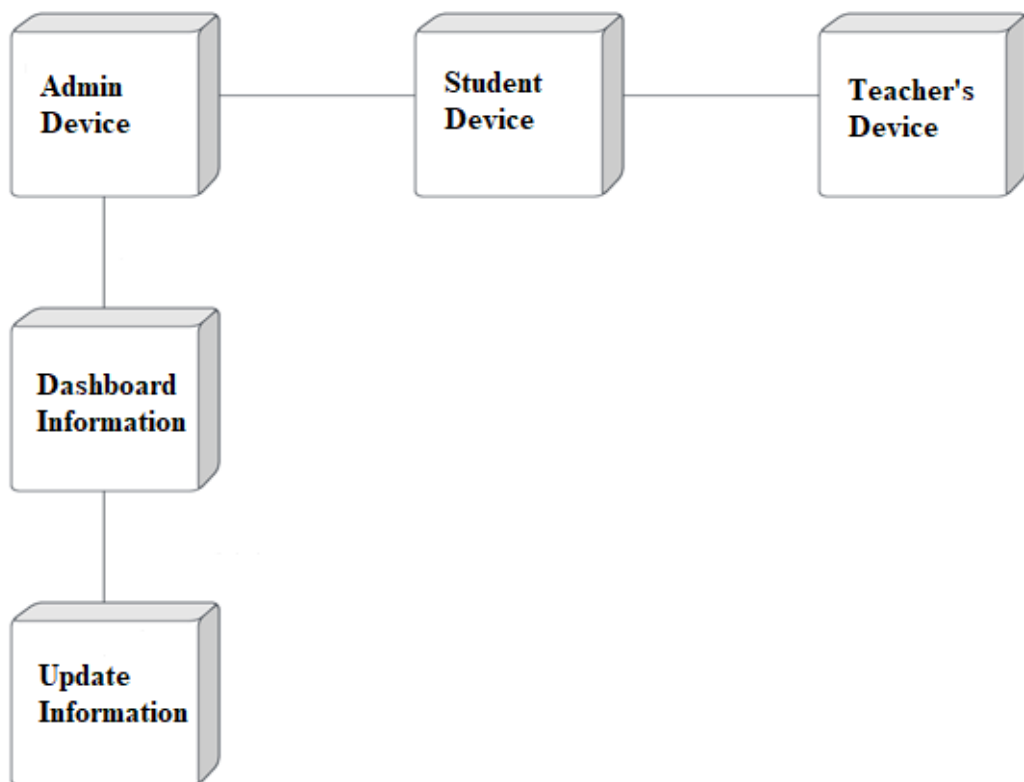
5.5 Implementation Level Details

The implementation degree entails the real development of the pupil control gadget. The front-end interface should be developed with the use of HTML and CSS, at the same time as the returned cease needs to be advanced using the Django programming language. The headings, paragraphs, and links that make up the webpage are all created

using HTML tags. To increase the website's usability and SEO, semantic HTML elements are crucial. Then add visual styling and layout to the website by applying CSS styles to the HTML elements. Determining typefaces, colors, margins, padding, and element placement falls within this category. Additionally, CSS may be used to build responsive designs that change according to the screen size and device being utilized. then use JavaScript to incorporate dynamic behavior and interactivity into the webpage. Then use Django Python to implement the website's backend. The database ought to be set up and related to the system.Here is a detailed explanation of the implementation points for a student management website using HTML, CSS, and Django.

1. HTML and CSS Implementation:

HTML and CSS are two fundamental technologies for building websites. HTML stands for Hyper Text Markup Language and is used to structure content on web pages, while CSS stands for Cascading Style Sheets and is used to style the appearance of web pages. HTML and CSS are used to design the user interface of the website. HTML is used to create the structure of the web page, while CSS is used to style it. The HTML and CSS implementation includes the following steps:

Wireframes and Mockups: Before implementing the website, it is important to design the wireframes and mockups of the website. These help in visualizing the layout and design of the website. It is important to design wireframes and mockups that align with the project requirements.

HTML Structure: Once the wireframes and mockups are finalized, the next step is to create the HTML structure of the website. This involves creating the basic structure of the web page, including the header, footer, and navigation menu. It also involves creating the main content of the web page.

CSS Styling: After creating the HTML structure, the next step is to style the web page using CSS. This involves adding colors, fonts, and other design elements to make the website visually appealing. It is important to use CSS best practices, such as using external stylesheets and optimizing the code for faster page load times.

2. Django Implementation

Django is a web framework for Python that provides tools and libraries for building web applications. The Django implementation includes the following steps:

Installation: The first step is to install Django and its dependencies. This can be done using a package manager like pip or by downloading the source code.

Project Setup: Once Django is installed, the next step is to set up the project. This involves creating a Django project, configuring the database, and setting up the static files directory.

Application Creation: After setting up the project, the next step is to create a Django application. This involves creating a new app within the project and configuring the settings for the app.

URL Routing: The next step is to set up URL routing for the website. This involves defining the URL patterns for the app and configuring the URL routing settings in the Django project.

View Functions: Once the URL routing is set up, the next step is to define the view functions for the app. These functions handle the requests from the user and generate the HTML content to be displayed on the web page.

Models: Django provides a built-in Object-Relational Mapping (ORM) system that allows developers to interact with the database using Python objects. The next step is to define the models for the app. These models define the structure of the data and the relationships between different objects.

Templates: Django provides a template system that allows developers to separate the HTML code from the view functions. The next step is to create the templates for the app. These templates define the structure of the HTML code and use template tags and filters to generate dynamic content.

Forms: Django provides a forms library that allows developers to create HTML forms using Python classes. The next step is to create the forms for the app. These forms define the fields and validation rules for the data entered by the user.

3. Integration

The final step is to integrate the HTML, CSS, and Django code to create the final student management website. This involves creating HTML templates that use the

Django template system, integrating the CSS stylesheets, and connecting the view functions to the database models and forms.

The integration step also involves testing the website to ensure that all the features are working correctly. This includes testing the user authentication system, testing the database integration, and testing the data visualization features.

In conclusion, implementing a student management website using HTML, CSS, and Django requires a thorough understanding of web development concepts and best practices. The implementation process involves designing the user interface using HTML and CSS

5.5.1 Technology Used:

5.5.1.1 Html and Css:

HTML and CSS are essential components in the development of a student management system project. HTML (Hypertext Markup Language) is the standard markup language used to create web pages, while CSS (Cascading Style Sheets) is used for styling the web pages. In a student management system, HTML is used to create the various web pages that make up the system, such as the login page, the dashboard, the student profile page, etc. HTML provides the structure and content of the web pages, including text, images, forms, and other elements.

A student management system is a software application that helps educational institutions manage student information, academic records, and other administrative tasks. The system typically consists of a user interface that allows users such as teachers, administrators, and students to interact with the system.

HTML is a markup language that is used to create the structure and content of web pages. In a student management system, HTML is used to create the various pages that make up the system. For example, the login page, the dashboard, the student profile page, the course registration page, and so on. HTML provides a standardized way of defining the structure and content of web pages, making it easy to create and maintain web pages across different browsers and platforms.

When creating a web page using HTML, you start by defining the structure of the page using HTML tags. HTML tags are elements that define different parts of a web page, such as headings, paragraphs, links, and images. You can use HTML tags to define the content and layout of a web page, as well as add interactive elements such as forms and buttons.

CSS is then used to style the web pages created using HTML. CSS provides a way to apply styles to various HTML elements, such as font styles, color, layout, and other visual properties. With CSS, you can create a consistent and visually appealing design across all the web pages of the student management system.

CSS, on the other hand, is used to style the web pages created using HTML. CSS provides a way to define the visual properties of HTML elements, such as font styles, colors, layout, and other design elements. With CSS, you can create a consistent and visually appealing design across all the web pages of the student management system.

5.5.1.2 Django:

Django is a popular web framework that can be used to develop a wide range of web applications, including a student management system. With Django, you can create a robust and scalable application that allows students and faculty to manage course schedules, assignments, grades, and more.

Here are some of the features that you might consider including in your Django-based student management system:

1. User authentication and authorization: You can use Django's built-in user authentication and authorization system to ensure that only authorized users can access the system.

2. Course Management: Allow instructors to create and manage courses and allow students to enroll in and drop courses.

3. Assignment Management: Enable instructors to create and manage assignments and allow students to submit their assignments and receive feedback.

4. Grade Management: Allow instructors to enter grades and feedback for assignments and exams and allow students to view their grades.

5. Messaging system: Allow students and instructors to communicate with each other via a messaging system.

6. Reporting and analytics: Provide detailed reports and analytics to help instructors and administrators track student performance and identify areas for improvement.

Overall, Django can provide a powerful and flexible framework for developing a student management system that meets the specific needs of your educational institution.

To implement a student management system using HTML, CSS, and Django, you can follow the following steps:

1. Design the user interface using HTML and CSS: Start by designing the interface for your student management system using HTML and CSS. You can use a template or create your own design based on your requirements.

2. Create a Django project: Once the user interface is designed, create a new Django project using the command "Django-admin start project name". This will create a new Django project with the name you provide.

3. Configure the database: Configure the database settings in the settings.py file of your Django project. You can use any database you prefer, but for this project, SQLite is recommended.

4. Define models: Define the models for your student management system. These models will be used to store the data for your system in the database. For example, you could define models for students, classes, grades, and assignments.

5. Create views: Create views for your student management system. These views will handle user requests and generate the appropriate responses. For example, you could

create views for adding new students, viewing student details, and submitting assignments.

6. Create templates: Create templates for your views. These templates will define the structure and layout of the HTML pages that will be displayed to the user.

7. Define URLs: Define the URLs for your views. These URLs will map user requests to the appropriate views.

8. Test the system: Test your student management system to ensure that it is functioning as expected. You can use the Django development server to test the system locally.

9. Deploy the system: Finally, deploy your student management system to a web server so that it can be accessed by users. You can use a cloud platform such as Heroku or AWS to deploy your system.

By following these steps, you should be able to create a functional student management system using HTML, CSS, and Django.

5.6 Testing

Software testing can be stated as the process of verifying and validating whether a software or application is bug-free, meets the technical requirements as guided by its design and development, and meets the user requirements effectively and efficiently by handling all the exceptional and boundary cases.

The process of software testing aims not only at finding faults in the existing software but also at finding measures to improve the software in terms of efficiency, accuracy, and usability. It mainly aims at measuring the specification, functionality, and performance of a software program or application.

Software testing can be divided into two steps:

1. Verification: It refers to the set of tasks that ensure that the software correctly implements a specific function.

2. Validation: It refers to a different set of tasks that ensure that the software that has been built is traceable to customer requirements.

When the project is done and is in the working stage the project is to be tested before bringing it into practice. So, for this there are various testing technique as shown below:

5.6.1 Unit Testing

Unit Testing is a type of software testing where individual units or components of a software are isolated from a section of code and verify its correctness. A unit may be an individual function, method, procedure, module, or object. Unit tests are automated and are run each time the code is changed to ensure that the new code does not break existing functionality. Unit tests are designed to validate the smallest possible unit of code, such as a function or a method, and test it in isolation from the rest of the system. This allows developers to quickly identify and fix any issues early in the development process, improving the overall quality of the software and reducing the time required for later testing. In SDLC, Unit testing is the first level of testing technique that is usually performed.

5.6.1.1 Objective of Unit testing:

- To isolate a section of code.
- To verify the correctness of the code.
- To test every function and procedure.
- To fix bugs early in the development cycle and to save costs.
- To help the developers to understand the code base and enable them to make changes quickly.
- To help with code reuse.

5.6.1.2 Advantages of Unit Testing:

1. Early Detection of Issues
2. Improved Code Quality
3. Faster Development
4. Better Documentation
5. Facilitation of Refactoring
6. Reduced Time and Cost

5.6.1.3 Disadvantages of Unit Testing:

1. The process is time-consuming for writing the unit test cases.
2. Unit testing will not cover all the errors.
3. Unit testing is not efficient for checking the errors in the UI.
4. It requires more time for maintenance when source code is changed frequently.
5. Difficulty in testing complex units.

5.6.2 Regression Testing

Tests the software after changes or modifications have been made to ensure the changes have not introduced new defects. Regression testing is a black box testing technique. It is used to authenticate a code change in the software does not impact the existing functionality of the product. Regression testing is making sure that the product works fine with new functionality, bug fixes, or any change in the existing feature. Regression testing is a type of software testing. Test cases are re-executed to check the previous functionality of the application is working fine, and the new changes have not produced any bugs.

Regression testing can be performed on a new build when there is a significant change in the original functionality. It ensures that the code still works even when the changes are occurring. Regression means Re-test those parts of the application, which are unchanged. Regression tests are also known as the Verification Method. Test cases are often automated. Test cases are required to execute many times and running the same test case again and again manually, is time-consuming and tedious too.

5.6.2.1 Advantages of Regression Testing:

1. Regression Testing increases the product's quality.
2. It ensures that any bug fix or changes do not impact the existing functionality of the product.
3. Automation tools can be used for regression testing.
4. It makes sure the issues fixed do not occur again.

5.6.2.2 Disadvantages of Regression Testing:

1. Regression Testing should be done for small changes in the code because even a slight change in the code can create issues in the existing functionality.

2. If in case automation is not used in the project for testing, it will be a time consuming and tedious task to execute the test again and again.

5.6.3 Integration Testing

Tests the integration of different components of the software to ensure they work together as a system. Integration testing is the second level of the software testing process that comes after unit testing. In this testing, units or individual components of the software are tested in a group. The focus of the integration testing level is to expose defects at the time of interaction between integrated components or units. Unit testing uses modules for testing purposes, and these modules are combined and tested in integration testing. The Software is developed with a number of software modules that are coded by different coders or programmers. The goal of integration testing is to check the correctness of communication among all the modules. Once all the components or modules are working independently, then we need to check the data flow between the dependent modules is known as integration testing. Integration testing is a software testing technique that focuses on verifying the interactions and data exchange between different components or modules of a software application. The goal of integration testing is to identify any problems or bugs that arise when different components are combined and interact with each other.

5.6.3.1 Advantages of Integration Testing:

1. It is convenient for small systems.
2. Simple and straightforward approach.
3. Can be completed quickly.
4. Does not require a lot of planning or coordination.
5. May be suitable for small systems or projects with a low degree of interdependence between components.

5.6.3.2 Disadvantages of Integration Testing:

1. There will be quite a lot of delay because we have to wait for all the modules to be integrated.

2. High-risk critical modules are not isolated and tested on priority since all modules are tested at once.

3. Not good for long projects.

4. High risk of integration problems that are difficult to identify and diagnose.

5. Can lead to system downtime and increased development costs.

6. Can lead to decreased efficiency and productivity.

5.6.4 System Testing

Tests the complete software system to ensure it meets the specified requirements. System testing is a type of software testing that evaluates the overall functionality and performance of a complete and fully integrated software solution. It tests if the system meets the specified requirements and if it is suitable for delivery to the end-users. This type of testing is performed after the integration testing and before the acceptance testing. System Testing is a type of software testing that is performed on a complete integrated system to evaluate the compliance of the system with the corresponding requirements. In system testing, integration testing passed components are taken as input. The goal of integration testing is to detect any irregularity between the units that are integrated together. System testing detects defects within both the integrated units and the whole system. The result of system testing is the observed behavior of a component or a system when it is tested. System Testing is carried out on the whole system in the context of either system requirement specifications or functional requirement specifications or in the context of both. System testing tests the design and behavior of the system and also the expectations of the customer.

System Testing Main Focus Areas:

- Hardware Interfaces: System interfaces like software connectivity with USB port, reading DVDs, etc. are working fine in a system.

- Complex functionalities: System is behaving as expected for complex functions like output to a file in desired format, etc.

- System Security: System integrated as a whole is secured enough and allows intended users to access the system functionalities assigned to user.

- Disaster Recovery / COB Testing: How long a system doing to take to recover from outage or disaster without impacting the continuity of business.

- Performance Testing: Performance testing is done to make sure the system is able to withstand the unexpected load or request without breakdown.

- User Interface: How easily the system responds to user interface for request like AJAX call, button click, file upload, etc.

- Install ability: How easy the software is to get installed without much effort or knowledge needed.

- Documentation: How efficiently use manual is documented to use software by end user.

- Usability: How easy the system software is designed so that it can be put into use by naïve users.

- Load or stress testing: This testing defines the maximum load capacity of the system software before it could breakdown or crash.

- Back-activity Compatibility: If a new version of software is developed, new system should make sure that it supports all the existing interfaces and

5.6.4.1 Advantages of System Testing:

1. Testers do not require more knowledge of programming.
2. It will test the entire product or software so that we will easily detect the errors.
3. The testing environment is similar to that of real time production.
4. It checks the entire functionality of the system with different test cases.
5. After this testing, the product will almost cover all the possible bugs or errors and hence the development team will confidently go ahead with acceptance testing.

5.6.4.2 Disadvantages of System Testing:

1. This testing is time consuming process than others.

2. The cost for the testing will be high since it covers the testing of the entire software.

3. It needs a good debugging tool otherwise the hidden errors will not be found.

5.6.5 Functional Testing

Checks an application, website, or system to ensure it's doing exactly what it's supposed to be doing. Functional testing is the process of validating functionality of a software application. Pass or fail is the result of a functional test, because either a feature works as designed or it does not.

The purpose of functional testing is to validate that the requirements of the software application have been met. It is important because functional testing assesses an application's fitness to be released to end users. While software engineering has evolved in the past decade, functional testing remains a core part of quality testing.

5.6.5.1 Advantage of Functional Testing:

1. It helps to identify any issues with the system's functionality before they become too much of a problem.

2. It can be used to verify that required features are working as expected and that the system is able to cope with unexpected conditions.

3. It can help to ensure that the product meets customer expectations and is bug-free.

4. It is an effective way to test the system under a variety of conditions and in a variety of scenarios.

5. It can be used to track progress and revise testing plans as needed.

5.6.5.2 Disadvantages of Functional Testing:

1. Functional testing is slow - Because functional testing is a detailed process, it can take a long time to complete. This can be a problem if you need to test a new feature quickly.

2. Functional testing is less accurate - Functional testing is less reliable than other types of tests because it relies on the actual function of the software being tested. This means that it can be difficult to find bugs that occur during normal usage.

3. Functional testing can be tedious - Because functional testing is focused on the actual functionality of the software, it can be tedious to conduct. This can lead to slow test times and missed bugs.

4. Functional testing is more expensive -functional testing is more expensive than other types of tests because it requires more time and effort to complete.

6. BLOCK DIAGRAM/FLOW CHART

6.1 Block Diagram

A block diagram is a graphical representation of a system or process that shows the major components or subsystems and the interconnections between them. It is a visual way to represent the functional relationships between the components of a project or system. A block diagram consists of blocks that represent the major components of a system or process, and lines that represent the connections or interfaces between the blocks. The blocks are often labeled with the name or function of the component, and the lines are labeled with the type of connection or interface between the components. Block diagrams are commonly used in many different fields, including engineering, electronics, software development, and project management. They are used to describe complex systems or processes in a simple and easy-to-understand way, and they can be used to communicate the design and functionality of a project to stakeholders and team members.

The importance of block diagrams can be summarized as follows:

- Visualization and Understanding: Block diagrams provide a visual representation of complex systems or processes that can help to understand and analyze the various components and their interactions. By representing a system or process in a graphical form, it can be easier to identify and analyze problems or bottlenecks.

- Communication: Block diagrams serve as a common language between different stakeholders who are involved in the design, development, and implementation of a system or process. They can be used to communicate complex concepts and ideas effectively to team members, customers, and other stakeholders.

- Design and Optimization: Block diagrams can be used to design and optimize systems or processes by identifying and analyzing the various components and their interactions. They can be used to test different scenarios and identify the most efficient or effective design.

- Documentation: Block diagrams provide a useful way to document systems or processes, as they provide a clear and concise representation of the various components and their interactions. They can be used to create user manuals, technical documentation, and other types of documentation.

- Troubleshooting and Maintenance: Block diagrams can be used as a troubleshooting tool to identify problems or faults in a system or process. By analyzing the various components and their interactions, it can be easier to identify the root cause of a problem and implement the necessary corrective actions.

Overall, block diagrams are an important tool for visualizing, designing, documenting, and optimizing complex systems or processes, and they play a critical role in many fields of engineering and science.

This block diagram drift highlights the primary functionalities and additives of your student management system. Depending on the requirements and complexity of the project, the actual block diagram may change.
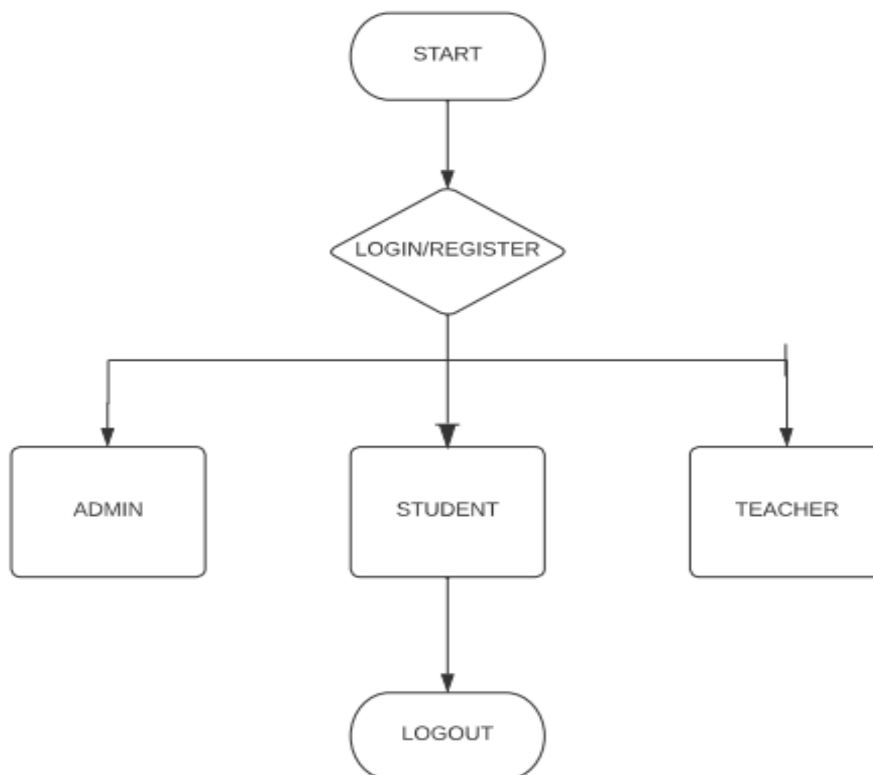

Figure 5.1: Block Diagram for Student Management System

The block diagram demonstrates the interdependence of the front-end, back-end, and database to deliver a comprehensive school management website solution. The back end and database make sure that the website is secure, scalable, and can handle a high amount of data and traffic, while the UI gives users of the website an intuitive and user-friendly experience.

User Authentication: The user login with their credentials. The system verifies the user's identity and presents get admission to their dashboard.

Scholar Dashboard: Students can view their attendance, marks, charges info and much more. Students can add pictures of any event taking place inside the school. Students can update their profile data.

Teacher Dashboard: Teachers can view the attendance, marks, and expenses details of their students. Instructors can upload marks and look at their own profile information. Instructors can upload photos of any occasion going on within the school.

Admin Dashboard: The admin can control user rights and obligations. Admin has access to the device's ratings and metrics. System configurations and settings can be managed and changed by the admin.

Database: The system stores all information associated with college students, instructors, and admin. The system guarantees facts safety and privateness via encryption and gets right of entry to controls.

Integration: The frontend and backend of the device included the use of the Django framework. The device makes use of HTML and CSS for the front-end design and presentation. Django Python is used to create the backend since it offers a dependable and scalable web framework for creating web applications.

6.2 Flowchart

A flowchart is a type of diagram that represents a process or workflow. It is a visual representation of the steps involved in a project or process, and the sequence in which those steps occur. A flowchart typically uses symbols and arrows to represent the various steps in a process, along with decision points and branching paths.Flowcharts

are commonly used in project management to help visualize and communicate complex processes. They are useful for identifying inefficiencies, bottlenecks, and potential areas of improvement in a project or process. Flowcharts are an essential tool for visualizing and documenting processes, workflows, and procedures in various fields, including project management, software development, engineering, and business management. They help break down complex systems or processes into simple, easy-to-understand diagrams, making it easier to communicate ideas, identify inefficiencies, and improve processes.

Importance of flowchart:

1. Provides clarity and understanding:

Flowcharts provide a clear and easy-to-understand visual representation of a process or workflow. They help break down complex processes into simple, easy-to-follow steps, making it easier for team members, stakeholders, and clients to understand the process and identify areas for improvement.

2. Improves communication:

Flowcharts are an effective tool for communicating complex processes and workflows to team members, stakeholders, and clients. They provide a common visual language that allows everyone to understand and interpret the process in the same way. By improving communication, flowcharts can help ensure that everyone is on the same page and working towards the same goal.

3. Identifies inefficiencies and bottlenecks:

Flowcharts can help identify inefficiencies and bottlenecks in a process or workflow. By visualizing the process, team members can identify steps that are unnecessary, time-consuming, or redundant. This can lead to the elimination of unnecessary steps, streamlining of workflows, and faster completion times.

4. Facilitates decision-making:

Flowcharts can help with decision-making by providing a visual representation of the available options and potential outcomes. By mapping out the different paths that a process or workflow can take, team members can make informed decisions based on the available information and the potential consequences of their actions.

5. Helps with process improvement:

Flowcharts are an essential tool for process improvement. By identifying inefficiencies and bottlenecks, team members can develop strategies to improve the process and reduce cycle times. Flowcharts can also help with testing and validating new processes before they are implemented.

6. Enables process standardization:

Flowcharts can help standardize processes and workflows across teams, departments, and organizations. By creating a visual representation of the process, team members can develop a common understanding of how the process works and what is expected at each step. This can lead to more consistent and predictable outcomes and improve the quality of work.

7. Enhances quality control:

Flowcharts are an important tool for quality control. By mapping out the process and identifying potential sources of error or defects, team members can develop strategies to prevent or minimize these issues. This can help ensure that the final product or service meets the required standards and specifications.

8. Facilitates training and onboarding:

Flowcharts can be used to train new team members and onboard new hires. By providing a visual representation of the process, team members can quickly understand how the process works and what is expected of them at each step. This can help reduce the learning curve and improve the speed at which new team members become productive.

Flowcharts are used in many fields, including software development, engineering, project management, and business process management. They are often used to document and communicate processes, troubleshoot problems, identify bottlenecks, and optimize workflows.

The symbols used in a flowchart represent different types of actions or steps in a process. Some common symbols include:

- Start/end symbol: Indicates the beginning or end of a process.
- Process symbol: Represents a step or action in the process.

- Decision symbol: Indicates a branching point in the process where a decision must be made based on a condition.
- Input/output symbol: Shows where input or output data is entered or output from the process.
- Connector symbol: Links different parts of the flowchart together.

Lines and arrows are used to connect the symbols and show the flow of the process. The direction of the arrows indicates the order in which the steps should be performed.

There are different types of flowcharts, including:
- Basic flowchart: Shows the sequence of steps in a process.
- Swimlane flowchart: Shows the steps in a process across different departments or individuals.
- Data flow diagram*:* Shows how data moves through a system.
- Business process modeling notation (BPMN) diagram*:* A standardized diagram that shows the steps, actors, and data involved in a process.

This flowchart shows principal strategies and interactions for your student information system. Users log in with their credentials and are directed to their respective dashboards wherein they can perform diverse obligations including viewing attendance, marks and uploading profile information. The system additionally includes an admin dashboard in which the administrator can control person debts and permissions, view reports and analytics, and configure gadget settings. The flowchart also illustrates how the machine interacts with the database to keep and retrieve statistics related to students, teachers, and admins. The flowchart highlights the primary features and functionalities of your student management system, such as user authentication, information display, and data upload. It also indicates the special dashboards and options to be had for users, as well as the administrative capabilities of the system.
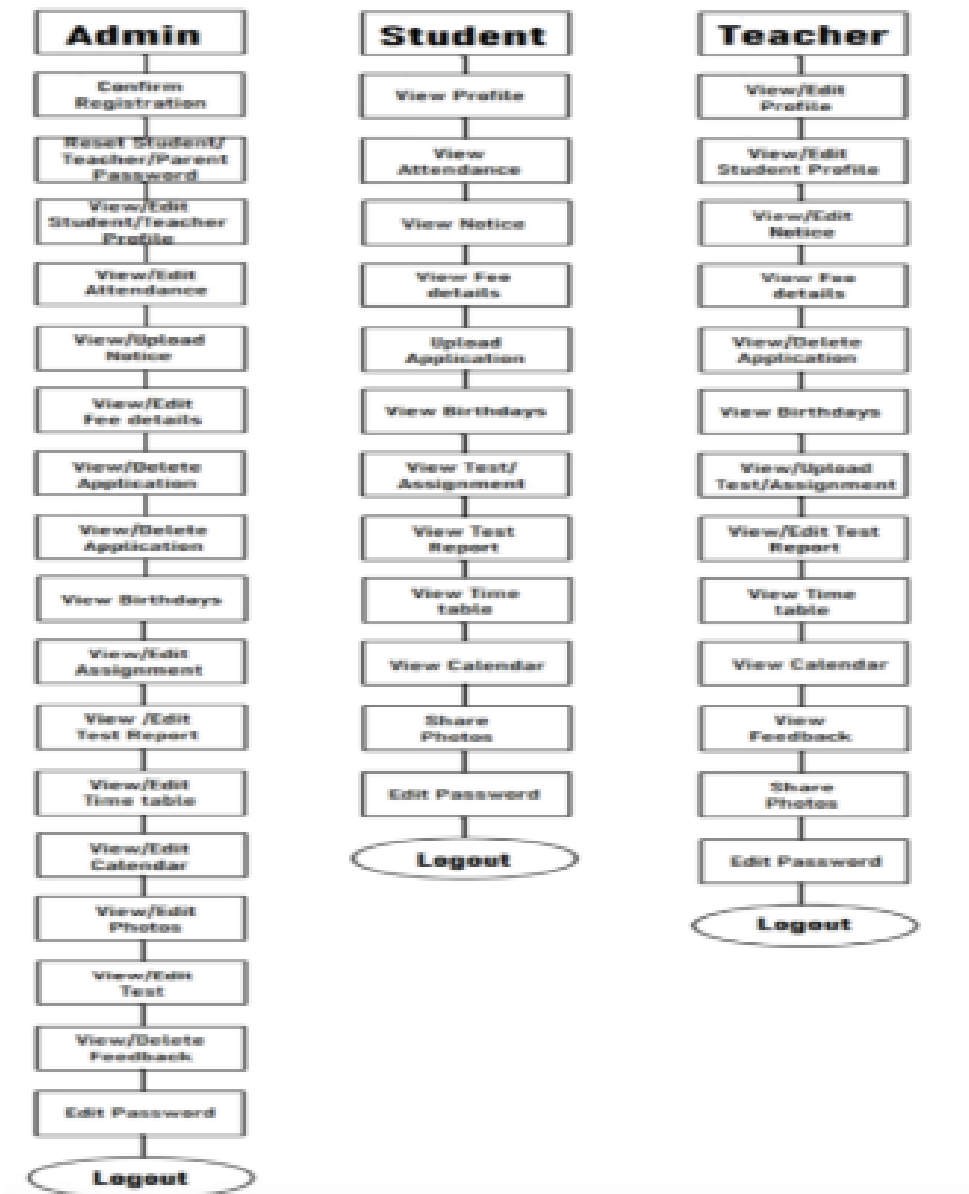
Figure 5.2: Flowchart for Student Management System

User authentication: The user enters their username and password to access the system. After authentication, the system determines whether the user is a student, teacher, or administrator.

Dashboard: The system shows a dashboard with pertinent data, such as attendance, grades, fees information, etc., depending on the user role. Update Information: Users have access to update their profile data.

Management of Attendance: Teachers can record absences, and students, parents, and guardians can see attendance logs. Marks management: Students and teachers can view and upload marks.

7. COMPARISON WITH TRADITIONAL METHOD

We can contrast the student management system with conventional approaches to managing student data to create a comparison.

In recent years, student management systems have gained popularity as an efficient way of managing student records, attendance, grades, and other academic information. Traditional methods of managing student records, such as paper-based systems, have been used for many years and are still used in many schools and universities. In this article, we will compare student management systems with traditional methods of managing student records.

Student Management Systems:

Student management systems are computer-based software programs that allow schools and universities to manage student records, attendance, grades, and other academic information. These systems are web-based, which means that they can be accessed from any computer with an internet connection. Some of the benefits of using student management systems include:

1. Efficiency: Student management systems are much more efficient than traditional methods of managing student records. Information can be entered and retrieved quickly, and there is no need to search through stacks of papers to find a particular record.

2. Accessibility: Student management systems are accessible from anywhere with an internet connection, which means that teachers, students, and parents can access important academic information from their home or office.

3. Accuracy: Student management systems reduce the chance of errors in record-keeping since they are designed to prevent data entry mistakes and ensure that all information is accurate and up to date.

4. Integration: Student management systems can be integrated with other software applications, such as learning management systems and grading software, to provide a comprehensive solution for managing academic information.

5. Security: Student management systems have built-in security features that protect sensitive student information from unauthorized access.

Traditional Methods:

Traditional methods of managing student records involve the use of paper-based systems, which include filing cabinets, paper records, and manual entry of data. Some of the disadvantages of using traditional methods include:

1. Inefficiency: Traditional methods are slow and time-consuming, as information has to be manually entered and retrieved from paper-based records.

2. Limited Accessibility: Traditional methods of managing student records are limited to the physical location where the records are kept, which means that teachers, students, and parents cannot access information remotely.

3. Inaccuracy: Traditional methods of managing student records are prone to errors, such as misfiling, loss of records, and data entry mistakes.

4. Limited Integration: Traditional methods of managing student records are not easily integrated with other software applications, which can limit their functionality.

5. Security: Traditional methods of managing student records are vulnerable to theft, loss, and damage, which can compromise the security of sensitive student information.

Student management systems are a more efficient, accurate, and secure way of managing student records than traditional methods. They offer many benefits, including increased accessibility, integration with other software applications, and built-in security features. Traditional methods, on the other hand, are slow, time-consuming, and prone to errors, which can compromise the accuracy and security of student information. Therefore, schools and universities should consider adopting student management systems to improve the management of academic records and ensure the security of sensitive student information.

Accessibility: Utilising any internet-connected device, anywhere, at any time, students can examine their academic records and teachers can upload their student's marks utilizing the student management system. Traditional techniques, on the other hand, demand physical attendance at the school to retrieve student data.

Data Accuracy : The student management system does not require human data entry, which might result in mistakes when using more conventional techniques. The data entered using the automated system is precise, comprehensive, and continuously updated.

Cost: The student management system necessitates a preliminary infrastructure and technological investment. It can, however, eventually lower the administrative expenses related to conventional approaches.

Security: The student management system provides secure access to student data through login credentials. Traditional methods involve paper-based records, which are susceptible to loss, theft, and damage.

Communication: A platform for communication between students and teachers is provided through the student management system. Traditional techniques involve telephonic or in-person communication, which can take time. In contrast to conventional approaches, the student management system offers a more effective, precise, and secure manner of managing student data. Additionally, it improves accessibility and communication, which can all help students and teachers have a better overall educational experience.

8. RESULT

Some potential outcomes that might be covered in a study report are as follows based on the functionality of the suggested student management system: Access to academic records and other pertinent information is made simple, which improves student involvement and happiness, better academic results are the result of greater openness and communication between instructors, students, and admin improved data privacy and security safeguards for sensitive data including school records and financial information, increased precision and efficiency of academic reporting and record-keeping, reduced administrative workload and time spent by employees and teachers. Overall, schools, instructors, and students can all gain a lot from the development of a school management website utilizing HTML, CSS, JavaScript, and Django Python. It can enhance communication, encourage information sharing, simplify administrative procedures, and offer insightful data on student performance and development. Schools can increase their overall efficacy and efficiency by investing in the creation of such a website, which will benefit students and the entire school community.

9. CONCLUSION

In conclusion, the suggested student management system is intended to make it easier and more effective for students to maintain their academic records. Using a web-based application, the system enables access to academic records such as grades, attendance, fee information, profiles, etc. for students, admin, and teachers. It is easy to access, data is accurate, and data is secure thanks to the usage of HTML, CSS, and Django for the front end and back end, respectively. The suggested system can increase academic record administration efficiency, decrease manual work, and guarantee data security and correctness. Overall, the suggested approach has the potential to dramatically enhance how academic records are managed in educational institutions, which would increase student outcomes and academic achievement.

FUTURE WORK

1. Student performance analytics: Adding analytics functionality to your student management system could provide insights into student performance and help teachers identify areas where students may need extra support. Analytics could also be used to track trends over time and identify areas for curriculum improvement.

2. Mobile app: Developing a mobile app for your student management system could allow students and teachers to access important information and functionality from their mobile devices. For example, students could check their schedules, grades, and assignment deadlines, while teachers could mark attendance and record grades on the go.

3. Parent and guardian portal: Adding a portal for parents and guardians to access information about their children's education could help keep them informed and engaged in the learning process. This could include features like attendance tracking, grade reports, and communication with teachers.

4. Online fee payment: Adding an online fee payment system to your student management system could make it easier for students and their families to pay fees and tuition. This could include support for different payment methods, such as credit cards and online bank transfers.

5. Integration with other school systems: Many schools have a variety of different systems in place to manage different aspects of the educational experience. Integrating your student management website with these other systems could provide a more seamless experience for students, teachers, and administrators. This could include integration with systems for managing learning resources, student health records, or transportation schedules.

6. Collaborative learning tools: Adding collaborative learning tools to your student management website could enable students to work together on projects, share resources, and support each other's learning. This could include features like discussion forums, peer feedback tools, or group project management tools.
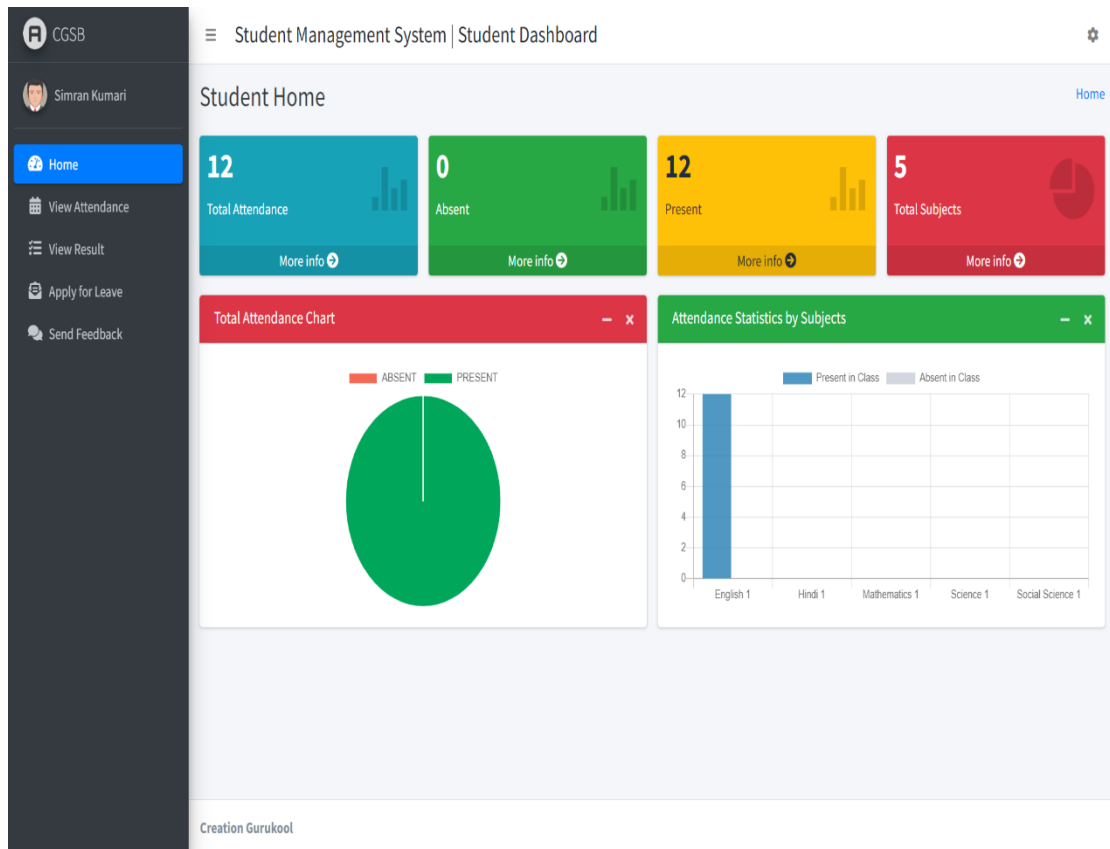
USER MANUAL

Figure 1: Student Home Page

The home page of a student management system typically serves as the main entry point for students accessing the system. It should provide a clear overview of the system's functionality and enable users to easily navigate to the specific features they need. The home page of a student management system should be well-designed and easy to navigate, with clear calls to action that help users get the most out of the system. By providing a user-friendly and intuitive interface, the home page can help ensure that students, teachers, and administrators are able to use the system effectively and efficiently.

Here are some common elements you might find on the home page of a student management system:

Navigation menu: A navigation menu should be prominently displayed on the home page, providing easy access to different features of the system. This might include links to pages for managing student profiles, course enrollments, grades, attendance, and more.

Attendance : The Attendance menu may include a dashboard that provides an overview of attendance data for a specific course or for the entire school. This dashboard might include metrics like attendance rates, tardiness rates, and other key indicators.

Quick links: To make it easy for users to access commonly used features, the home page might include a section for quick links. These might include links to frequently used pages, such as the student dashboard, course catalog, or teacher directory.

Feedback: Feedback on a student management website is a tool that allows users to provide feedback about the website's features and functionality. This dashboard typically includes a form or interface where users can submit their comments, suggestions, and complaints.

View Result: A view results dashboard on a student management website is a tool that provides users with access to various types of academic results, such as grades, exam scores, and other assessments. This dashboard is typically accessible to students, and it allows them to view the results of their academic performance in a secure and organized way.

Apply for Leave: An apply for leave dashboard on a student management website is a tool that allows students to request a leave of absence from their academic studies. This dashboard typically includes a form or interface where students can enter information about their leave request and submit it to the relevant authorities for approval.

View Subjects: A view subject dashboard on a student management website is a tool that provides students with access to information about their academic subjects.
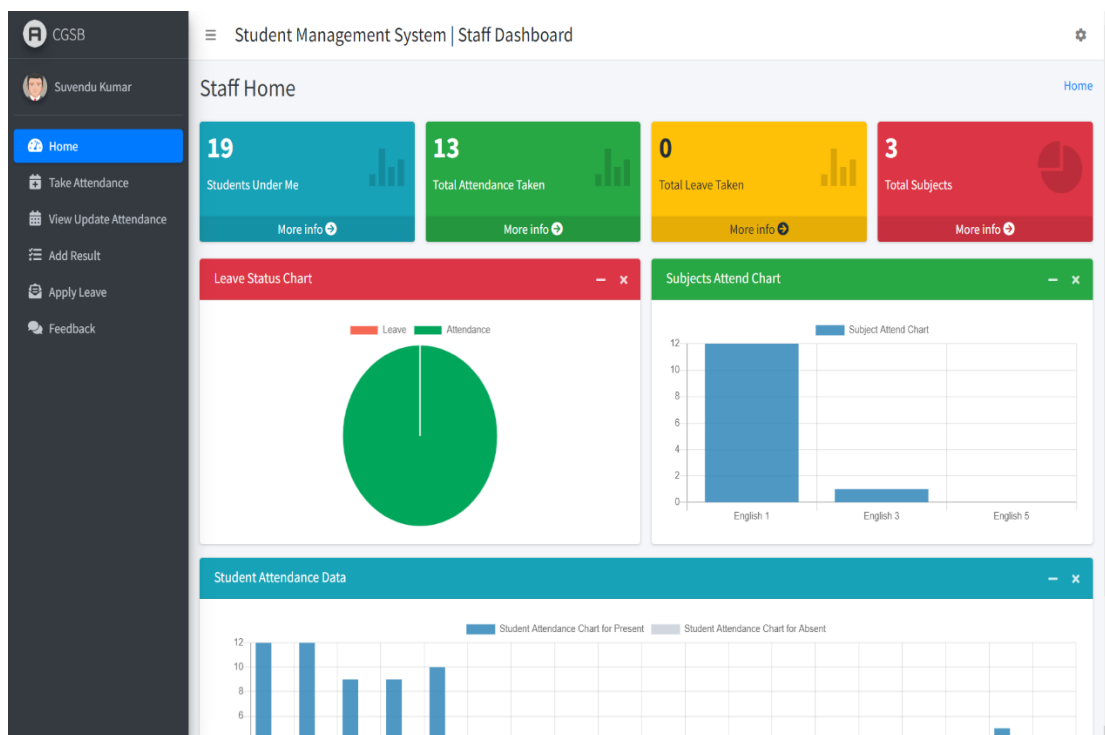
Figure 2: Staff Home Page

A staff management dashboard on a student management website is a tool that allows administrators and staff members to manage the various aspects of the institution's workforce. This dashboard typically includes features such as staff profiles, scheduling, attendance, and performance management.

The staff profiles feature typically includes information about each staff member, such as their name, contact information, position, and qualifications. This information can be used to manage staffing levels, assign tasks, and ensure that the institution has the necessary resources to operate effectively.

The scheduling feature allows administrators and staff members to create and manage schedules for different shifts, tasks, or projects. This can help to ensure that staff members are deployed effectively and that the institution's operations run smoothly.

The attendance feature allows administrators and supervisors to track staff attendance, absence, and leave. This can help to ensure that staff members are present and available when needed and can help to manage staffing levels during periods of high demand.

The performance management feature allows administrators and supervisors to evaluate staff performance, provide feedback, and manage career development. This

can help to ensure that staff members are performing effectively and that they are able to develop their skills and knowledge over time.

Overall, a staff management dashboard on a student management website is a valuable tool for managing the institution's workforce. It provides administrators and staff members with easy access to the information and tools they need to manage staffing levels, schedules, attendance, and performance, and enables them to make informed decisions about staffing and resource allocation.

A staff management system dashboard is an integral part of any student management system website that helps in managing the staff members and their activities efficiently. The dashboard serves as a one-stop-shop for all staff-related activities and tasks, giving the administrator full control over the staff members. The dashboard is designed to be user-friendly, with all the necessary functions and features easily accessible. It allows administrators to manage and monitor the staff members' activities, schedules, and performance in a centralized location. Here are some key features and functionalities that the dashboard should have:

Staff Profile Management: The dashboard should have a feature that allows the administrator to create and manage staff profiles, including their personal information, educational qualifications, and employment details. This feature also enables the administrator to assign roles and responsibilities to the staff members based on their expertise and job requirements.

Attendance Management: The dashboard should provide a feature to record the staff members' attendance, which helps to keep track of their attendance and work hours. The attendance records can also be used to calculate the staff members' payroll.

3. Leave Management: The dashboard should include a feature for leave management, which allows the staff members to apply for leave, and the administrator can approve or reject the application. This feature also allows the administrator to keep track of the staff members' leave records.

Communication Management: The dashboard should have a feature for communication management, which enables the administrator to communicate with the staff members

and vice versa. This feature could include chat, email, or SMS, making it easier to coordinate and communicate with staff members.

Task Management: The dashboard should include a feature for task management, which enables the administrator to assign tasks to staff members and monitor their progress. This feature helps to ensure that the staff members are working on the assigned tasks and meeting the deadlines.

Reporting and Analytics: The dashboard should include a reporting and analytics feature, which provides insights into the staff members' activities, attendance, performance, and other metrics. This feature helps the administrator to make data-driven decisions and identify areas of improvement.

Overall, a staff management system dashboard is an essential component of a student management system website. It helps the administrator to manage the staff members efficiently, improve their performance, and ensure that they are meeting the goals and objectives of the institution. The dashboard should be designed to be user-friendly, with all the necessary features and functionalities, and provide insights into the staff members' activities to help the administrator make data-driven decisions.
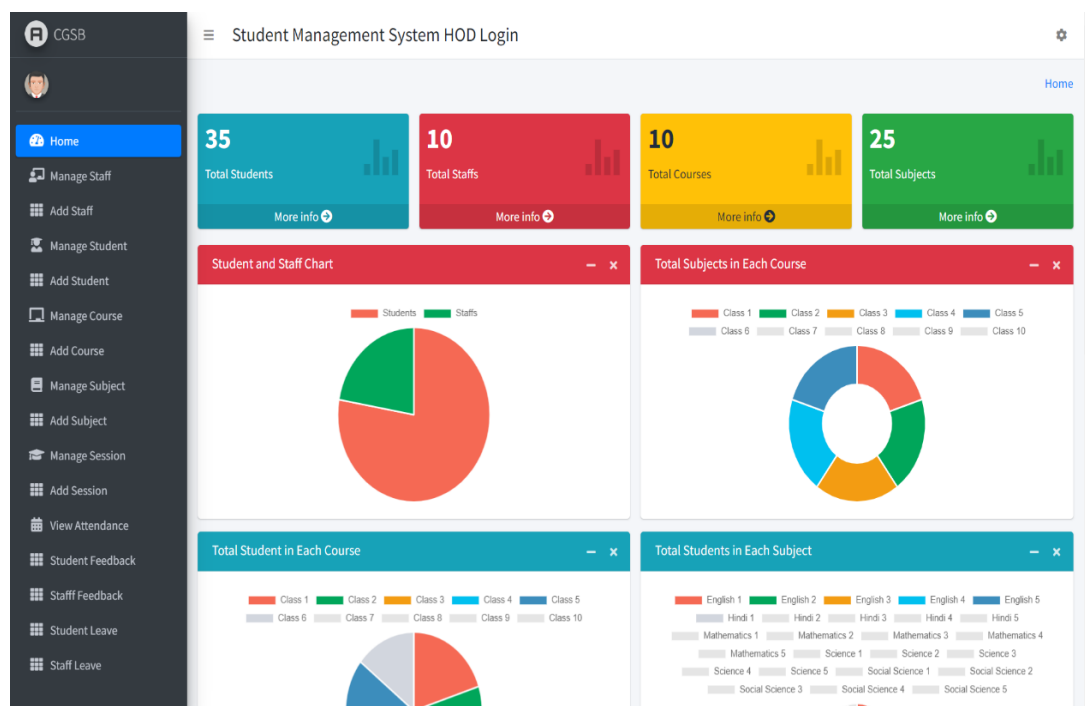

Figure 3: Admin Home Page

Admin has each and every right to access the system. Like he can update and check attendance, add or delete students or faculties, update passwords, check feedback, etc. An Admin home page dashboard on a student management website is a tool that provides administrators with a high-level overview of the various aspects of the institution's operations. This dashboard typically includes features such as student data, financial information, staff management, and academic performance.

The student data feature allows administrators to view and manage information about the institution's students, including demographics, enrollment status, and academic performance. This information can be used to evaluate the effectiveness of various academic programs and to identify areas for improvement.

The financial information feature allows administrators to view and manage financial data related to the institution's operations, including budgeting, revenue, and expenses. This information can be used to ensure that the institution is operating within its budget and to identify areas where financial efficiencies can be gained.

The staff management feature allows administrators to view and manage information related to the institution's workforce, including staff profiles, scheduling, attendance, and performance management. This information can be used to ensure that the institution has the necessary resources to operate effectively and that staff members are performing effectively.

The academic performance feature allows administrators to view and manage information related to the institution's academic performance, including student grades, exam scores, and other assessments. This information can be used to identify areas where academic performance can be improved and to ensure that academic standards are being maintained.

Overall, an Admin home page dashboard on a student management website is a valuable tool for administrators to stay informed about the various aspects of the institution's operations. It provides them with a high-level overview of student data, financial information, staff management, and academic performance, enabling them to make informed decisions about resource allocation, budgeting, staffing, and other key areas of operation.

The admin home page dashboard is the central hub of a student management system website, designed to provide administrators with a quick and easy overview of all the key information and activities related to student management. The dashboard is customizable, allowing administrators to choose which metrics and functions they want to see at a glance. Here are some of the key features and functionalities that an Admin home page dashboard in a student management system website should have:

Student Enrollment Management: The dashboard should provide a feature for managing student enrollments. This feature should allow administrators to see the number of new enrollments, the number of students who have dropped out, and the current enrollment figures. The administrator should also be able to search for specific students and view their enrollment status.

Attendance Management: The dashboard should provide a feature for managing student attendance. This feature should allow the administrator to see attendance records for individual students, as well as the overall attendance rate for the institution. The administrator should be able to generate reports on attendance for individual students or classes.

Grade Management: The dashboard should provide a feature for managing student grades. This feature should allow the administrator to see the grades for individual students, as well as the overall grade distribution for each class. The administrator should also be able to generate reports on student grades and performance.

Communication Management: The dashboard should provide a feature for managing communication between students and parents. This feature should allow the administrator to send messages to students and parents via email or SMS, as well as receive messages from them. The administrator should also be able to track the status of messages sent and received.

Staff Management: The dashboard should provide a feature for managing staff members. This feature should allow the administrator to see the staff members' contact details, roles, and responsibilities. The administrator should also be able to assign tasks and monitor their progress.

Reporting and Analytics: The dashboard should provide a feature for generating reports and analyzing data. This feature should allow the administrator to generate reports on various metrics such as student performance, attendance, and fee collection. The administrator should also be able to analyze the data to identify trends and patterns.

Overall, the Admin home page dashboard is an essential component of a student management system website. It provides administrators with a quick and easy overview of all the key information and activities related to student management. The dashboard should be customizable, allowing administrators to choose which metrics and functions they want to see at a glance. It should also provide features for managing student enrollments, attendance, grades, fees, communication, resources, staff members, and generating reports and analytics.

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