

Academics Monitoring System

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Abstract - Whenever we are in a need of college calendar, attendance status, exam results etc. we need to go to the faculty. We always used to think what if we had a database where we can get all these things at a single place. The best solution to that is website which stores and handles the data of students at a single place. So, our aim is to create a website which stores the data of the students at a single place. The faculty members and administrators can add, delete, and update information of the students accordingly.

Key Words— Academic Monitoring and evaluation system, College's performances, academic performances.

1.INTRODUCTION

Student management is becoming a necessity in education in modern-day age and it is to automate all functions performed daily in the college. With the help of this system, we can gather all the useful information needed to the management in few clicks. Main purpose is to create software which will manage the working of these different modules. The interconnectivity among modules reduces the time required to perform different operational task.

The software help gather the basic information of student automatically. It helps students, faculty, and management department of college. The system can store the details of students, faculty and teachers and maintains their details in a dynamic way. The proposed system provides the easiest way to manage all aspects of student and college. The software help explore all the activities happening inside the college which students do not know about. It can handle the activities of students and teachers.

Using this system, user can manage student details, student internal marks, external marks, student attendance. Each student's attendance is being updated daily. If any student's attendance percentage is found to be below the mark, it sends alert message to the parent's number regarding their child attendance. Using this system user can retrieve any information related to student. The objective of the system is to reduce the

paper work and to eliminate manual processes and to save significant staff time.

An academic monitoring system is a tool used to track and evaluate students' academic progress and performance over time. It typically involves collecting and analysing data on a variety of factors, such as attendance, grades, test scores, and other relevant metrics.

In addition to identifying struggling students, an academic monitoring system can also help identify high-achieving students who may benefit from advanced coursework or other enrichment opportunities.

2.LITERATURE SURVEY

2.1 Background History:

SIMS was an early MIS for schools. (The earliest MIS for schools was developed in 1978 by Raymond Bily while he was a student at Asheville High School, in Asheville, NC.) It was initially developed by Philip Neal, a teacher at Lea Manor High School, from 1982 to 1983.[10] Bedfordshire County Council (Lea Manor's local education authority) then further developed the product, which began being used by other schools in 1984.

In 1988, a commercial company, SIMS Ltd, was founded to further develop SIMS. SIMS Ltd was acquired by Capita Group in 1994.

In December 2020, Capita decided to sell their Education Software Solutions business (whose flagship product is SIMS) to private equity house Montagu to reduce debts. Montagu have stated that they intend to continue developing SIMS with a plan to release the latest version, SIMS 8, after the acquisition process has completed.

The use of academic monitoring systems dates back several decades, although the technology has evolved significantly over time. In the early days of these systems, educators relied on paper-based tracking and monitoring methods, which were timeconsuming and often inaccurate.

As technology advanced, academic monitoring systems became more sophisticated, with the introduction of computerized systems and the use of data analytics. The first computerized academic monitoring systems were developed in the 1980s and 1990s, allowing educators to track student attendance, grades, and other metrics more efficiently.

In the early 2000s, web-based academic monitoring systems emerged, providing realtime access to student data from anywhere with an internet connection. These systems enabled educators to monitor student progress in real-time and provided students with access to their grades, attendance, and other information.

Today, academic monitoring systems are widely used in educational institutions of all levels, from K-12 schools to colleges and universities. They are essential tools for improving student outcomes, meeting stakeholder demands, and achieving institutional success in today's educational landscape.

2.2 Related Work

Development of smartphone-based student attendance system: Student's attendance shadowing is a vital issue in order to cover scholars' performance in the classroom as well as in their studies. It becomes a crucial concern because the university authority maintains a rule that one pupil can only attend in the test if his/ her attendance is advanced or equal to several probabilities else not. The traditional attendance system needs pupil is to physically subscribe the attendance distance each time for the attendance of each class.

This is unnecessarily time- consuming to notice and mark pupil's name on the attendance distance. This also happens that some scholars may accidentally or willingly mark the pupil's name as deputy. The hard dupe of attendance distance may get lost. Using Smartphones like Android Technology the course schoolteacher will be suitable to take attendance fluently by our designed mobile operation and save the attendance in the phone as well as in garrison and can check chance and can publish as hard dupe.

Using the stored information, this system is suitable to mark attendance, marking interferers' entry, attendance chance computations, shoot emails, and send SMS to the guardian to keep them informed about their child's attendance at the Institute. The designed system has online access from any place and any moment which may extraordinarily help the course schoolteacher with keeping track of their pupil's attendance.

A literature survey on academic monitoring systems reveals that they have become increasingly popular in recent years as schools and educators recognize the importance of tracking and analysing student progress and performance. Here are some key findings:

Academic monitoring systems have been found to be effective in improving student outcomes. A study published in the Journal of Education for Students Placed at Risk found that an academic monitoring system led to improved academic outcomes for students in a high-poverty urban school district.

Academic monitoring systems can be used to identify students who are at risk of falling behind academically. A study published in the Journal of Educational Research found that an academic monitoring system was effective in identifying at-risk students in a rural middle school.

Academic monitoring systems can be used to identify areas where additional support and resources may be needed. A study published in the Journal of Educational and Behavioral Statistics found that an academic monitoring system helped schools identify students who may benefit from additional support and resources, such as tutoring or counseling.

Here are some related works for academic monitoring systems:

"Design of Academic Monitoring System Based on Big Data," by Li Li and Yishan Li (2019). This study presents a design of an academic monitoring system based on big data. The system uses machine learning algorithms to analyze student data and provide personalized support and intervention.

"Student Academic Performance Monitoring System Using Data Mining Techniques," by D. D. Rajendra Kumar and K. R. Suresh Kumar (2016). This study presents a student academic performance monitoring system that uses data mining techniques to identify students who are at risk of failure and provide early intervention.

"Development and Implementation of an Academic Monitoring System for Student Retention," by Tricia Seifert and T. Scott Bledsoe (2017). This study describes the development and implementation of an academic monitoring system for student retention. The system provides real-time monitoring of student progress and facilitates early intervention.

"A Predictive Model for Early Detection of At-Risk Students Using Learning Analytics in Academic Monitoring Systems," by Mohammad Alnabhan and Rania Hodhod (2020). This study presents a predictive model for early detection of at-risk students using learning analytics in academic monitoring systems. The model uses machine learning algorithms to analyze student data and predict which students are at risk of failure.

"Academic Monitoring System for Student Success: A Case Study," by Jerry D. Parr and Sean Farrell (2019). This study presents a case study of the implementation of an academic monitoring system at a small liberal arts college. The system improved student engagement, facilitated early intervention, and increased retention rates.

Table 2.1: Different Algorithms used in existing system

Sr. No.	Year	Author Name	Methods Used	Remark
1	2016	D. D. Rajendra Kumar, K. R. Suresh Kumar	Data Mining Technique.	To identify students who are at risk of failure and provide early intervention.
2	2017	Tricia Seifert and T. Scott Bledsoe	Machine Learning Algorithm.	The system provides real-time monitoring of student progress and facilitates early intervention
3	2019	Li Li, Yishan Li	Machine Learning Algorithm.	To analyse student data and provide personalized support and intervention In academics monitoring system.
4	2019	Jerry D. Parr, Sean Farrell	Different Frameworks	The system improved student engagement, facilitated early intervention, and increased retention rates.
5	2020	Mohammad Alnabhan, Rania Hodhod	The model uses machine learning algorithms	To analyze student data and predict which students are at risk of failure.
6	2020	Emily T. Hazzard	The model used different technologies.	Evaluating the Effectiveness of Academic Monitoring Systems.
7	2020	W. Scott Blackmer	the use of machine learning algorithms	This work highlights the potential of machine learning algorithms for predicting academic performance.

Table 2.1 shows the different research done in academics monitoring system, and the various algorithms used for implementing academics monitoring system, academics monitoring system. These systems have some benefits as well as some limitations.

Many different authors and researchers used algorithms like machine learning algorithm, big data, different frameworks and different technologies.

"Student Academic Performance Monitoring System Using Data Mining Techniques," by D. D. Rajendra Kumar and K. R. Suresh Kumar (2016).

"Development and Implementation of an Academic Monitoring System for Student Retention," by Tricia Seifert and T. Scott Bledsoe (2017).

"Design of Academic Monitoring System Based on Big Data," by Li Li and Yishan Li (2019).

"Academic Monitoring System for Student Success: A Case Study," by Jerry D. Parr and Sean Farrell (2019).

"A Predictive Model for Early Detection of At-Risk Students Using Learning Analytics in Academic Monitoring Systems," by Mohammad Alnabhan and Rania Hodhod (2020).

3.SYSTEM IMPLEMENTATION

3.1 Software:

1. Operating System: A suitable operating system must be installed on the computer, such as Windows, Linux, or macOS.
2. Integrated Development Environment (IDE): An IDE such as Atom, Sublime text, or Visual Studio Code is needed to develop and run the project.

3. Libraries: Several software libraries are required to implement the project, including Redux, react router, and Express.

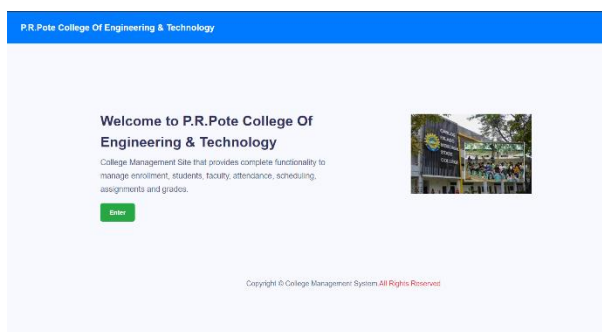
3.2 Hardware:

- i. Workstations: The users of the academic monitoring system require workstations such as desktops, laptops, or tablets to access the application. The hardware requirements for these workstations depend on the application's complexity and the expected number of users.
- ii. Server: An academic monitoring system typically requires a server to host the application and store the data. The server should have sufficient processing power, memory, and storage to handle the expected number of users and data size.
- iii. Database server: An academic monitoring system requires a database server to store and manage the data.
- iv. Networking: An academic monitoring system requires a reliable network connection for users to access the application.

3.3 Implementation Details:

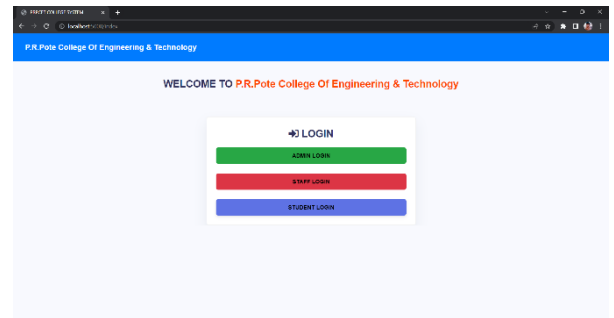
Here are implementation details for academics monitoring system using various modules, and algorithms for feature of academics monitoring system:

- I. Home Page Module: The home page of an academic monitoring system serves as the main entry point for the application. It should provide an overview of the key features and functionality of the system and make it easy for users to navigate to different sections of the application.



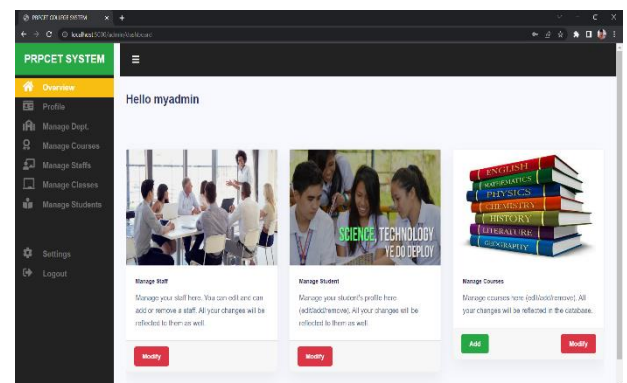
Screenshot 3.1: Home Page

- II. In this home page here shows the college name and photo of the institute after clicked enter button move on second page of different login pages like: admin page, staff page, student page.



Screenshot 3.2: Different Login Pages

- III. Different login pages: The login page is the first screen that users encounter when they attempt to access an academic monitoring system. It typically requires users to enter their credentials to verify their identity and gain access to the system. Here are some components that may be included in a typical login page:
 - i. Username and password fields: The login page typically includes fields where users can enter their username or email address and password to log in. The fields may be labelled clearly to indicate what information should be entered in each field.
 - ii. Remember me option: The login page may include a checkbox that allows users to choose whether they want the system to remember their login information for future sessions.
 - iii. Forgot password link: The login page may include a link that allows users to reset their password if they forget it. Clicking on this link may direct users to a password reset page.
 - iv. Error messages: If users enter incorrect login credentials or encounter other errors while attempting to log in, the login page may display error messages that provide feedback and guidance on how to resolve the issue.

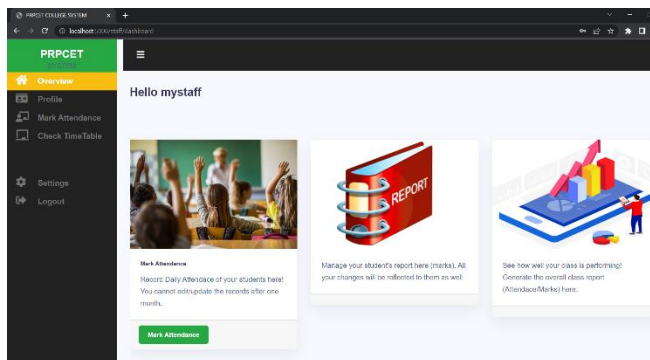


Screenshot 3.3: Admin Page

IV. The admin page in an academic monitoring system is typically a section of the application that is accessible only to users with administrative privileges. It allows administrators to manage the system's configuration, user accounts, and other settings. Here are some components that may be included in a typical admin page:

- Dashboard:** The admin page may include a dashboard that provides an overview of key information and statistics related to the academic monitoring system, such as the number of active users, the most popular courses, or the overall system usage.
- User management:** The admin page typically includes functionality to manage user accounts, including adding new users, editing user profiles, and deleting users. It may also allow administrators to assign different roles and permissions to users.
- Course management:** The admin page may include functionality to manage courses, including creating new courses, editing existing courses, and managing course enrolment.

V. The staff page in an academic monitoring system is typically a section of the application that is accessible only to faculty and staff members. It allows staff members to manage their courses, students, and other aspects of their job responsibilities.



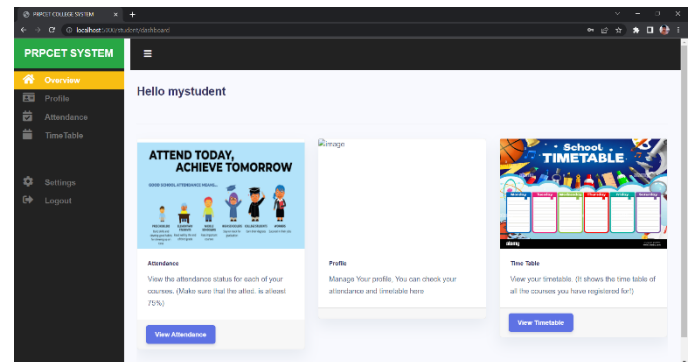
Screenshot 3.4: Staff Page

VI. The student page in an academic monitoring system is typically a section of the application that is accessible only to students. It allows students to view and manage their academic records, enroll in courses, communicate with instructors, and access other resources related to their academic progress.

- Dashboard:** The student page may include a dashboard that provides an overview of key information and statistics related to the student's academic progress, such as current courses, grades, attendance records, and upcoming assignments.
- Course enrolment:** The student page typically includes functionality for students to browse and enrol in

courses, view course materials, and access course assignments and exams.

- Academic records:** The student page may include functionality for students to view their academic records, such as grades, attendance records, and transcripts.



Screenshot 3.5: Student page

4.RESULT ANALYSIS

An academic monitoring system is a software tool that helps schools, colleges, and universities track student performance, attendance, and other metrics. The system can generate reports and provide analytics to help administrators, teachers, and parents understand how students are progressing.

The results of an academic monitoring system can be analysed in many ways, depending on the goals and objectives of the institution. Some common ways to analyse the data include:

Attendance tracking: The system can generate reports on student attendance, including patterns of absence and tardiness. This can help teachers identify students who are struggling with attendance and take appropriate action.

Performance tracking: The system can generate reports on student performance in various subjects, including grades, test scores, and assignments. This can help teachers identify students who are struggling academically and provide extra support.

Progress monitoring: The system can generate reports on student progress over time, including changes in grades and performance. This can help teachers and administrators identify trends and adjust their instructional practices accordingly.

5.ADVANTAGES & LIMITATIONS

5.1 Advantages:

- Improved communication Between Students and teacher Download report of the results in PDF format.
- Increases the efficiency of the teachers.

- iii. Improved student outcomes: An academic monitoring system can help teachers and administrators identify students who are struggling academically and develop targeted interventions and support services to help them succeed.

5.2 Limitations:

- i Fortunately, there aren't many. The most common issue schools/teachers/students/parents face while using a student management system is: a complex user interface. And that is a solvable issue.
- ii We are humans and we need some time to get a hang of things. If the tool you're using is genuinely tough to use, you can go for a tool that's simple or get a training.

6.CONCLUSION

Finally, with due diligence, the student management web-based Application system is carried out. It is system that assists the user to work with the day-to-day activities involved in the academic institution. It lessens the amount of manual hard work and provides greater efficiency diminishing the amount of time taken for detailing different modules. The interface provides user-friendly experience to everyone. Only verified users can access the information concerning students and faculties. At last, we may state that the performance of this new system is accurate, precise and it successfully performs the assigned tasks.

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