Pillai InfoDesk

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Abstract **- Most academic institutions face difficulty in managing records of the students and teachers and tracking their information as they still rely on paperwork and manual processes or outdated management systems. These activities create loads of tasks to be done by educators and institution administrators. The "Pillai InfoDesk '' provides a simple and visually pleasing interface for maintenance of student and teacher information. It can be used by educational institutes or colleges to maintain the records of students and teachers easily. This objective is difficult to achieve using a manual system as the information is scattered, can be redundant and collecting the relevant information can be very time-consuming. This project will solve all these problems. Pillai InfoDesk allows the administrator and the teaching staff to edit, find and track the personal details of the students and teachers. It also allows the students to keep their profiles up to date and showcase their achievements, certificates, committees, extracurricular activities etc. The teachers can showcase their qualifications, awards, achievements, committees, experience, journals, etc. It'll also facilitate keeping all the records of students and teachers, such as their ID, name, mailing address, phone number, DOB, etc. Due to vast amounts of data, it becomes difficult to find and filter information according to our needs and hence to solve this problem, in Pillai InfoDesk, various filters can be applied to display only the relevant information. So all the information about the students and the teachers will be available in a few seconds. Overall, it'll make student and teacher information management an easier job for the institution.**

Keywords—Paperless System, Record Management, Data-Organization

I. INTRODUCTION

Pillai InfoDesk is a web-based platform that streamlines college administration and tackles administrative burdens in colleges by centralizing student registration, courses, faculty oversight, attendance, grading, and reporting. Accessible anywhere with an internet connection, it empowers users across the educational ecosystem. Administrators leverage Pillai InfoDesk to seamlessly manage and update college records. Faculty can add, access and modify student information, while students benefit from features like attendance tracking, performance monitoring, and secure access to their records and calendars. Central to the system is the faculty's ability to add results (exams and attendance) and access detailed student profiles to inform decisions. Pillai InfoDesk's modular design integrates various functionalities, addressing the diverse administrative needs of educational institutions.

A. Fundamentals

Pillai InfoDesk is a software application designed to manage the administrative tasks of a college or university. It provides a centralized platform for managing student registration, course management, faculty management, attendance tracking, grading, and reporting. The system is web-based, allowing students, faculty, and administrators to access it from anywhere with an Internet connection. A management system is a very important and essential part of any educational institute. The Project defines all management of the College System. Pillai InfoDesk is a college management system that controls all the management tasks and functions. It performs all functions which are required of any Educational Institute. Admin can view and change all records of the college. Teachers can also view their and student information and they can change their personal information. Students can track attendance, select and visualize their skills, track their academic performance securely view their academic records and view the events

calendar. Teachers have been authorized at this site to update results including assignments, midterm and final term marks details, and attendance daily. Teachers can view all details of each student of any semester along with other academic details.

B. Objectives

1. Develop a certificate management system that would effectively manage certificates of students and faculty.
2. The purpose of this project is to build a website to reduce the manual work of managing certificates.
3. Faculty as well as students can add and delete certificates.
4. Ensure the application is secure, reliable, and easily accessible to users.
5. To provide a comprehensive analysis of student exam results, offering insights into academic performance, and identifying areas of improvement.
6. To integrate effective data visualization techniques for students, enabling a clearer and more insightful representation of academic performance.

C. Scope

The scope of Pillai InfoDesk is quite broad and can be applied to a variety of educational institutions, such as schools, colleges, universities, and other learning organizations. It can be used by administrators, teachers, and students to manage and maintain student and teacher records, such as personal details, academic progress, achievements, and qualifications. The system can also provide a platform for students and teachers to showcase their work and accomplishments, which can create a sense of community and foster a positive learning environment. It provides a comprehensive platform for managing student and teacher information and improving the overall

II. LITERATURE SURVEY

Student Information Management Systems (SIMS) have undergone a significant evolution from their traditional paper-based roots to digital platforms, marking a pivotal shift in educational data management. Initially reliant on manual paperwork, traditional SIMS were susceptible to errors and inefficiencies, often resulting in time-consuming processes and limited capabilities. However, with the advent of computer technology, SIMS has transitioned to digital formats, offering institutions greater efficiency and accuracy in record-keeping.

The digitization of SIMS has not only revolutionized data management but also expanded its scope beyond just student information. Modern SIMS now encompass a plethora of features for managing various aspects of an educational institution, including faculty information, certifications, achievements, and extracurricular activities. This expanded functionality reflects the evolving needs of educational institutions in the digital age, requiring SIMS to become more sophisticated and adaptable to the diverse demands of stakeholders.

The integration of faculty information into SIMS is particularly noteworthy, as it enables institutions to better utilize the expertise and achievements of their staff. By centralizing faculty data, SIMS facilitate collaboration, communication, and resource allocation, ultimately enhancing the overall effectiveness of the academic community.

The purpose of recent literature reviews on SIMS is to explore the latest research findings regarding their impact on education. Studies have consistently demonstrated the positive effects of advanced SIMS on educational institutions, including improvements in student outcomes and reductions in administrative burden. These systems not only streamline administrative processes but also empower educators with valuable insights into student performance, facilitating personalized support and interventions.

A. Literature Review

1. Shahmeheran, Atharva Pande, Peeyoosh Chauhan, “STUDENT INFORMATION MANAGEMENT SYSTEM”, International Research Journal of Modernization in Engineering Technology and Science, May-2022 [1]. The student management system provides multiple login IDs for students, teachers, and heads of departments. The software includes features such as attendance management, academic management, feedback system, exam management, personal details management, and result management. However, despite the numerous features and benefits of the student management system, it is important to note that the system has a limitation of managing only up to 200 students at a time, which can lead to issues such as limited scalability and the inability to accommodate a larger number of students. Nonetheless, the system still ensures that students have access to the right information and knowledge necessary for their academic planning and time management.

2. Yash Vaidya, Khushboo Motwani, Omkar Shinde, Sulochana Madachane, "iStudent Management System", International Research Journal of Engineering and Technology, Apr 2022 [2]. The paper outlines a student management system featuring face recognition-based attendance tracking, online quizzes, and proctored exams. Comprising profile management, classroom, and attendance modules, it aims to streamline academic processes. The attendance module employs facial recognition for precise attendance monitoring, enhancing security. Proctored exams ensure fairness via continuous webcam monitoring. Powered by a Convolutional Neural Network (CNN) algorithm, the system assigns significance to image elements. However, implementation may incur high costs due to necessary hardware and software. Maintenance may pose challenges for institutions lacking technical expertise. Privacy concerns may arise from facial recognition and continuous webcam monitoring. Furthermore, reliance on technology exposes the system to disruptions like power outages or hardware failures.

3. Deepak Saini, Payal, Mansi Ghadigaonkar, Prof. Sujata Kadu, "Student Management System", International Journal of Advance Research and Innovative Ideas in Education, 2021 [3]. The article advocates for a web-based student management system as an upgrade from paper-based methods due to its time-saving nature and global accessibility. It offers centralized record-keeping, role-based access, and features like admission and accounting systems. Developed using the MERN Stack and the prototyping model, it promises efficiency and a user-friendly experience. Despite its advantages, including reduced manual work, it faces drawbacks like high costs, technical expertise requirements, user resistance, and security risks. Nevertheless, its benefits outweigh the negatives, making it a favourable choice for educational institutions seeking streamlined management processes.

4. Swapnali Avhad, Trupti Bade, Assistant Prof Kumud Wasnik, "DESIGN AND IMPLEMENTATION OF COLLEGE STUDENT INFORMATION USING ANDROID APPLICATION", International Research Journal of Engineering and Technology, Volume: 07 Issue: 07, July 2020 [4]. The article explores the development of a College Student Information Android application aimed at streamlining college management processes. It comprises modules for students, faculty, and administrators, offering real-time access to attendance, test marks, notices, and events. The application significantly reduces paperwork and time consumption, enhancing efficiency. Its user-friendly design facilitates easy navigation and information retrieval. Despite its benefits, the application faces drawbacks such as slow processing, security concerns, and limited accessibility for some users. These issues may hinder user experience and diminish the application's effectiveness, though it remains a viable solution for college management.

B. Overview

Pillai InfoDesk presents a revolutionary approach to revolutionize the management of student and teacher information within educational institutions. It aims to address the challenges posed by outdated paperwork and manual processes, along with antiquated management systems, which often result in scattered data and time-intensive data collection procedures.

The core feature of Pillai InfoDesk lies in its simple and visually appealing interface, designed to streamline the maintenance of student and teacher information. Administrators and teaching staff will have access to a comprehensive toolkit that enables them to effortlessly edit, locate, and monitor the personal details of both students and teachers. This functionality promises to significantly reduce the administrative burden associated with information management, thereby freeing up valuable time and resources.

Moreover, Pillai InfoDesk empowers students by allowing them to take control of their profiles. They can easily update their information and showcase their achievements, certificates, participation in committees, and engagement in extracurricular activities. This not only facilitates a sense of ownership but also promotes transparency and accountability within the educational community.

Similarly, teachers can leverage Pillai InfoDesk to highlight their qualifications, awards, achievements, participation in committees, teaching experience, and scholarly contributions such as journals. By providing a platform for teachers to showcase their expertise and accomplishments, Pillai InfoDesk fosters professional development and recognition within the institution.

Overall, Pillai InfoDesk represents a paradigm shift in educational information management, offering a comprehensive solution to streamline processes, enhance transparency, and empower stakeholders. With its user-friendly interface and robust functionality, Pillai InfoDesk has the potential to revolutionize the way educational

institutions manage student and teacher information, paving the way for greater efficiency and collaboration.

1) Existing System Architecture: The majority of present systems are based on manual and paper-based processes, which are time-consuming, error-prone, and can cause processing delays. This can impair the institution's efficiency and lead to mistakes in data handling. Furthermore, present systems are only capable of managing basic information such as student and faculty records. This can limit the institution's ability to manage more complicated data and may impede decision-making capabilities. Existing systems are unable to scale up to meet the institution's increasing demands, resulting in slower processing times and restricted data storage capacity.

Some existing systems are expensive and cannot be customized to match the institution's specific demands. This can result in excessive costs and impede the institution's capacity to optimize the system to meet its needs. Furthermore, existing system user interfaces are not user-friendly, making it difficult for students, staff, and administrators to navigate and use the system successfully. Existing systems lack integration across components, resulting in data redundancy and inefficiencies in data administration. They also do not provide real-time data, making it harder for administrators to get current information and make informed decisions.

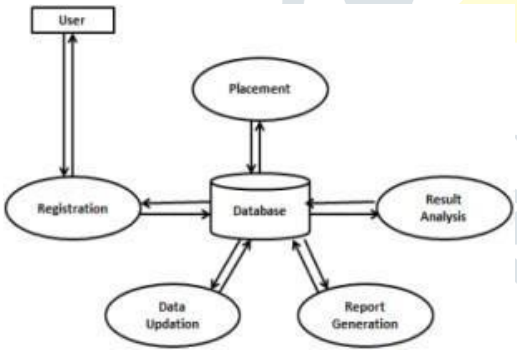

Fig 1. Flowchart of Existing System Architecture

The project has been split up into the following modules for easy and effective implementation.

- **Registration Module:** Registration happens when a candidate first uses the system. Registration means the system will take the candidate's details as required by the application. The obtained details are then stored in the database. The registration is for the students and faculties. The students will register by providing information such as Name, parent's name with occupation, address, academic details (10th, PUC), CET ranking, admission quota etc. Faculties will register by providing information such as Name, Address, Email, Contact number, Educational qualification, past work experience etc

- **Data updation:** This is to allow the department to update student records (updating IA marks, attendance, student information address, contact number, email ID, university results, skill test marks, and achievements, & to update faculty information.

- **Results Analysis:** The function of this module is to get results of students on USN online, store results in the database and later analyze results (pass percentage, failure percentage, FCDs, FCs, SCs,) and compare with the previous year/department results.

- **Student Performance Analysis & Placement Prediction:** The main function of the module is to predict the probability of placements for an individual student or a batch 10 based on the history and academic performance of previous batches.

2) Proposed System Architecture: Our proposed system Pillai InfoDesk aims to introduce a transformative solution for educational institutions seeking an efficient, modern, and streamlined approach to managing and maintaining student and teacher records. The system's user-friendly interface caters to administrators, teachers, and students, promising to reduce the manual workload associated with record-keeping, minimize errors, and provide quick data access. Additionally, it offers advanced features for attendance management and visualization of individual student skills, fostering a more engaging and productive learning environment.

Student Model:

- **Attendance Records:** Students will be able to view their attendance records.

- **Skills Visualization:** The system will allow students to track and visualize their skills and progress, aiding in self-assessment and goal setting.

- **Data Access:** Students can access their personal records and academic data, including grades, promoting transparency and accountability.

Administrator Model:

- **Data Management:** Administrators will have the privilege to manage and oversee the complete database, including adding, updating, and maintaining student and teacher records.
- **Updating Events Calendar:** Effortlessly update and manage upcoming events with Pillai InfoDesk's intuitive interface, ensuring administrators, students, and teachers stay informed and engaged in the vibrant campus activities.
- **Notice Creation:** Create and distribute notices seamlessly through Pillai InfoDesk, empowering administrators to efficiently communicate important updates, deadlines, and announcements to students and teachers.

Teacher Model:

- **Student Data Access:** Teachers can view student records, attendance, and skill visualizations, enabling them to adapt their teaching strategies to better support individual students.
- **Attendance Management:** Teachers can use the system to take attendance in real-time, and mark absences.

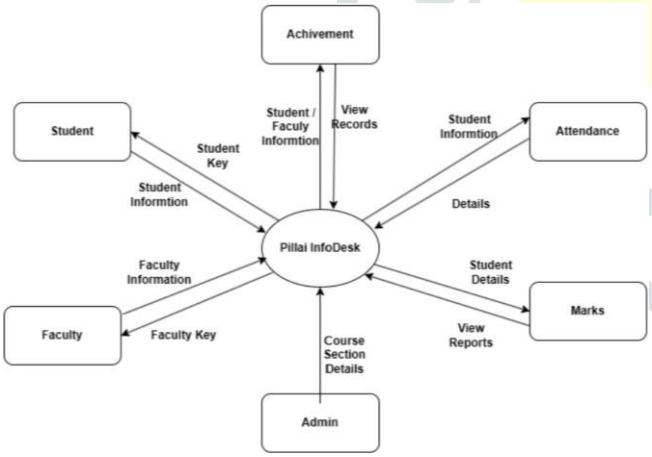

Fig 2. Flowchart of Proposed System Architecture

The introduction of Pillai InfoDesk as the backbone of educational record-keeping holds immense promise for educational institutions. Its comprehensive suite of features, combined with user-centric design, stands to revitalize record-keeping and enhance administrative efficiency. This proposal highlights the potential for a more motivated student body, improved academic outcomes, and a streamlined administration, reinforcing Pillai InfoDesk as an indispensable tool for modern educational institutions.

C. Implementation Details

1) Tools and Technologies:

1. **Tailwind CSS**:
   - Utility-first approach: Tailwind CSS promotes a unique approach to styling where you directly apply small utility classes to HTML elements. This approach allows for quick prototyping and easy customization without writing custom CSS.
   - Highly customizable: Tailwind CSS comes with a vast set of pre-defined utility classes that cover a wide range of design needs. Additionally, it allows you to extend or customize these utilities to match your project's specific design requirements.
   - Responsive design: Tailwind CSS provides responsive design utilities out of the box, enabling you to create layouts that adapt seamlessly to different screen sizes and devices.

2. **React**:
   - Component-based architecture: React's component-based architecture encourages modularity and reusability, making it easier to manage complex user interfaces by breaking them down into smaller, manageable components.
   - Virtual DOM: React's Virtual DOM efficiently updates only the components that have changed, minimizing DOM manipulation and improving performance.
   - Large ecosystem: React has a vast ecosystem of libraries, tools, and community support. This ecosystem includes state management solutions like Redux, routing libraries like React Router, and UI component libraries like Material-UI, which can significantly accelerate development.

3. **Node.js**:
   - Asynchronous and non-blocking I/O: Node.js uses an event-driven, non-blocking I/O model, which allows it to handle multiple requests concurrently without blocking the execution thread. This makes it highly efficient for handling I/O-bound tasks, such as serving HTTP requests or interacting with databases.
   - Scalability: Node.js is inherently scalable due to its non-blocking nature and lightweight architecture. It can handle a large number of concurrent connections with relatively low

resource consumption, making it suitable for applications with high traffic volumes.

- JavaScript everywhere: Node.js allows you to use JavaScript for both client-side and server-side development, promoting code reuse, consistency, and developer productivity.

4. **MongoDB Atlas:**
   - Flexible schema: MongoDB's document-based data model allows you to store heterogeneous data structures within the same collection, making it easier to represent complex relationships and adapt to evolving data schemas.
   - Scalability: MongoDB Atlas offers horizontal scalability through features like sharding and replica sets, allowing you to distribute data across multiple nodes to handle the increased workload and ensure high availability.
   - Cloud-native: MongoDB Atlas is a fully managed database service hosted on the cloud, providing automated backups, monitoring, and security features out of the box. This eliminates the need for manual database administration tasks, allowing you to focus on application development.

5. **Express**:
   - Minimalist framework: Express is a lightweight, unopinionated web framework for Node.js, providing essential features for building web applications without imposing unnecessary abstractions or conventions.
   - Middleware support: Express middleware allows you to extend the functionality of your application by adding modular, reusable components to the request/response pipeline. This makes it easy to implement features like authentication, logging, and error handling.
   - Routing: Express simplifies the creation of RESTful APIs by providing a robust routing system that allows you to define endpoint handlers for different HTTP methods and URL patterns, making it easy to structure your application's API

6. **Redux**:
   - Predictable state management: Redux provides a single source of truth for managing application state, making it easier to understand how data flows through your application and how it changes over time.
   - Time-travel debugging: Redux's immutable state and action logs enable powerful debugging capabilities, such as time-travel debugging, which allows you to replay actions and inspect the application state at any point in time. This can significantly simplify the process of identifying and fixing bugs.
   - Ecosystem: Redux has a rich ecosystem of middleware and developer tools that enhance its capabilities, such as Redux Thunk for handlingasynchronous actions, Redux Saga for managing complex side effects, and Redux DevTools for monitoring and debugging state changes. These tools provide additional flexibility and convenience for building complex applications with Redux.

2) Hardware and Software Specifications:

For our project, the required specifications are given in Table 3.2 and Table 3.3 respectively.

Table I. Hardware details

Processor	Windows i5 Intel
HDD	10 GB
RAM	4 GB

Table II. Software Details

Operating System	Window, Linux, macOS

III. CONCLUSION

Pillai InfoDesk emerges as a promising and indispensable solution for educational institutions seeking to revolutionize their record-keeping processes. With its user-friendly interface serving administrators, teachers, and students, this system not only lightens the burdens of manual record-keeping but also diminishes the risk of errors and redundancies in data management. It has features, such as attendance tracking and the visualization of individual student skills, that empower educational institutions to efficiently monitor and nurture their students' progress.

Pillai InfoDesk is not merely a data management tool, it's the driving force behind academic excellence and administrative prowess, ensuring that educational institutions not only adapt but flourish in the digital age.

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