NBA Depot: Development of NBA documentation system for academic institution

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***Abstract*— NBA accreditation is now becoming a prerequisite for technical institutions to seek autonomous status from universities; this creates a necessity for a web portal system which will be able to store huge documentation at college level/department level. The system in this paper is aimed for developing an online NBA documentation system that will be useful to educational institutions and colleges mainly for information retrieval. Staff and students who are logging in this system will be able to access information regarding college. The faculty would be able to generate multiple types of reports, view all student's data, set course outcomes, program outcomes, etc. For accessing the website the users must be registered with the system after which they will be able to access as well as modify data as per the permissions given to them. It will ease the process by giving more accuracy, while giving automation to the faculty. Thus, the system reduces manual work and builds solutions using technological terms.**

Keywords*— *Web-portal, documentation, automation, educational institutions, system, information retrieval.

I. INTRODUCTION

In the current digital era, there is a vast amount of information available online, making it difficult to find what you're looking for. The process of accessing and obtaining pertinent information from vast amounts of data that are stored in different formats is known as information retrieval (IR). The significance of information retrieval cannot be understated since it enables people and organizations to quickly and easily access pertinent information that can assist them in conducting research, making educated decisions, and solving problems. This IR is essential for web portal development for accessing information more conveniently.

The accreditation procedure is crucial to upholding the norms and quality of education. It is a procedure that compares educational institutions and programs to a list of standards and requirements. The Government of India created the National Board of Accreditation (NBA), an independent organization, to evaluate and certify technical education programs in India. The National Board of Accreditation (NBA) is a set up by the AICTE to assess the qualitative competence of the programs offered by technical and professional educational institutions, which are approved by appropriate statutory regulatory bodies. So we created the web portal “Depot of NBA documentation”. Colleges need to maintain a significant amount of evidence to prove compliance with the National Board of Accreditation (NBA) standards. The management of this documentation can be time-consuming and challenging, which increases the risk of mistakes and inefficiencies. We suggest a new approach for handling NBA documents to overcome these difficulties by streamlining the procedure and making it simpler for universities to maintain compliance. Here the concept of maintaining all the documents related to NBA will be managed by a web portal giving the university an automated and online platform. It will help to maintain a huge amount of data online rather than a large amount of paperwork required to store information such as student/staff personal details, academic details, syllabus, and achievements. The super admin of the web portal is the head of the department and will handle the permissions to be given to the staff and students. The search field will help to find records of specific students. The username and password will help students/staff to login the website but if the session is timed out it will log out the system automatically.

The overall goal of the project is to establish a centralized, organized, and effective accrediting procedure that encourages accountability, openness, and data management. By streamlining the certification process and easing

administrative strain, the project will benefit the accrediting board as well as the college.

II. LITERATURE SURVEY

Following literature survey is according to our system. It shows different research papers based on the concept of NBA documentation.

Liangqiu Meng[1] implemented a hierarchical framework to arrange the suggested college student management system, which consists of four layers: a web display layer, a business logic layer, a data access layer, and a database layer. The college student management system's ER diagram is then described. It has a number of components, including information on the teacher, the department, the major, the class, the student, the course, the manager, employment data, the comprehensive score, and the type of course. Finally, a functional module design for a system to manage college students is offered. This system is developed with three different categories of users: teachers, managers, and students.

Manish Kumar Thakur[2] mentioned about the smart college management system which includes two modules to make up the suggested work: A. Student B. Teacher C. Admin. Students must provide their student name, college registration number, and university registration number in the student's module. The student results from internal college exams are maintained by the admin module. In addition, the sophisticated features include: Notifications for natural disasters like floods and other events will be issued to students directly from the administrative office via the app. Any new information for a specific semester will be uploaded by the professor through the program, informing the students for that semester. Depending on their departments, the students can obtain a variety of subject-specific notes. Application also contains reasoning to support providing pupils with the aforementioned amenities.

Shadrack B Kweingoti[3] proposed that institutions throughout the world have found that using information technologies to implement their business processes is an effective solution. An online program called Library Book Management System was created and engineered with the only purpose of automating library services. With a focus on the Maasai Mara University library, which has not fully automated its services, the system was designed to address the existing issues faced by Narok County libraries. The automation of the cataloging, book circulation, fine computation, card processing, member information management, and report production operations was the goal of this system. This system was put into place using a variety of techniques. There are plenty of them, such as the PHP scripting language, HTML5, JavaScript, JQuery library, Cascading Style Sheets, MySQL 5.3 database running on Wamp Server, Bootstrap, Microsoft Visio 2010.

Praveen Kumar, Tripti Sihirra, Sandeep[5] represented the information about the project is COLLEGE MANAGEMENT SYSTEM (CMS). A web-based tool called CMS seeks to give information to all management levels inside a business. The college can utilize this system as an information management system. The system administrator will generate a login ID and password for a specific user, allowing that user to access the system and upload or download data from the database. All business logic will be in PHP and be located in the middle layer, while the front-end will be HTML pages with Java Script for client-side validation. Also, these levels will communicate with the MySql database, the third layer of the database. Apache will function as the web server to begin executing this project.

Shrikant Kokate[6] gave the information about importance of ERP system that it is impossible to retrieve information from paper files, there are no tools for accessing old records, and staff members waste hundreds of hours each month manually inputting data or carrying out tasks that should be performed automatically, like evaluating students and producing results. These gaps will be filled by e-college, which will also enable educational institutions to save significant time. This paper outlines a small number of modules and how they should be implemented in order for educational institutions to run efficiently.

C.Vinothini, C. Tarun, K. A. Bhavana, G. Nikhil Krishna, Advaith Praveen[7] have described the NAAC and NBA process. In order to investigate and carry out certification of HEIs, the Government of India's Ministry of Human Resource Development formed NAAC under UGC and NBA under AICTE in 1994. Engineering colleges are now urged to submit applications for institutional NAAC accreditation as well as individual programme NBA accreditation in order to maintain quality standards. In order to request autonomous status from universities/UGC, technical institutions now need to have NBA accreditation. This paper explores the potential for the NBA accreditation process to even be completed digitally with the aid of a personalized web portal in addition to studying the various facets of NBA accreditation and assisting us in understanding its significance.

Lalit Mohan Joshi[8] developed the project 'CMS' which is an Intranet-based program that can be used by any department or the entire university. The college may utilize this technology to track student attendance. Students and staff members who log in can view or search any college-related information. Staff will provide updates on student attendance, grades, and staff attendance. For an engineering college, this system (C.M.S.) is being created to maintain and facilitate simple access to information. Users must first register with the system in order to view and edit data according to the permissions granted to them.

S. Jeyalatha et al.[9] summarized the way to access data from MySQL databases. Thus, this literature survey helps to create our system in a more potent way.

III. PROPOSED SYSTEM

This system is designed to help:

- HOD can give permission to faculty and students also can view the overall web portal.
- Faculty can create forms and students can fill forms through the web portal.
- Faculty can maintain course outcome and program outcome.
- Students can check attendance, check syllabus status and view profiles.
- Faculty adds curriculum, activities and sports.

This system basically is designed where staff and students are connected online through a web portal. Here, the HOD, faculty and students can login separately to their respective accounts and get access to the internal details.

A. Requirement Elicitation:

Stakeholders: The stakeholders for the project are Principal, HOD, teaching faculty, non-teaching faculty, students.
Interview participants: Interview participants to learn about their needs, demands, and concerns regarding the accreditation process. To fully comprehend their viewpoints, pose open-ended questions and then follow up with incisive inquiries.
Study existing documentation: To better understand the criteria that must be met, review current documentation connected to the accreditation process, such as the NBA's accreditation standards and guidelines.

B. Functional Requirements:

- All the users of the system should be able to sign up (if new user) wherein they will use their email id and self-password (so that no person outside the institution can sign up with this portal) to log in into the portal and fill out a basic registration form containing information about their personal details.
- Colleges must be able to upload and maintain any NBA-required documentation, such as self-studies, program evaluations, and accreditation reports, using the system. Moreover, version control and document tracking must be supported by the system.
- The system should be able to map CO's and PO's for each assessment into the syllabus.
- The system should be able to provide a search function to allow users of the portal to find specific documents quickly and easily.
- The system must have reporting capabilities that let users create unique reports on the status of their documents, student/faculty personal details, syllabus and other important indicators.
- Students should be able to view their profile/dashboard after logging in so that they can navigate to different action tabs and access the required functionality/feature.
- Students should be able to fill the feedback form provided by the respected faculty.
- Faculty and HOD should be able to view details(academic/sports or achievements).

Following figure illustrates the role of each stakeholder in the web portal :-

Role of stakeholders

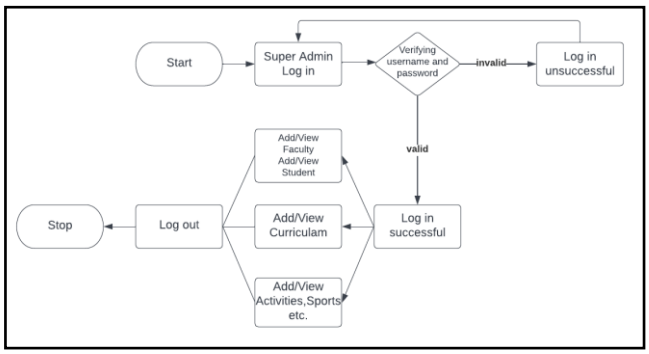

Fig. 1. State Machine (Super Admin)

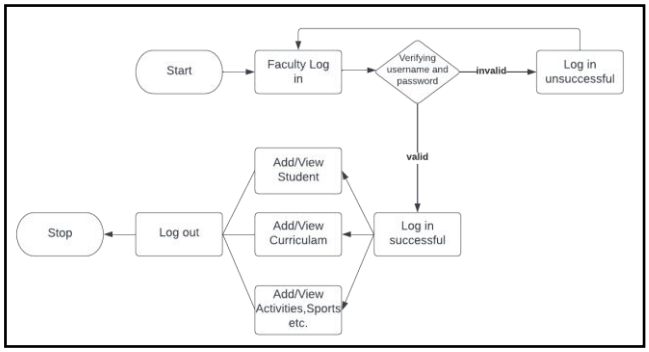

Fig. 2. State Machine (Faculty)

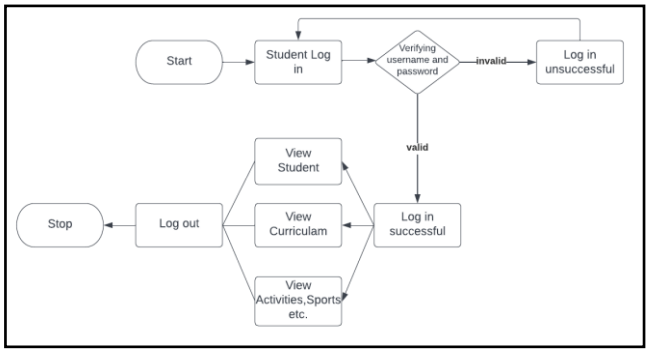

Fig. 3. State Machine (Student)

C. Features

1. Document storage: Creating a central repository for all NBA-related documents, such as student records, academic records, and more.
2. Search functionality: The project may contain a powerful search capability that enables users to search by student name, date period, or other criteria, making it simple for staff/HOD to locate what they're searching for.
3. User access control: Access to particular sorts of documents may need to be restricted to certain individuals or groups of users depending on the nature of the project. Implementing a user authentication and authorization system may be necessary for this.
4. Form filling: This is an important functionality of the system which purpose the need to fill the

various forms so students and staff can access this information contained in the database.

D. Deployment

The website is hosted on a web server in this deployment diagram, which connects to the application server using a load balancer. In order to retrieve and save data, the application server interacts with the database server and manages user requests. All information pertaining to the college management system is kept on the database server. To maintain data security and redundancy, the diagram also includes a backup server. In case there are any problems with the primary database server, the backup server keeps a duplicate of the database server as a backup that may be used to recover data.

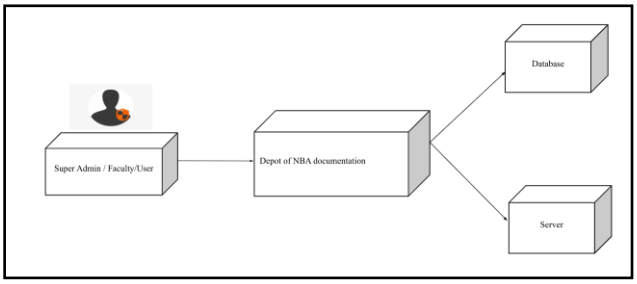

Fig. 4. Deployment Diagram

The user interface for the front-end program would be the Depot of NBA documentation. Making API requests to the back-end, processing user input, and producing pages would be its responsibilities. Communication with the front-end application and data retrieval from the back-end data layer would be handled by the API layer. Moreover, it would manage user access authorization and authentication. of the NBA-related documents would need to be stored and retrieved by the data layer. This may include student data, game, academic details, student's profiles, and other things. Technology such as MySQL will be used to store the data. With the addition of dynamic features like dropdown menus, form validation, and animations, JavaScript is utilized to improve the user experience.

E. Technology Used

- For Frontend:

1. HTML

Because HTML is the industry-standard markup language for structuring and displaying content on the web, it is utilized in the creation of websites.

HTML offers a clear and well-organized structure for website content. Both developers and consumers will find it simple to comprehend and browse because of the use of tags to markup material and determine its structure.

All current web browsers support HTML, making it a dependable and consistent method for developing web pages that function on a variety of platforms and gadgets.

HTML enables programmers to construct web pages that are user-friendly for those with disabilities. Developers can give screen readers and other assistive technology a structure that is more meaningful and understandable by employing semantic HTML elements.

2. CSS

The usage of CSS (Cascading Style Sheets) in website building allows for the separation of content's display from its structure and functionality. The following are some justifications for using CSS while creating websites:

1. Styles: CSS enables designers to add aesthetic elements to website content, such as font, color, and layout. Developers may design aesthetically appealing websites that are simpler to read and navigate by separating appearance from structure.
2. Consistency: CSS makes it simple to keep uniform styling throughout a website. Web designers can produce a more unified and streamlined website by generating reusable styles and using them consistently.
3. Efficiency: The amount of code required to style a website is reduced with CSS. Developers can write shorter code by applying CSS to numerous components at once.

3. JavaScript

Because it enables the creation of dynamic, interactive web pages, JavaScript is utilized in the building of websites. The following are some justifications for using JavaScript in website development:

Interactive elements can be created using JavaScript, including pop-up menus, drop-down menus, and animations. JavaScript allows programmers to make fun, interactive experiences for website visitors.

JavaScript can be used to construct responsive websites that change their layout in response to user input and activity. JavaScript, for instance, can be used to dynamically load material without requiring a page refresh.

1. Functionality: JavaScript enables programmers to increase a website's functionality. JavaScript, for instance, can be used to interface with APIs, conduct calculations, and check user input. JavaScript is a dependable scripting language because it is supported by all current web browsers.
2. Flexibility: To build sophisticated and potent websites, JavaScript can be combined with other web technologies like HTML and CSS. Using JavaScript in conjunction with other programmes, programmers may build extremely interactive and functional websites.

- For Backend:

1. PHP:

Because it enables the building of dynamic, interactive websites that can communicate with databases, manage form data, and carry out other server-side operations, PHP (Hypertext Preprocessor) is used for website development. These are some explanations for why PHP is employed in website creation:

PHP is a server-side scripting language, which means it runs on the server as opposed to the client. As a result, programmers may construct dynamic, interactive websites that can analyze form data, communicate with databases, and produce dynamic content.
Database integration enables developers to build websites that can store and retrieve data by interacting with databases like MySQL using PHP. This enables the development of websites such as social networks, e-commerce websites

1. Flexibility: PHP is a powerful language that can be used to build a variety of online applications, from simple scripts to massive, complicated websites.
2. Compatibility: PHP is a dependable option for website building because it is supported by the majority of web hosting companies and is compatible with all main web servers.
3. Community: There are many resources and libraries available to assist developers create websites more quickly thanks to PHP's sizable and vibrant developer community. This also implies that PHP is always developing and getting better, with new additions and upgrades coming out frequently.

DFD all level:

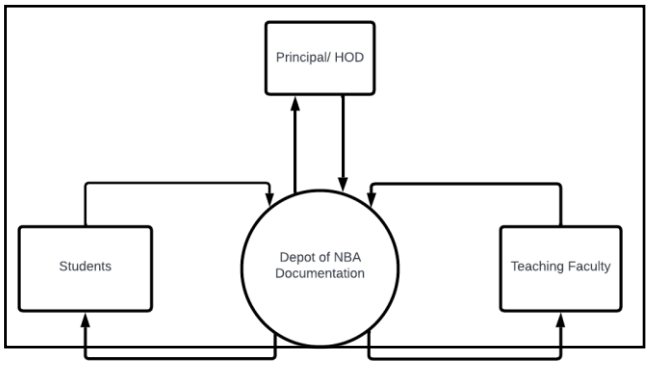

Fig. 5. DFD Level 0

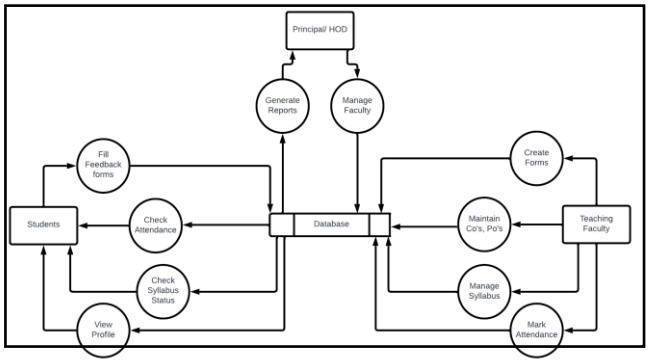

Fig. 6. DFD Level 1

F. Expected Outcomes

- A unified web site that serves as a one-stop for all the information pertaining to the accreditation process should be created as a result of the project. Information on the accreditation standards, procedures, guidelines, and other pertinent data should be accessible through the site.
- Academic support to all the students throughout the degree program.
- Details of the student should be made available and should be easily accessed by the staff.
- By automating administrative activities, reducing paperwork, and offering real-time updates on the certification process, the project should seek to boost efficiency and productivity.
- An improved data management system, capable of handling substantial amounts of data linked to the accreditation process, including institution profiles, accreditation criteria, and evaluation reports, should be the project's output.

IV. Using Theory and Calculation

Mathematical Expressions and Symbols

A college management system typically involves multiple sets of relationships. Here are some examples:

- Student-Course relationship: A student can able to learn more than one course, and each course may have a number of individuals enrolled in it. This relationship is many-to-many.

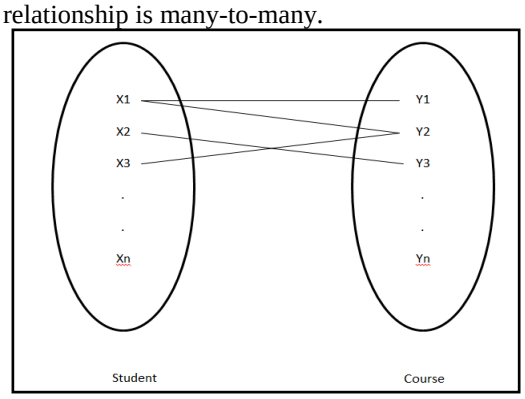

Fig. 7. Student-Course relationship

- Course-Faculty relationship: Faculty may teach many courses, but only one faculty may be assigned to any given subject. This relationship is many-to-one.

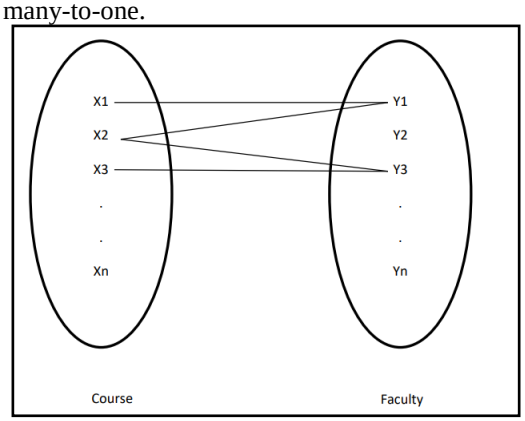

Fig. 8. Course-Faculty relationship

- Faculty-Students relationship: There can be more than one faculty for a student, and there can be more than one student for each faculty. This relationship is many-to-many.

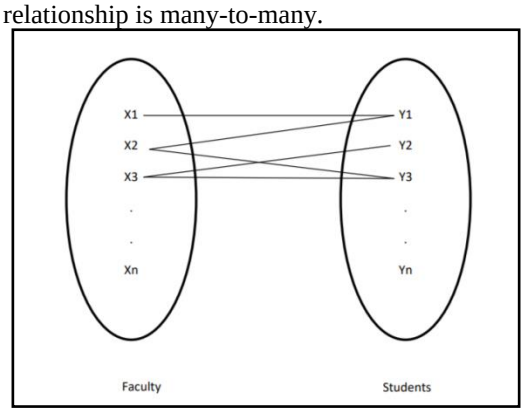

Fig. 9. Faculty-Students relationship

- Superadmin-Faculty relationship: Superadmin may have more than one faculty under him/her, but only one superadmin is head of all the faculties. This relationship is one-to-many.

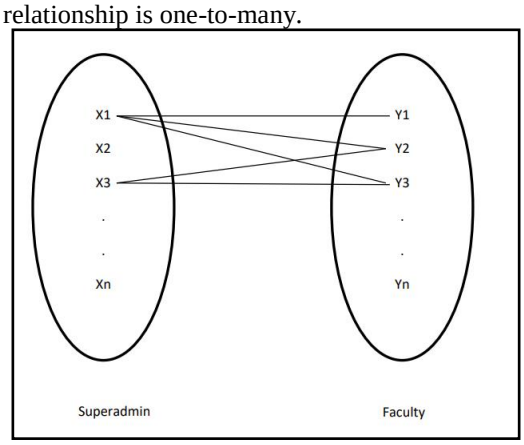

Fig. 10. Superadmin-Faculty relationship

- Superadmin-Student relationship: Superadmin may have more than one student under them, but only one superadmin is head of all students. This relationship is one-to-many.

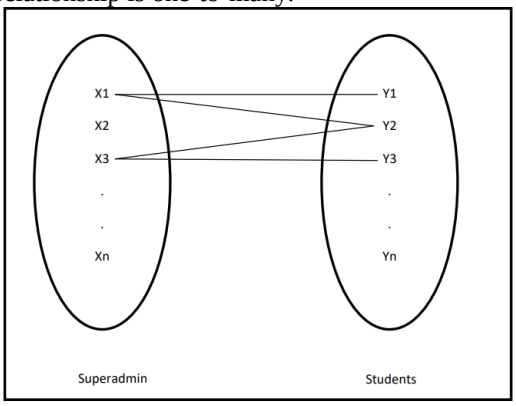

Fig. 11. Superadmin-Student relationship

CONCLUSION

The amount of information created and stored in the modern digital age has increased rapidly. Online information storage and retrieval are now essential for both students and faculties. Users can store vast volumes of data in an accessible and secure manner using online information storage. Physical storage is no longer required, and the possibility of data loss is decreased. It's crucial to have quick and effective information retrieval skills. Users can now quickly and accurately search for and obtain the information they need thanks to the development of online information retrieval tools and methodologies. With the assistance of sophisticated search, for educational institutions, a college management system is a crucial tool for managing admissions, student data, course scheduling, faculty management, and financial administration, among other elements of college operations. A college management system's deployment has a number of advantages, including reduced procedures, enhanced accuracy, and increased efficiency. It makes it possible for educational institutions to keep well-organized records, automate administrative processes, and provide reports in real-time, all of which can aid in the making of data-driven decisions. A college management system can also make stakeholders, such as students, teachers, staff, and administration, more transparent by making information easily accessible and encouraging dialogue. For educational institutions looking to boost their operational effectiveness, increase the quality of their services, and maximize the use of their resources, a college management system is a wise investment.

APPLICATIONS

There are several uses for a college management system, which is a crucial tool for educational institutions. One of a college management system's main applications is:

1. Admissions: By automating procedures like application submission, document verification, and money collection, a college administration system simplifies the admissions process.
2. Student Records Management: Digital records of students, including their personal data, academic standing, attendance, and conduct, are kept by a college management system. The creation of reports, transcripts, and other documents using this data is possible.
3. Course Management: A college management system aids in the coordination of faculty assignments, course scheduling, and course evaluation. Students can also examine their schedules and register for classes through it.
4. Faculty Management: A college management system aids in the administration of faculty hiring, deputizations, performance reviews, etc.
5. Management of finances: A college management system makes it easier to manage finances, which includes keeping track of expenditures, producing

financial reports, and maintaining the institution's financial accounts.

6. Student, professor, and management communication is made possible through a college management system through a variety of channels, including email, chat, and messaging.
7. Data backup and disaster recovery: Users can back up vital data and files using online information storage, ensuring that they can restore them in the event of data loss or calamities like fires or floods.
8. Collaboration: Many users may access and work together in real-time on documents and files thanks to online storage and retrieval technologies. Teams may collaborate more effectively as a result, and physical storage requirements are decreased. Users can access their files and data from any device with an internet connection thanks to online information storage. This makes it simpler to work while traveling or remotely.
9. Data sharing: Sharing files and papers with others is made simple by online information storage. Colleagues can be given access to particular files or folders by users.
10. Research and Analysis: Internet information retrieval technologies let users look up and get information from a variety of sources in a snap. This helps user's access pertinent information quickly and correctly for study and analysis.
11. Education: Internet information retrieval and storage are frequently employed in this sector. It is simple for teachers and students to share information work together on projects, and access educational resources.

In conclusion, a college management system provides a number of uses that help educational institutions improve their efficiency, streamline their operations, and offer better services to their teachers, staff, and students.

FUTURE SCOPE

With ongoing technological improvements and rising demand for simplified educational procedures, the potential of college management systems is bright. The following are some prospective areas for expansion and improvement:

1. Mobile Integration: College management systems are anticipated to include mobile integration to improve accessibility and convenience for users as a result of the growing use of mobile devices. The incorporation of artificial intelligence and machine learning into college management systems can help to automate processes like course scheduling, student performance monitoring, and faculty evaluation.
2. Blockchain Technology: By using blockchain technology, the risk of data breaches can be decreased and the security of college administration systems can be improved. With predictive analytics, it is possible to examine student data and forecast academic achievements.
3. Virtual and augmented reality: The use of virtual and augmented reality can improve learning by allowing students to engage more fully with the course material.
4. Customized Learning: College management systems can include personalized learning technologies to adapt educational materials and content to the requirements and learning preferences of specific students.

In conclusion, the potential for growth and development in the areas of mobile integration, artificial intelligence and machine learning, blockchain technology, predictive analytics, virtual and augmented reality, and personalized learning is enormous for college administration systems in the future. The way educational institutions run their businesses and provide students with educational content may change as a result of these developments.

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