College Management System Using DJANGO Framework in Python

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ABSTRACT

The College management systemis a website which is build by using Django with features for managing student and staff information, Automatic Attendance, Results, Leave Applications and also notifications. Our Proposed system is divided into three panels: Admin, Staff, Student. The Admin panel grants complete control over the system, the admin can manage students , staff, courses, subjects and all the things that can a student and staff can handle.Admin can also handle leave applications, feedback and admin can have the overall view of staff information and student information. The staff panel is for teachers to manage students attendance and results and they can also apply leave. The Student panel enables students to view and update there profiles, check attendance and also apply can apply leave and they will also get notifications .Overall College Management system enables Student, Staff and Admin a user-friendly website which will be helpful for time management of staff and as well as Students.

Key Words: College Management System,Admin, Student information, Staff Information, Time Management.

I. INTRODUCTION

In traditional educational Institution the day-to-day monitoring of attendance, results, leave applications and communication between student, staff, admin are done manually.This process is essential but it can be time taken which will have impact on the efficiency of college management.To increase the efficiency of the educational systems we are proud to present our College Management System, the solution designed to transform the traditional practice to an innovative website.

Staff members are required to maintain physical records, manually calculate attendance and grades and totally paper-based systems for leave applications and feedback. This manual approach will increase overhead for staff and student and resulting in loss of Information, delayed results. To solve this problems College Management System is introduced
The College Management System proposed in this paper aims to address the challenges faced by educational institutions for managing various aspects. Th system is developed using Django, a robust python web

framework ensuring a secure, scalable, and efficient for all end users. The College Management System features three distinct panels - Student, Staff and Admin each tailored to specific needs of Students, Staffs and Administrators. This structure provides personalized approach making it easier to user to navigate.

The Student panel allow students to manage there attendance, grades, schedules and leave requests helping them to stay on top of there academic responsibilities. The Staff panel acts as a central hub for faculty and staff, streamlining administrative tasks like tracking attendance, managing results and organizing timetables. By automating this processes, it helps staff become more efficient in what they do, which improves the overall teaching and learning experience.

The admin panel is the central control point for the entire system, giving the administrators the ability to manage attendance, results, timetables and leave applications. This ensures that the entire institution runs smoothly and stays organized. The college management system is built with user - friendliness in mind, offering an accessible platform that simplifies administrative tasks for everyone. Automated features such as attendance tracking, result management , timetable creation , and leave processing. It addresses many of the issues that come with traditional college management system[1-28].

II. LITERATURE SURVEY

Tang, Y.F., & Zhang, Y.S(2009, August). **[1]** Design and Implementation of College Student Information Management System Based on Web Services. Tang and Zhang designed a student information management system using web services with Role-Based Access Control(RBAC). The system ensures high security while providing functionalities such as database management, role-specific access, and efficient handling of student records .

Hashim N. M. Z., & Mohamed, S. N. K,. S.(2013).**[2]** Development of Student Information System. Hashim and Mohamed created a student information system tailored for the Faculty of Electronics & Computer Engineering at universiti Teknikal Malaysia Melaka (UTeM). Using Rapid Application Design (RAD) methodology, the system focuses on recording and updating student data efficiently while providing reports for faculty use.

Patnaik, S., Kumari Singh, K., R., & Kumari, n. (2016).**[3]** College Management System. Patnail et al. Developed an automated college management system to replace traditional paperwork with digital solutions. The system they made categorizes users based on roles I.e., Students or Faculty and provide functionality such as attendance tracking, fee management, and academic record maintenance.

D B Heras, D. Otero, and F. Arguello,**[4]** developed an eco-feedback system to enhance the sustainability in universities. The system integrates virtual environments and human-computer interfaces to monitor ecological practices. It provides real-time feedback to users. It encourages sustainable behaviour and improving environmental performance metrics with academic institutions.

Y Wang, B Y Sun, and F Cheng,**[5]** developed a model for managing image archives using electronic documentation. This process improves efficiency in storing,retrieving, and managing visual data in universities. The model focuses on digitization to streamline archival workflows, ensuring better organization.

X. X. Xin, R. M.Wu, and H. H.Li,**[6]** they developed E-Campus management using SOA. It is framework for managing university operations using a Service Oriented Architecture(SOA). This integrates different functions into one system,making it more efficient. H.M. Wei and L.J.He**[7]**in 2009 built a system to manage all academic affairs in universities using SOA. It combines student records, faculty management, and course administration into one platform.

S.Jeyalatha, B.VijayaKumar, and G.S. Wadhwa,**[8]** created a web-based tool to manage data in universities. It helps keep student records and administrative data organized and accurate. Rajmane, S.S., Mathpati, S.R., & Dawle, J. K.(2016). Proposed a system to unify all college management tasks into one digital platform. This improves efficiency by making all processes accessible in one place.

Bharmagoudar, S.R., Geeta, R.B., & Totad, S.G.(2013),**[9]** designed a eb-based system to simplify student record management. It securely stores student data and provides features like attendance tracking.

III.EXISTING SYSTEM

The existing system for college management typically relies on manual processes or basic software solutions. Administrators often manage student registrations, fee calculations through paper records or spreadsheets. This approach can lead to inefficiencies. Due to manual work there is lots of time waste. There will be maintenance problem due to this and the data may be lost as it is saved in files. Further there will be lack of centralized digital platform and this will limits the ability of both students, faculty, and administration to efficiently manage the college. Overall it will lead to increased burden for administration, faculty and as well as students and a poor user experience. Overall the existing system is cumbersome and lacks automation and does not meet the modern needs.

IV.PROPOSED SYSTEM

The proposed College Management System addresses the shortcomings of existing system manual processes and provides a comprehensive, web-based solution built with Django. This system reduces the burden of the administration by its automation by offering a user-friendly interface where they can view everything regarding college. It includes separate admin panel, staff panel, and student panel which ensures secure access and streamlined operations. The system contains taking students attendance, updating attendance and many more. The student can also view their respective attendance In the proposed system all actions can be done through admin panel. The admin can add student , staff, subjects, courses, sections and many more. It will automate all the activities in the existing system and lessen the burden of the administration.

V. SYSTEM REQUIREMENTS

The hardware requirements we need to develop this project is a Computer/ PC with a good internet access and for frontend we should have minimum knowledge of HTML, CSS, JavaScript. And for backend software requirement is to have knowledge in Django. Database we need is SQLite. For Authentication also we need Django only which is a framework in Python. For version control GIT is required.

VI. <u>METHODOLOGY</u>

The methodology includes :

Requirements Gathering :

Identifying key features such as admin , faculty and student credentials (gmail , password).

System Design :

Designing the user friendly interface using HTML ,CSS, JavaScript and implementing Django as the Backend realtime data handling authentication.

Implementation :

Frontend Development : HTML, CSS ,JavaScript allows easy User Interface creation and also provides real-time data validation.

Backend Development : Using Django which is a pyhton backend web Framework provides inbuilt database (sqlllite3) and also managing of the files (templates, views , models) are very easy in Django.

Flow Diagram:
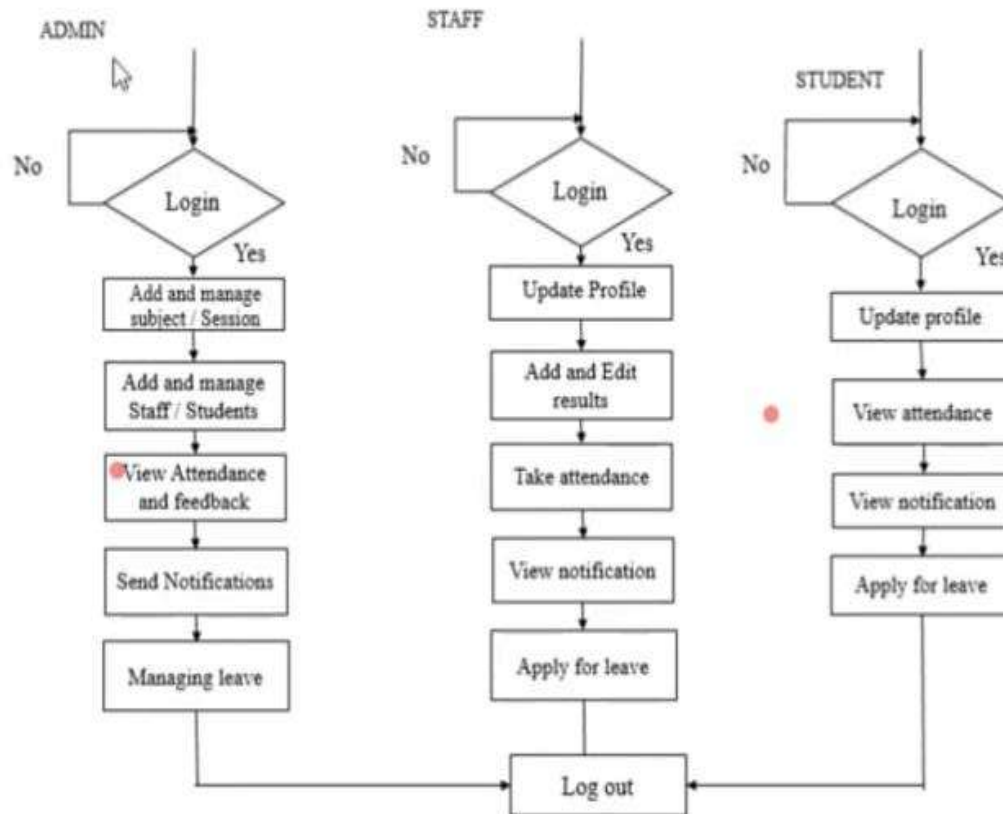
WORKING PROCESS

User Login and Registration

1.Admin Login: Admins use secure credentials to log into systems. Upon successful login, they gain access to   overall college management features in admin panel.

2.Staff Login: Staff login using provided credentials by the admin. After login,
staff gain access to features that are present in the staff panel,including students
attendance, taking leave and complaint submission.

3.Student Login: Students login using provided credentials by the admin. After login, student gain access to features that are present in the student panel, including view attendance, asking leave and complaint submission.

Admin Panel Operations

The admin panel provides complete control over college management functions allowing admins to

Update Login and Personal Details: Admin can manage their own account details, including login credentials and personal information, for security and record keeping.

Staff Registration: Admin register/add staff manually by entering their details, including name, mail, address,session, and course.Only registered staff can login and access the staff panel features.

Student Registration: Admin register/add student manually by entering their details, including name, mail, address, course, session and section.Only registered student can login and access the student panel features.

Attendance Monitoring: The attendance data will be recorded and it can be viewed by students and as well as staff. Admin can monitor the attendance of the students for any subject taken by any staff.

Course Management: Admin can add course and also admin can manage the course. The number of courses totally depend on the admin.

Session Management: Admin can add session and manage session. Session is nothing but from which year the academic year started and when it will be end .,

Section Management: Admin can add sections in a particular course and the number of sections also totally depend on the admin.

Subject Management: Admin can add any number of subjects and assign the subjects to respective staff.

Notify Student/ Staff: Admin can send notifications to students and as well as Staff

Staff/Student Feedback: Admin can view the feedback given from the students and as well as from the staff.

Staff Leave: When the staff sends a leave notification to the admin, then admin has the right to approve their leave or reject their leave.

Staff Panel Operations

Update Profile: Staff can manage their personal details and update their profile.

Attendance Management: Staff can record attendance of students of their consultant subject and they can also update the attendance of the students.

View Notifications: Staff can view the notifications sent from the admin.

Apply For Leave: Staff can apply for leave and that will go to admin, and admin will approve or reject their leave.

Feedback: Staff can share their views on improvement of college and send feedback to the admin.

Student Panel Operations

Update Profile: Student can manage their personal details and update their profile.

Apply For Leave: Student can apply for leave, that can be approved by either Staff or admin.

Feedback: Students can send feedback to admin regarding staff, academics or any college related issue to admin.

Dashboard and User Interface: The system uses a clean, user-friendly dashboard for smooth user experience. It conatains a responsive user interface.

Data Validation:

The system prevents with entering duplicate values of hall ticket number for students. And email id will be also validated.

System Security and Maintenance: The system uses role-based access control,I.e., it will ensure that only admin, students and staff can access the features of their respected panels.

Summary

The College Management System in Django is designed to offer an efficient solution to manage the administrative operations in college, from student, staff registration to attendance management, providing feedback, asking for leave, and updating their respected profiles by using a user-friendly dashboard. It also contains secure and role based access, the system provides essential features to enhance the features of college management system for a seamless experience for administration, staff, and student.

ADVANTAGES

Increased Productivity

By automating attendance tracking, leave processes, the system saves time both for the staff and as well as students.Also streamlines process cross student, administrative, and staff panels fortimely and precise accomplishing of academic and administrative undertakings.

Better Security and Centralization of Data

Stores information like attendance, grades, leave applications, and others on acentral databases for easy access and lesser chances of data loss. Criticalinformation can only be made available to specific people using role-based access control.

Economical

Decreases the use of manual record-keeping, printing documents, and purchasing stationery enabling reduced expenditures.

Improved Inter-connectivity

Inter-messaging and notification systems improve the interaction of students, staff, and administrators. Real-time information is sent to concerned users through automated notification systems for attendance, grade approvals, and leave queries.

Higher Reliabilty

Aids in the elimination of manual errors caused by attendance and leave booking, grade counting, and others by automating the processes.Attendance and performance monitoring report generation is automated for instant decision making.

Improved Student Services

Gives students a service by which they can check their attendance with ease.

VII. PROBLEM STATEMENT

Overseeing the administrative and academic functions of an educational institution simultaneously is often difficult and time-intensive. Ineffective manual systems of keeping records of students and staff, tracking attendance, managing results, processing leave applications, and sending notifications often result in mistakes, inefficiency, and communication barriers. The absence of a central system for retention of

student and staff information commonly leads to backlogs in processing leave applications and tracking academic progress. Moreover, manual attendance tracking can also lead to inaccuracies, making records unreliable.

To mitigate the issues outlined above, an automated web-based system was designed using Django framework called College Management System, which provides a single, automated interface for all institutional activities. The system automatically tracks attendance and record management, replaces manual leave applications with automated ones, and facilitates instantaneous notifications to enhance

students', staff, and administrator's productivity. In addition to improved efficiency, the system also enhances accuracy and reduces communication gaps in the institution. With the simple design student, staff, and admin panels optimized, the system improves time wastage, reduces the administrative load, and enables better overall in.

VIII. <u>RESULTS</u>

Upon successful implementation and completion of the College Management System(CMS), The administrative efficiency is improved by automation of tasks such as student registration, attendance tracking and academic record management, it reduces manual efforts and paperwork.It is used to enhance communication and collabration between admin , faculty and student. It provide secure storage and access control mechanisms ensure data integrity. Student will get benefit from user-friendly interfaces to view attendance and receive notifications. College management system transforms traditional administrative processes into efficient digital works flows
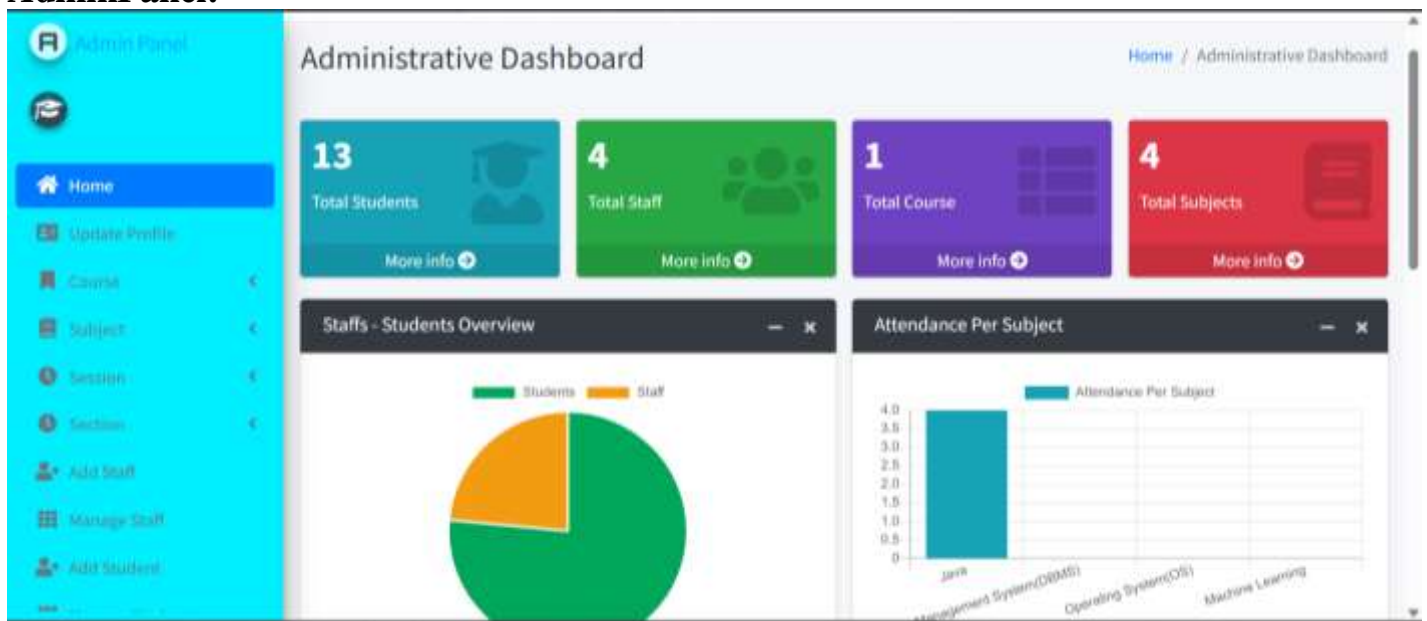
Student Panel:
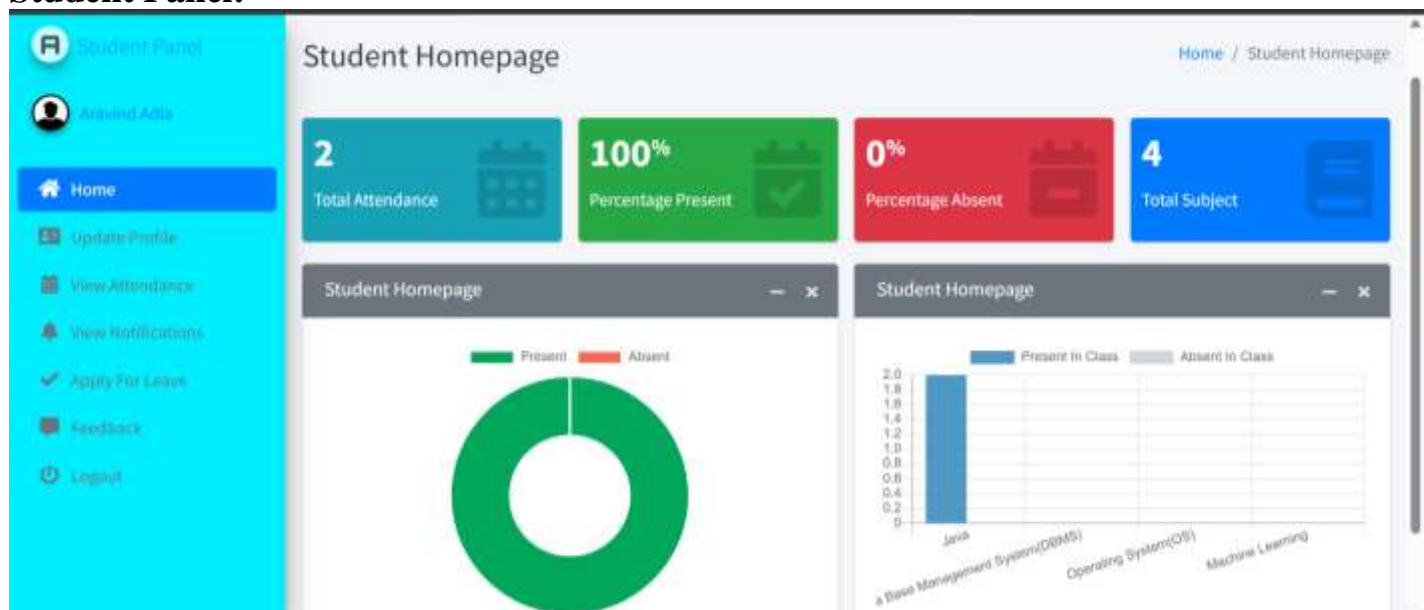
Staff Panel:
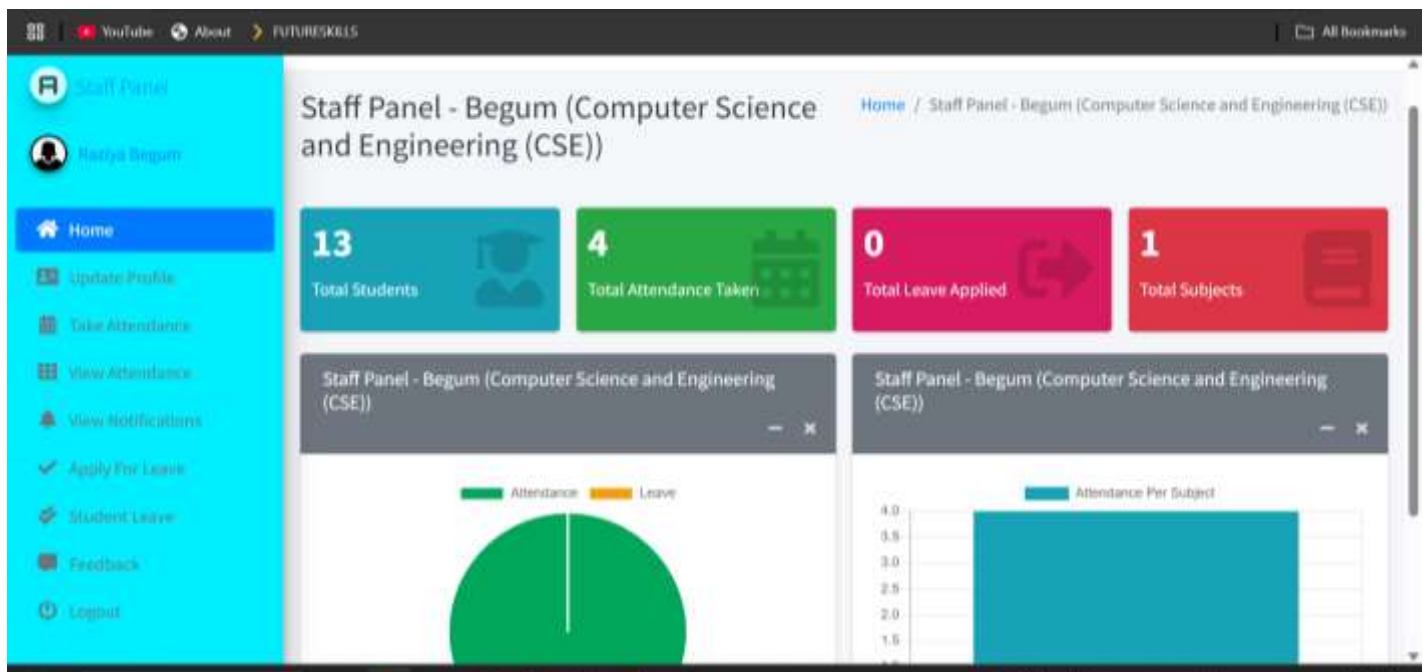
AdminPanel:

IX.CONCLUSION

In conclusion, College Management System that was developed with Django addresses the inefficiencies of traditional college institutions and is comprised of a student panel for student to manage their academic responsibilities, attendance, grades, schedules, and leave requests, staff panel to mange the inefficient processes of administrative staff so they can put more focus on teaching and improving student experience, and the Admin panel to manage the centralized skills of attendance tracking, result management, timetabling, and leave request processing. This system reduces drawbacks of manual systems for various reasons, including data loss, delays, and workload increase, improves communication between college community members, and leads to increased efficiency throughout the college. Finally it lays the foundation for future potential improvements in technology - including mobile application ability, insights from artificial

intelligence on student experience. Overall, this College Management System represents a real step forward in creating organizational efficiencies of academic institutions.

X. <u>FUTURE ENHANCEMENT</u>

Future enhancement of this project can be done by using advanced technologies like Artificial Intelligence and Machine Learning to implement predictive analytics for student performance. Integrate fingerprint or face recognition for more accurate and efficient attendance tracking. We can also develop a mobile app for easy access to the system on phones. We can also implement real time notifications for important updates, deadlines, and events. Additionally we can add built-in video conferencing capabilities for online classes and meetings. And including a module for job postings, internship opportunities, and career counselings. We can be implement more comprehensive data visualization tools for better user interface and decision making. Additional security measures can be implemented to protect sensitive data. These enhancements will transform the system into a robust platform that will meet the needs of administrators, staff, and as well as students.

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XII. <u>BIBLIOGRAPHY</u>

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