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EDURA: A smart Educational Companion for Students

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Abstract - *This project presents **EDURA**, a web-based college companion platform developed using PHP, HTML, CSS, JavaScript, and Microsoft SQL Server, designed to centralize and manage academic activities for students and faculty. Using features such as timetables, study materials, exam schedules, event notifications, and query management, the system aims to streamline college workflows and improve communication. Various modules, including student dashboards, faculty dashboards, and administrative panels, were implemented to ensure role-based access and functionality. The system also incorporates database management, dynamic content rendering, and user authentication mechanisms to enhance usability and data security. The platform's performance and reliability were assessed through testing of module interactions, data retrieval, and real-time notifications. Additionally, a user-friendly web interface was developed to allow students and faculty to access and manage academic information efficiently. This system aims to serve as a comprehensive tool for organizing, tracking, and facilitating academic activities in colleges, with potential applications in improving productivity, resource management, and student-faculty engagement..*

Key Words: EDURA, College Companion, Student Dashboard, Academic Management, Study Materials, Exam Preparation, Faculty Interaction, Educational Web Application.

1. INTRODUCTION

In the 21st century, where data and technology drive academic management, organizing and accessing student and faculty information has become increasingly important. **EDURA**, the college companion platform, centralizes academic activities such as timetables, study materials, exam schedules, event notifications, and query handling, making it easier to manage large amounts of college data efficiently.

Manual tracking of these activities across spreadsheets, notice boards, and separate systems is time-consuming and prone to errors, making traditional methods inefficient. By using a modular web-based platform, EDURA simplifies these processes, providing students and faculty with real-time access to information.

This approach allows colleges and academic departments to make data-driven decisions, enhance communication, and improve productivity, thereby fostering a more organized and responsive academic environment for both students and faculty.

2. OBJECTIVES

1. To develop a centralized web-based platform that efficiently manages academic activities for students and faculty, including timetables, study materials, exams, events, and queries.

2. To provide role-based dashboards for students, faculty, and administrators, enabling seamless access to relevant information and simplifying academic workflows.

3. To enhance communication between students and faculty by integrating a query submission and response system, improving responsiveness and engagement.

4. To create a user-friendly interface that allows students and faculty to view schedules, access materials, submit queries, and receive notifications in real time.

3. MOTIVATION

The motivation behind developing **EDURA** stems from the need to harness technology to better organize, manage, and access academic information in colleges. Modern academic environments generate a large volume of data, including timetables, lecture notes, exam schedules, events, and student queries, which can be difficult to track and coordinate manually. By centralizing these activities in a web-based platform, EDURA aims to uncover patterns in academic workflows, improve communication between students and faculty, and streamline administrative processes. This not only enhances efficiency and reduces errors but also empowers students and faculty to access relevant information quickly and make informed decisions.

Furthermore, EDURA fosters engagement and collaboration by providing real-time notifications and easy access to resources. As web technologies evolve, the potential to expand EDURA's features and improve usability continues to grow, making it an exciting project to

bridge technology and academic management. The ultimate motivation is to provide a comprehensive, organized, and user-friendly system that supports both students and faculty in achieving better academic outcomes.

4. LITERATURE SURVEY

1. R. Kumar, S. Patil, and A. Sharma, "College Management System Using Web Technologies," 2021 International Conference on Computing and Automation (ICCA), Bangalore, India, 2021, pp.

Key Findings:

- A web-based college management system was developed to manage student records, attendance, and academic schedules.
- Role-based dashboards for students, faculty, and administrators improved accessibility and user experience.
- The system highlighted the importance of centralized platforms for efficient academic data management.

2. P. Singh, M. Verma, and R. Gupta, "Design and Implementation of a Student Information System," 2020 International Conference on Smart Computing and Systems (ICSCS), Pune, India,2020.

Key Findings:

- The study implemented a student information system to manage timetables, exam schedules, and course materials.
- Integration of notifications and query management enhanced communication between students and faculty.
- Demonstrated the efficiency of modular web applications in reducing administrative overhead.

3. S. Choudhary and A. Rao, "Web-based Academic Portal for College Administration," 2019 International Conference on Advanced Computing and Communication Technologies (ICACCT), Hyderabad, India, 2019, pp. 334-338

Key Findings:

- Proposed a web portal for academic management with modules for lectures, exams, events, and notifications.
- Use of centralized databases ensured consistency and accuracy of academic records.
- Highlighted the significance of interactive dashboards for students and faculty engagement.

4. V. Mehta, R. Joshi, and K. Desai, "Implementation of College Companion Web Application," 2022 3rd International Conference on Emerging Technologies in Computer Science (ICETCS), Mumbai, India, 2022, pp. 145-149.

Key Findings:

- Developed a modular web application to manage college timetables, notes, exams, and events.
- Demonstrated the benefits of real-time notifications and query handling for academic communication.

5. PROBLEM FORMULATION

Introduction

In the context of *EDURA – A College Companion Website*, the problem formulation focuses on developing a unified digital platform that simplifies academic and communication processes within a college environment. The system aims to provide students and faculty with easy access to essential resources such as timetables, notes, exam details, events, and faculty information through a single interactive dashboard.

The main challenge lies in integrating multiple modules efficiently while ensuring user-friendliness, data security, and smooth information flow. Traditional manual methods of sharing academic materials, managing schedules, and handling student queries are often time-consuming and prone to errors. *EDURA* addresses these issues by automating and centralizing such activities.

This problem can be seen as an integration and data management task that requires effective database design, responsive web interfaces, and secure authentication. The final goal is to create a reliable and scalable system that enhances academic coordination, encourages digital learning, and improves the overall college experience for students and faculty members.

Present System

The current systems used in most colleges rely heavily on traditional or semi-digital methods for managing academic information and communication. Important resources such as timetables, study materials, announcements, and faculty details are often shared manually or through scattered digital platforms like emails, WhatsApp groups, and printed notices. This results in inefficiency, delays, and difficulty in maintaining organized access to academic information.

Students frequently struggle to find the correct materials or updates at the right time, while faculty members face challenges in managing schedules, sharing notes, and addressing student queries systematically. Furthermore, most existing systems lack an integrated platform that combines all these essential academic functions in one place.

Hence, *EDURA – A College Companion Website* is designed to overcome these limitations by providing a centralized, interactive, and accessible digital platform. It simplifies communication, enhances learning, and improves overall academic coordination within the college environment.

Problems of Present System

Lack of Centralized Access:

In most colleges, important academic information such as timetables, study materials, exam schedules, and announcements are scattered across multiple platforms or communicated manually. This creates confusion and makes it difficult for students to find the required information quickly.

Inefficient Communication:

Students and faculty often rely on informal channels like WhatsApp groups or verbal announcements, which are not reliable or structured. As a result, many students miss important updates or deadlines due to miscommunication.

Manual Management of Data:

Many administrative and academic processes are still managed manually, leading to time-consuming tasks and higher chances of human error. Maintaining attendance, distributing notes, or updating exam-related information manually causes unnecessary delays.

Limited Student–Faculty Interaction:

There is no dedicated platform for students to raise academic queries or interact directly with faculty members outside of classroom sessions. This limits collaboration and slows down the resolution of academic concerns.

Data Inconsistency and Lack of Updates:

Since there is no unified system, data such as timetables or event schedules may not always be updated in real-time. Outdated information can lead to confusion and scheduling conflicts.

Dependence on Physical Resources:

Many colleges still rely on printed notices and physical distribution of materials. This not only consumes resources but also makes it difficult for students who are absent or off-campus to stay updated.

Proposed System

The proposed system, **EDURA**, is designed to simplify and digitalize college-related activities by integrating essential academic and communication features into a single platform. It aims to replace traditional manual systems and fragmented communication channels with a centralized, efficient, and user-friendly web application.

EDURA provides modules such as **Timetable**, **Notes/Materials**, **Exam Section**, **Events**, **Faculty Details**, and a **Query Box**, allowing students and faculty to interact and access information easily. The system ensures quick updates and smooth information sharing, reducing delays and improving coordination.

The platform supports **role-based access**, where students, faculty, and administrators have separate dashboards with relevant functions. It focuses on improving transparency, communication, and accessibility within the college environment.

Built with a scalable and modular architecture, EDURA can be expanded with additional features like attendance tracking and online assessments in the future. Overall, the system enhances college management and serves as a reliable digital companion for students and faculty.

Problem Statement

The system aims to develop a comprehensive and user-friendly college companion platform that integrates essential academic and administrative features into a single digital space. Current college systems rely heavily on manual processes and scattered communication channels, leading to inefficiency and delays in information sharing.

EDURA seeks to overcome these limitations by providing an organized, accessible, and interactive web-based system where students and faculty can manage timetables, study materials, exams, events, and queries efficiently. The goal is to create a unified platform that enhances communication, promotes transparency, and simplifies day-to-day academic activities through digital automation.

6. SOFTWARE REQUIREMENT SPECIFICATION

FUNCTIONAL REQUIREMENT

These are the specific features, functions, and operations that the **EDURA** system must perform to meet the needs of students, faculty, and administrators. They define the core behavior and functionalities of the platform.

Functional Requirements of EDURA – A College Companion Website:

User Authentication:

The system must allow secure login and registration for students and faculty, ensuring authorized access based on user roles.

Timetable Management:

Students should be able to view their class timetables, while faculty can update or modify schedules as needed.

Notes and Materials Section:

Faculty members should be able to upload study materials and notes that students can easily access and download.

Exam Section:

The system must display exam timetables, notifications, and results to keep students informed.

Events and Announcements:

EDURA should provide real-time updates about college events, seminars, and important notices through an interactive dashboard.

Query Box:

The system must include a query section where students can post academic questions or issues and receive responses from faculty.

NON-FUNCTIONAL REQUIREMENT

These are the quality attributes and constraints that define how the **EDURA** system performs its functions. They describe essential system properties such as performance, scalability, usability, and reliability.

Non-Functional Requirements of EDURA – A College Companion Website:-

Performance:

The system should provide quick access to information such as timetables, notes, and announcements with minimal load time. It must efficiently handle multiple user requests simultaneously without affecting performance.

Scalability:

EDURA should be scalable to support an increasing number of students, faculty, and data records as the college grows. The system design should allow smooth expansion without affecting functionality.

Availability:

The system should remain accessible at all times, ensuring that students and faculty can access information whenever needed with minimal downtime.

Security:

The system must protect sensitive information through user authentication, role-based access control, and data encryption to ensure privacy and prevent unauthorized access.

Usability:

The web interface should be simple, intuitive, and easy to navigate. It must be responsive and accessible across devices such as desktops, tablets, and smartphones.

1. Hardware and Software Requirements

Hardware Requirements

These specify the physical devices and components needed to run the **EDURA** system effectively, including servers, user devices, network equipment, and storage resources.

Hardware requirements of Olympic Medal Prediction using Python are: -

Server: Multi-core CPU (Intel i5/i7 or AMD Ryzen), 8–16 GB RAM, 256–512 GB SSD storage to host the web application and database.

Networking: High-speed internet connection to ensure smooth access for multiple users and real-time updates.

Backup: Local or cloud-based backup storage and UPS to protect data from power failures or system crashes.

User Access Devices: Client devices including desktops, laptops, tablets, and smartphones for students and faculty to access the system.

Database Server: Scalable Database Management System (e.g., Microsoft SQL Server) to store user data, academic materials, and activity logs efficiently.

Software Requirements

These define the programs, operating systems, tools, and frameworks required to develop, deploy, and operate the **EDURA** system. They include the necessary software for coding, hosting, testing, and maintaining the application.

Software Requirements of EDURA – A College Companion Website:-

Operating System: Windows, Linux, or macOS for development and server hosting.

Programming Languages: PHP (for backend), JavaScript (for frontend interactivity), HTML, and CSS.

Database: Microsoft SQL Server for storing user data, timetables, notes, and activity logs.**Optional Tools & Platforms:**

XAMPP/WAMP for local server setup for remote deployment and scalability.

7. DESIGN

Architecture

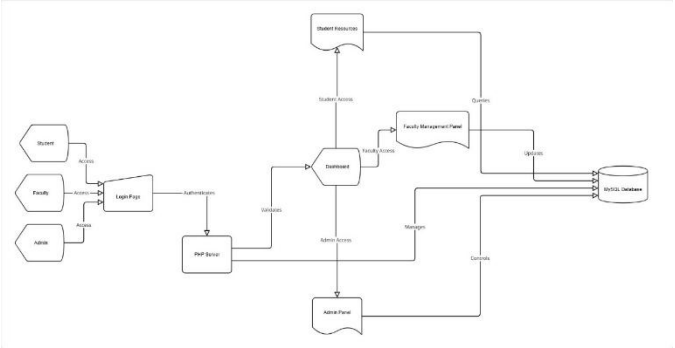


Fig. 7.1 The above figure represents the architecture of EDURA.

The architecture of **EDURA – A College Companion System** provides an integrated platform for students, faculty, and administrators to manage academic and campus-related activities.

Data Storage:

Includes separate databases such as Student Database, Faculty Database, Notes & Materials Database, Events Database, and Queries Database to store structured academic data and communication records.

Server and Processing:

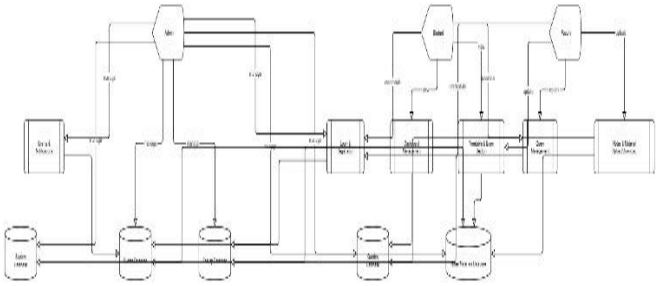
A centralized **PHP-based Web Server** connected to **SQL Server** handles all backend operations such as authentication, data retrieval, and management of dashboards for students, faculty, and administrators.

User Interface:

A responsive front-end built using **HTML, CSS, and JavaScript** provides access to login/registration pages, dashboards, and content upload/download features.

Modules:
Key modules include Login & Registration, Dashboard Management, Timetable & Exam Section, Notes & Materials Upload/Download, Events & Notifications, and Query Management.
Each module interacts with its respective database and allows seamless communication between users and the system.

Data Flow Diagrams



The **EDURA system** enables smooth interaction between students, faculty, and administrators.

Students can log in, access notes, timetables, events, and raise queries.

Faculty upload study materials, update schedules, and respond to student queries.

Admin manages user accounts, events, and maintains the database.

Data flows through modules like *Login/Registration*, *Dashboard*, *Notes Management*, *Exam Section*, and *Query System*, all connected to a central **SQL database** for secure storage and retrieval.

Use Case Diagram

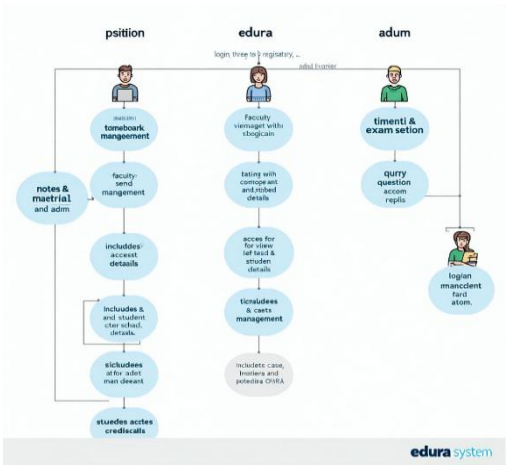


Fig. 7.4 Use Case Diagram

8. IMPLEMENTATION

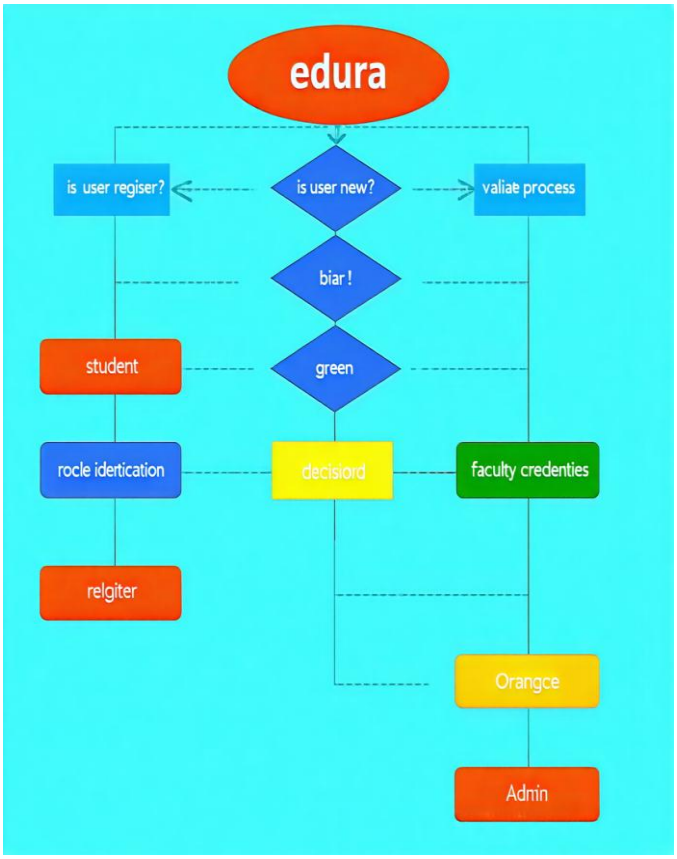


Fig. 8.1 Flowchart

The above figure represents the implementation of EDURA

Tools

1. Front-End Tools

HTML: Used for structuring and organizing the web pages and core content of the EDURA platform.

CSS: Provides styling, color schemes, and layout design to ensure an appealing and consistent visual experience.

JavaScript: Adds interactivity, dynamic content updates, and client-side functionality to enhance user engagement.

2. Back-End Tool

Programming Languages: PHP and JavaScript for server-side logic.

Database: Microsoft SQL Server or MySQL for storing user and academic data.

Server: Apache or XAMPP for hosting and testing.

Version Control: Git for code management.

These tools collectively ensure the seamless functionality, interactivity, and reliability of the project, making it user-friendly and efficient for its purpose.

9. TESTING

Test Cases

Test Case 1: Invalid User Role Selection

- **Input:** User tries to login without selecting Student / Faculty / Admin.
- **Expected Result:** Prompt displayed to select a valid user role.

Test Case 2: Invalid Student USN

- **Input:** Student enters an incorrect or improperly formatted USN.
- **Expected Result:** Error message "Invalid Student credentials" is displayed.

Test Case 3: Invalid Faculty Login

- **Input:** Faculty enters incorrect ID or password.
- **Expected Result**: Login denied with an error message

Test Case 4: Invalid Admin Login

- **Input:** Admin enters wrong username or password.
- **Expected Result:** Access denied and error message shown.

10. RESULTS

Login-page

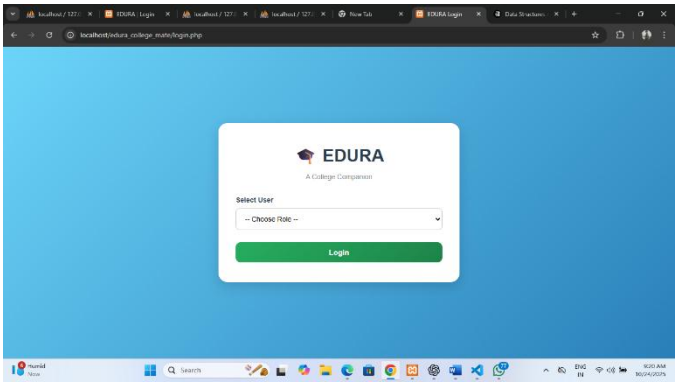


Fig 9.1.1 Login-page

Dashboards

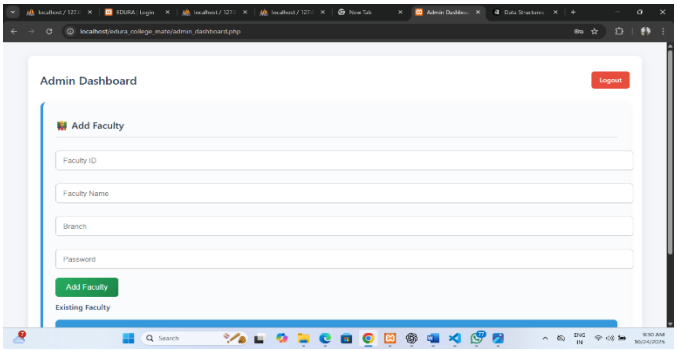


Fig 10.1.2 Admin dashboard Page

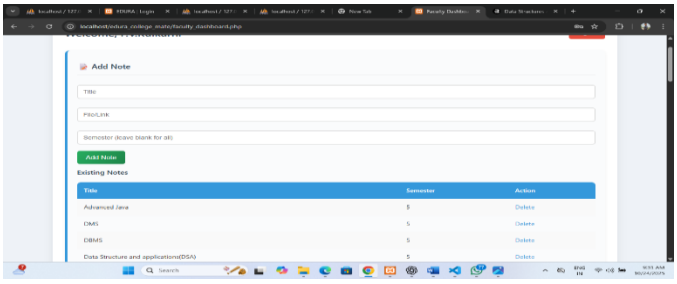


Fig 10.1.3 Faculty dashboard Page

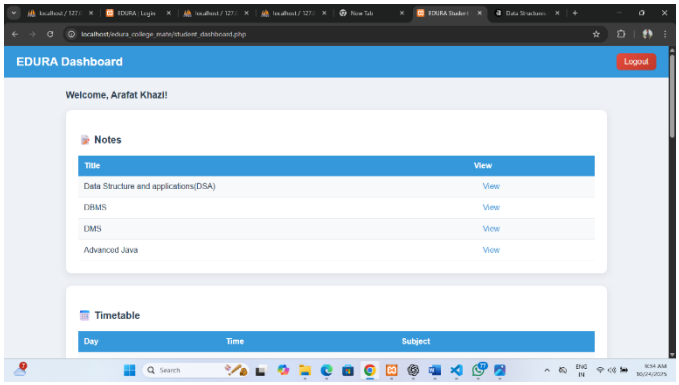


Fig 10.1.4 Student dashboard Page

11. CONCLUSIONS

The **EDURA** system serves as an innovative digital platform designed to enhance the academic experience of students and faculty by providing an all-in-one college companion solution. It integrates essential academic modules such as timetables, notes and materials, exam updates, event notifications, and faculty information into a single, user-friendly interface. By leveraging modern web technologies, secure database management, and efficient data handling, EDURA ensures smooth and reliable performance for users.

The system is built with scalability, usability, and security in mind, allowing it to handle growing user bases and institutional data efficiently. With its interactive design and real-time accessibility, EDURA promotes better communication, organization, and engagement within the college community.

Ultimately, **EDURA** has the potential to revolutionize how students and faculty interact with academic resources, offering a seamless, centralized platform that simplifies campus life and supports a smarter, more connected educational environment.

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