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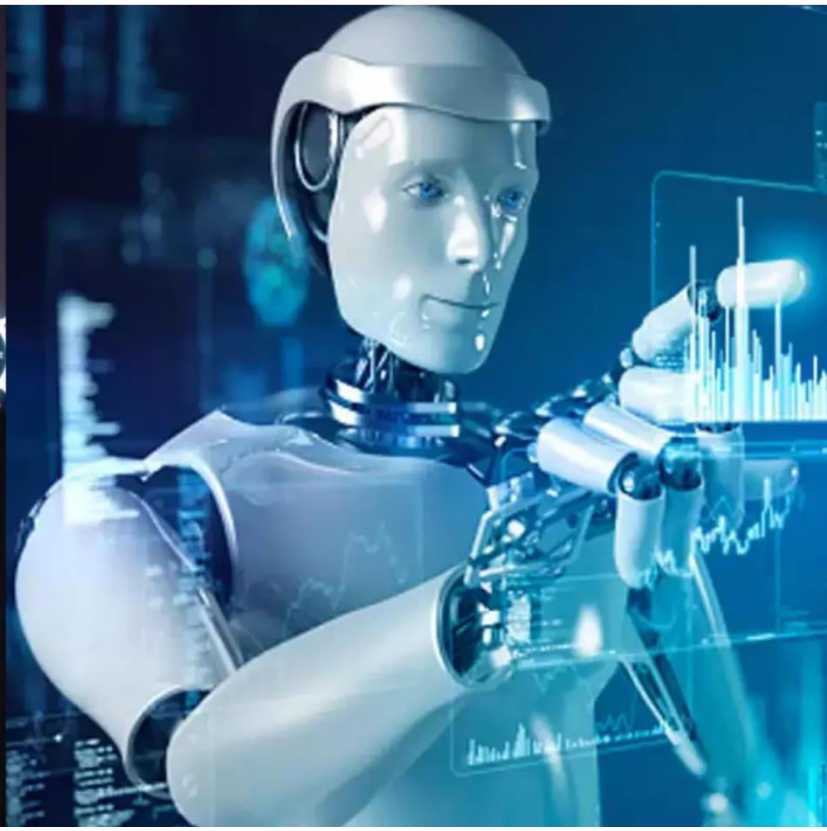

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Smart College Student App: A Cross-Platform Mobile App

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ABSTRACT: This paper presents the proposed development of the Smart College Student App, a cross-platform mobile extension of an existing College Student Portal. The project aims to make academic and institutional information accessible through Android and iOS devices while reusing the portal's existing web application and database. The earlier website was developed using HTML, CSS, JavaScript, PHP, and MySQL and included student registration, role-based access, branch-wise records, and academic performance information. To reduce duplicate development and configuration effort, the proposed mobile solution uses platform-supported web-view components to display the responsive portal within mobile applications. Android WebView and Apple WKWebView provide the respective mechanisms for embedding web content in mobile apps [1], [2]. The proposed system focuses on secure sign-in, student-specific dashboards, profile information, attendance, timetable, notices, and results, subject to the availability of these modules in the connected portal. This paper describes the system background, architecture, implementation approach, security considerations, and a test plan. Since mobile implementation and device-level testing are ongoing, no unverified performance or deployment results are claimed.

KEYWORDS: Smart College Student App, cross-platform application, Android, iOS, College Student Portal, WebView, WKWebView, PHP, MySQL, role-based access control, academic information system.

I. INTRODUCTION

Educational institutions use digital systems to manage student information and communicate academic updates. A web-based student portal can centralize services such as registration, profile management, academic records, and institutional notices. However, students may find it more convenient to access these services through a mobile application that is available from their smartphones. This project therefore extends an existing College Student Portal into the Smart College Student App, with the objective of providing access on both Android and iOS devices.

The earlier website provides the foundation for the proposed application. It was developed using HTML, CSS, JavaScript, PHP, and MySQL, and includes features described in the previous version of this project, such as student registration, role-based access control, branch-based student records, and academic performance information. The current phase focuses on presenting the portal through a mobile-friendly application interface without creating a separate data-management system. Reusing the existing web application and database is intended to reduce repeated development work and keep student information consistent across web and mobile access. The application must

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continue to enforce the portal's authentication and authorization rules; displaying a page inside a mobile application does not, by itself, provide security.

II. LITERATURE SURVEY

Student information systems commonly bring academic and administrative information together so that students and authorized staff can access relevant records from one place. A mobile extension introduces an additional access channel but also requires attention to screen size, navigation, connectivity, and account security. The project follows a reuse-oriented approach: the existing portal remains responsible for application logic and database operations, while the mobile application provides a mobile access layer.

Official Android documentation describes WebView as a component for displaying web content inside an Android application [1]. Apple provides WKWebView for displaying interactive web content within applications on its platforms [2]. These platform components make it possible to reuse a responsive web application while providing separate Android and iOS application packages. Security guidance from OWASP highlights the need to restrict web-view navigation to trusted content and to assess risks such as unsafe content loading [3]. Accordingly, the proposed design uses a trusted portal address, server-side authentication, role checks, and controlled navigation. The literature and platform documentation support the technical feasibility of this approach; they do not establish that the proposed app has already passed deployment or security testing.

III. METHODOLOGY

The project follows an incremental approach. The existing College Student Portal is treated as the base system, and the mobile application is planned as an additional client for accessing its services. The work is divided into requirement analysis, architecture design, mobile integration, security review, and testing:

1. Requirement Analysis & System Architecture

The proposed architecture contains three main parts. Presentation Layer: the existing responsive interface, built with HTML, CSS, and JavaScript, presents information to the user. Mobile Access Layer: an Android application uses Android WebView, while an iOS application uses Apple WKWebView to load the trusted portal over HTTPS [1], [2]. Application and Data Layer: the existing PHP application processes requests and applies business rules, while MySQL stores student and academic records. Both mobile clients connect to the same hosted portal, avoiding separate copies of student data. The portal remains responsible for authentication, authorization, validation, and database access.

2. Core System Implementations

The main modules and design considerations are as follows: (1) Student authentication: users sign in through the existing portal, and access is restricted according to the account role. (2) Student dashboard: the application provides a mobile-friendly entry point to the services available to the signed-in student. (3) Student profile and records: personal and academic information is retrieved from the existing portal according to the user's permissions. (4) Academic services: attendance, timetable, notices, and results can be presented where the corresponding website modules and data are available. (5) Shared backend: PHP and MySQL continue to manage application logic and records, so updates made through authorized portal functions can be reflected in mobile access. (6) Navigation and connectivity: the mobile client should handle loading states, network interruptions, back navigation, and links that lead outside the trusted portal. The app should load only approved portal domains. Any JavaScript-to-native bridge, if later required, must be limited to trusted content and carefully reviewed because platform documentation warns that such bridges can introduce security risks [1].

IV. EXPERIMENTAL RESULTS

The earlier College Student Portal was evaluated in a local server environment for its core website functions, including student registration, role-based access, branch-wise record handling, and conditional display of academic performance information. These website-level observations form the starting point for the mobile extension. The cross-platform application is the current development focus; therefore, this paper does not report completed app-store publication, device compatibility measurements, battery usage, or mobile response-time results.

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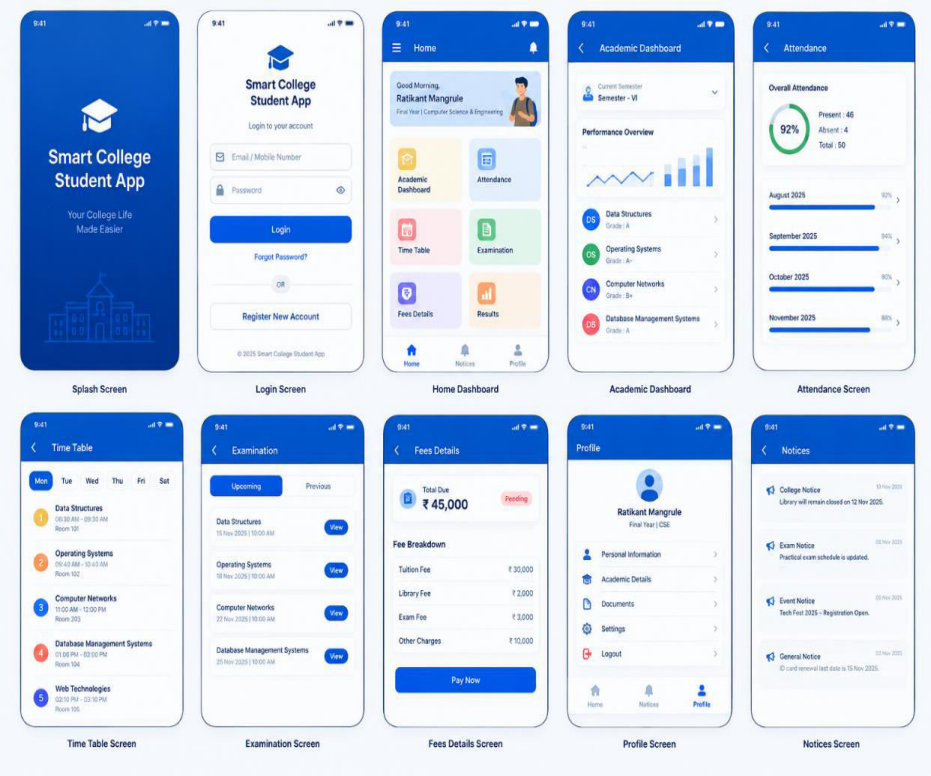
The proposed mobile application will be evaluated on representative Android and iOS devices. Functional tests will check sign-in, sign-out, dashboard navigation, profile access, and the display of each academic module that is available in the portal. Integration tests will verify that both mobile clients retrieve consistent information from the same PHP and MySQL backend. Security tests will check that unauthenticated users cannot access protected pages, that student accounts cannot view another student's records, and that navigation is restricted to trusted portal domains. Usability tests will examine text readability, touch targets, screen adaptation, and navigation. Network tests will cover slow connections, loss of connectivity, and recovery after reconnection. These are planned evaluation activities; their outcomes should be added only after the tests have actually been performed and recorded.

The expected benefit of the proposed approach is that students can access the portal through a familiar mobile interface without requiring a second, independent academic database. Reusing the existing website can reduce duplicated implementation effort and simplify the maintenance of shared student records. Actual usability, compatibility, and performance benefits must be confirmed through the planned tests on physical devices and should not be assumed in advance.



V. CONCLUSION

The Smart College Student App is proposed as a cross-platform mobile extension of the existing College Student Portal. The design reuses the portal's HTML, CSS, JavaScript, PHP, and MySQL foundation and presents its available services through Android WebView and Apple WKWebView. This approach is intended to provide Android and iOS access while minimizing duplicated development and keeping student information within the existing backend. Secure authentication, role-based authorization, trusted-domain navigation, and responsive page design are essential parts of the solution. The existing website provides the project foundation, while mobile integration and device-level evaluation remain the focus of the current phase. Future work includes completing the mobile builds, testing on a range of devices and network conditions, addressing issues found during testing, and documenting measured results before release.

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