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Campus Connect

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Abstract: *Campus Connect is a centralized mobile application designed to improve communication and information management within a college campus. It replaces traditional methods like notice boards and informal messaging, which often cause delays and lack transparency. Developed using Flutter and Supabase, the app offers secure, role-based access for students, faculty, and administrators. It includes key features such as a digital notice board for instant announcements, real-time chat for better interaction, a complaint management system for transparent issue reporting, and a lost-and-found module for tracking items. Overall, Campus Connect enhances communication, ensures organized data management, reduces reliance on external platforms, and helps create a more efficient, transparent, and digitally connected academic environment.*

Keywords: Supabase, mobile application, Flutter, Flutter, communication

I. INTRODUCTION

Campus Connect is a centralized, role-based mobile application designed to improve communication, transparency, and administrative efficiency in educational institutions. It addresses the limitations of traditional methods like notice boards, emails, and informal messaging, which often lead to delays, miscommunication, and scattered information.

Developed using Flutter and powered by Supabase, the app ensures smooth performance, real-time data synchronization, secure authentication, and cloud-based storage. It provides role-based access for students, faculty, and administrators, allowing controlled and organized information sharing. Faculty can post updates, students can access information and raise complaints, and administrators can manage the system effectively. The application integrates key modules such as a digital notice board for announcements, a chat system for communication, a complaint management system for transparent issue tracking, a lost-and-found portal, and a dedicated girls' chat room for safe interaction. Overall, Campus Connect reduces reliance on multiple platforms, enhances data security and transparency, and creates a unified digital ecosystem, contributing to smarter and more efficient campus management.

II. METHODOLOGY

The methodology involves integrating mobile application development, secure authentication, real-time communication, cloud storage, and role-based system modules to create a centralized campus management platform.

A. Mobile Application Development

The application is developed using Flutter in Android Studio, providing user-friendly dashboards for students, faculty, and administrators.

B. User Authentication & Role Verification

Supabase Authentication verifies users and assigns roles (Student, Faculty, Admin), ensuring secure and controlled access.

C. Backend Processing

Supabase handles API requests, data processing, and manages operations like notices, complaints, and chat.

D. Data Communication

The app communicates with the backend using APIs and real-time services for instant data updates.

E. Data Storage

All data is stored in a cloud-based PostgreSQL database, ensuring structured and secure storage.

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F. Real-Time Synchronization

Real-time features allow instant updates for notices, complaints, and chat messages without refreshing.

G. System Modules

Includes Notice Management, Complaint System, Lost & Found, and Girls Chat Room for structured campus operations.

III. MODELING AND ANALYSIS

The modelling of the proposed Campus Connect is represented using standard UML diagrams to describe system behaviour, interactions, and structure. These diagrams help in understanding the workflow, object relationships, and operational logic of the system.

A. Sequence Diagram – Campus Connect

The sequence diagram illustrates the interaction between sensors, ESP32, backend server, database, and web dashboard during real-time monitoring.

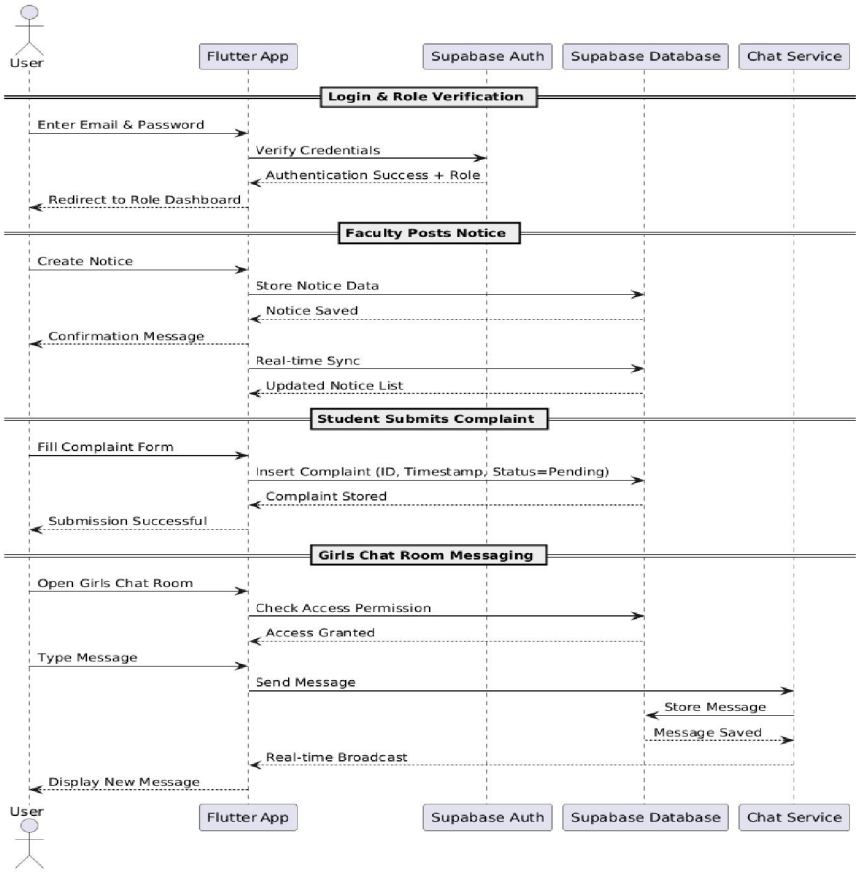
Sequence of Operations:

1.Login Process

2. Notice Posting

3. Complaint Submission

4. Girls Chat Room



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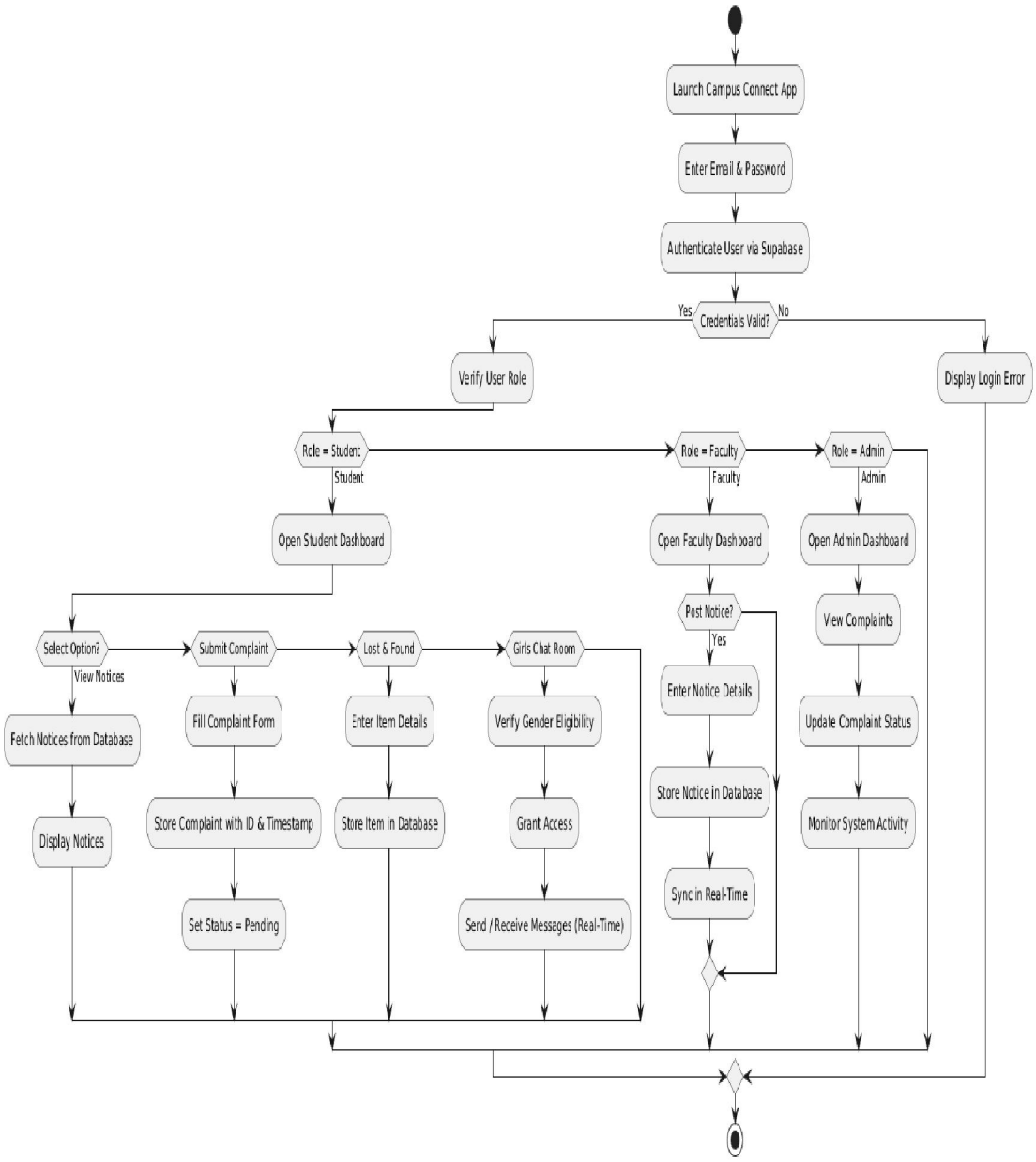
B. Activity Diagram – System Workflow

The activity diagram represents the overall workflow of the system from sensing to alert generation.



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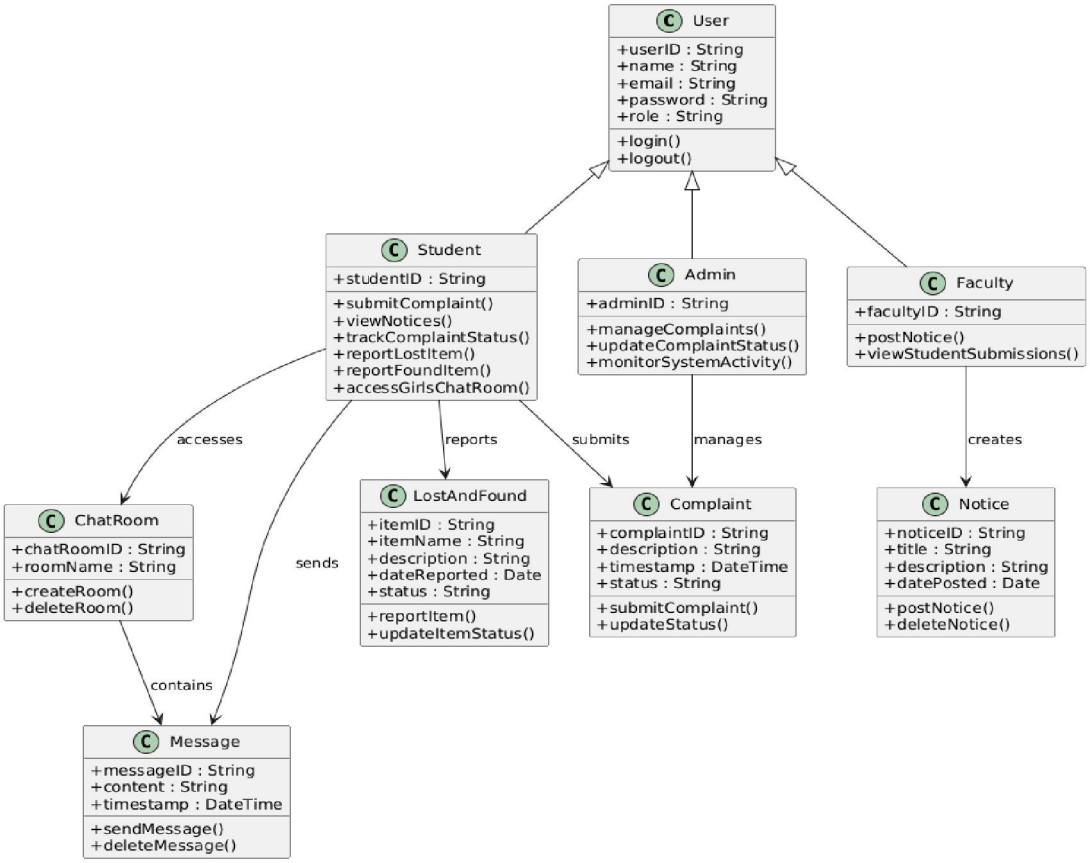
C. Class Diagram – System Structure

The class diagram defines the structural relationship between major system components.



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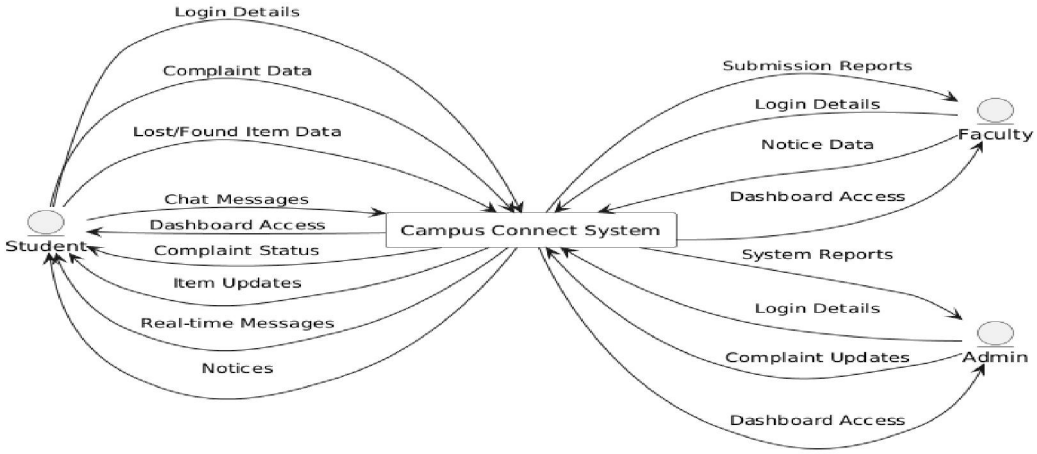
D. Data Flow Diagram (DFD)

Data Flow Diagrams represent how data moves through the system and how different processes interact.

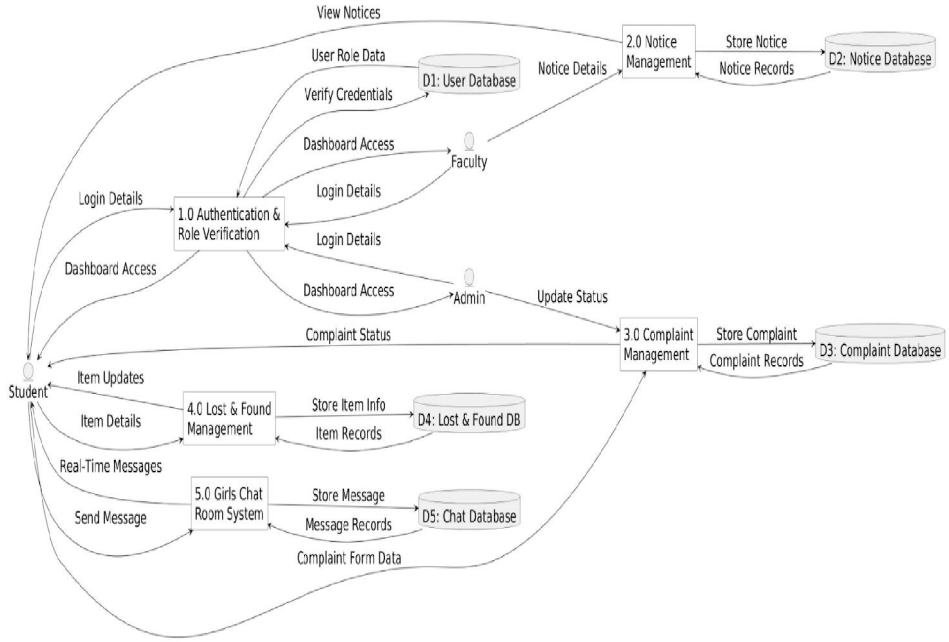
DFD Level 0 – Context Diagram

The Level 0 DFD provides a high-level overview of the system showing external entities and overall data flow.



DFD Level 1 – Detailed Diagram

The Level 1 DFD breaks the system into detailed processes such as data acquisition, processing, storage, and visualization.



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IV. CONCLUSION

The Campus Connect system has been successfully developed to provide a centralized and efficient platform for communication and campus management. It eliminates traditional communication gaps by replacing manual notice boards and informal systems with a secure, real-time mobile application.

Using Flutter for frontend and Supabase for backend services, the system ensures secure authentication, role-based access, and instant data synchronization. Modules like Notice Management, Complaint Handling, and Lost & Found improve transparency, accountability, and overall efficiency.

The system is scalable, reliable, and user-friendly, making it a practical solution for modern educational institutions. It enhances communication, reduces manual workload, and provides a strong foundation for future improvements.

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