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Project X: Automated Attendance System

R1. User Roles and Access Control

R1.1. The system shall support three primary roles: Lecturer, Student, and Administrator.

R1.2. Only registered lecturers shall be able to record attendance.

R1.3. Only registered devices shall be authorized for attendance recording.

R1.4. Administrators shall have full control over system data (CRUD operations on students, lecturers, devices, and courses).

R2. Attendance Recording and Data Persistence

R2.1. The system shall allow lecturers to record student attendance using a registered mobile device, tablet, or computer.

R2.2. Attendance data shall be stored on a cloud-based MySQL database.

R2.3. Attendance shall be linked to a course, identifying the student, lecturer, date, and time.

R2.4. Attendance shall be retrievable in real-time.

R3. Device Registration and Tracking

R3.1. A lecturer shall be able to register multiple devices.

R3.2. The system shall track the location of registered devices in case a lecturer needs assistance.

R3.3. Only registered devices shall be able to access the attendance system.

R4. Student Enrollment and Management

R4.1. Students shall be able to enroll in courses through the system.

R4.2. The system shall store and manage student details, including:

R4.2.1. Name

R4.2.2. University ID

R4.2.3. Profile Picture (captured via the system)

R4.3. The system shall allow adding, updating, and deleting student records.

R5. Reporting and Data Access

R5.1. The system shall provide the following reports:

R5.1.1. Attendance reports (by student, by course, by date range).

R5.1.2. List of students per course.

R5.1.3. List of lecturers and their registered devices.

R5.2. Reports shall be accessible to lecturers and administrators.

R6. Photo Capture and Storage

R6.1. The system shall allow lecturers to capture passport-style photos of students.

R6.2. Photos shall be stored as files, and student IDs and names shall be stored in the database.

R6.3. The system shall ensure secure access to stored images.

R7. System Architecture and API Access

R7.1. The system shall use a REST API to interact with the database.

R7.2. All user interactions (attendance, enrollment, reporting) shall be handled through the API.

R7.3. API requests shall be authenticated and authorized.

8. Testing Criteria

R8.1. Unit Testing: Each function (attendance logging, student enrollment, etc.) shall be tested in isolation.

R8.2. System Testing: The system shall be tested end-to-end to validate workflows.

R8.3. User Acceptance Testing (UAT): The system shall be tested against the above assertions to confirm it meets user needs.