**PROJECT X REQUIREMENTS**

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**1. System Overview**

1.1 The system shall provide an automated attendance tracking solution for university lecturers.

1.2 The system shall support multiple devices (smartphones, tablets, computers) as registered attendance-tracking devices.

1.3 The system shall enable lecturers to use only registered devices for attendance recording.

1.4 The system shall store attendance records persistently in a cloud-hosted Mongodb database.  
1.5 The system shall provide REST API endpoints for data access and modification.

**2. User Roles & Permissions**

2.1 The system shall define the following user roles:

2.1.1 Lecturers shall be able to register devices, record attendance, manage students, and generate reports.

2.1.2 Administrators shall be able to manage lecturers, students, courses, and attendance records.

2.1.3 Students shall be identified in the system and associated with attendance records.

2.2 Only registered devices shall be allowed to record attendance.

2.3 The system shall persist user-related data, including lecturers, students, and courses.

**3. Attendance Tracking**

3.1 The system shall allow lecturers to record attendance using a registered device.

3.2 Attendance records shall be stored in a database.

3.3 The system shall prevent unauthorized devices from recording attendance.

3.4 The system shall support generating reports on attendance data.

**4. Device Registration & Tracking**

4.1 The system shall allow lecturers to register one or more devices.

4.2 The system shall provide functionality to locate a registered device.

**5. Student Management**

5.1 The system shall allow storing student profiles, including name and university ID.

5.2 The system shall enable capturing and storing a passport-style photo for each student.

**6. Course Management**

6.1 The system shall allow storing and managing courses.

6.2 The system shall enable associating students with courses.

6.3 The system shall enable associating lecturers with courses.

**7. Reporting & Data Management**

7.1 The system shall support generating reports on:

7.1.1 Attendance records.

7.1.2 List of students.

7.1.3 List of lecturers.

7.1.4 List of courses.

7.1.5 Student enrollments in courses.

7.2 The system shall support the following operations for all system data:

7.2.1 Adding new records.

7.2.2 Modifying existing records.

7.2.3 Deleting records.

7.2.4 Viewing records.

**8. Database & API**

8.1 The system shall use a Mongodb database hosted in the cloud.

8.2 The system shall provide access to the database via a REST API.

**9. Testing**

9.1 The system shall undergo the following testing levels:

9.1.1 User Acceptance Testing (UAT).

9.1.2 System Testing.

9.1.3 Unit Testing (where applicable).