

**Project X**

**Team BAMP**

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**Project X**

**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 Atlas 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 Atlas relational 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).