**Project X: Automated University Attendance System**

# System Overview

## Objective

* + 1. Automates university attendance tracking using registered devices. Lecturers record attendance, store student details (including photos), and generate reports. Data is securely stored in a cloud-based MySQL database, accessible via REST API.

## System Users

* + 1. **Lecturers**: Manage attendance, students, and reports.
    2. **Administrators**: Oversee system operations and user management.
    3. **Students**: Have attendance and personal data recorded.

# Module Requirements

## User & Device Management

* 1. **Lecturer Registration & Authentication**
     1. Secure login required.
     2. Multiple device registration per lecturer.
     3. Only registered devices can access the system.

## Device Management

* + 1. Devices are verified, uniquely identified, and linked to lecturers.
    2. Add, remove, and track registered devices.

# Attendance Management

## Student Identification & Attendance Recording

* + 1. Attendance marking via:
       1. Manual entry (Student ID input).
       2. Photo capture verification.
    2. Each record includes student details, timestamp, lecturer, course, and location.
    3. Data syncs automatically with the cloud.

## GPS Location Verification

* + 1. Records exact attendance location to prevent fraud.
    2. Lecturers can track their last known device location.

# Student & Course Management

## Student Profile Management

* + 1. Student profiles include name, ID, photo, enrolled courses, and attendance history.
    2. Supports adding, updating, and deleting student records.

## Course & Enrollment Management

* + 1. Lecturers create and manage courses.
    2. Students are assigned to courses.
    3. Course details include name, code, lecturer, and enrolled students.

# Reporting & Data Management

## Attendance Reports

* + 1. Generate real-time attendance reports with filters (date, lecturer, course, student).
    2. Export in CSV or PDF format.

## Audit & History Logs

* + 1. Logs attendance entries and system changes for auditing.

# Photo Capture & Storage

## Student Photo Capture

* + 1. Lecturers take passport-style student photos.
    2. Photos are securely stored and linked to student records.

## Backend & Database Requirements

* + 1. **Cloud MySQL Database**: Stores students, lecturers, courses, attendance, and devices.
    2. **REST API Integration**: Secure API for authentication, attendance submission, and data retrieval.