**PROJECT X: Automated Attendance System**

**Requirements**

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| Version | 1.2 |  |
| Date | Mar 6, 2025 |  |
| Status | Authorized | Auth by TCO, Client, Dev |
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1. The system shall record roll call attendance.
2. Only registered devices shall be allowed in the system.
3. The system shall support location-based (GPS) verification to confirm student attendance
4. The system shall validate the user against the QR.
5. The system shall enforce OTP authentication to enhance security.
6. The system shall generate reports:
   1. Attendance
   2. List of Students
   3. List of Lecturers
   4. List of Courses
   5. Students’ enrolment per course
7. The system shall enable Administrator to capture student pictures using a registered device and store:
   1. A passport-style photo
   2. The student’s name and university ID
   3. The photo as a file and the student’s details in the database
8. The system shall support three primary roles:
   1. Administrator
   2. Instructors
   3. Students
9. Authorized users shall be able to:
   1. Only authorized user shall be able to use a registered phone, tablet, or computer to identify students.
   2. Phones used for attendance tracking shall be registered and linked to a specific authorized user.
   3. Each instructor may have multiple registered devices
      1. But a device can only be registered to 1 Instructor
   4. The system shall provide functionality to locate a lost registered lecturer's phone.
   5. Authorized users shall be able to create, read, update and delete (CRUD) courses.
   6. Only authorized user shall assign schedules and enrol students.
   7. Scan students' QR codes to record attendance in real time.
   8. Remove students from a course if they drop out.
   9. Access course-related data, including student enrolment, attendance records, and course details
      1. This access is controlled by the authorization system
10. Students shall be able to:
    1. View their attendance records in the provided interface for attendance verification.
    2. Students shall NOT be allowed to modify or delete attendance records.
11. The database shall be hosted on a cloud server.
12. System feature access shall be restricted to authenticated users via a secure API.
13. Testing shall be conducted at multiple levels:
    1. User Acceptance Testing (UAT): Validate system compliance with client expectations.
    2. System Testing: Ensure seamless integration of all system components.
    3. Unit Testing: Verify the correct functionality of individual components.
14. The system’s formal documentation shall include:
    1. System Requirements
    2. System Design
    3. User Acceptance Test (UAT)
15. The documentation and code should be persisted in Version Management tool like GIT to control versioning, team sharing and safe keeping
16. Your GIT repositories should be made available to me
17. The system’s high-level documentation shall include:
    1. A High-level Use Case Diagram to representing system interactions and workflows.
    2. A High-level UML Diagram is used to illustrate relationships between system entities.
    3. A Conceptual Diagram providing a high-level representation of system architecture, key components, and their interactions.
    4. Proof of Conceptual model Review
    5. Project Plan (a breakdown matric of what is to be done by when)
    6. With plan and actual columns
18. Detailed design documentation shall include:
    1. Component Diagram
    2. Class Diagram showing classes and methods
    3. Activity diagrams
    4. At least 1 detailed sequence diagram
    5. Evidence of a Detailed Design review
19. Implementation
    1. Clear well-structured code
    2. Code should be well commented with standard headers for:
       1. Classes
       2. Methods
    3. Evidence of the daily team standups
       1. i.e. a record for each person
       2. what they did yesterday
       3. what they are doing today
       4. any impediments (things that are stopping them progressing)
    4. Evidence of Code Reviews
       1. Who is presenting the code
       2. Who are reviewing the code
       3. To do a code review the developer should make available printed copies of the code being reviewed to the reviewers a day before the REVIEW
    5. Final output
       1. Working code
       2. Demonstration of the working code
20. Final points
21. It is not expected that you will be able to do all in great details
22. What is important is that you become familiar with how to do each of these steps
23. It is required that you **MANAGE YOUR TIME** AT EACH STAGE such that you do not overrun the deadline
24. A working project that is partially feature complete is more important than any that do not work