Class: ICT2113	
PrjTm P1 - 2349T: Project Specification	
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1. Company Description

Company Name: Studex
Company Vision: Studex envisions empowering educational institutions with reliable digital solutions that improve the management of student participation and institutional activities. The company aims to enhance transparency, efficiency, and accountability in student engagement processes, enabling institutions to make informed decisions while reducing administrative overhead.
Core Business: IT
Industry Sector: Software Development
Key Software Initiatives:

- **Standardised and Auditable Participation Tracking**
  StudEx aims to establish a consistent, system-governed approach to recording attendance and participation hours for physical extracurricular events, ensuring fairness, accuracy, and auditability while reducing manual administrative effort.
- **Improved Student Visibility and Engagement**
  StudEx seeks to enhance student engagement by providing a centralized dashboard and timely system-triggered notifications, enabling students to easily track upcoming events, completed participation hours, and attendance status.
- **Strong Administrative Governance and Role Control**
  StudEx aims to strengthen institutional governance through clearly defined administrative controls, role-based access, and dependency handling, ensuring data integrity and preventing misuse or inconsistency in records.
- **Structured Event Registration and Eligibility Management**
  StudEx intends to introduce controlled event registration and eligibility enforcement based on institutional rules, ensuring that participation workflows are well-defined and separated from attendance validation.

2. Project Description

Project Name:ExtracurricularEventTracking and Participation Management System
Project Context:
Extracurricular activities form an essential component of student development and, in some cases, institutional graduation or participation requirements. However, managing events, tracking student attendance, and allocating participation hours are currently prone to ambiguity and inconsistency. Existing practices lack clear separation between event registration and attendance, rely on unreliable validation methods, and provide limited auditability of participation records.
The project addresses the need for a clearly specified system that formalises event eligibility, participation tracking, attendance validation, and reporting responsibilities. This Project Specification captures elicited requirements in a structured, technology-neutral manner to serve as a stable baseline for subsequent requirements and design activities.
Project Goal: SMART
Specific: Define clear system behaviour for event management, student registration, attendance validation, and participation hour allocation
Measurable: Ensure participation hours are awarded only upon validated attendance
Attainable: Align system behaviour with existing institutional workflows
Relevant: Support accurate reporting, auditability, and fair student assessment

Time-bound: Establish a validated requirements baseline prior to SRS development

3. Business Operation Requirements

BOR - L0AccessManagement
- BOR - L1.1 Admin Account Management (Essential)
    - Admin Role: Administrative staff shall be responsible for managing the system configuration and access for both students and staff.

Business Rule: Admins manage user access and system configuration for both students and staff.
Constraint: Only authorized staff can modify system settings. Unauthorized access is restricted.
- BOR - L1.2 User Authentication (Essential)
    - Login Management: Admin staff shall ensure secure login mechanism for users(students and staff), enabling them to access the system based on their roles.

Business Rule: Users must authenticate with a username and password; MFA for admins.
Constraint: Passwords must meet security standards (min. 8 characters, including upper/lowercase, numbers, and special characters).
- BOR - L1.3 User Role Management (Essential)
    - Role Assignment: Admin shall be able to assign roles (student,staff) to users and manage permissions for different functionalities of the system.

Business Rule: Admin assigns roles (student, staff) and manages system permissions.
Constraint: Role changes are auditable and require admin confirmation.

BOR1 - L0EventManagement

- BOR1 - L1.1 Event Registration by Students (Essential)
    - Student Self-Registration: Students can view a list of available events and register for the ones they are interested in.

Business Rule: Students self-register for events, but cannot register for overlapping events.
Constraint: Event registration is subject to availability. Full events cannot be registered for.
- BOR1 - L1.2 Event Assignment Based on Courses (Essential)
    - Course-Specific Event Assignment: Admin assigns events to specific courses. Only students enrolled in the assigned courses can register for those events. This ensures that events are tied to the student's academic schedules.

Business Rule: Admin assigns events to courses; only enrolled students can register.
Constraint: Students must be enrolled in the course before the registration period starts.

BOR2 - L0Notification

- BOR2 - L1.1 Event Notification Management (Essential)
    - Event Reminders: The system shall send notifications to students about upcoming events, including event start times and reminders for hours incomplete.

Business Rule: Notifications for upcoming events sent 24 hours before and 1 hour prior.
Constraint: Default notifications cannot be disabled; students can adjust notification preferences.
- BOR2 - L1.2 Hours Completion Alerts (Essential)
    - Incomplete Hours Notifications: The system shall notify students if they have not completed the required hours for their extracurricular activities

Business Rule: Students are notified weekly about incomplete hours.
Constraint: Notifications are sent via email, SMS, or push notifications based on student preference.

- BOR2 - L1.3 Notification Customization (Desirable)
    - Custom Notification Settings: Students can customize how and when they receive notifications (email, push notifications, etc.)

Business Rule: Students can customize notification preferences (email, SMS, push).
Constraint: Critical reminders (event registration, incomplete hours) cannot be disabled.

BOR3 - L0StudentTracking

- BOR3 - L1.1 Track Event Participation (Essential)
    - Participation Tracking: The system shall track the events that each student has attended and the total hours spent on those activities.

Business Rule: The system tracks attendance and updates total hours after events.
Constraint: Students cannot modify their participation hours.

- BOR3 - L1.2 Display Event History (Essential)
    - Event History: Students can view a history of all events they have attended, along with the respective participation hours.

Business Rule: Students can view event history with event name, date, and hours attended.
Constraint: Event history is archived for 2 years and may be deleted or anonymized after.

4. Technical Requirements

TR1 –L0SystemRequirements
- TR1 – L1.1 System Classification
  The system shall be a cloud-hosted, mobile-accessed software system designed to support the management, tracking, and reporting of student participation in extracurricular events.
  TR1 – L1.2 Delivery Model
- The system shall be delivered as a Software-as-a-Service (SaaS) solution with no on-premise deployment required.
  TR1 – L1.3 Access Model
  The system shall be accessed exclusively through mobile applications by students and administrators.
- TR1 – L1.4 Architectural Model
  The system shall use a centralised backend architecture with a single authoritative data source.

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TR2 –L0HostingandInfrastructureRequirements
- TR2 – L1.1 Hosting Environment
  The system shall be hosted on a managed cloud platform.
  TR2 – L1.2 Availability and Scalability
- The hosting environment shall provide high availability and automatic scaling based on usage demand.
  TR2 – L1.3 Infrastructure Responsibility
  The customer shall not be responsible for infrastructure provisioning, monitoring, or server maintenance.
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- TR2 – L1.4 Backup Management
  The hosting environment shall provide managed and automated backups.

TR3 –L0SoftwareConfigurationItems
- TR3 – L1.1 Mobile Application Binaries
  The system shall include Android and iOS mobile application binaries as software configuration items.
  TR3 – L1.2 Backend Services
- The system shall include cloud-hosted backend services as software configuration items.
  TR3 – L1.3 Data Storage Services
  The system shall include managed cloud database services as software configuration items.
- TR3 – L1.4 Notification Services
  The system shall include notification delivery services as software configuration items.

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TR4 –L0PlatformandTechnologyConstraints
- TR4 – L1.1 Application Platform
  The system shall be implemented using the Flutter framework for mobile application development.
  TR4 – L1.2 Backend Technology
- The backend services shall be implemented using Dart-based cloud technologies.
  TR4 – L1.3 CMS Constraint
  The system shall be implemented as a custom application and shall not use any general-purpose or third-party CMS.
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TR5 –L0AdministrationandAccessControl
- TR5 – L1.1 Administrative Tools
  The system shall provide built-in administration tools for managing courses, students, events, and participation records.
  TR5 – L1.2 Role-Based Access
- Administrative access shall be role-based and restricted to authorised users only.
  TR5 – L1.3 Database Access Restriction
  Administrative users shall manage system data through application interfaces without direct database access.
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TR6 –L0ExternalIntegrationConstraints
- TR6 – L1.1 Password Reset Integration
  The system shall support OTP-based password reset via email or phone.
  TR6 – L1.2 Video Meeting Integration
- External video meeting platforms shall be accessed via stored links without API-level integration.
  TR6 – L1.3 Payment Integration Constraint

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The system shall not include payment gateways, subscription services, or billing system integrations.
TR6 – L1.4 Platform Dependency Constraint
- The system shall not depend on institution-specific LMS platforms or third-party calendar systems.

TR7 – L0DataSecurityandProtection
- TR7 – L1.1 Authentication Enforcement
The system shall enforce secure user authentication mechanisms.
TR7 – L1.2 Access Control
- Access to system data shall be role-based and restricted to authorised users only.
TR7 – L1.3 Data Transmission Security
All data transmitted between client and server shall be encrypted.
TR7 – L1.4 Data Storage Protection
- Stored data shall be protected against unauthorised access.

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TR8 – L0MaintenanceandUpdates
- TR8 – L1.1 Corrective Maintenance
The vendor shall provide ongoing corrective maintenance.
TR8 – L1.2 Adaptive Maintenance
- The vendor shall provide adaptive maintenance for platform and dependency updates.
TR8 – L1.3 Deployment Strategy
Application updates shall be deployable with minimal or no customer downtime.

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TR9 – L0DataExportandMigration
- TR9 – L1.1 Data Export Capability
The system shall support export of system data for audit or migration purposes.
TR9 – L1.2 Exported Data Scope
- Exported data shall include student records, event records, and attendance data.
TR9 – L1.3 Export Format
Exported data shall be provided in a structured, machine-readable format.

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TR10 – L0 Platform Compatibility
- TR10 – L1.1 Mobile Operating Systems
The system shall support Android devices running Android 6.0 or later and iOS devices running iOS 9 or later.
TR10 – L1.2 External Link Compatibility
- External event links shall open correctly in standard mobile browsers or native meeting applications.

TR11 – L0 Performance Constraints
- TR11 – L1.1 Data Load Performance

Dashboard data shall load within 2 seconds under normal operating conditions.
TR11 – L1.2 Calendar Responsiveness
- Calendar navigation shall have no noticeable lag during normal use.
TR11 – L1.3 Concurrent Usage
The system shall remain responsive during peak concurrent usage.

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TR12 – L0 Documentation Configuration Items
- TR12 – L1.1 System Documentation
The vendor shall provide a system description document.
TR12 – L1.2 User Documentation
- The vendor shall provide a student user manual and an administrator user manual.
TR12 – L1.3 Deployment Documentation
The vendor shall provide deployment notes, release notes, and a data structure
- overview for audit and migration purposes.