Remerciements

Table des matières

Table des figures

Liste des tableaux

Liste des abréviations

Introduction générale

English language schools manage many complex processes such as student registration, course scheduling, tutor assignment, assessments, and resource management. These activities are often handled using fragmented systems and manual tools like spreadsheets, emails, and paper documents, which leads to inefficiencies, scattered data, and difficulties in tracking student progress and optimizing resources.

To address these challenges, a dedicated management system for an English language school platform is proposed. This platform aims to centralize administrative, academic, and communication processes within a single integrated system. By offering features such as course management, scheduling, assessments, communication, analytics, and payment processing, the system seeks to overcome the limitations of traditional methods and existing international applications, ultimately providing a more efficient, transparent, and user-friendly learning environment.

This report presents all the stages followed in the design and development of the application. It is organized into four distinct chapters :

The first chapter, entitled "General Project Framework", presents the project context, the study of the existing situation, the limitations of current and international solutions, the proposed solution, and the adopted methodology.

The second chapter, entitled "Requirements Analysis", focuses on identifying system stakeholders, describing functional and non-functional requirements, defining the product backlog, and presenting the hardware and software working environment.

The following chapters are dedicated to the implementation of the project using the Scrum methodology and describe the different development sprints : SPRINT 1, SPRINT 2, SPRINT 3, SPRINT 4, highlighting the features developed and the results achieved during each iteration.

Finally, this report concludes with a general conclusion that summarizes the various phases of the project, evaluates the achieved objectives, and discusses future perspectives and potential improvements of the proposed platform.

Chapitre 1

General Project Framework

Plan

1 Introduction

Educational institutions worldwide are transitioning to digital platforms to improve efficiency and learning outcomes. English language schools face particular challenges : managing enrollments, coordinating tutors, scheduling sessions, delivering content, organizing events, and maintaining student engagement—all while ensuring smooth communication between multiple stakeholders.

This project develops a centralized web platform to address these operational complexities. The system will integrate all pedagogical and administrative functions into a unified environment accessible to students, tutors, academic affairs officers, and directors.

This chapter outlines the project framework. We examine current management practices and their limitations, present our proposed solution with clear objectives, and introduce the SCRUM agile methodology that will guide our development process. This foundation ensures we build a platform that truly meets the needs of all users while remaining scalable and maintainable.

2 Project Presentation

The project consists of developing a comprehensive web-based management platform for an English language school. This platform aims to centralize and optimize all pedagogical and extra-pedagogical activities within the institution. The system will facilitate the management of multiple processes including student enrollments, session bookings, course delivery, article publishing, club management, event organization, and notification systems.

The platform is designed to serve various stakeholders including students, tutors, and administrative staff, each with clearly defined roles and responsibilities. By providing a unified digital environment, the solution seeks to enhance operational efficiency, improve communication between actors, and streamline the overall educational experience.

The core objective is to create a dynamic web application that supports the entire pedagogical process while offering an intuitive and accessible interface for all users, thereby modernizing the school's management approach and fostering better engagement within the learning community.

3 Study and Critique of the Existing Situation

3.1 Study of the Existing Situation

Currently, English language schools typically manage their operations through fragmented systems and manual processes. Administrative tasks such as student registrations, course scheduling, and tutor assignments are often handled using basic tools like spreadsheets, email communications, and physical documentation. This approach leads to several operational challenges :

— **Scattered information** : Student data, course materials, schedules, and administrative records are stored across multiple platforms and formats, making centralized access difficult.

— **Manual coordination** : Scheduling sessions, assigning tutors to courses, and managing room bookings require significant manual effort and coordination between different departments.

— **Limited communication channels** : Communication between students, tutors, and administrators relies heavily on email and phone calls, which can be inefficient and lack proper tracking mechanisms.

— **Lack of real-time monitoring** : Tracking student progress, attendance, and performance requires manual data collection and analysis, delaying feedback and intervention.

— **Inefficient resource management** : Managing physical resources (classrooms, materials) and extra-curricular activities (clubs, events) without a centralized system often results in conflicts and underutilization.

— **Paper-based assessments** : MCQs and quizzes are frequently administered on paper, making grading time-consuming and preventing instant feedback to students.

Application	Description	Drawbacks / Limitations
Moodle	Open-source LMS widely used in schools and universities for course management and online learning.	— Complex setup and administration — Limited integration with physical resources and room management — Notifications and messaging can be insufficient
EF Classroom	Online platform for English language learning with course tracking and student progress monitoring.	— Focuses mainly on learning content, not administrative tasks — Scheduling and tutor assignment are not fully integrated — Limited reporting on attendance and extra-curricular activities

Tableau 1.1 : Comparative Analysis of Existing Solutions

3.2 Critique of the Existing Situation

The current approach to managing English language school operations presents several critical limitations that hinder efficiency and user satisfaction :

— **Time-consuming processes** : Manual handling of registrations, scheduling, and administrative tasks consumes valuable time that could be dedicated to pedagogical activities.

— **Error-prone operations** : Human intervention in repetitive tasks increases the risk of scheduling conflicts, data entry errors, and miscommunication between stakeholders.

— **Poor user experience** : Students and tutors face difficulties in accessing course materials, checking schedules, and receiving timely notifications, leading to frustration and disengagement.

— **Limited scalability** : As the school grows, managing increasing numbers of students, courses, and activities becomes exponentially more complex without an integrated system.

— **Insufficient analytics** : The absence of consolidated data makes it challenging to generate meaningful reports, track key performance indicators, and make data-driven decisions for

institutional improvement.

— **Lack of transparency** : Students often lack visibility into their progress, upcoming sessions, and available resources, while administrators struggle to maintain oversight of overall operations.

— **Missed engagement opportunities** : Without a platform for clubs, events, and social interaction, the school fails to fully leverage extra-curricular activities to enhance the learning experience and build community.

3.3 Proposed Solution and Targeted Objectives

To address the aforementioned limitations, we propose the development of a comprehensive web-based platform that will transform the management of the English language school. This solution aims to achieve the following objectives :

Primary Objectives :

— **Centralization** : Create a unified platform that consolidates all pedagogical and administrative processes, providing a single source of truth for all stakeholders.

— **Automation** : Automate repetitive tasks such as registration processing, schedule generation, notification delivery, and attendance tracking to reduce manual workload.

— **Enhanced accessibility** : Provide 24/7 access to course materials, schedules, assessments, and resources through an intuitive web interface accessible from any device.

— **Improved communication** : Implement integrated messaging, notification systems, and announcement features to facilitate seamless communication between students, tutors, and administrators.

— **Real-time monitoring** : Enable tutors and administrators to track student progress, performance, and engagement through dashboards and analytics tools.

— **Digital assessments** : Implement an MCQ system with instant grading and feedback, allowing students to assess their knowledge and tutors to evaluate learning outcomes efficiently.

Secondary Objectives :

— **Community engagement** : Provide features for club creation, event management, and discussion forums to foster a vibrant learning community beyond the classroom.

— **Resource optimization** : Implement booking systems for tutoring sessions, rooms, and materials to maximize resource utilization and minimize conflicts.

— **Data-driven decision making** : Generate comprehensive reports and analytics to support strategic planning and continuous improvement of pedagogical approaches.

— **Scalability** : Design a flexible architecture that can accommodate growth in student numbers, course offerings, and institutional expansion.

— **User satisfaction** : Deliver an intuitive, responsive, and user-friendly interface that enhances the overall experience for all actors involved.

By achieving these objectives, the proposed platform will modernize the school's operations, improve educational outcomes, and create a more engaging and efficient learning environment for students while empowering tutors and administrators with powerful management tools.

4 Platform Identity and Visual Design

4.1 Logo Design

The platform's visual identity is embodied in a distinctive logo that reflects the core mission and values of our English language learning system.

Figure 1.1 : Platform Logo

The logo design incorporates two meaningful symbolic elements that communicate the platform's educational purpose :

— **The Book :** Represents the facilitation of learning and education, emphasizing our commitment to knowledge transfer, continuous learning, and accessible educational resources.

— **The Crown :** Symbolizes academic excellence and achievement, reflecting the high standards and quality education we strive to deliver to all students.

Together, these elements create a visual representation of our mission : to provide accessible, high-quality English language education that empowers students to achieve excellence.

4.2 Color Palette

The platform employs a carefully curated color palette that conveys professionalism, trust, energy, and clarity. Each color has been selected to evoke specific emotions and support the user experience :

Color	Hex Code	Symbolism and Purpose
Blue	#37568D	Reflects trust, professionalism, and intelligence. This primary color establishes credibility and reliability, creating a sense of stability and confidence in the platform.
Gold	#DE9A38	Conveys excellence, achievement, and value in education. This accent color highlights important elements and reinforces the pursuit of academic success.
Red	#BF3650	Represents energy, motivation, and progress. This dynamic color inspires active learning, encourages engagement, and emphasizes calls to action.
Light Gray	#EFEFEF	Demonstrates clarity and simplicity. This neutral background color ensures clean layouts, enhances readability, and provides visual breathing space for an intuitive user experience.

Tableau 1.2 : Platform Color Palette and Symbolism

5 Adopted Methodology

5.1 Choice of Methodology : Presentation of SCRUM

To effectively manage development time and prioritize tasks throughout the project lifecycle, we adopted the SCRUM agile methodology.

Why SCRUM ?

SCRUM is a framework designed to address complex and evolving problems while delivering maximum value productively and creatively. Its primary objective is to build a product that meets the client's actual needs rather than simply adhering to contractual terms.

The methodology's core characteristics are iterative and incremental development. Work is divided into manageable parts or modules, with each part representing an iteration that leads to a working increment. These iterations are called Sprints, typically lasting 2-4 weeks, allowing for continuous feedback, adaptation, and progressive delivery of functional features.

This approach ensures flexibility to accommodate changing requirements while maintaining steady progress toward project completion.

5.2 SCRUM Roles

Scrum consists of three roles : Product Owner, Scrum Master, and the Development Team. Product Owner : This is the official representative of the client within a Scrum project. They are the only one who manages the work of the development team. The Product Owner communicates the client's needs and prioritizes them, playing a fundamental role in creating the product's value.

Scrum Master : Their goal is to simplify the tasks of the development team and create an environment that fosters engagement and productivity. They also ensure communication between the Product Owner and the team members.

Development Team : Usually composed of 6 to 10 people, their main task is product development. They are responsible for assessing the difficulty of different tasks and planning sprints to deliver a product that meets the Product Owner's requirements.

5.3 SCRUM Framework

The Scrum framework includes Scrum teams, events, artifacts, and rules. Each component of this framework plays a distinct role and is essential to the success and effectiveness of Scrum

implementation, as illustrated in the following image :

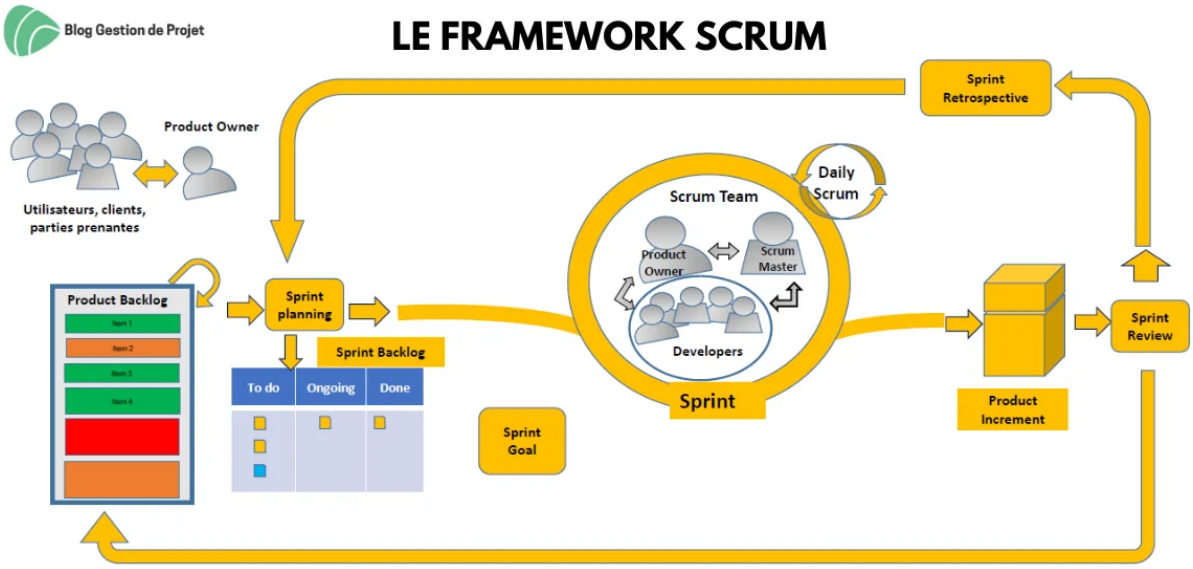

Figure 1.2 : Scrum Functioning

6 Conclusion

We have identified critical gaps in current language school management : fragmented systems, manual processes, poor communication, and limited analytics. Our proposed platform addresses these issues through centralization, automation, real-time monitoring, and comprehensive reporting capabilities.

The SCRUM methodology provides the agile framework needed to deliver this solution iteratively, ensuring continuous stakeholder feedback and adaptive development. With clearly defined objectives and a solid methodological approach, we move forward to Sprint 0, where detailed requirements specification and technical architecture will transform this vision into actionable development plans.

Chapitre 2

Sprint 0 : Requirements Expression and Technical Study

Plan

1 Introduction

In this initial phase, Sprint 0 aims to ensure a thorough understanding of the client's requirements and the fundamental architecture of the project by the SCRUM team. Throughout this chapter, we will explore in detail the various actors involved in our application, as well as the functional and non-functional requirements and the technologies involved in our solution. Additionally, an overview of the project's overall architecture will be presented to provide a clear perspective on our development approach.

2 Requirements Identification

2.1 Identification of Actors

An actor represents a user role interacting with the system. This can be a human user, an organization, a machine, or another external system. Each actor has specific functions and defined permissions, thus contributing to the achievement of the system's objectives and its proper functioning.

2.1.1 Main Actors

— **Visitor** : An unregistered user who browses available courses and initiates the registration process.

— **Student** : Focuses on learning English and engaging with the school community through courses, activities, and assessments.

— **Tutor** : Responsible for educational delivery, content creation, and student progress monitoring.

— **Academic Affairs Officer** : Manages daily academic operations, schedules, student services, and serves as the primary point of contact for administrative matters and feedback.

— **Director (System Manager)** : Oversees strategic management, institutional governance, and platform administration. Ensures quality control through analytics and validation processes, manages user roles and permissions, and maintains technical configuration and system settings.

2.1.2 Secondary Actors

— **Payment System** : An external system that handles payment processing for course enrollments, membership fees, and other financial transactions within the platform.

2.2 Functional Requirements

The platform's functional requirements are organized into key management modules :

2.2.1 Authentication and User Management

This module handles user registration, secure login and logout, password recovery, email verification, role-based access control, profile management, role assignment by the Director, and tutor profile validation.

2.2.2 Course and Content Management

Manages the course catalog with browsing and search capabilities, course creation and modification by tutors, student enrollment and withdrawal, learning materials upload and organization (videos, PDFs, documents), content categorization, and course capacity management.

2.2.3 Schedule and Booking Management

Enables timetable creation by the Academic Affairs Officer, session scheduling with tutor and room assignment, calendar views, student booking and registration for sessions, tutoring appointments, room reservations, conflict detection, and automated notifications for changes.

2.2.4 Assessment Management

Supports MCQ creation and question bank management by tutors, quiz assignment to courses, automated test administration with instant grading, answer corrections and explanations, student performance tracking, and result analytics.

2.2.5 Complaint and Feedback Management

Provides complaint submission forms with categorization and priority assignment, status tracking, response management by the Academic Affairs Officer, escalation to the Director, course evaluation forms, tutor rating systems, and feedback reports for quality improvement.

2.2.6 Club and Event Management

Manages club creation requests and validation by the Director, membership registration, event creation and publishing, participant registration and tracking, event calendar integration, and attendance monitoring.

2.2.7 Communication and Notification Management

Provides internal messaging between users, announcement posting, discussion forums with moderation, automated notification delivery, customizable templates, user preferences, and scheduled reminders for sessions and events.

2.2.8 Analytics and Reporting Management

Provides comprehensive dashboards with key performance indicators, enrollment and attendance statistics, student progress reports, tutor performance analytics, financial summaries, and custom report generation in multiple formats (PDF, CSV) with data visualization.

2.2.9 Payment and Subscription Management

Manages all financial transactions and subscription processes, including secure online payments, invoice generation, and payment history tracking. This module ensures that students can pay for courses safely, view their invoices, and access a complete record of past payments.

2.3 Non-Functional Requirements

— **Security** : The platform ensures the protection of users' personal data through secure authentication, password encryption, and role-based access management. All communication is secured via HTTPS to prevent unauthorized access.

— **Performance** : The platform guarantees fast response times and smooth operation, even with simultaneous access by multiple users. Optimized database queries and efficient code ensure a fluid user experience.

— **Availability** : The platform is accessible 24/7 to ensure continuous access to services. Regular backups and monitoring systems maintain system reliability.

— **Scalability** : Each service is independent and can be scaled individually according to demand, allowing the system to handle growing numbers of users and data efficiently.

These requirements ensure the platform delivers a professional, secure, and reliable experience for all users while remaining scalable and maintainable over time.

2.4 SCRUM Team

2.4.1 Product Owner

Mohamed Khaled Hamrouni defines the product vision, manages the backlog, and ensures stakeholder requirements are met.

2.4.2 Scrum Master

Khalil Abdelmoumen facilitates the SCRUM process, removes impediments, and ensures adherence to agile principles through sprint ceremonies.

2.4.3 Development Team

The development team consists of four members working collaboratively :

— **Nadhem Hmida** : Full-stack developer

— **Ismail Ismail** : Backend developer

— **Kenza Baccar** : Frontend developer

— **Mohamed Aziz Louati** : Full-stack developer

The team follows SCRUM practices to ensure iterative and incremental delivery of high-quality features.

2.5 Product Backlog

ID	User Story	Priority	Complexity
1	As a Visitor I want to view available courses.	1	Simple
2	As a Visitor I want to register on the platform.	1	Simple
3	As a User I want to authenticate.	1	Simple
4	As a User I want to manage my profile.	2	Simple
5	As a Student I want to pay tuition fees.	2	Medium
6	As a Student I want to take tests and quizzes.	2	Medium
7	As a Student I want to request to join a club.	3	Simple
8	As a Student I want to submit a complaint.	3	Simple
9	As a Student I want to participate in events.	3	Simple
10	As a Student I want to evaluate courses and tutors.	3	Simple
11	As a Student I want to submit feedback.	3	Simple
12	As a Student I want to track my progress.	2	Medium
13	As a Tutor I want to manage my courses.	2	Medium
14	As a Tutor I want to manage tests and quizzes.	2	Medium
15	As a Tutor I want to manage ratings.	3	Medium
16	As an Academic Affairs Officer I want to manage complaints and feedbacks.	2	Medium
17	As an Academic Affairs Officer I want to manage clubs and events.	3	Medium
18	As an Academic Affairs Officer I want to manage refunds.	3	Medium
19	As an Academic Affairs Officer I want to manage payments and subscriptions.	2	Complex
20	As an Academic Affairs Officer I want to manage schedules.	1	Complex
21	As a Director I want to manage users.	1	Medium
22	As a Director I want to view statistics.	4	Complex

Tableau 2.1 : Product Backlog

Prorité : The Product Backlog comprises 22 prioritized user stories that will guide the iterative development process across multiple sprints.

2.6 Global Use Case Diagram

In this section, we formally present the requirements of our system using the use case diagram. Use case diagrams, in UML language, serve to model the behavior of a system and capture its requirements. They detail the main functions and scope of the system while identifying the interactions between the system and its actors. Due to the complexity and scope of the platform, the diagram is presented in three parts for better readability.

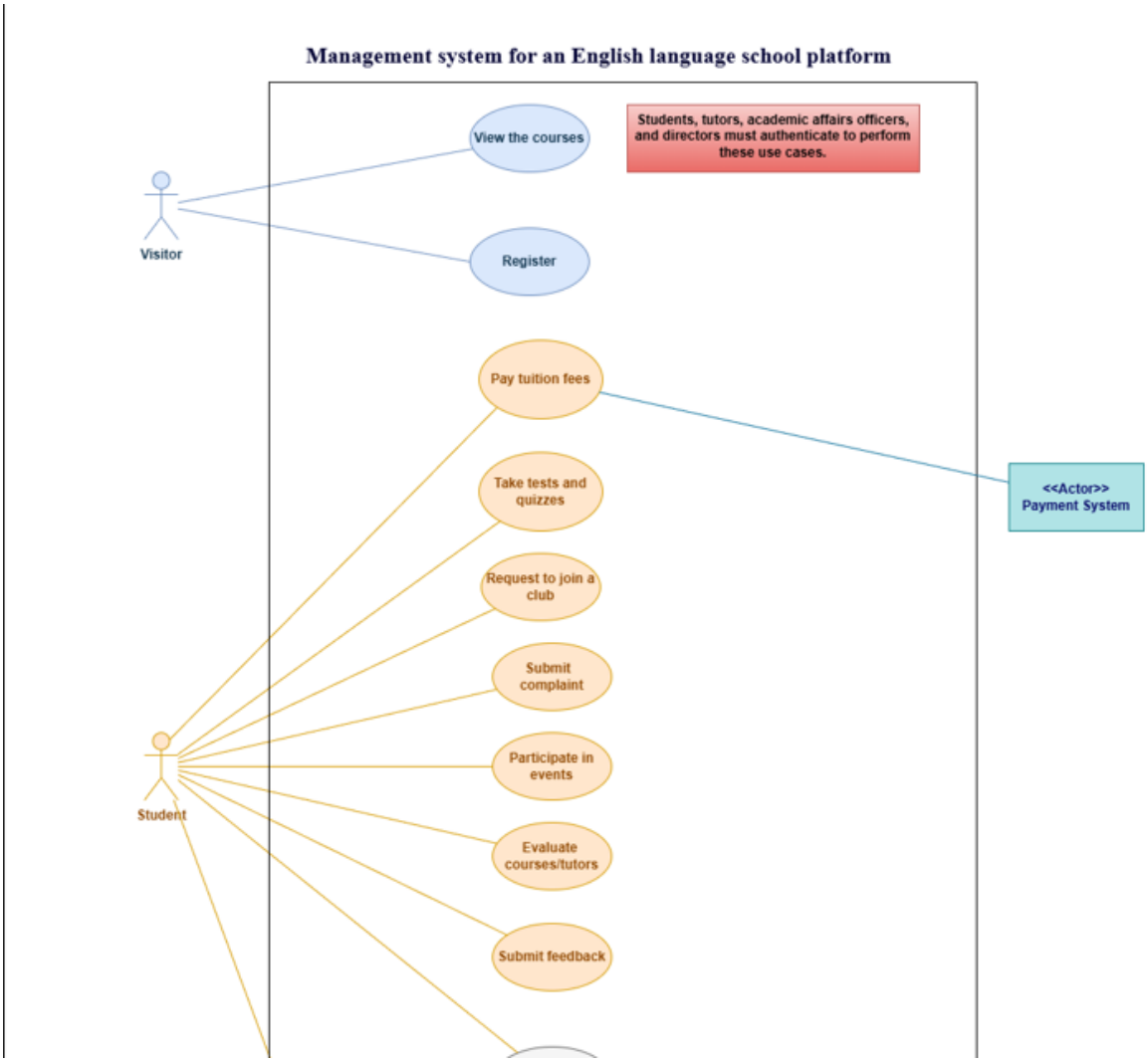

Figure 2.1 : Global Use Case Diagram - Part 1 : Visitor and Student Interactions

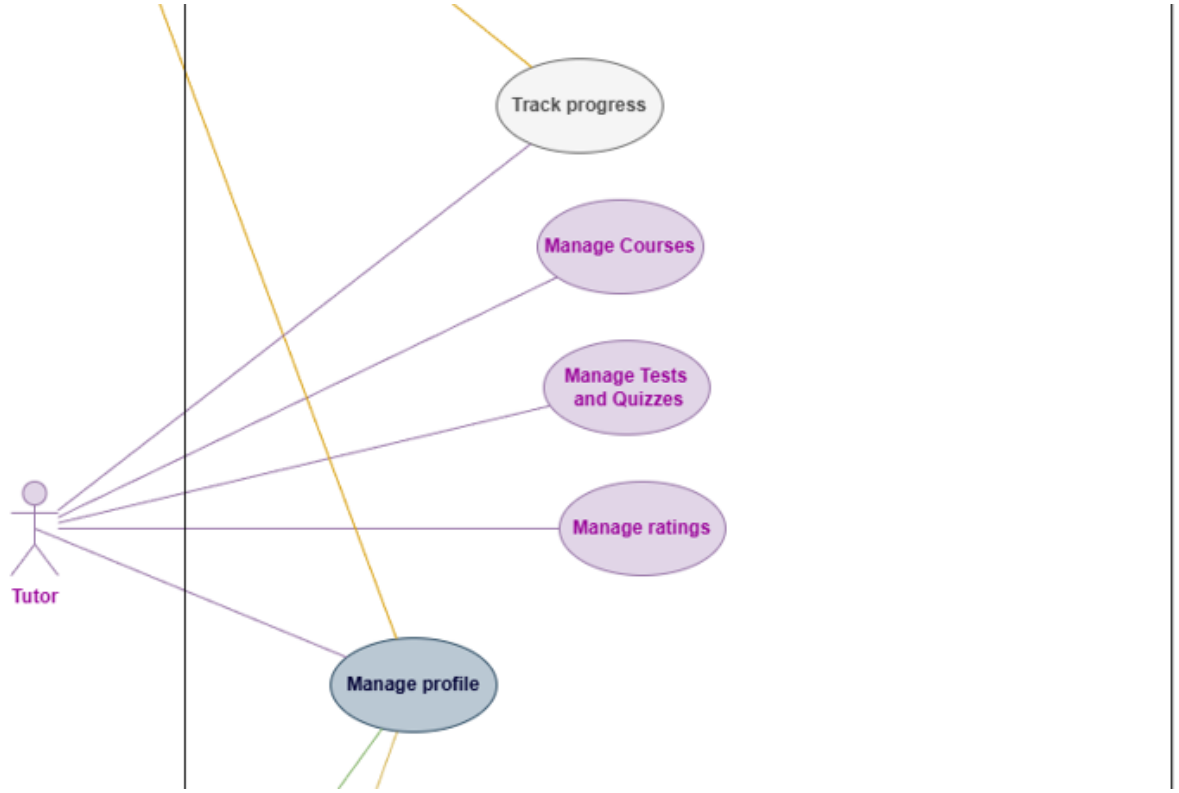

Figure 2.2 : Global Use Case Diagram - Part 2 : Tutor Interactions

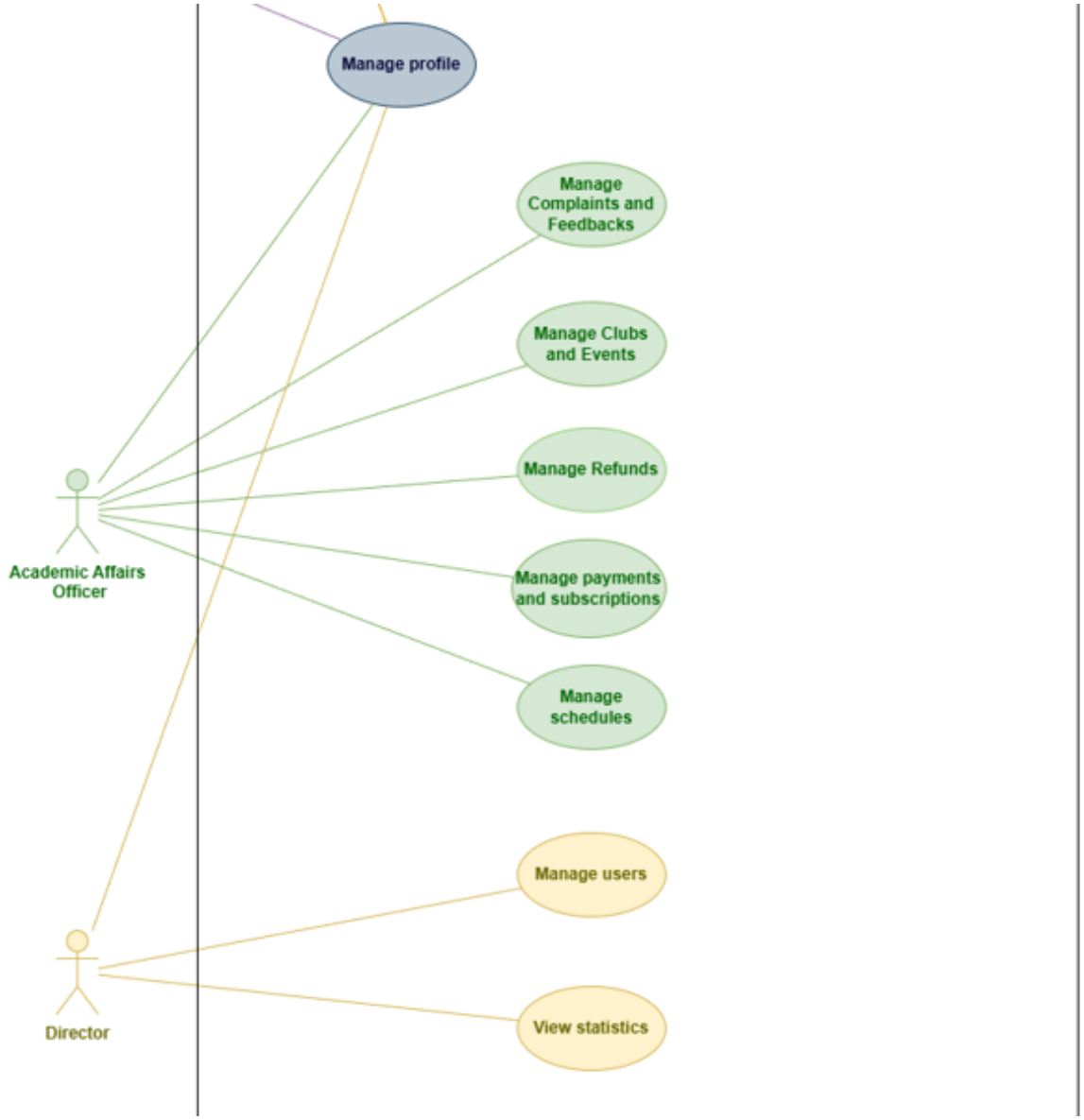

Figure 2.3 : Global Use Case Diagram - Part 3 : Academic Affairs Officer and Director Interactions

These use case diagrams provide a comprehensive overview of the platform's functionalities and the interactions between different actors (Visitor, Student, Tutor, Academic Affairs Officer, Director) and the system. They also show the integration with the external Payment System actor for handling financial transactions. The diagrams serve as a foundation for sprint planning and development prioritization throughout the project lifecycle.

2.7 Sprint Distribution

Sprint	Features / Modules
Sprint 1	Authentication and User Management + Course and Content Management
Sprint 2	Schedule and Booking Management + Assessment Management (MCQ and Tests)
Sprint 3	Club and Event Management + Payment System Integration
Sprint 4	Complaint, Feedback and Communication + Analytics, Reporting and Finalization

Tableau 2.2 : Sprint Distribution

3 Environnement de développement et choix techniques

3.1 Environnement logiciel et langage de programmation

4 General Architecture of the Application

The proposed system is designed using a **Microservices Architecture (MSA)**, chosen for its modularity, scalability, and maintainability. The main points are as follows :

— **Modularity :** The platform is divided into independent services, each handling a specific business function such as user management, course and schedule management, assessments, payments, communication, and performance monitoring.

— **Independent Development and Deployment :** Each service can be developed, deployed, and updated separately, enabling faster feature implementation without affecting the entire system.

— **Communication :** Services interact through well-defined APIs or asynchronous messaging, allowing seamless coordination while maintaining autonomy.

— **Data Autonomy :** Each microservice manages its own database, reducing data conflicts and ensuring independence.

— **Fault Isolation :** Failures in one service do not impact other services, enhancing system reliability and availability.

— **Scalability :** Resources can be allocated dynamically to services with higher demand, ensuring optimal performance.

— **Team Autonomy and Maintainability :** Different teams can work simultaneously on separate services, improving productivity and ease of maintenance.

— **Adaptability :** The architecture supports continuous evolution and integration of new functionalities, meeting the complex needs of an English language school platform.

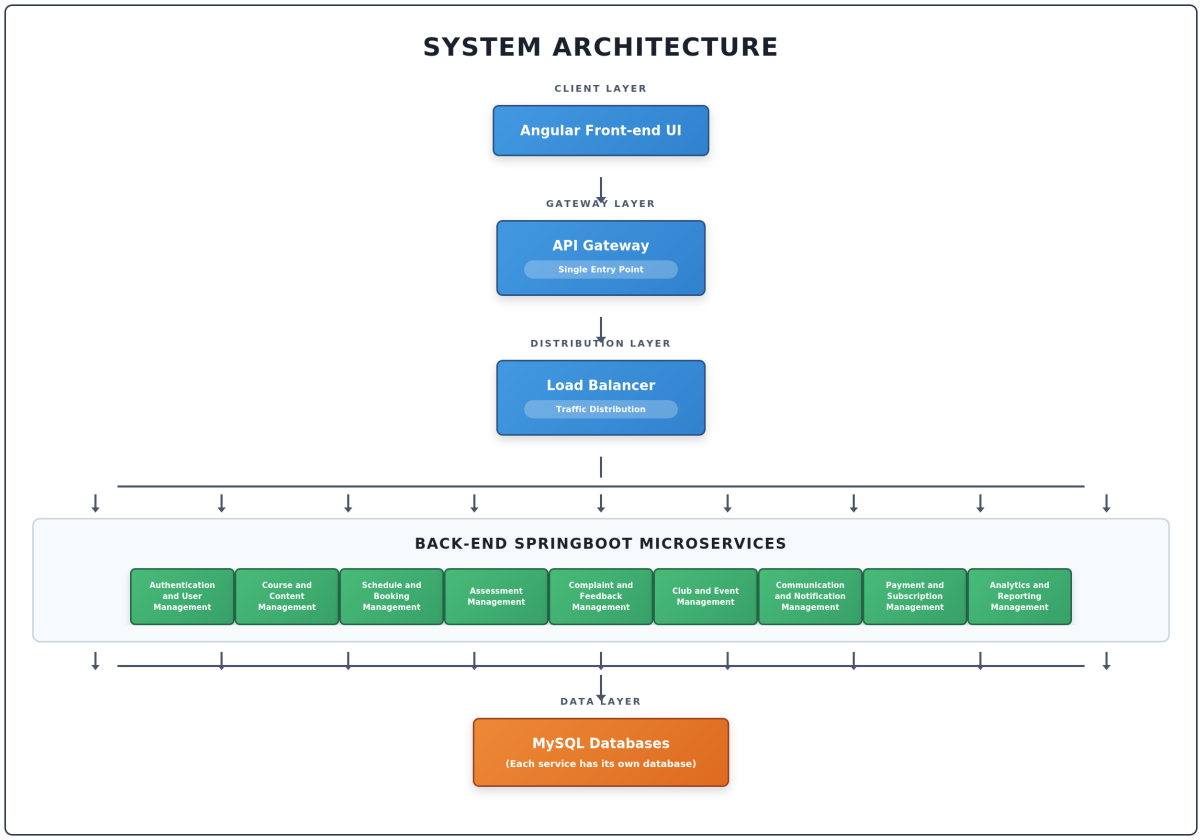

Figure 2.4 : System Architecture

5 Conclusion

This chapter has successfully laid the groundwork for the English Language School Management Platform development. We have identified all key actors, defined comprehensive functional and non-functional requirements organized into nine core modules, and established a Product Backlog of 22 prioritized user stories.

The adoption of a Microservices Architecture ensures modularity, scalability, and independent service development. With our SCRUM team defined and sprint distribution planned, we have a clear roadmap for iterative delivery.

The technical environment and architecture choices provide a solid foundation for implementation. We are now ready to begin Sprint 1, which will focus on Authentication and User Management—the critical foundation upon which all other platform functionalities will depend.

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