SkillForge UML Design Report
Programming 2 – Fall 2025

Team members :

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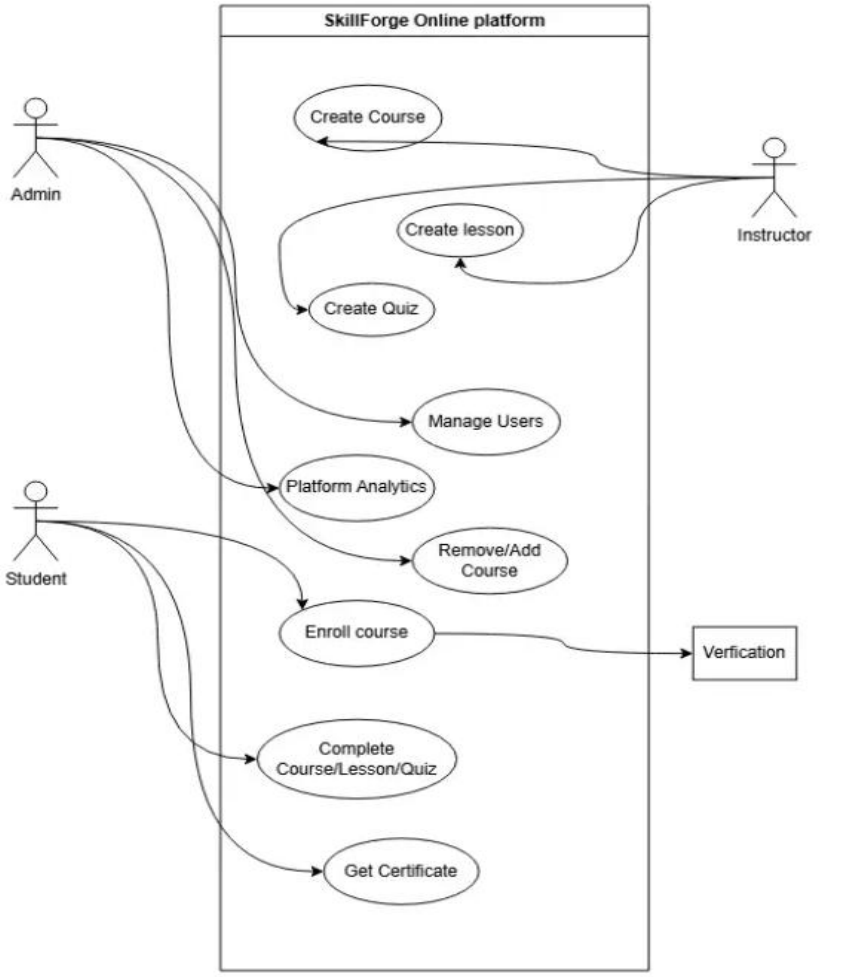
Introduction

This report presents the UML design for the SkillForge online learning system.
It includes the Use Case, Activity, Class, and Sequence diagrams, which describe how the system works from both user and structural perspectives. Each diagram focuses on a different part of the system's functionality.

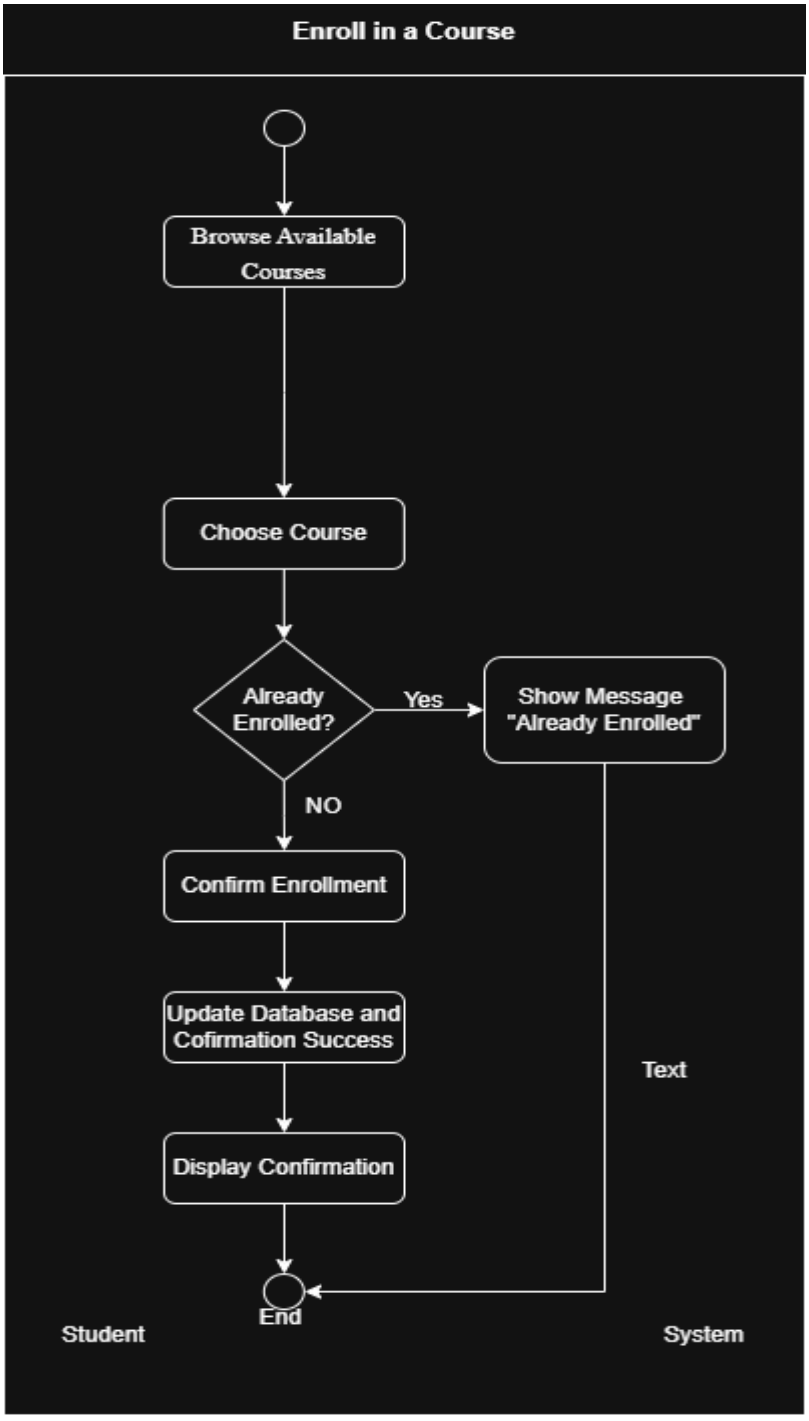
Use Case Diagram by *Ahmed Abdul Moneim / ID 9284*



Explanation:

This Use Case Diagram defines the functional scope of the SkillForge platform by illustrating the relationships between the system's three primary actors (Student, Instructor, and Admin) and their main activities. It clearly shows the student’s learning journey—from enrolling in a course and completing content to getting certified—while separating the content creation role of the instructor and the platform governance role of the Admin. This model serves as the foundational view of system requirements and is essential for detailed design work.

Activity Diagram by*: Youssef Essam / ID 9798*

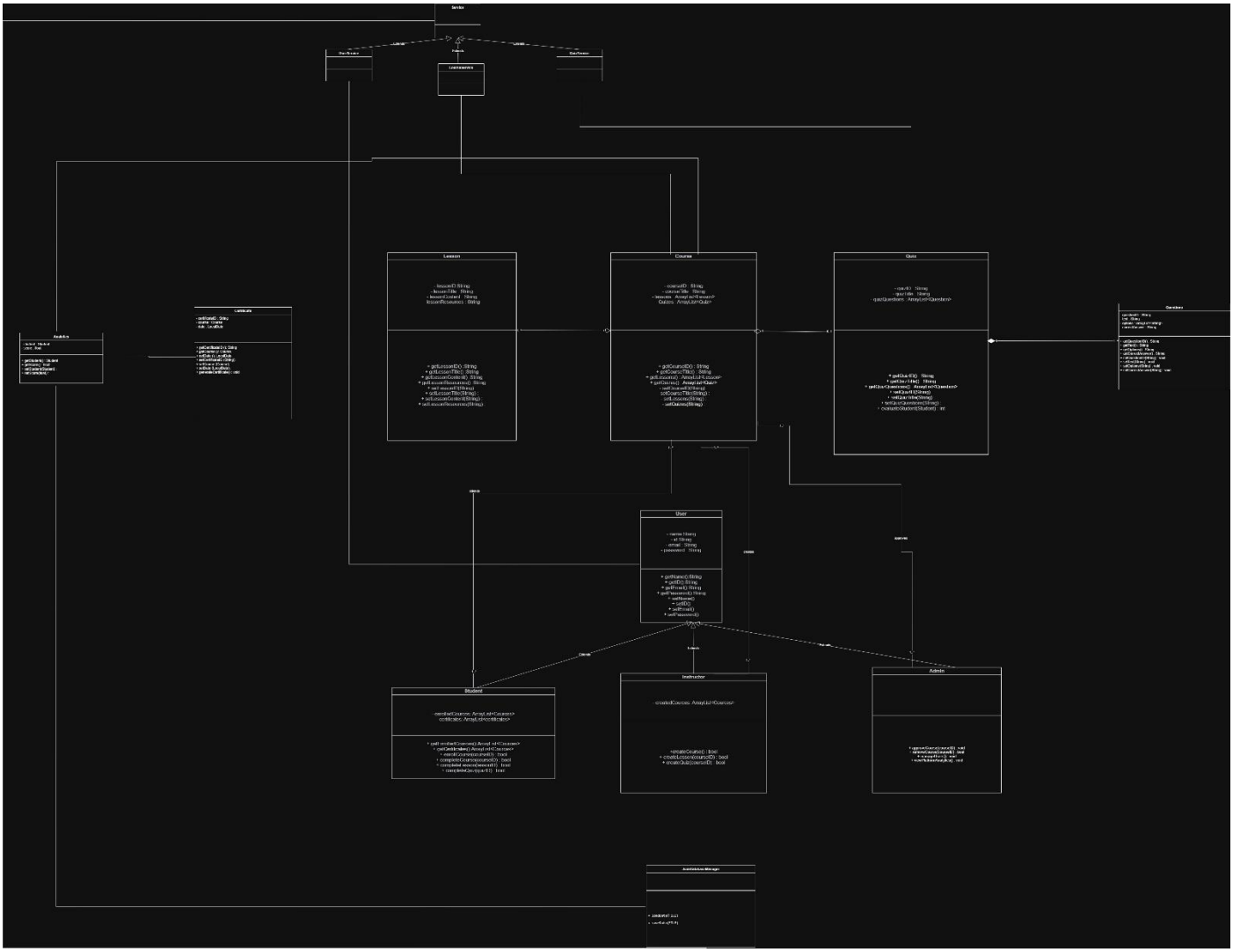


Explanation:

This activity diagram describes how a student interacts with the SkillForge platform to enroll in a course.

It shows steps including login, browsing available courses, selecting one, confirming enrollment, Updating Database and viewing the confirmation message.

Class Diagram by: *Eyad Motawea / ID 9784*



Explanation:

This UML Class Diagram illustrates the architectural blueprint of the e-learning system, defining the core entities and their static relationships. The model is structured around a User hierarchy (Student, Instructor, Admin) and the Course content hierarchy (Lesson, Quiz). Key associations include Instructors creating Courses and the Enrollment class, which links a Student to a Course to track progress, thereby defining the system's foundation and capabilities.

Sequence Diagram by: *Ziad Abdelhaleem / ID 9634*

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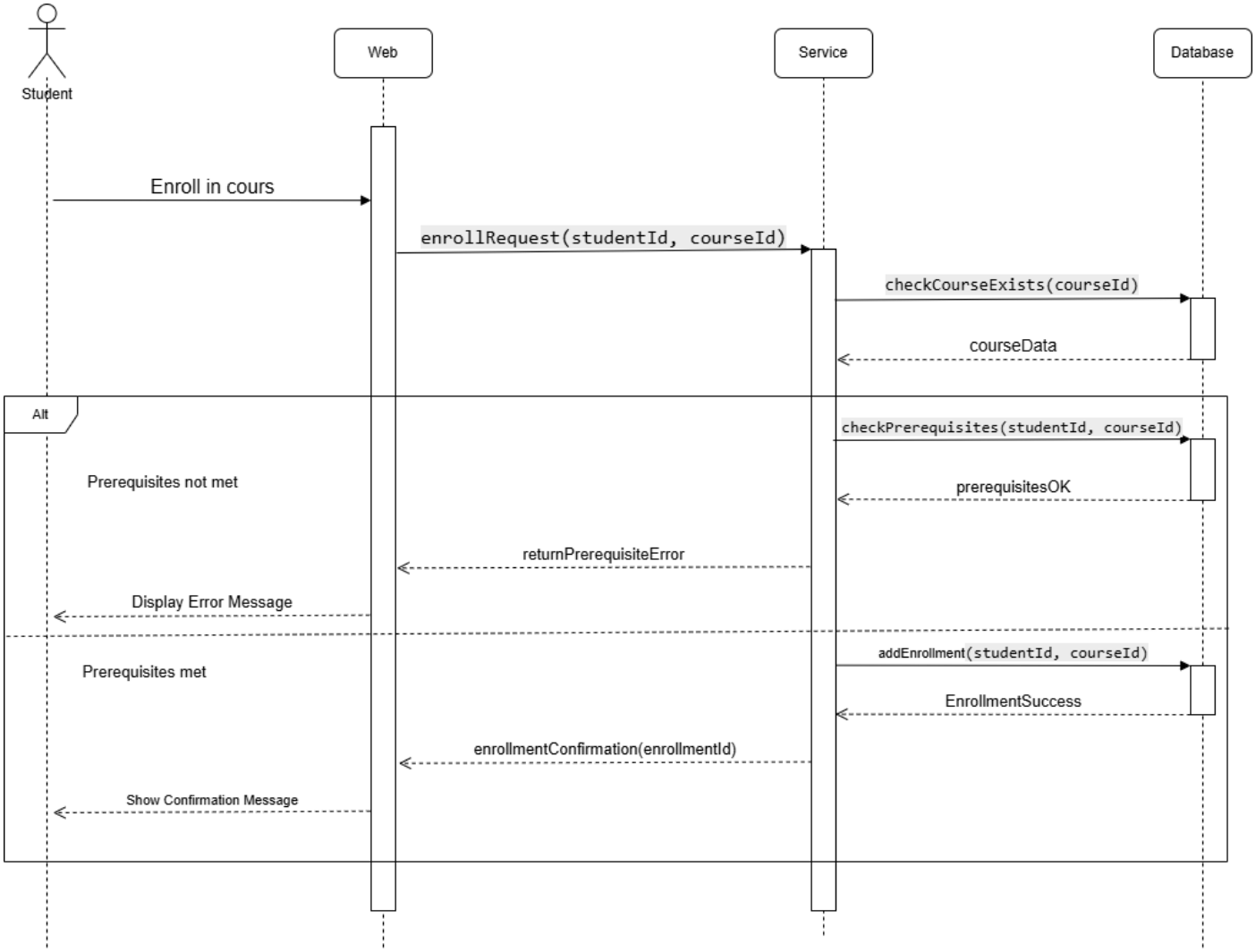

Explanation:

This sequence diagram models the successful and unsuccessful paths for a student enrolling in a course. The process begins with the Student initiating the request through the Web interface, which triggers a transactional call to the Service layer. The Service first consults the Database to verify the course existence and then to checkPrerequisites. An Alt (Alternative) fragment governs the flow: if prerequisites are met, the Service proceeds to addEnrollment to the Database and returns a confirmation to the Student; if prerequisites are not met, the Service returns a returnPrerequisiteError, resulting in an error message displayed to the user.