FIELD TRANING PROJECT'S REPORT>>

Team Members:

Rawan Ayman Adly

Nadin Mohamed

Dr: Islam Elgedawy

1. Executive Summary

This report provides a comprehensive overview of the Employee Training & Development System, a web-based application designed to streamline corporate training administration. The system supports multiple user roles (Admin and Employee) and offers robust features for managing training courses, tracking employee progress, and generating detailed reports. The backend is built using

ASP.NET Core with a MongoDB database, while the frontend is developed with HTML, CSS, and JavaScript to provide a seamless and interactive user experience.

2. Requirements Analysis and Use Cases

This section outlines the core functionalities of the system from the perspective of its users, as depicted in the provided Use Case Diagrams.

2.1. Admin

User & Course Management: The admin can register new users, define their roles (Admin or Employee), and perform full CRUD operations (Create, Read, Update, Delete) on training courses.

Enrollment Management: Admins can assign courses to employees, track their progress, and update the status of enrollments.

Reporting & Analytics: The system provides the ability to generate comprehensive reports on course performance, user progress, and departmental training status.

Monitoring: The admin has access to a comprehensive dashboard that provides quick statistics and recent activity logs.

2.2. Employee

Course Interaction: Employees can browse available courses, enroll in them (or request enrollment), and access their assigned training materials.

Progress Tracking: They can monitor their progress in enrolled courses and view a personal progress report.

Certificates: Upon course completion, employees can download their earned certificates.

Profile Management: The system allows employees to view and update their personal profiles.

USE CASE:

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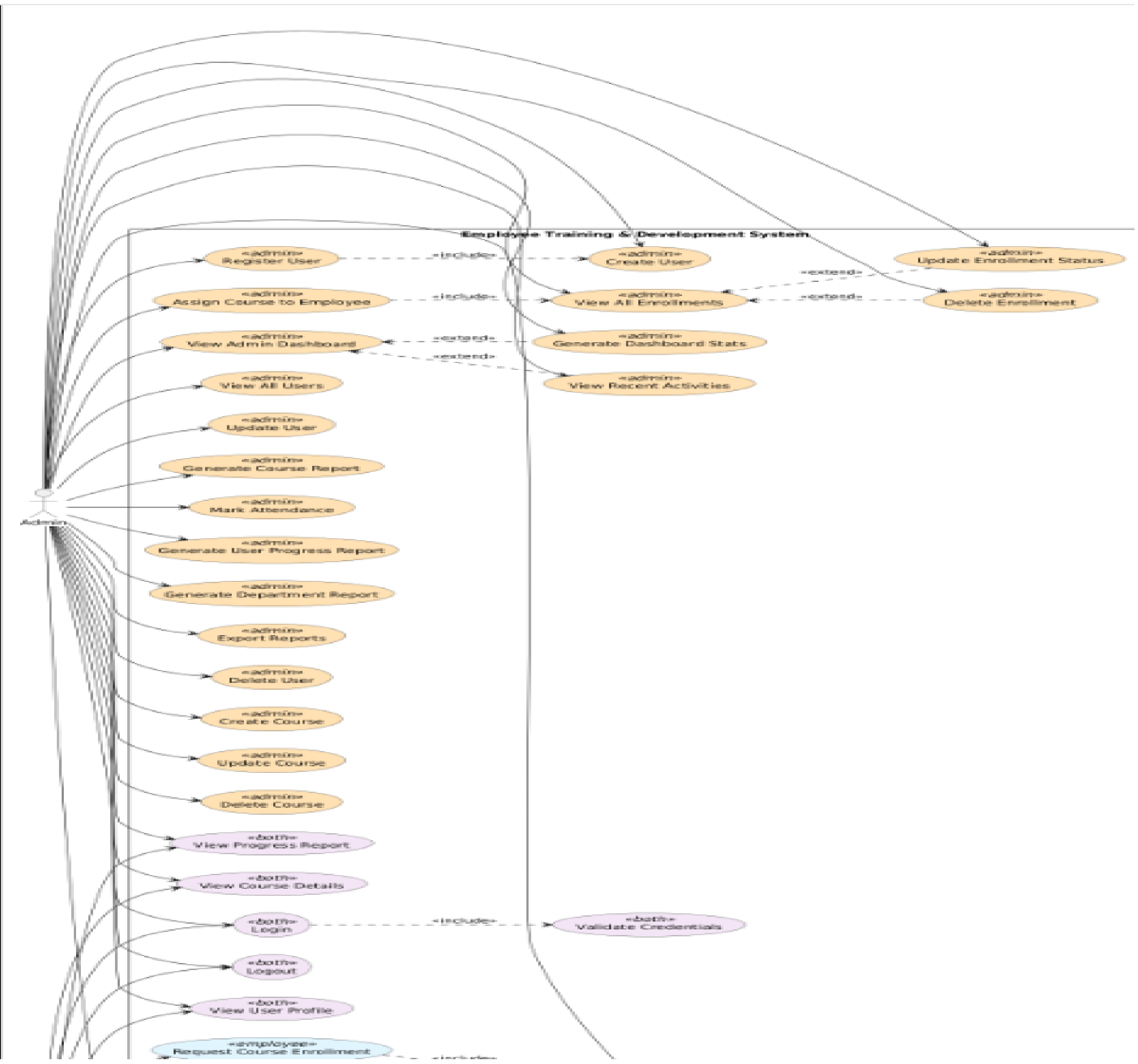
Employee Training & Development System
Admin
«admin» Register User
«include»
«admin» Create User
«admin» Update Enrollment Status
«admin» Assign Course to Employee
«include»
«admin» View All Enrollments
«extend»
«extend»
«admin» Delete Enrollment
«admin» View Admin Dashboard
«extend»
«admin» Generate Dashboard Stats
«extend»
«admin» View Recent Activities
«admin» View All Users
«admin» Update User
«admin» Generate Course Report
«admin» Mark Attendance
«admin» Generate User Progress Report
«admin» Generate Department Report
«admin» Export Reports
«admin» Delete User
«admin» Create Course
«admin» Update Course
«admin» Delete Course
«both» View Progress Report
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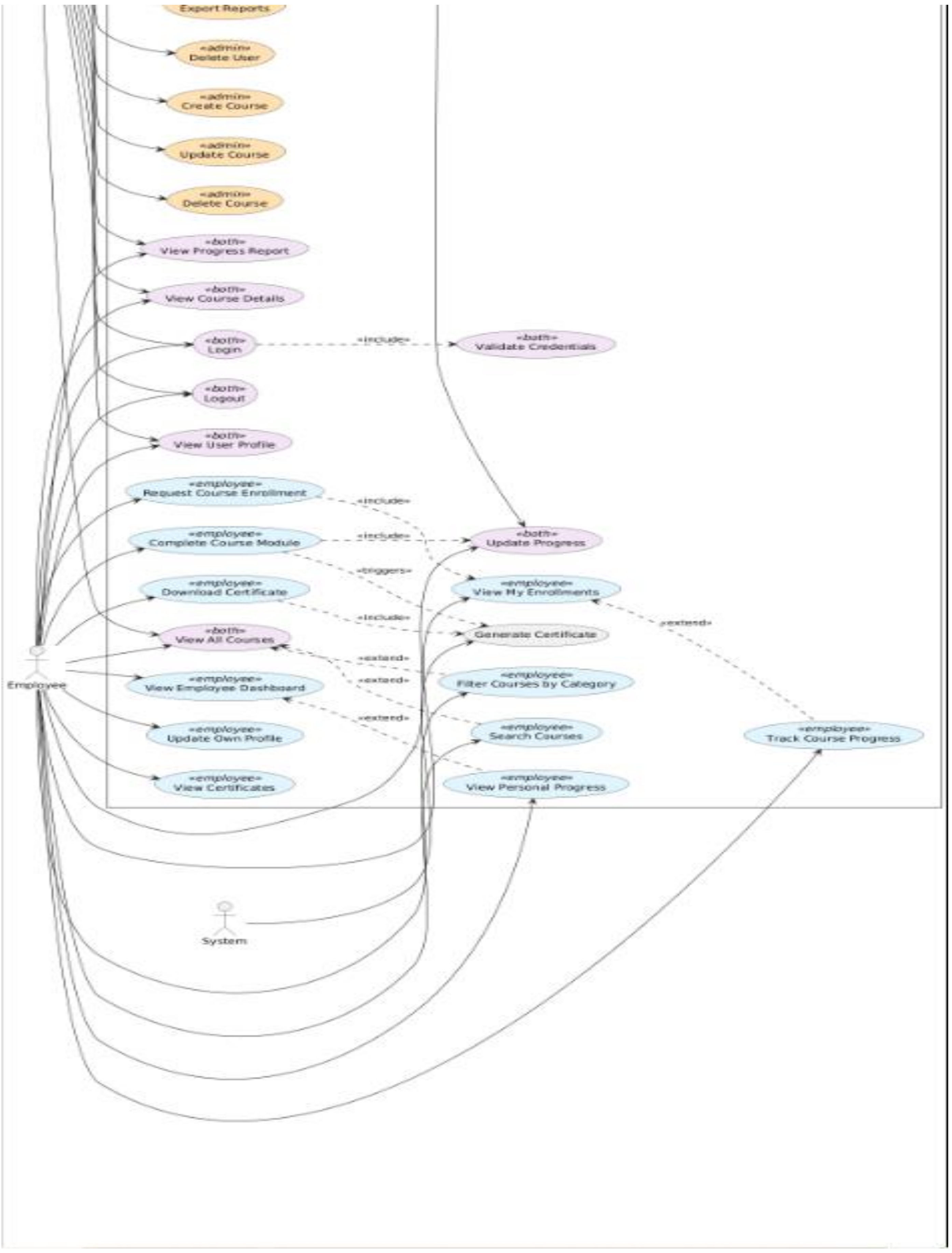
«include»
«both» Validate Credentials
«both» Logout
«both» View User Profile
«employee» Request Course Enrollment
«include»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«admin» Create Course
«admin» Update Course
«admin» Delete Course
«both» View Progress Report
«both» View Course Details
«both» Login
«include»
«both» Validate Credentials
«both» Logout
«both» View User Profile
«employee» Request Course Enrollment
«include»
«employee» Complete Course Module
«include»
«both» Update Progress
«triggers»
«employee» View My Enrollments
«employee» Download Certificate
«include»
Generate Certificate
«extend»
«both» View All Courses
«extend»
«employee» Filter Courses by Category
«extend»
Employee
«employee» View Employee Dashboard
«extend»
«employee» Update Own Profile
«employee» Search Courses
«employee» Track Course Progress
«employee» View Certificates
«employee» View Personal Progress
System

3. System Design

The system is designed with a multi-tiered architecture, separating the presentation, business logic, and data layers.

3.1. Class Diagram

The provided Class Diagram defines the main components of the system:

Classes:

User: Represents system users (Admin and Employee) with attributes like name, email, role, and department.

Course: Represents training courses with properties such as title, duration, instructor, and level.

Enrollment: An association class that links a User to a Course and tracks progress, status, and enrollment date.

Service Classes: These are the business logic classes that handle data interactions, including UserService, CourseService, and EnrollmentService.

ReportService: A dedicated class for generating reports and statistics.

CLASS DIAGRAM:

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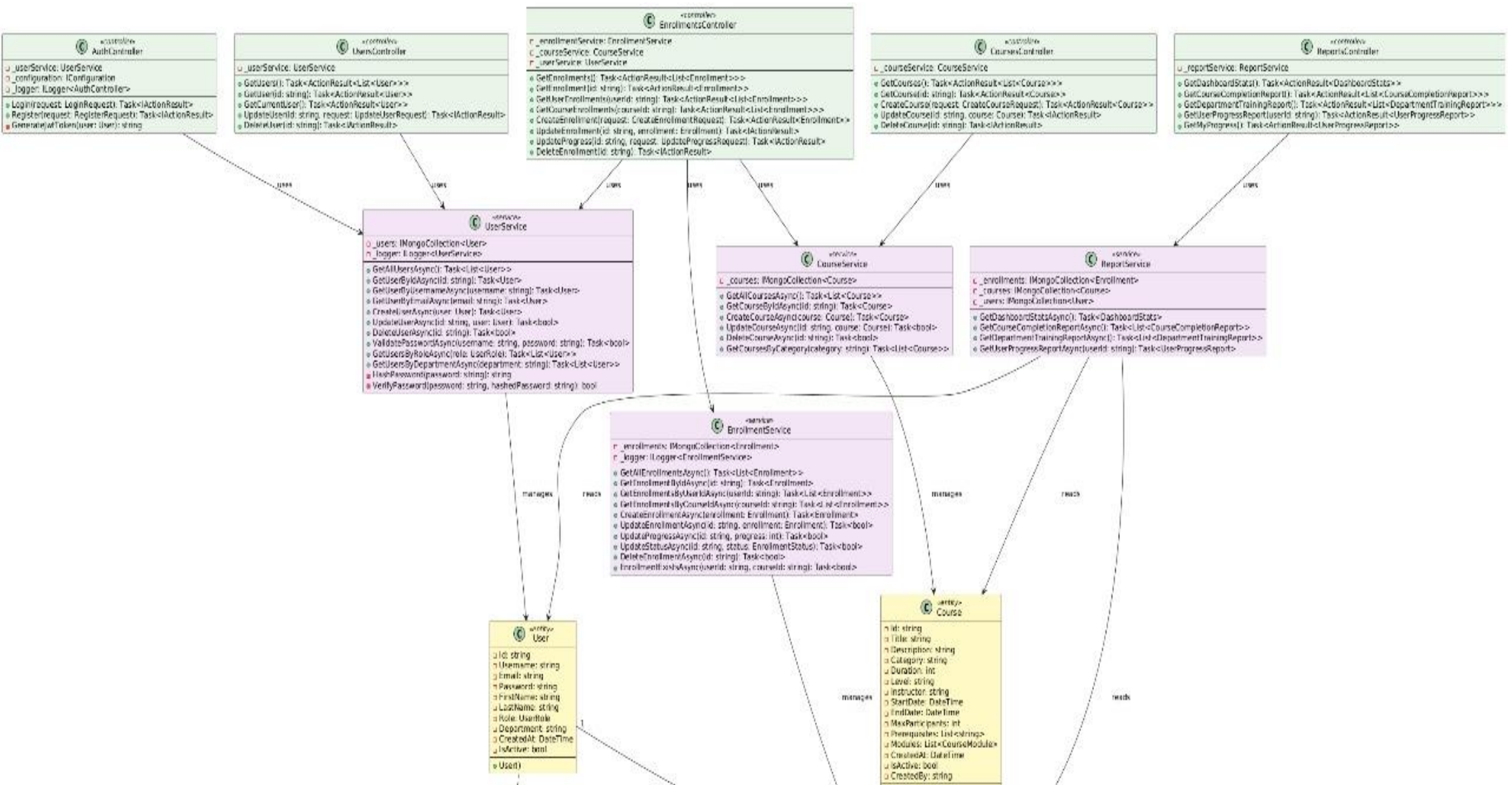

«controller» AuthController
«controller» UsersController
«controller» EnrollmentsController
«controller» CoursesController
«controller» ReportsController
«service» UserService
«service» CourseService
«service» ReportService
«service» EnrollmentService
«entity» User
«entity» Course
uses
manages
reads

Relationships:

Association: An association exists between the User and Course classes through the Enrollment class, indicating that a user "enrolls" in a course.

Dependency: The Service classes depend on the entity classes (User, Course, etc.) to perform their functions.

4. Implementation

4.1. Backend

Technologies: ASP.NET Core 8.0, MongoDB, and JWT.

Key Components:

Configuration (Program.cs, appsettings.json): The MongoDB connection string and JWT secret key are configured here.

Services: Service classes are registered as scoped services to ensure efficient and reusable database connections.

Authentication: JWT Bearer Authentication is used to secure API endpoints, ensuring that only authenticated users can access protected functionalities.

CORS: Cross-Origin Resource Sharing (CORS) is enabled to allow the frontend application to make requests to the API.

4.2. Frontend

Key Components:

Login & Auth: The localStorage is used to persist the authentication token and user information, managing the logged-in state across sessions.

API Integration: A helper function apiCall centralizes all API requests, automatically adding the JWT token to request headers.

Dynamic Rendering: The JavaScript code dynamically populates tables and cards on the dashboards with data fetched from the API.

Visual Reporting: The Chart.js library is utilized to create interactive charts that visualize report data.

5. Conclusion

The Employee Training & Development System provides a comprehensive solution for managing corporate training programs. Its design, based on a clear and solid architectural structure, ensures scalability and flexibility, making it easy to add or modify features in the future.