

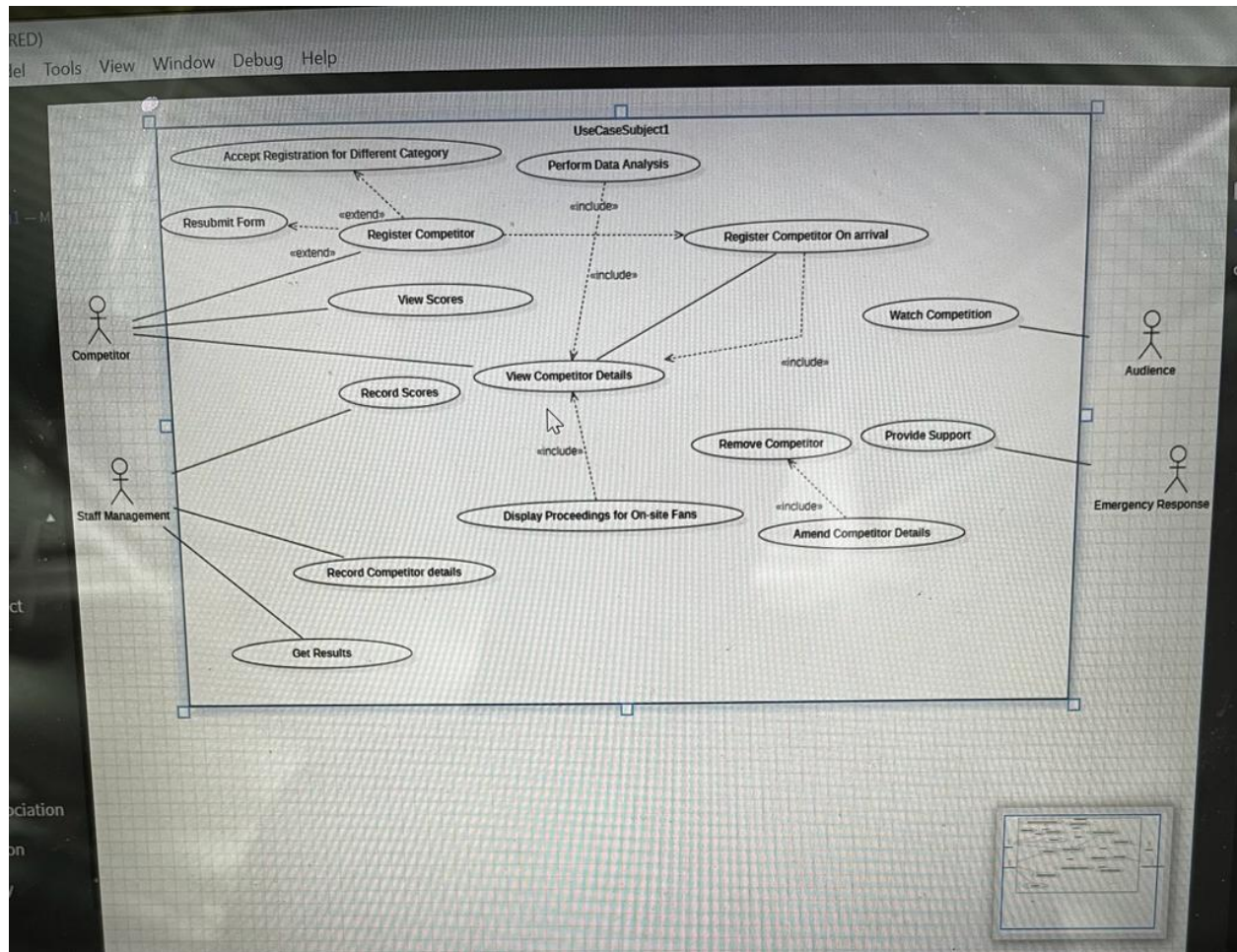
Software Architecture

Part 1 - Analysis, Architecture Design and Detailed Design

Use case Diagram:

In the initial stages of our system design, I created a Use Case Diagram to illustrate the various functionalities provided to the actors (external users) of the competition management system. The actors involved include Competitors, Staff Members, Audience and Emergency Response Services. The key use cases include Competitor Registration, Record scores, Search Competitor, View Details, Print Reports, and various staff-related operations such as Register Competitor, Remove Competitor, and Amend Competitor Details.

This diagram offers a high-level overview of the interactions between different actors and the functionalities they can perform within the competition management system. It sets the stage for a more detailed understanding of the system's requirements.

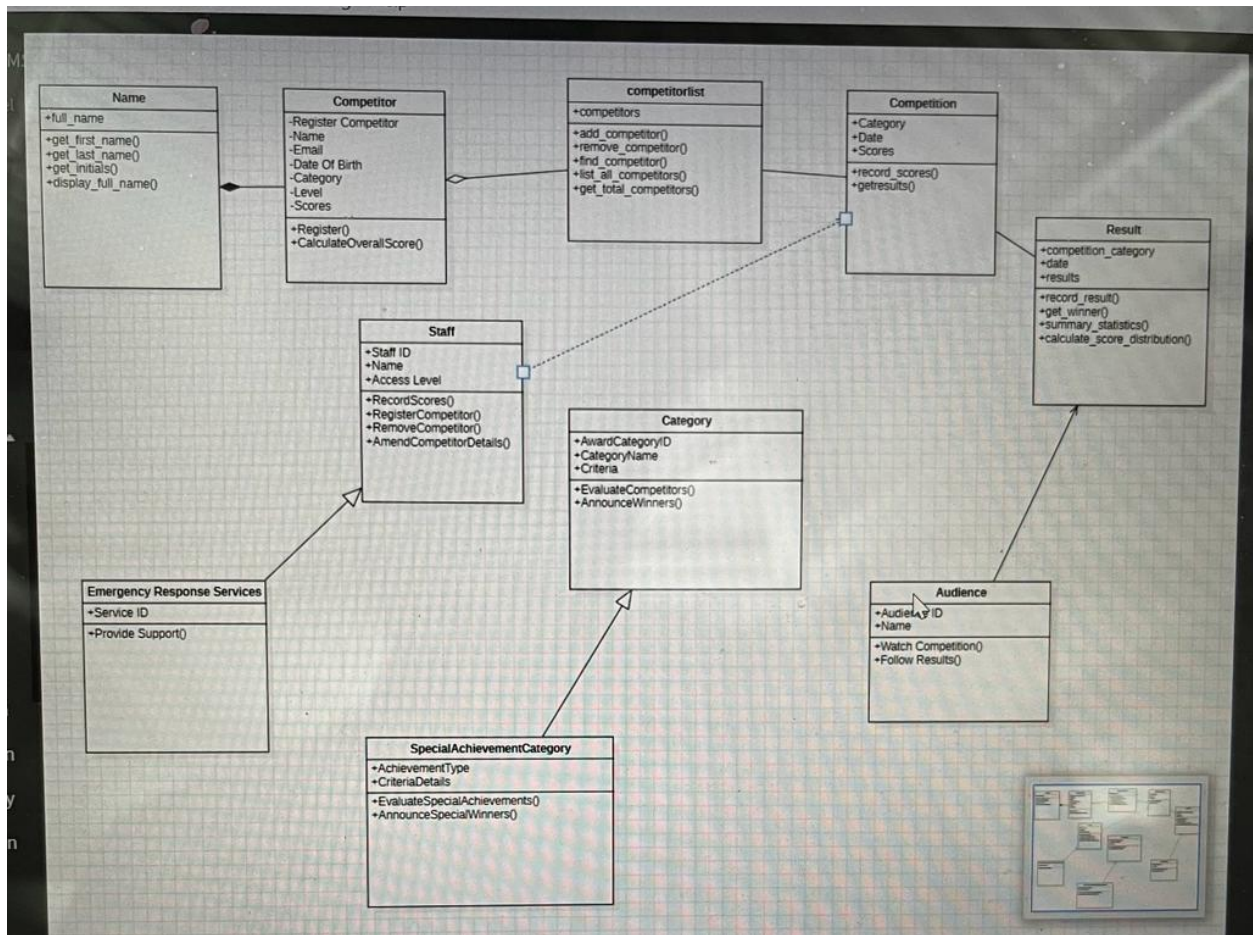


Class Diagrams:

Following the Use Case Diagram, I proceeded to design a Class Diagram that outlines the main classes, their attributes, methods, and relationships within the system. The core classes include Competitor, Competition, Staff, Result, and additional classes for specialized entities such as AwardsCategory.

Each class encapsulates specific attributes and methods related to its role in the competition system. For instance, the Competitor class includes details like CompetitorNumber, Name, and

Level, with methods for registration and score calculation. The Staff class handles staff-specific operations like registering and amending competitor details. The Result class manages competition results, calculating the winner and generating summary statistics.



3 Tier Architecture:

The 3-Tier Architecture of the system was designed to provide a big-picture view of how different subsystems interact across the data, logic, and presentation tiers. In the Data Tier, I identified storage for Competitor, Competition, and Staff data using CSV or JSON files. The Logic Tier consists of multiple subsystems like Competitor Management System, Competition Management System, Staff Management System, and Audience Interaction System, each responsible for specific functionalities. The Presentation Tier includes web interfaces for Competitors, Staff, Officials, and On-site Fans.

This architecture promotes a modular and scalable design, where each subsystem has well-defined responsibilities. It ensures separation of concerns and facilitates easier maintenance and future expansions. The interactions between subsystems within a layer and across layers are clearly delineated, providing a roadmap for the implementation phase.

