ADMINISTRATIVE SYSTEM FOR THE SWIMMING CLUB "THE DOLPHIN"

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Computer Science 2020 – 1st semester Project

CONTENTS

INTRODUCTION

1.1 Purpose

The purpose of this project is to analyze, document and bring a possible solution in regard to the Management System of the Swimming Club "The Dolphin".

1.2 Scope

The scope of this project applies specifically to the swimming club "The Dolphin" but some parts of it may be reused for similar swimming clubs. The responsibility of managing this club is shared by three actors, with different uses and expectations from the System.

1.3 Executive Summary

The current users are the Chairman, the Treasurer, and the Coach.

We plan to develop a system that would allow separation of concerns for these actors allowing through authentication, access to different actions.

For the Chairman we want him to be able to manage membership information such as (name, age, contact number, membership status, payment information).

For the Treasurer we want him to be able to handle payments and statistics.

And if the member is an elite swimmer at registration or during his membership, he changes to one, we want to give the Coach the possibility to manage his results in training, competitions, and progress in time. A clear view will be provided to Coach so he can further on track the elite swimmer's performance individually and in the group.

POSITIONING

2.1 Business Opportunity

We wanted to check the current economic climate, and competition so we did a SWOT Analysis which is posted at the end of this project in the Appendix.

Following this analysis, we learned that important factors such as location, staff and good club facilities would improve the stature of this club and possible increase in profits. Issues that could happen and should be taken into consideration are mostly lack of hygiene and facilities that were promised, or the current happiness of our staff which would lead to poor customer review.

Opportunities may arise when sending athletes to competitions to grow our brand and expand our base membership. Sponsorship from local authorities for these elite swimmers should also be taken into consideration. And a website would be a good idea to promote the club in the social media. Being a sport club where members come to exercise and stay healthy, we can also try to sell them natural products or even partner with equipment manufacturers and try to offer better prices in this way.

Threats may arise if we do not keep up with the expectations since the competition on the market is always on the rise.

Taken the above information into consideration we suggest that the club should invest more in the future into this additional tracking and monitoring performance system which will act as an aggregate system to our current solution.

2.2 Problem Statement

The problem of	Monitoring elite swimmers results in training or competitions
affects	the Coaches and the swimmers
the impact of which is	reduced coaching time and poor management decisions
a successful solution would be	an automated system of tracking performance which would integrate with the current system

The problem of	Entering and storing accurate member information
affects	the club and its members
the impact of which is	duplication of accounts, inaccurate membership fee payments
a successful solution would be	an automation in our current solution which would calculate the fee based on provided input and would also allow flexibility if members want to change the status of their membership.

The problem of	Tracking members who fall behind payments
affects	the Club and the Treasurer's job efficiency
the impact of which is	lack of a clear view of club's finances and a necessary tool to plan ahead while tracking profits and expenses
a successful solution would be	provide a clear view of the current financial situation updated daily while new payments are received

STAKEHOLDER AND USER DESCRIPTIONS

3.1 Key Users

Chairman:

- Wants to smooth the process of signing members in.
- Wants his staff and club members to stay with the club.
- Wants to build his club's image by signing elite members.
- Wants to have a swift decision-making system dividing responsibility to each key user in the company's organigram.

Treasurer:

- Wants to be provided with accurate data on the club financial situation
- Wants to be able to track down members who fell behind with payments

Coach:

- Wants accurate data on the performances of swimmers.
- Wants more time for training, data must be quickly processed and retrieved.

3.2 Other Stakeholders

Member:

- Wants to have access to the club facilities in the way that it was promised to him at registration
- Wants to practice sport and stay healthy

Elite Swimmer:

- Wants good facilities and a performance-oriented environment.
- Wants to enter competitions.

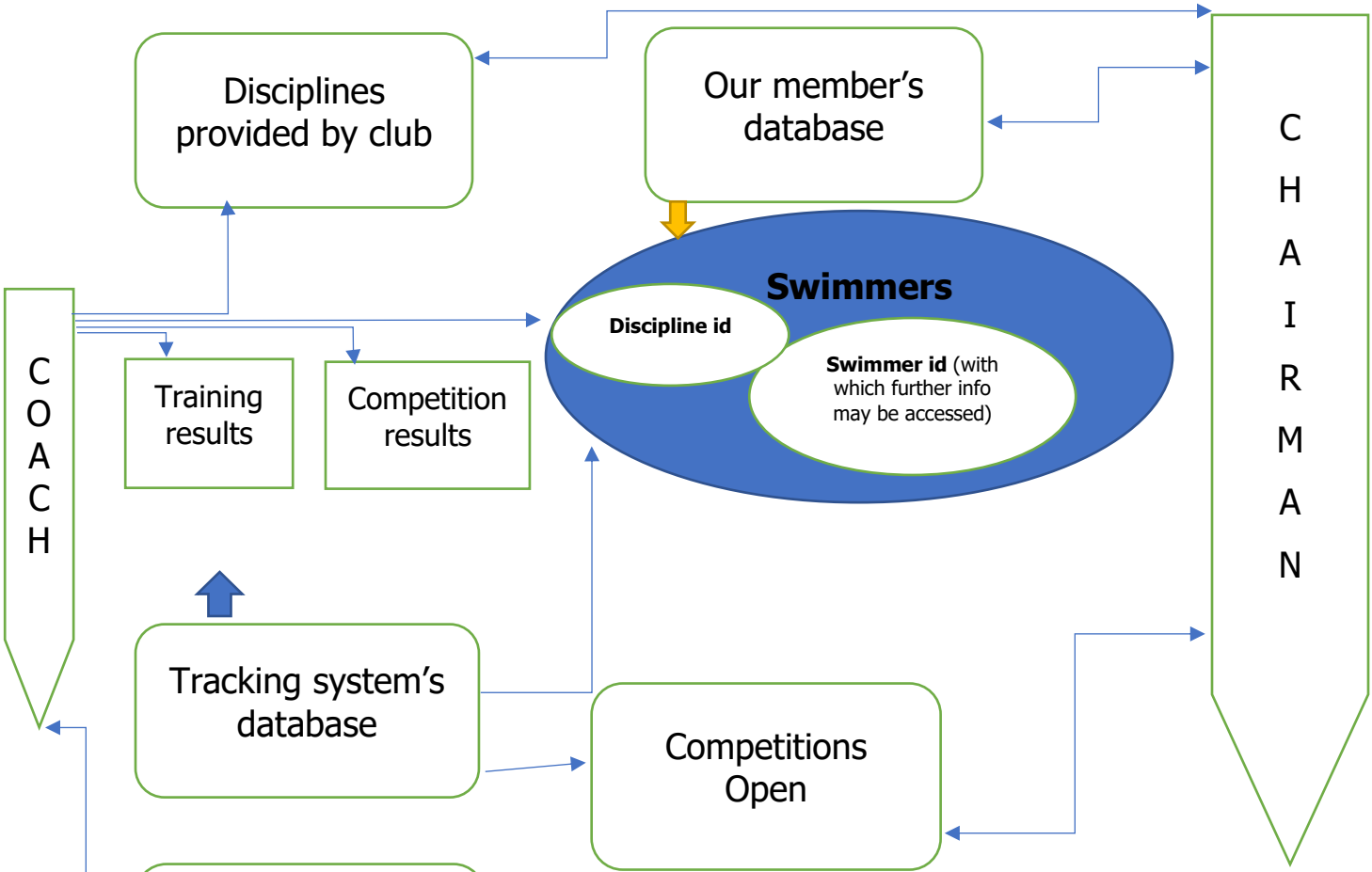
City:

- Wants to invest more in training athletes as part of a bigger project

Other businesses

- Of course, other businesses connect, depend, and complement each other so we must keep an eye on where our position is in this situation.

Prototype Diagram



Competitions	
Competition id	Competition name

Competition List		
Competition id	Discipline id	Swimmer id

4.2 Summary of capabilities

- guided assistance in registering members
- reliability of financial information
- immediacy in retrieving swimmer's performance

4.3 Assumptions and Dependencies

Aggregate system: The data on swimmer's performance is retrieved by our system through a local connection with an aggregate monitoring system that uses state-of-the-art technology (e.g. arm braces, GPS, cameras). This system has knowledge about our database of swimmers, has permission to access it and pairs the results processed with an individual swimmer for a specific discipline and then groups the results in junior and senior category. Because the monitoring system is just something that we envision, we will just fill out some external txt files that will represent an image of how these results should end up in the database, abstracting away the process of processing them.

The *business value* of this feature of the system is to minimize administration with inputting data and increase coaching time.

Feature Improvement: Further on our system should have an integrated API that collects data from the official website of the competitions entered so we can save time with inputting data.

Our relational database concerning the swimmer's performance should consist of four separate files:

- Swimmer (id, name, phone number, age, discipline, coach)
- Discipline (id, name)
- Competition (id, name)
- Competition List (Competition id, swimmer id, discipline id)
- Training Results (Swimmer id, Discipline id, rally, time, date)
- Competition Results (Competition List id (*list of all swimmers and the disciplines they are competing for, to a precise Competition*) rally, time, date)

PRODUCT FEATURES

5.1 Related to the Chairman User

5.1.1 Login as the appropriate user with a password and ID

5.1.2 Print all Members with their information

5.1.3 Register a new Member

5.1.4 Edit an existing Member

5.1.5 Delete an existing Member

5.2 Related to the Treasurer User

5.2.1 See all members in debt

5.2.2 Approve payment

5.3 Related to the Coach User

5.3.1 See Swimmers information by category of age

5.3.2 Assign Discipline to Swimmer

5.3.3 Print all Training Results by category of age

5.3.4 Print all Competition Results by category of age

5.3.5 Add a Discipline

5.3.6 Print all Disciplines

5.3.7 Add a Competition

5.3.8 Print all Competitions

5.3.9 Print top five swimmers in training by category of age

5.3.10 Print top five swimmers in competition by category of age

5.3.11 Possibility to filter results by discipline competed for and rally

5.3.12 Manage Competition Lists

5.3.13 Manage Results of Training

5.3.14 Manage Results of Competitions

5.4 Product Prototype

Manage Swimmers

Swimmers			
Coach id	Swimmer id	Junior/Senior	Discipline

Disciplines	
Discipline id	Discipline name

* Can scroll down for the full list

1. Assign swimmer Discipline
2. Go Back

Optional:

3. Look for swimmer by name
4. Filter by headers of tables

Manage Results & Competitions

Manage Results | Manage Competitions

Top5 Competition results					
Cmp id	Swimmer id	Discipline id	Rally	Time	Date

Top 5 Training Results				
Swimmer id	Discipline id	Rally	Time	Date

1. See full list for either of the two tables
2. See current open Competitions
3. Go Back

Competitions Open	
Competition id	Competition name

1. Choose one Competition (to manage the current Participants List)
2. Go Back

Participants List		
Competition id	Swimmer id	Discipline id

1. Add to List
2. Delete from List
3. Go Back

GLOSSARY

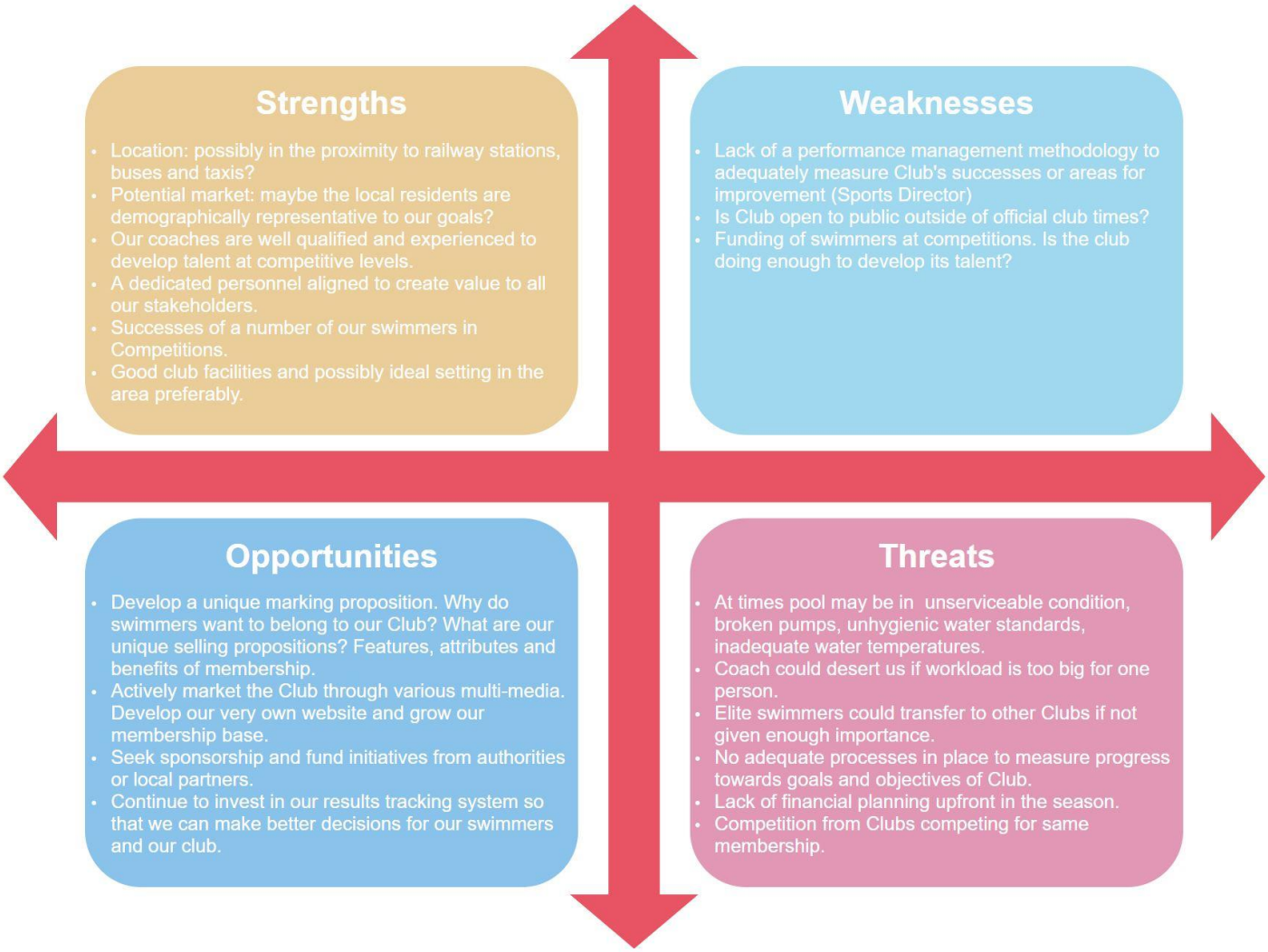
aggregate system: collection of objects that are bound together by a root entity, otherwise known as an aggregate root (our system in this case). The aggregate root guarantees the consistency of changes being made within the aggregate (monitoring system) by forbidding external objects from holding references to its members.

monitoring system: state-of-art technology widely used in research associated with the athlete's sports performance. Thanks to all kind of sensors and cameras we have real-time information of our players, speed and heart rate data that can also be processed to analyze trends or possible improvements of the athlete.

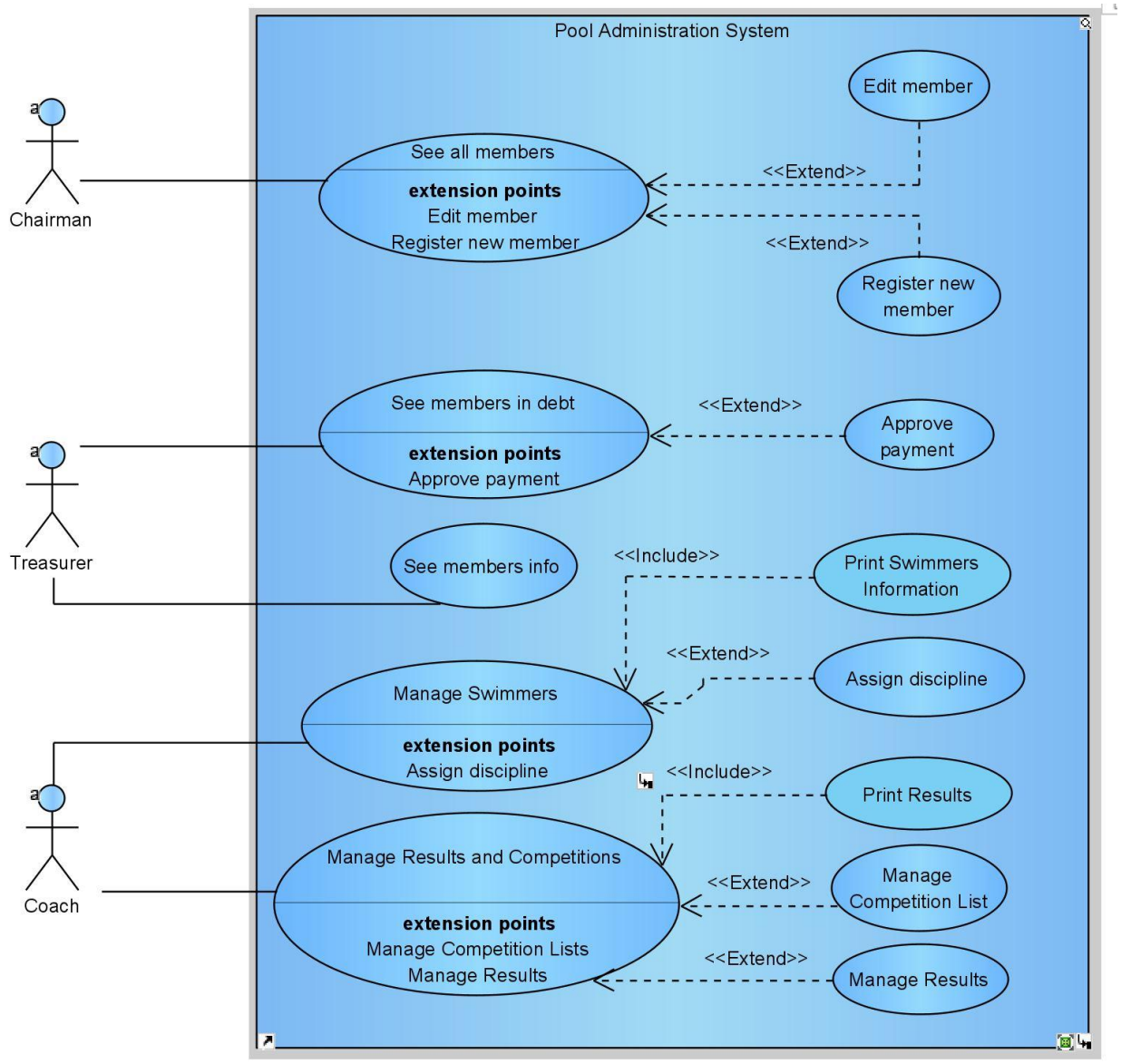
integrated API: a connection between two or more applications, that lets those systems exchange data between each other. Today, in our app-connected world, API integration is critical to all organizations.

relational database: a relational database is a type of database. It uses a structure that allows us to identify and access data in relation to another piece of data in the database. Often, data in a relational database is organized into tables.

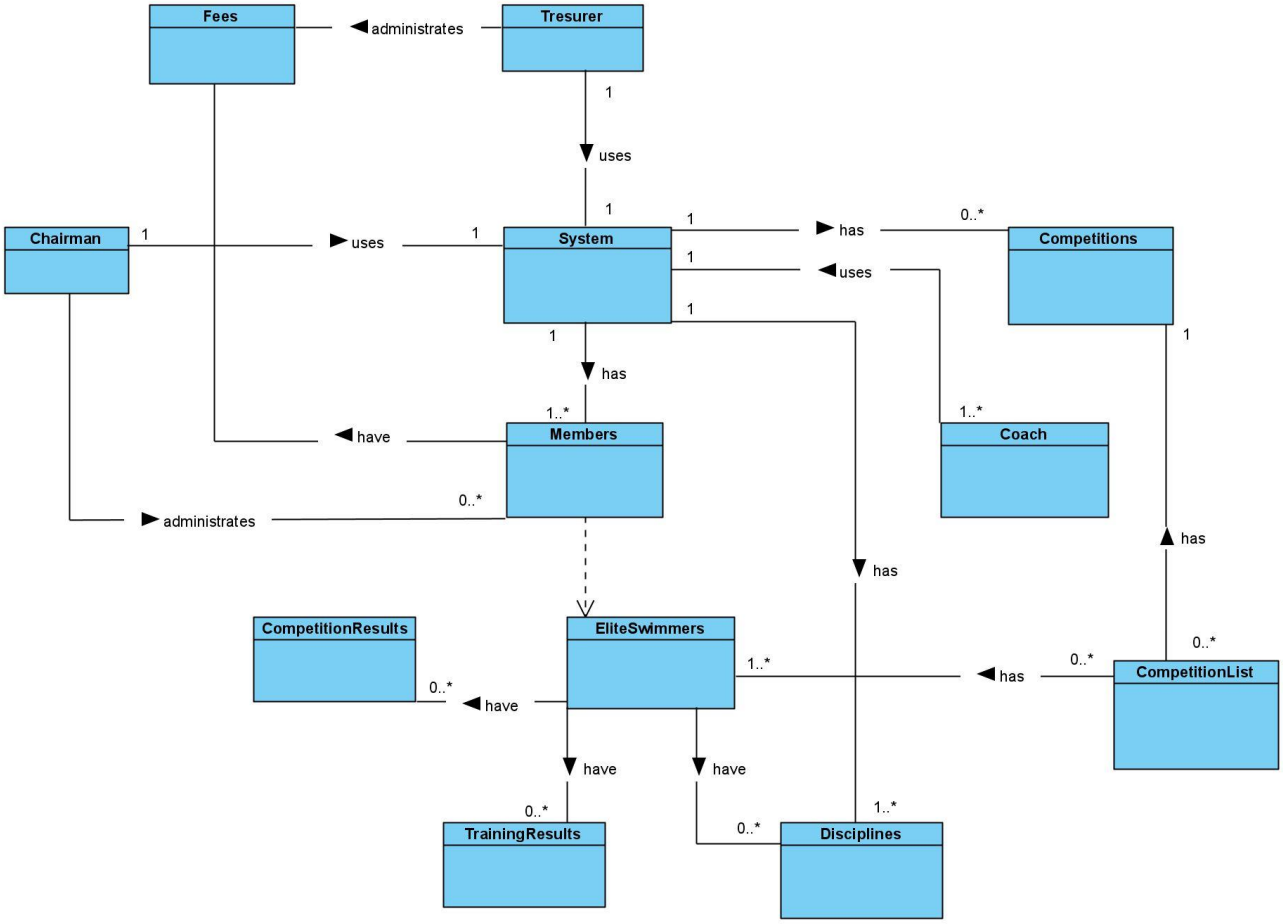
Appendix A – SWOT Analysis



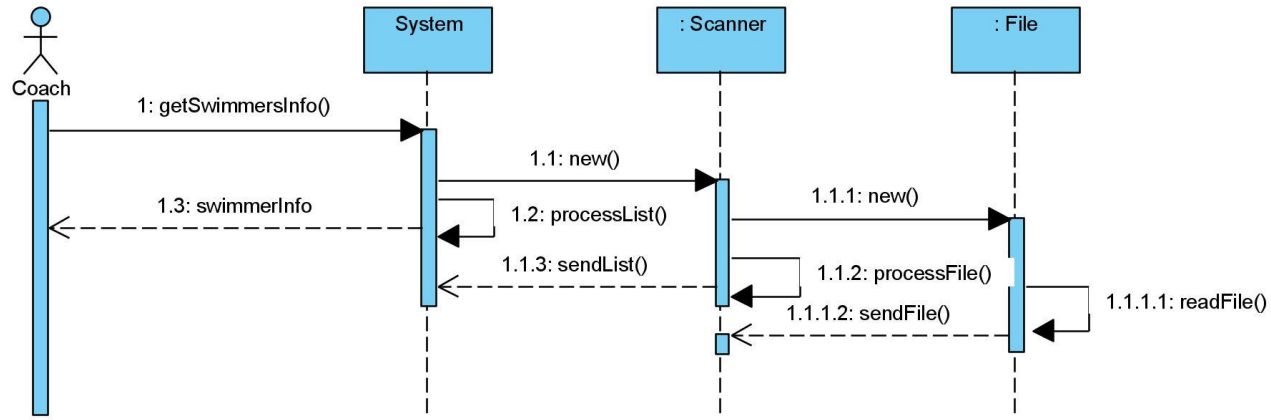
Appendix B – Use Case Diagram



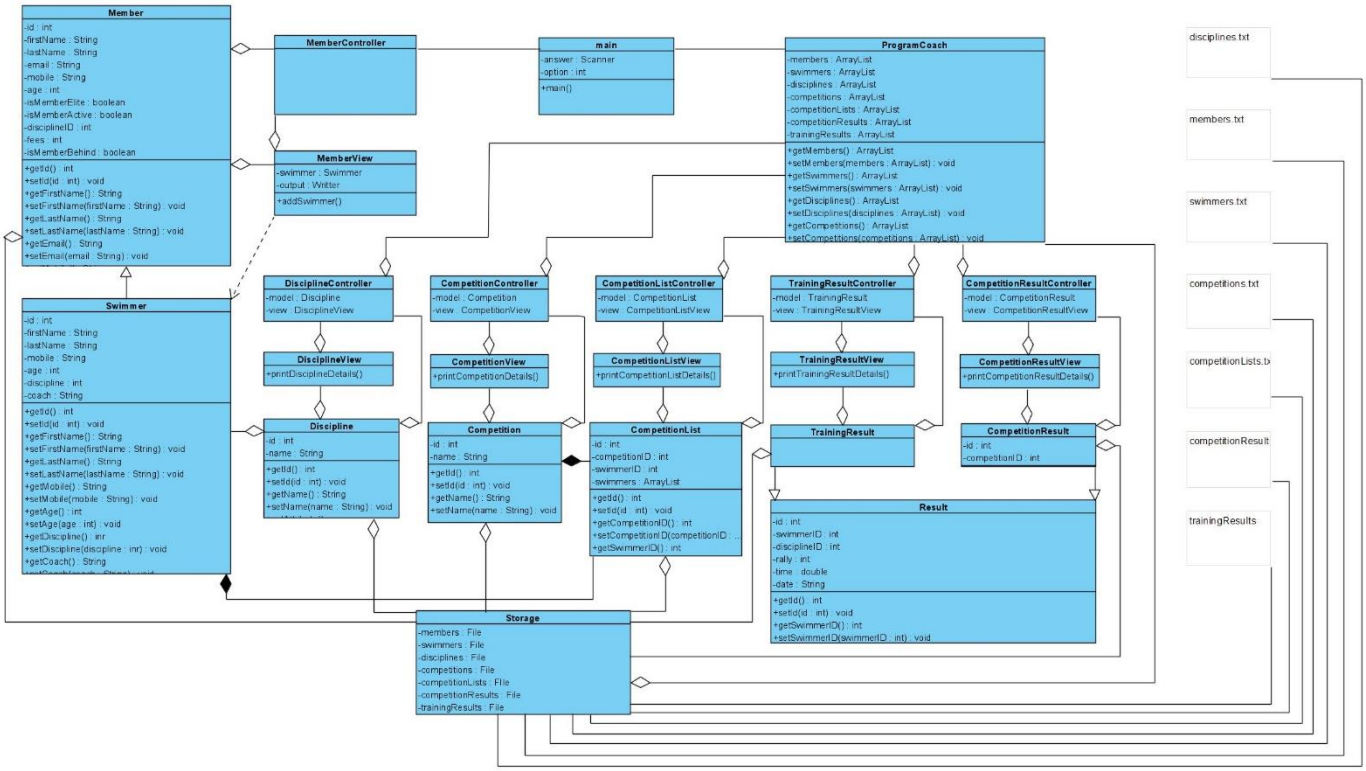
Appendix C – Domain Model



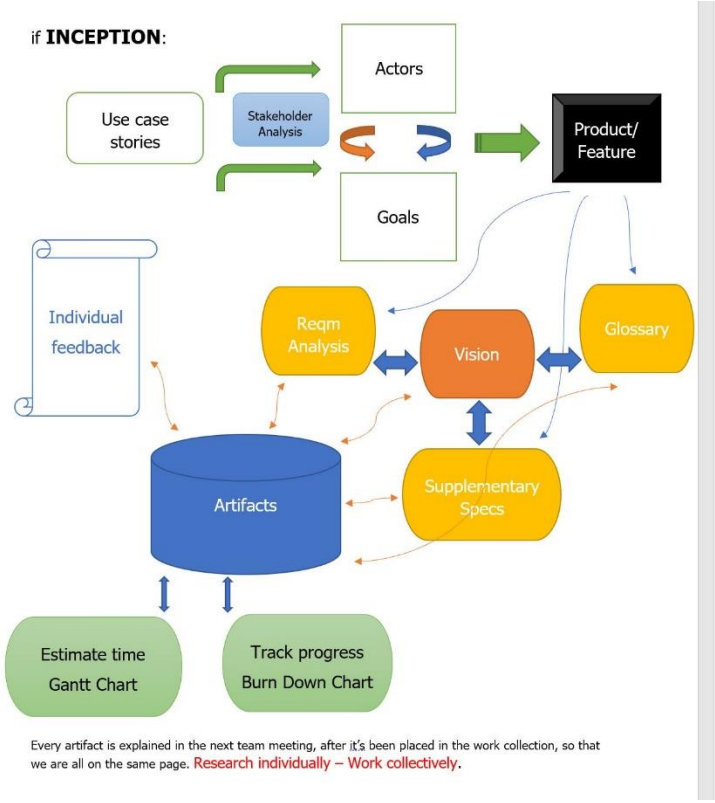
Appendix D – System Sequence Diagram

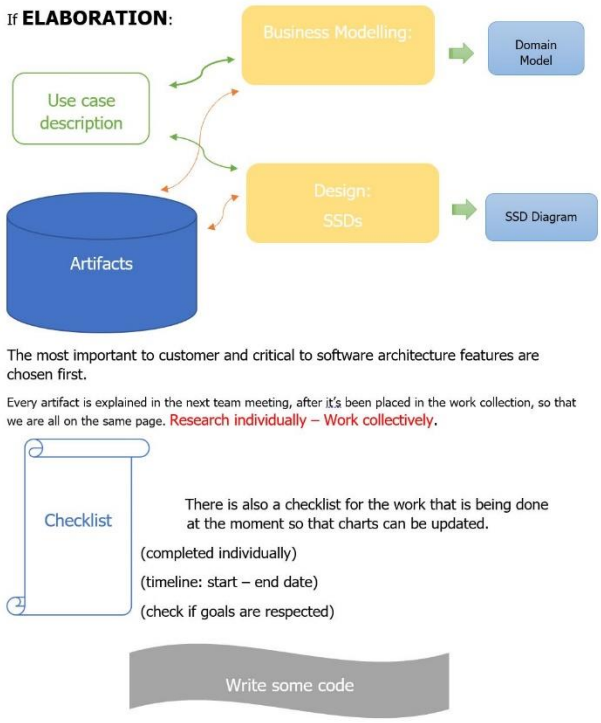


Appendix E – Class Diagram



Appendix F – Phase Plan





Appendix G – Gantt Chart