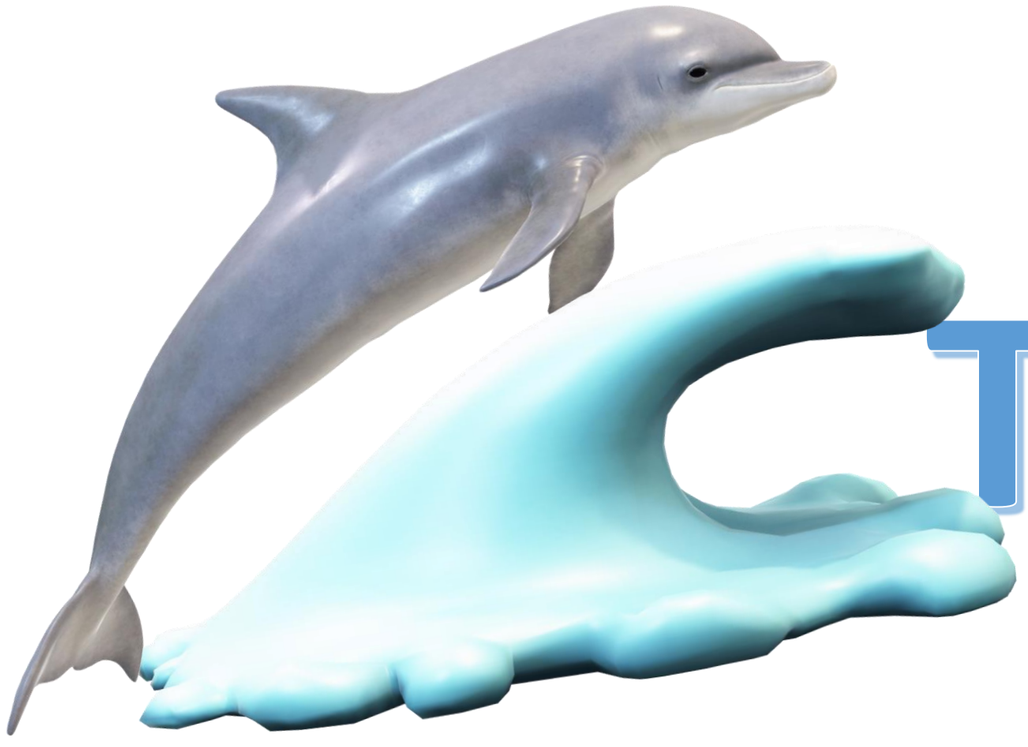


The Dolphin

Swimming Club

Computer Science
DAT 20I
1. Semester Report

By Krishna Prasad Khanal
Omar Said Farah
Mahfuzur Rahman Shawon

Table of Contents

INTRODUCTION

Aqua IT-solutions has been contacted by the Swimming Club Dolphin, located in a small town in Fyn (Denmark).

Dolphin is a small club, which has not had any major financial support from any sponsors or any other for that matter, it has up to now only been possible to acquire a single computer.

However, Dolphin business has grown, and is currently pursuing an ambitious strategy, thus led to an increase in search training exercises, result performances, competitions and so on so forth.

Fortunately, due to recent fund investment and increase in member because of top quality Coaches, the board has decided to replace their manual registration system, and instead invest in an administrative IT system that will help make employees (I.e., Staff) work easier, manageable & in an intuitive manner.

Therefore, the board now wants a simple system that can be used on the computer, and which also stores the files locally. As they do not have any Cloud backup nor high speed internet.

PROBLEM FORMULATION

This report strives to answer the following *problem statement*:

How do we most effectively create an administrative system that meets the requirements that the Club Dolphin seeks?

This bowls down from the explanation of the following sub-points:

- ★ An analysis as a company - I.e., swimming club Dolphin (Organization).
- ★ A design section in which we formulate, both in writing and visually, all and part of our bid for a solution (SWD - Object Oriented Software Development).
- ★ A section where the system we have created is explained, as well as argumentation for the solutions we have chosen (SWC - O. O. Software Construction).

MAIN SECTION: ORGANIZATION

Brainstorming

Who has contact with the club?

Who are the owners of the Swim Club Dolphin?

Who has an influence in the swimming club?

- ✓ Management
- ✓ Chairman
- ✓ Cashier
- ✓ Coach
- ✓ Members
- ✓ Investors
- ✓ Developers

How do system developers influence the swimming club?

- The system developers must develop a system that meets the specific requirements for the management system.
- The required System must be completed within a certain deadline.

What is the role of the chairman of the club?

- The chairman is responsible for new members, and registers them with their basic information, e.g., name, age, etc.

Who pays for the club?

- The members pay. The quotas are as follows:
  - Under 18 years (DKK 1,000) annually.
  - Over 18 years (DKK 1,600) annually.
  - Active members over the age of 60 receive a 25% discount of ‘over 18 years’ fees.
  - Passive membership (DKK 500) annually.

Matrix structures

A **matrix organizational structure** is a workplace format in which employees report to two or more managers rather than one manager overseeing every aspect of a project.

Swimming Club Matrix

	No influence in the club	*Influence in the Club*
Interest in the Club	Other Swimming Clubs Other competitive swimmers	Active Members Competitive Swimmers Leaders Trainers/Coaches
No interest in the Club	Janitor in the Swimming pool	Passive members Small Club growth

System Developers Matrix

	No influence in the club	*Influence in the Club*
Interest in the Club	Other System Developers	Current System Developers (us) Management (responsive System)
No interest in the Club	Old System (manual)	Replacement of old System

STAKEHOLDERS

Identifying the most important Stakeholders:

What the management wants to see in the future?

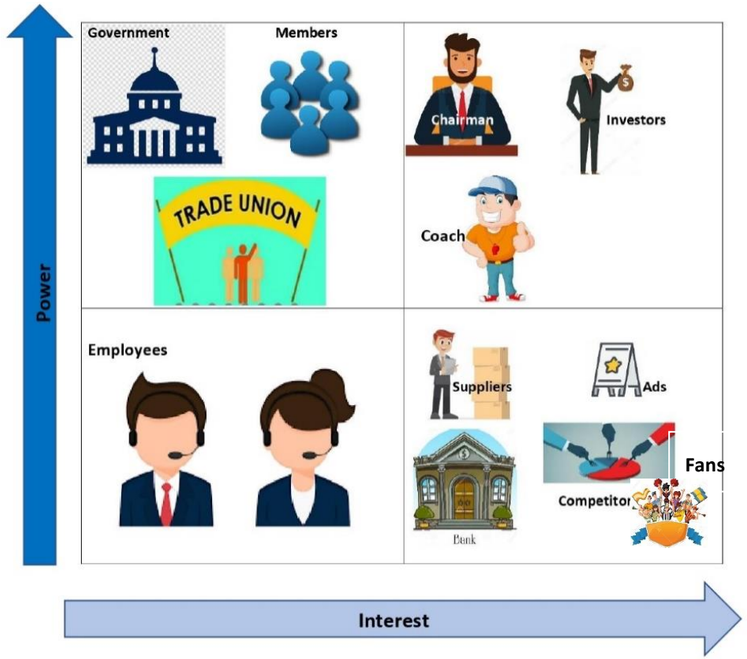
- Members Growth
- Good results from the competition swimmers.
- Economy Growth.
- Outcompeting other swimming clubs in the local area.

What is the expectation of the management from the new System?

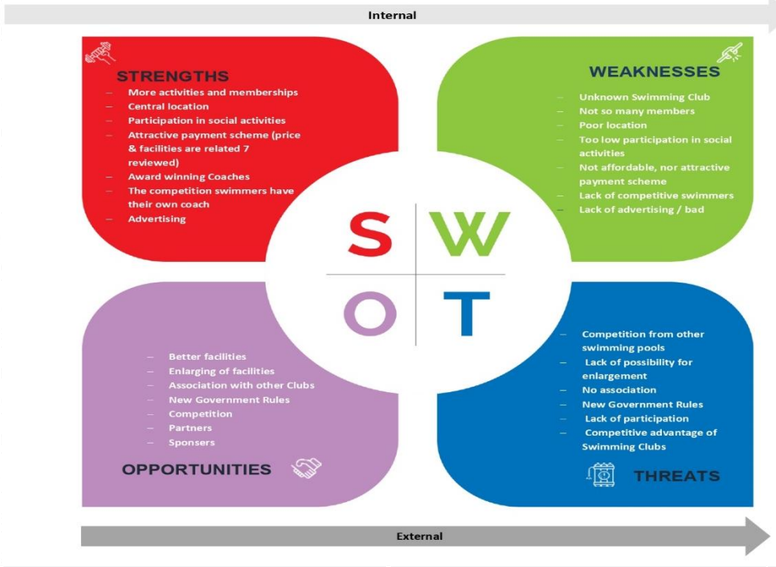
- To be easier to register new members.
- System developers can meet the deadline.
- No renewal of (new) System for the next five years.

What will the management does not want to see in the future?

- Poor result from competitions.
- New swimming clubs open.
- Declining turnover.
- Members decrease.



Stakeholders	Key interests	Power
Chairman	Chairman is the key	chairman is not satisfied, he even can terminate our project so that we must handle him closely.
Investors	Investors are also k less interested the r	ey also are powerful , so that we have to handle very closely.
Coach	Coach is mainly int club.	also has power but not equal to the chairman and investor but he can directly can convince them to his
Members	Members are intere them. The system w	ey are less powerful than the chairman, Invester and coach but the members can influence those three above.
Government and law enforcement	The governments, l keep satisfied. if we	ey are also powerful, if we are not good with them, like they can even terminate the whole project.
Trade Union	Trade union also ha any rights of emplo	ey are not directly powerful as chairman and Investers but they can influence them.
Suppliers	Suppliers has big in	ey have less power.
Bank	Bank has big intere	ey have less power.
Fans	Fan can be intereste	ough they do not have much power but they can be highly influencer.
Competitors	Competitors has big	ey have very less power, but can be very critic.
Media	Media has always big interest to the club and each component of the club.	They are not directly powerful but can be influencer.



Swot Analysis

Risk Analysis

	Risk	Description	**Impact**	probability	Severance	Mitigation
1.	Loosing Data	As a system developer, we could encounter a risk of loosing our data.	3	2	6	We can backup our data in external drives.
2.	System failure in system update	Some times we need to update our system. After updating we can encounter the system failure	3	3	9	We can create restoring point so that we can restore the well functioning system from previous date.
3.	System hack	In some point we can encounter the cyber criminal try to hack our system like user profile , credit cards, and confidential data.	3	2	6	We can develop or use the cybersecurity in our system so that we can make our system secure.
4.	Changing in the leadership of club	Some time we can face the problem with changing leadership of the clubs	2	1	2	We have to be always aware with who are the probable leader in future.
5.	Employees health issues	While working in the team work, some of the team members can be sick or hurt in accident so that he or she can not come to the work. Which will cause a problem in our work follow	2	2	4	We can use the remote working environment or we have to have the enough man power to the work done in time.
6.	New unfavorable rules from government.	While working in the project, we can encounter the new government rules which can restrict us to our work.	2.5	2	5	To avoid such problem we should have a good legal advisor to solve the issue.

Risk Matrix

RISK RATING KEY

LOW	MEDIUM	HIGH	EXTREME
ACCEPTABLE	ALARP as low as reasonably practicable	GENERALLY UNACCEPTABLE	INTOLERABLE
OK TO PROCEED	TAKE MITIGATION EFFORTS	SEEK SUPPORT	PLACE EVENT ON HOLD

SEVERITY →

LIKELIHOOD ↓

	ACCEPTABLE LITTLE TO NO EFFECT ON EVENT	TOLERABLE EFFECTS ARE FELT, BUT NOT CRITICAL TO OUTCOME	UNDESIRABLE SERIOUS IMPACT TO THE COURSE OF ACTION AND OUTCOME	INTOLERABLE COULD RESULT IN DISASTER
IMPROBABLE	LOW	MEDIUM	MEDIUM	HIGH
Low Risk is unlikely to occur	2	4		
POSSIBLE RISK WILL LIKELY OCCUR	LOW	MEDIUM 3	HIGH 5	EXTREME 6
PROBABLE RISK WILL OCCUR	MEDIUM	HIGH	HIGH 6	EXTREME 9

MAIN SECTION: SOFTWARE DESIGN (SWD)

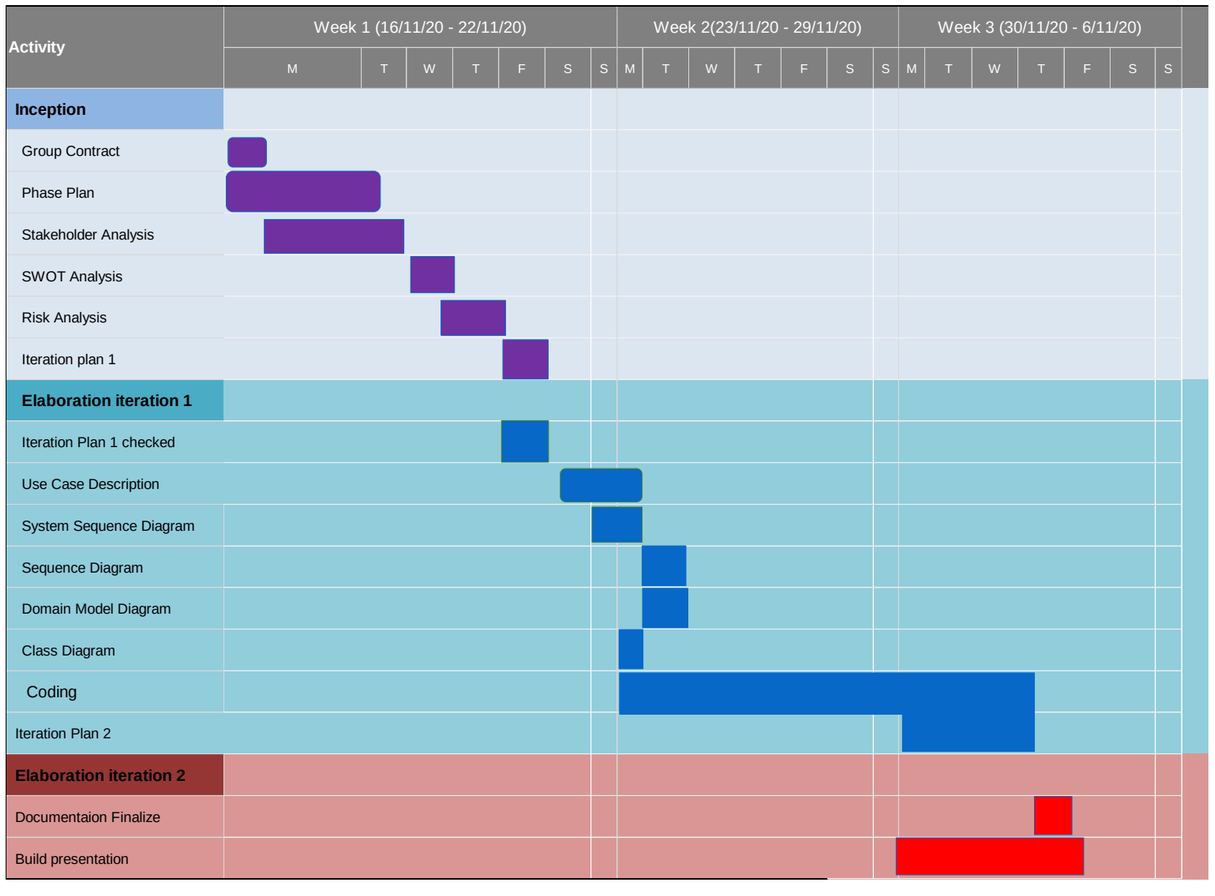
Group Contract

These are the terms of group conduct and cooperation that we agree on as a team.

We agree to work on the project whatever the group needs us to do and give our best. If we have some problems solving a work others group member will help him. If we have some problems solving a work others group member will help him. Group members must do some parts of work in every phase from inception to elaboration, and in general from Organization to SWD to SWC section. We agree to keep in touch all time from 16th November to 11th of December. Even any of us could not attend the meeting for some reason, he should share the work if he is not attending the meeting for some reason, he should share the work he is working with virtually. We also agree to all the meetings unless any of us has some serious sickness or important work to do. He must inform earlier if he cannot join the meeting. If we have any conflict regarding some work in the project we must discuss with appropriate behavior and sort out the matter if it doesn't solve we will share our ideas with the teacher and we will decide which one the teacher prefers the most. We agree to do all the work together before the deadline

Team Member's Name
-Krishna Prasad Khanal
-Omar Said Farah
-Mahfuzur Rahman Shawon

Phase Plan



Vision: -

“Vision is to Future what Mission is to Present.”

Without a clear vision there is a high risk of a disconnect between the project’s tangible outputs and what the customer or organization really needed.

We highly desire an administrative IT System, or program, for the Dolphin Swimming Club. The program must handle the registration of new members, including their personal data, such as name & age, member specification, and activity type (exerciser / competition). And subscriptions of members shall be recorded upon registration time. Several variables govern the subscription, be it age, form of activity and type of membership (junior or senior). A treasurer must be able to see a list of members in arrears (i.e., late due payments), as he’s responsible over the management of payments. Finally, this kind of System is needed in order to provide an accurate information to the Customers and mitigate errors, thus improve the management efficiency.

Regarding a coach who is associate with the Swimming Club must be able to see an overview of best times and disciplines of his participants. And the Coach must be able to print top 5 of the best competitive swimmers in various disciplines.

Main Use Case diagram:

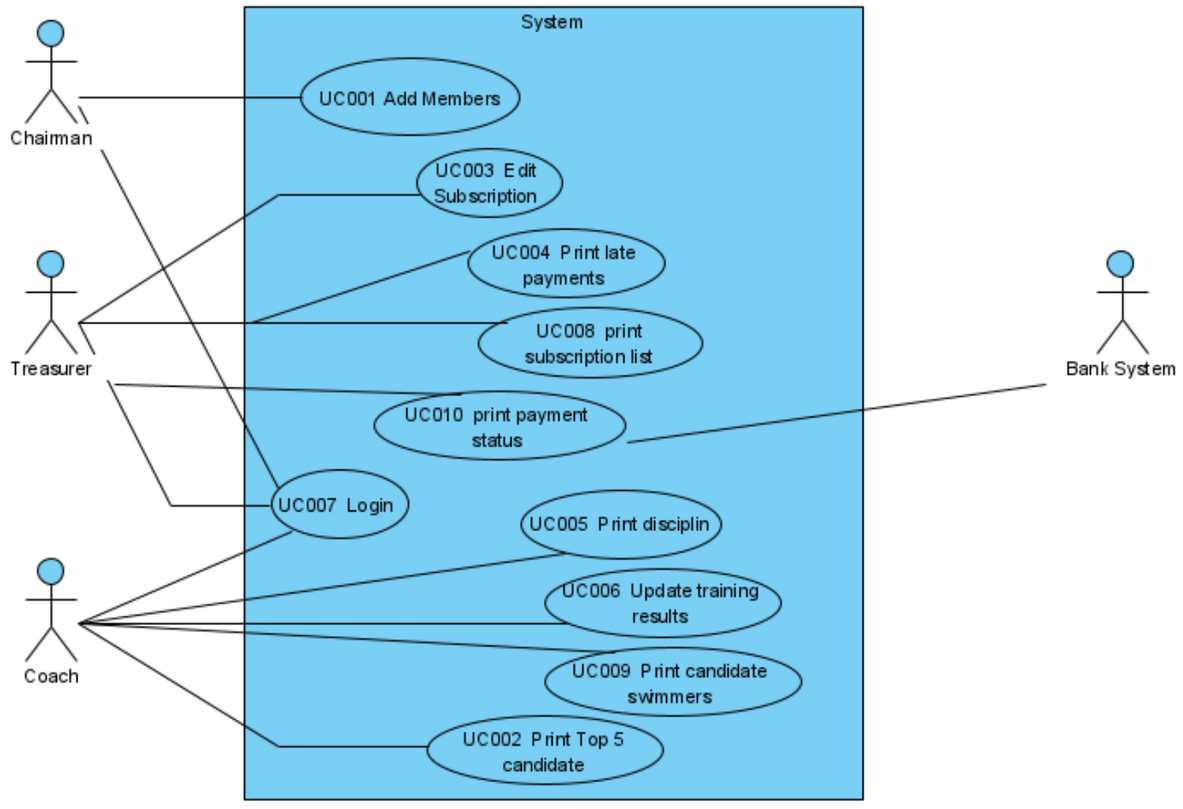


Figure 2.1: Use Case Diagram: visual representation of all the methods used in the program.

We used Use Case numbering system here, for better reference and tracking purposes.

Use Case ID UC001

Use case Name Add member

Scope Dolphin Swimming Club IT System

Description The chairman must be able to create new members

Actor Chairman

Stakeholders Chairman for Dolphin Swimming Club

Precondition New member should be able to be added in the Club System.

Main Success Scenario

1. Chairman creates a new member from a menu.
2. System prompts for first name
3. Chairman enters first name
4. System prompts for last name
5. Chairman enters the last name
6. System prompts for age
7. Chairman enters age
8. System prompt for membership type
9. Chairman enters membership type
10. System prompts for discipline
11. Chairman enters discipline
12. System records the collected members information in file.

Extension:

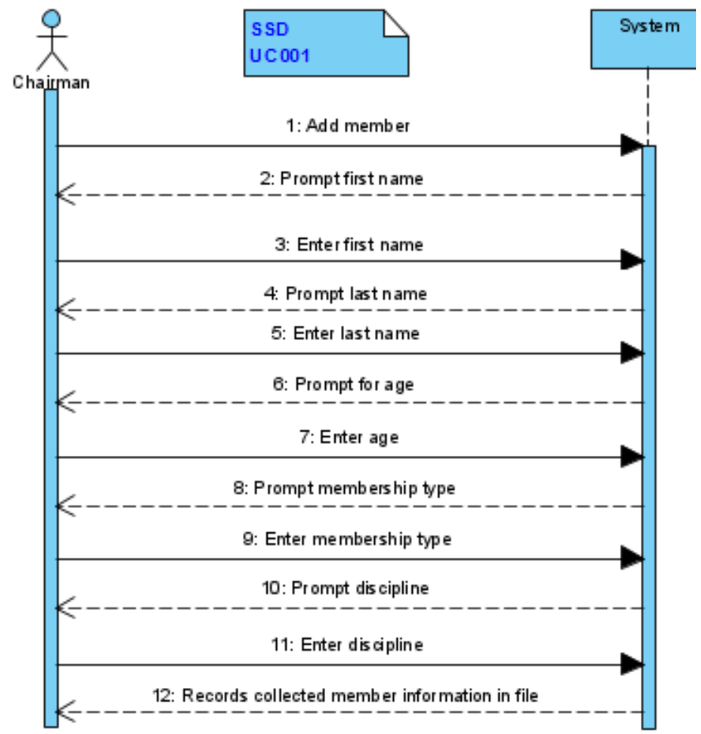
In Chairman steps 3-9:

1. When Chairman enters input

_ If input is valid, proceed to the next step.

_ Else return to the same step. ... Until validated.

System records after all validated member information in file



Fully dressed Use case description: -get top 5(UC002): -

Primary actor: - Coach

The coach uses the system to get the list of top five players with the help of the result of the last matches.

Main success scenario: -

- Coach enters the login credentials to the system
- System authenticate the credentials and display the dashboard.
- Coach selects and clicks the button get top 5
- System displays the top 5 list
- Coach prints the list

Alternate scenario: -

A. Coach selects the wrong button: -

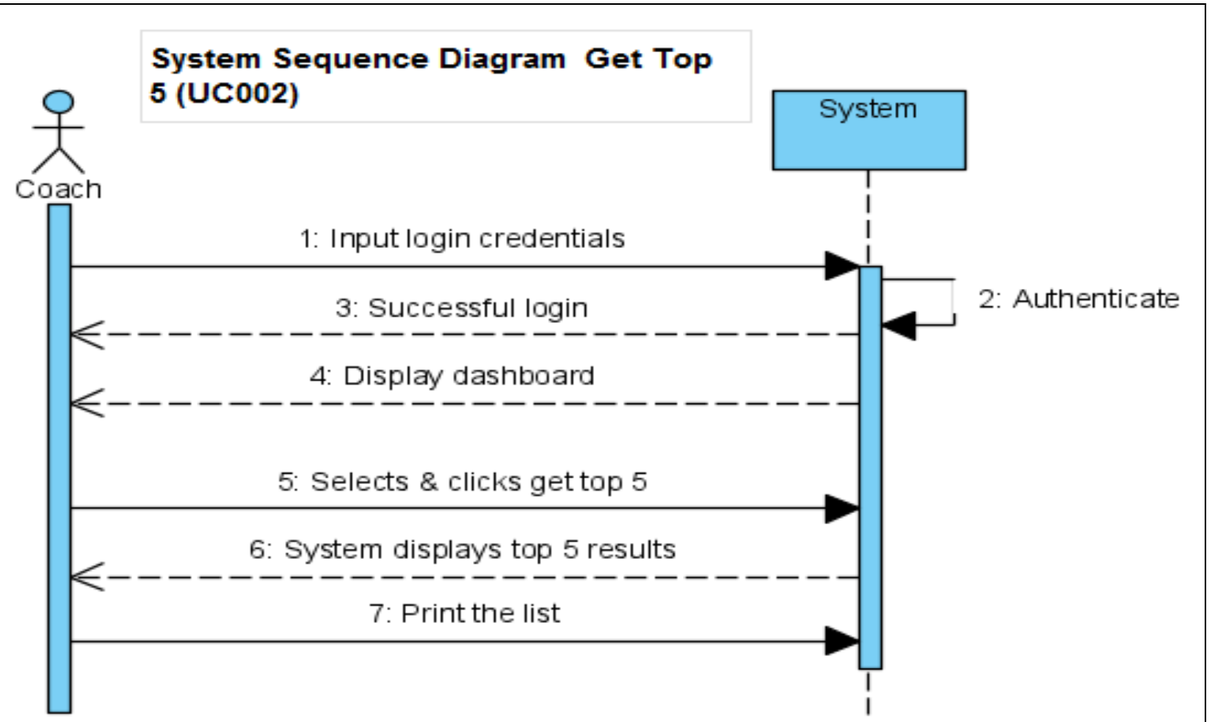
- Coach select the print candidate button.
- System prints the candidate list.
- Coach select and click the button get top 5.

B. System does not respond: -

- Coach select the get top 5 button and presses it.
- System does not respond for long time.
- Coach restart the system.

Special requirement: -

- Language translation
- User friendly UI.
- Mobile access

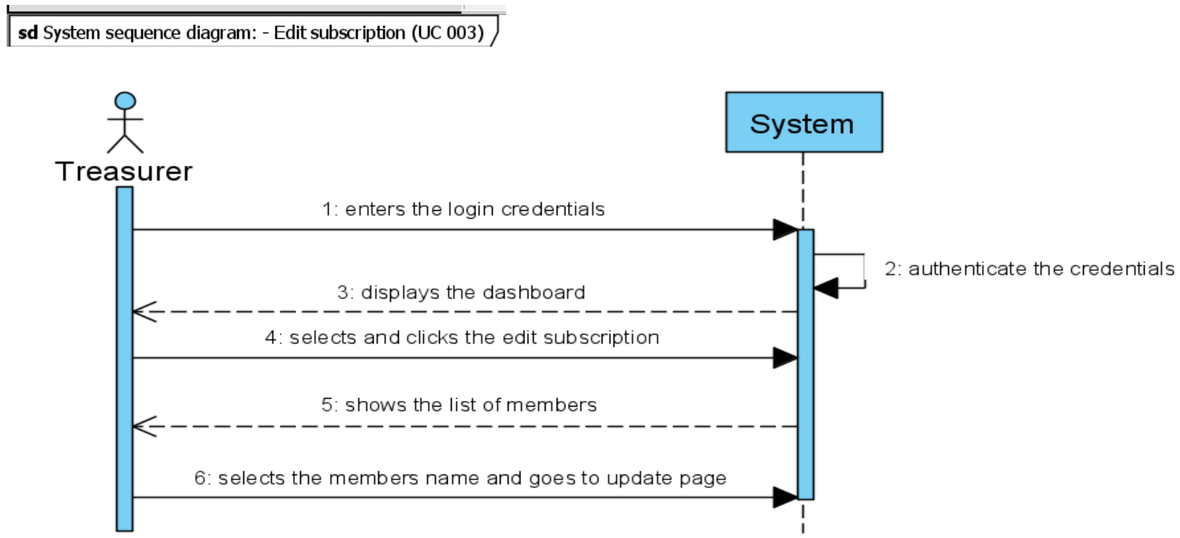


Use case description: - Edit subscription (UC 003)

Primary actor: - Treasurer

Main success scenario: -

Treasurer enters the login credentials and logs in the system. System displays the dashboard. Treasurer selects and clicks the edit subscription button. System shows the list of the members. Treasurer selects the members name and goes to update page.

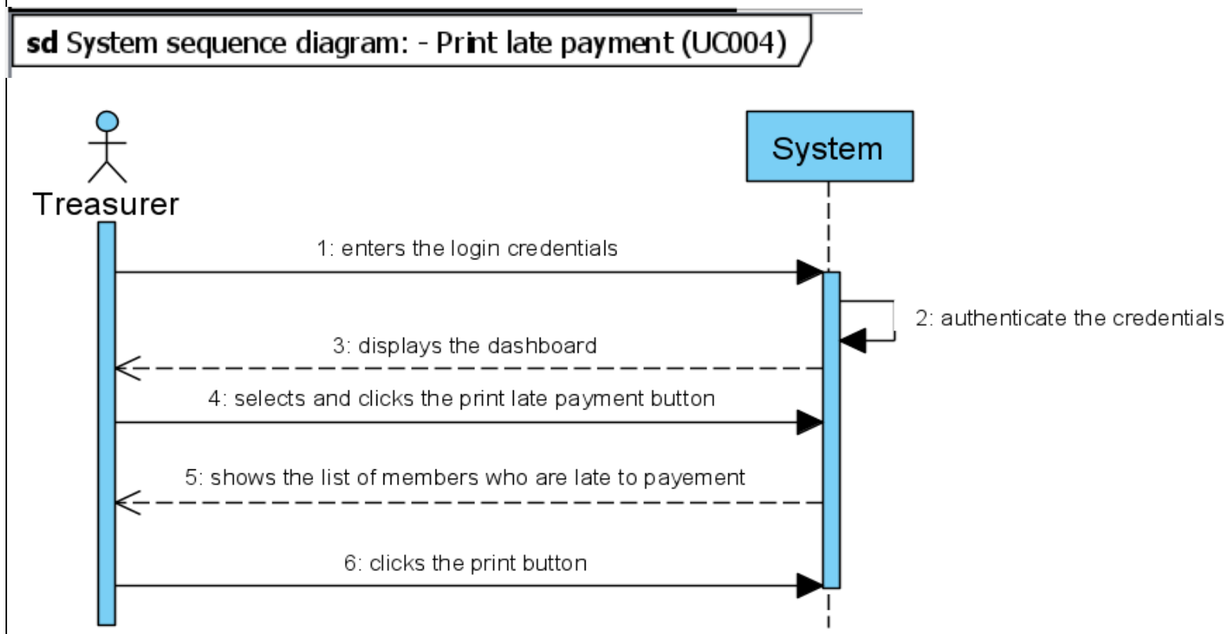


Use case description – Print late payment (UC004)

Primary actor: - Treasurer

Main success scenario: -

Treasurer enters the login credentials and logs in the system. System displays the dashboard. Treasurer selects and clicks the print late payment button. System shows the list of the members who are late to payment. Treasurer clicks the print button.

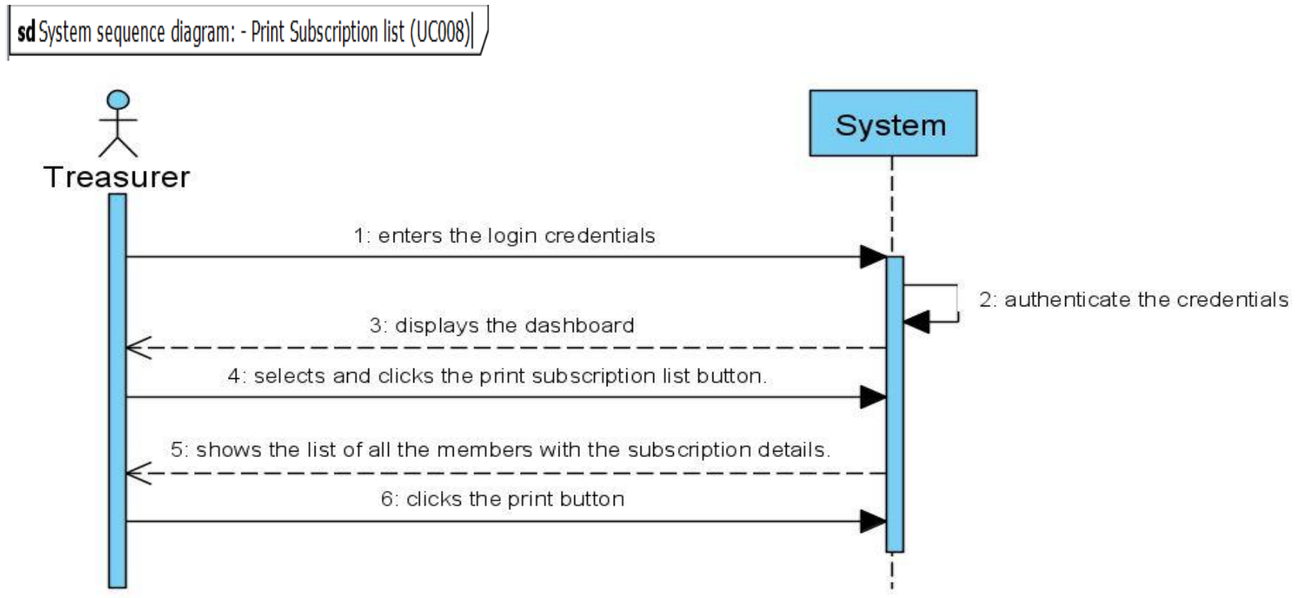


Use case description – Print Subscription list (UC008)

Primary actor: - Treasurer

Main success scenario: -

Treasurer enters the login credentials and logs in the system. System displays the dashboard. Treasurer selects and clicks the print subscription list button. System shows the list of all the members with the subscription details. Treasurer clicks the print button.

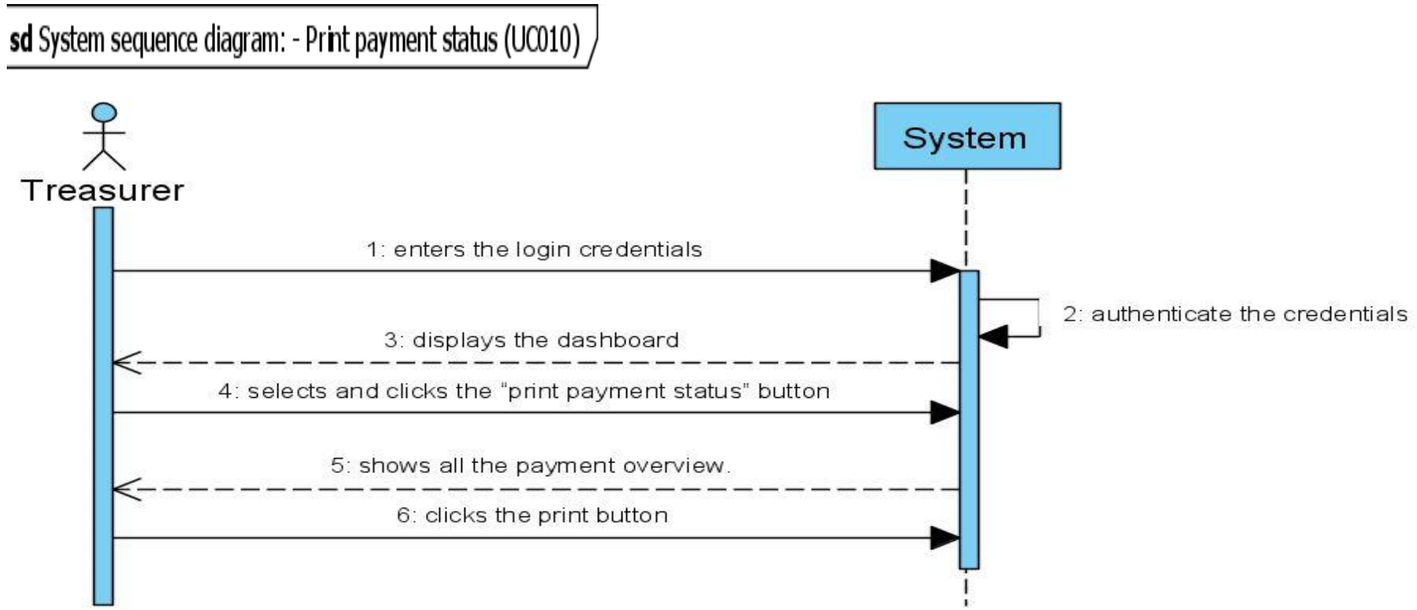


Use case description – Print payment status (UC010)

Primary actor: - Treasurer

Main success scenario: -

Treasurer enters the login credentials and logs in the system. System displays the dashboard. Treasurer selects and clicks the “print payment status” button. System shows all the payment overview. Treasurer clicks the print button.

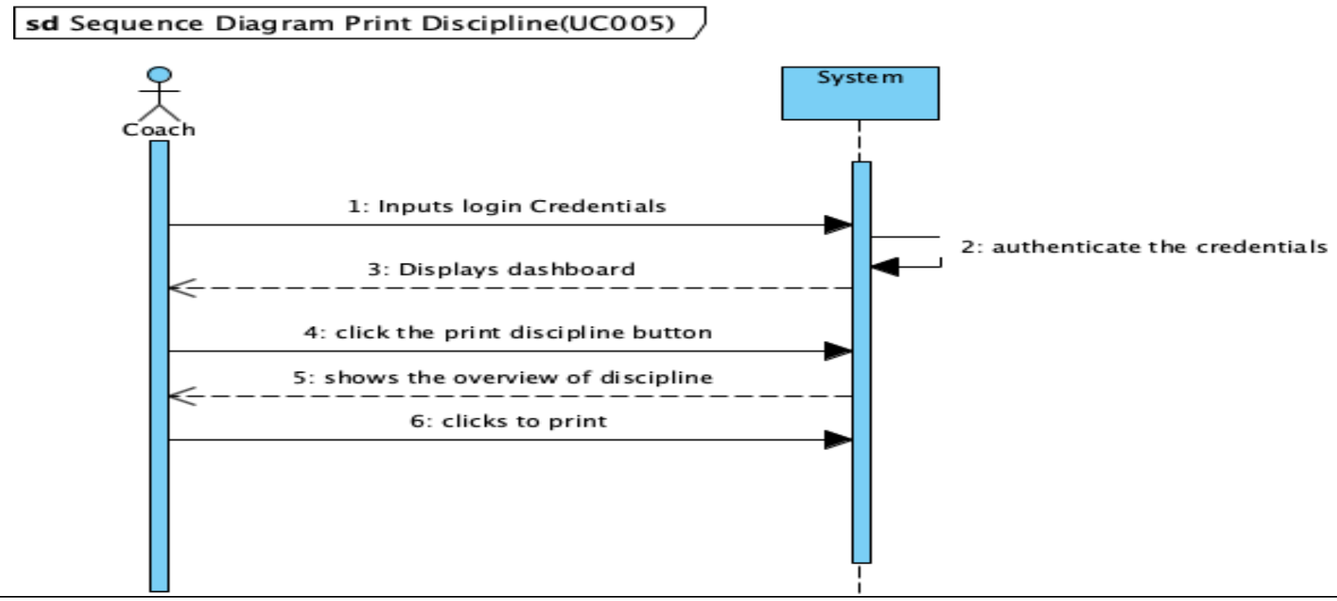


Use case description – Print discipline (UC005)

Primary actor: - Coach

Main success scenario: -

Coach enters the login credentials and logs in the system. System displays the dashboard. Coach selects and clicks the “Print discipline” button. System shows all the discipline overview. Coach clicks the print button.

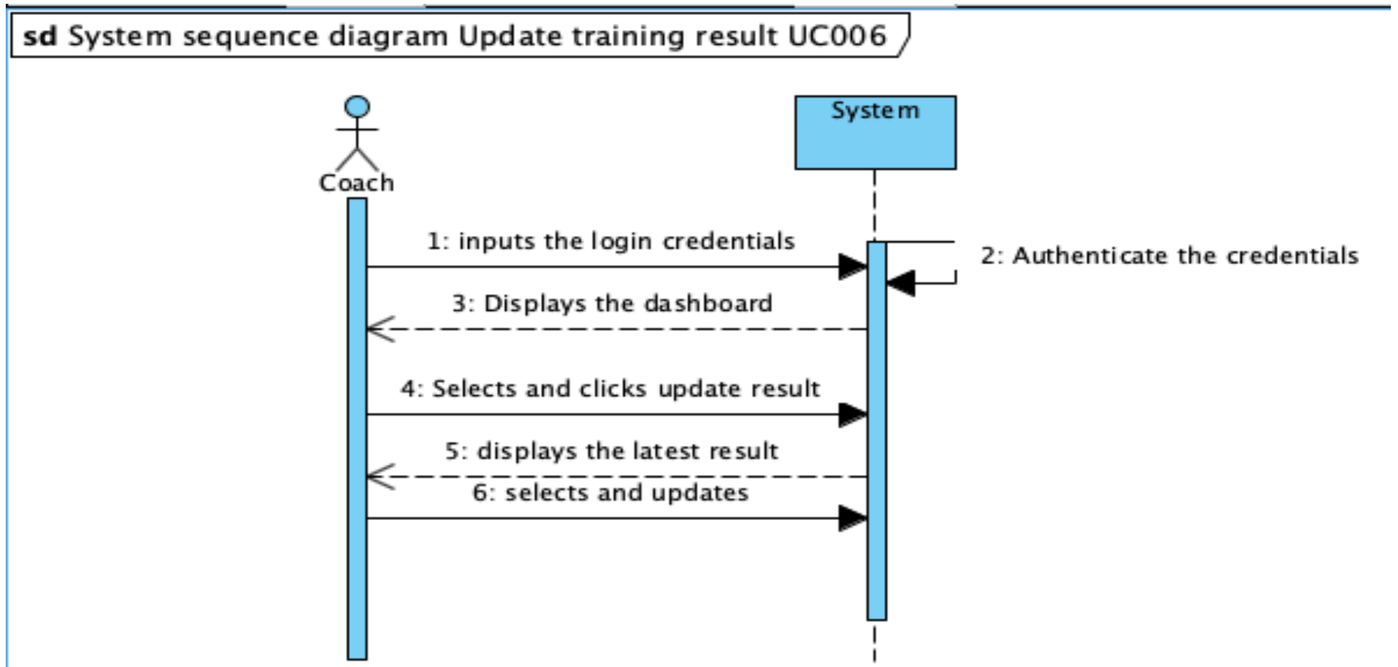


Use case description – Update training result (UC006)

Primary actor: - Coach

Main success scenario: -

Coach enters the login credentials and logs in the system. System displays the dashboard. Coach selects and clicks the “Update training result” button. System shows all the latest result of specific training. Coach clicks the specific training and updates.

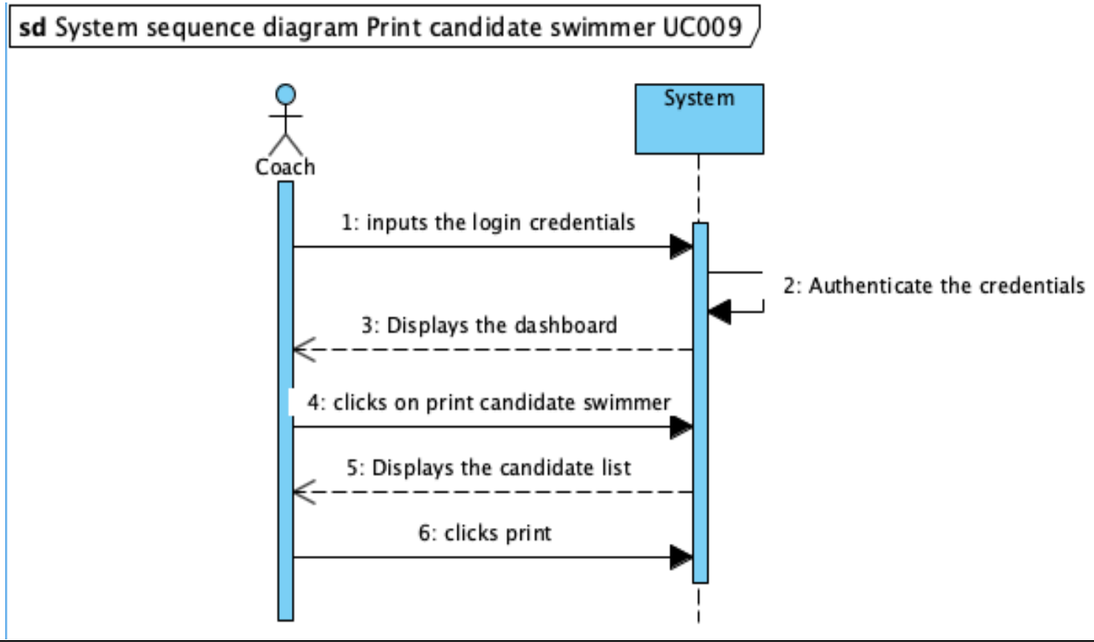


Use case description – Print Candidate swimmers (UC009)

Primary actor: - Coach

Main success scenario: -

Coach enters the login credentials and logs in the system. System displays the dashboard. Coach selects and clicks the “Print Candidate swimmers” button. System shows list of candidate swimmers. Coach clicks the print button.



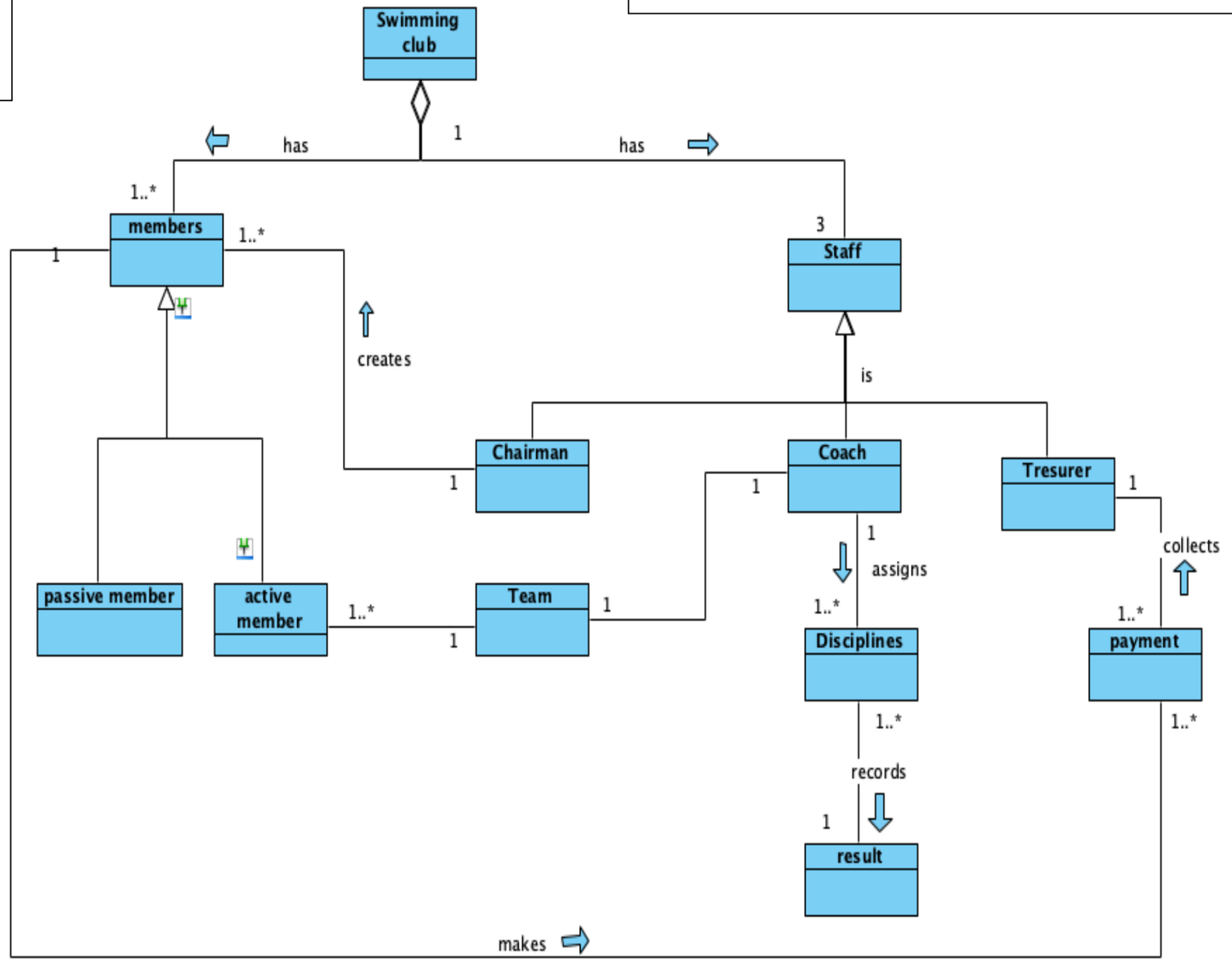
Noun List

- Chairman
- Coach
- Staff
- Treasurer
- Members
- Subscription
- Payments
- Subscription
- List (payment)
- Training
- Results
- Swimmers
- Candidate

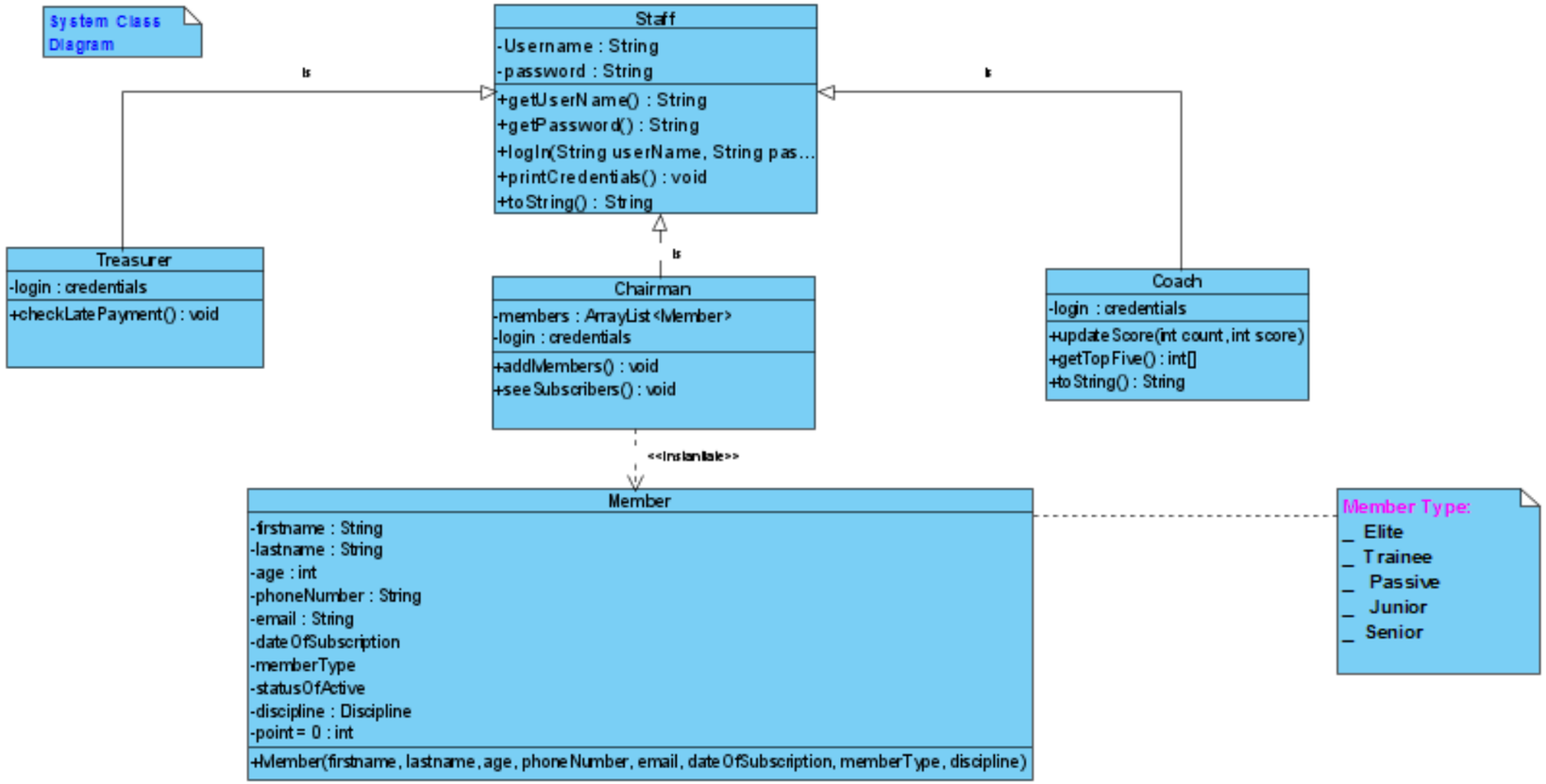
Verb List

- Add(members), it belongs to UC001 in the Chairman Class.
- Edit(subscription), it belongs to UC003 in the Treasurer Class.
- Print (late payments) , it belongs to UC004 in the Treasurer Class.
- Print (subscription list), it belongs to UC008 in the Treasurer Class.
- Print (payment status), it belongs to UC010 in the Treasurer Class.
- Login, it belongs to UC007 in all of the class Chairman, Coach, Treasurer Class.
- Print (discipline), it belongs to UC005 in the Coach Class.
- Update (training results), it belongs to UC006 in the Coach Class.
- Print (candidate swimmers), it belongs to UC009 in the Coach Class.
- Print (top 5 candidate), it belongs to UC002 in the Coach Class.

Domain model:



Design Class Diagram:



MAIN SECTION: SOFTWARE CONSTRUCTION (SWC)

The aim of this section is to explain the programming process, in other words, the way to the implementation.

In this section, we will go about our approach, what where why we have used some of the OOP concepts such as Inheritance, Encapsulation.

Design to Construction

In this section, we will try to explain some operations (I.e., methods) in relation to our Use Cases as they are the foundation building blocks

Of our report. Therefore, we thought it will be important to shed some light on our approach & results.

We have tried to use OOP concepts and showcase Inheritance, Polymorphism (I.e., overriding – dynamic binding).

First and foremost, our Staff class is the Super class, and the Chairman & Coach & Treasurer are all Sub classes, this automatically imply inheritance and

They (sub classes) do inherit everything from super class & can add its own member data.

Polymorphism is also obtained by overwriting toString () method from Staff super class.

One of the requirements for the task was that a chairman should be able to register and record new members in the member.txt (name, age, email, activity type and discipline).

UC001 – addMembers():

```
public void addMembers(){
    String discipline ="";
    String statusOfActive;
    Member m = new Member();
    Scanner sc = new Scanner(System.in);
    System.out.println("Please Enter first name:- ");
    String firstName= sc.next();
    System.out.println("Please Enter last name:- ");
    String lastName = sc.next();
    System.out.println("Please Enter your age:- ");
    int age = sc.nextInt();
    System.out.println("Please Enter phone number:- ");
    String phoneNumber = sc.next();
    System.out.println("Please Enter email:- ");
    String email = sc.next();
    System.out.println("Please Enter subscription date -dd/mm/yyyy-format ");
    String dateOfSubscription = sc.next();
    String memberType="";
    if(age<18){
       memberType = "Junior";}
    else if(age>=18&&age<60){
```

CONCLUSION

In order to consider, the association with members as Dolphin is a small Club growing, some considerations must be made such as the relationship with other clubs, how to attract new members and funds.

Therefore, it will be no surprise, that Dolphin should address some issues in relation to the growing interest in the club.

The difficulty of small club (or enterprise) in growth is a lack of investments, of connection with members (especially new ones).

How can it be solved?

Suggestions: may be more visibility (help, donation, competition participation...), advertising and so on so forth.

Dolphin Swim Club can manifest itself on a competition level if the needed and necessary Coaches, competition swimmers are found.

Hence, competitiveness can be achieved with other clubs.

Throughout this project, it has been an iterative process, whereas each cycle must go through simple series of steps to repeat, tweak & improve software. Thus, the need for group reflection to discuss whether a changeset fits into the task and align in the overall goal.

Here are some fundamental principles we followed:

- Communication: continuous team consultation to discuss about where we are in task, where we are stuck, where we are heading in terms of our work plan.
- Presentation: revision of code, diagrams & overall group understanding.
- Expectation: knowing each one’s competency, setting realistic goals, delegating work task & above everything else work together.

BIBLIOGRAPHY

The whole group

Books:

- Craig Larman: Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development - Third edition (2004)
- Building Java Programs
- The Organization

search the Google machine.

GLOSSARY

Name	Role	Description
Chairman	Actor	Staff
Treasurer	Actor	Someone who's responsible for payment.
Coach	Actor	Someone who helps other people achieve their goals.
Use	Assosiation	usage
Record	Assosiation	saves
Pay	Assosiation	payment
Initialize	Assosiation	create
Attends	Assosiation	part taker
Results	Assosiation	Results
Be included-in	Assosiation	part of
Contain	Assosiation	Be included-in
Exercise	Object	personal bodily activity (no competition)
Subscription	Object	Member should pay for subscription.
Member	Object	Someone who's registred with the club.
Class	Object	Different class for different member (junior, senior).
AktiviteType	Object	Different activity for different member (active, passive).
Discipline	Object	Competitive activities in swimming (freestyle, butterfly,...)