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**Collage of Computer and Information Sciences**  
**Department of Information Systems**

**IS340 System Analysis and Design**  
**1<sup>st</sup> Semester 2022**



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## **1- Introduction**

## **Overview:**

Regular physical activity and healthy diet are one of the most important things people can do for their health. healthy lifestyle can help people to reduce the risk of depression, anxiety and help them sleep better. Furthermore, it can reduce the risk of some chronic diseases like heart disease and diabetes type 2 or improving the health status for people who are already have these diseases.

Nowadays, people knew these benefits and the people's health consciousness was increased. Resulting to increase the joining in health & fitness clubs. so, the manual management system has no longer work in an effective way and become insufficient for managing these health clubs. hence the need for existing a new system with new features that enable the owners to improve the way they manage these health clubs is necessary.

(Fitness zone) is an Online system aims to automate the health club management system. It improves the process of registration for new members. Furthermore, it provides many services for members for instance: determining the suitable diet plan for a member in depend on her/his body mass indicator, also, displaying various learning video of exercises for members. In addition, it helps owner club and his team to manage the members and add any new events to them through google calendar associated with the system so the members can easily view and register in the events if they want.

This arrangement benefits both members and owners: the member can register on the club online and the system allows him to complete easy payment across a wide variety of methods to complete registration process in the club. On other hand, the owners can manage and filter all members with his/her membership easily.

## **The problem statement:**

As more people are becoming health conscious and are more willing to join fitness clubs to maintain their physical and mental health, they need a single place where they will be offered all they need regarding their health such as diet plans, exercise videos, in real life gym sessions. Unfortunately, not many fitness clubs provide such services because they lack a fully automated system that is easy to manage and maintain.

**System capabilities:**

- 1-Customers can communicate directly with the club management
- 2-The system allows the member to schedule their exercises.
- 3-Allows customers to choose the right workout for them
- 4-allows customers to choose the right equipment for a workout.
- 5-The gym can manage the demand for equipment
- 6-allow the customer to communicate with the coach.

**Business benefits:**

- 1-Helping clients to achieve their goal
- 2-Providing high clear workout videos
- 3-Providing the best equipment
- 4-Helps maintain a healthy lifestyle.



## **System Analysis**

**Functional requirement:**

1. The member shall be able to create an account.
2. The owner shall be able to create an account.
3. The member shall be able to change the account information.
4. The owner shall be able to change the account information.
5. The member shall be able to delete the account
6. The owner shall be able to delete the account.
7. The member shall be able to login to the system.
8. The owner shall be able to login to the system.
9. The member shall be able to log out from the system.
10. The owner shall be able to log out from the system.
11. The member can select the desired membership program.
12. The member shall be able to change his membership.
13. The member shall be able to make payment.
14. The member shall be able to freeze membership.
15. The member shall be able to resume membership.
16. The owner can add new events for members.
17. the member shall be able to view exercises videos.
18. The member can set a target which he wants.
19. The member shall be able to select goal for themselves.
20. the member shall be able to update the goal for themselves.
21. The member shall be able to keep track of his goal.
22. The owner can view the list of all members with their membership.
23. The owner can filter members by their membership.
24. The owner shall be able to submit the notification message.

## **Non-Functional requirement:**

### **System Reliability:**

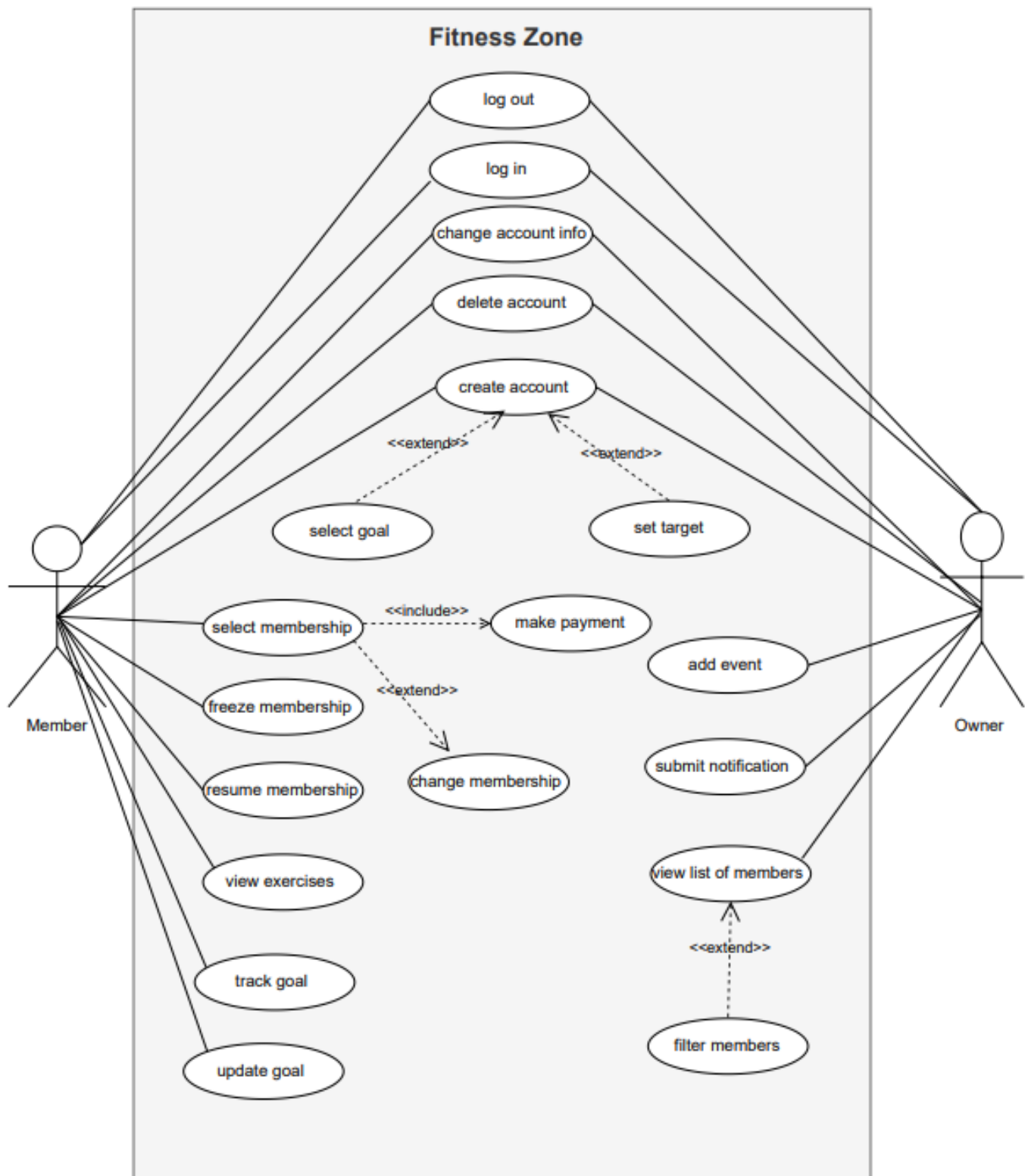
1. The system must be able restart in less than 5 minutes after failure.
2. The system must be available 24/7.
3. The system must provide correct information.
4. The system shall keep data of new & old members
5. The system shall be able to restore all lost data after failure.
6. The system shall be able to display video with high quality.

### **System Security:**

1. The system shall be able to validate member's log in information.
2. The password should consist of at least 8 alphanumeric characters.
3. The system shall be able to protect member's data from unauthorized changes.
4. The system shall be able to protect its data from unauthorized access



## Use case diagram:



### Detailed use case discription :

Use case name	<b>Create Account</b>	
Scenario	Create account for user	
Triggering Event	New user wants to set up an Account.	
Brief description of the event	User create an account by entering basic information and then following up email, phone number.	
Actor	Member and owner	
Related use cases	None	
Stakeholders	Member and owner	
Preconditions	User email must be validated. User phone number must be validated.	
Post conditions	User must be created and saved. Account's must be created and save.	
Flow of activities	Actor	System
	1. User enter basic information.	1.1 System create new account. 1.2 System prompts for user email.
	2. User enter their email.	2.1 System validate User email. 2.2 System prompts the User to enter her phone number.
	3. User enter their number.	3.1 System validate User phone number.
Exception conditions	1.1 Basic User data are incomplete. 2.1 The email is not valid. 3.1 The phone number is not valid	

Use case name	<b>Delete account</b>	
Scenario	Delete account for user.	
Triggering Event	The user wants to delete the account.	
Brief description of the event	User can delete the account by requesting from the system to delete his account, once requested the account will be deleted.	
Actor	Member and owner	
Related use cases	None	
Stakeholders	Member and owner	
Preconditions	User must have an account. User must log in.	
Post conditions	The account is deleted from the system.	
Flow of activities	Actor	System
	1.User indicate that they want to delete their account.	1.1 Ask user to confirm the deletion.
	2.Confirm the deletion.	2.1 Delete the account from the system.
Exception conditions	2.1 The system fails to delete account.	

Use case name	<b>Change account information</b>	
Scenario	Change information for customer.	
Triggering Event	User wants to change information.	
Brief description of the event	User wants to change information in account after creating it.	
Actor	Member and owner	
Related use cases	None	
Stakeholders	Member and owner	
Preconditions	User must have an account User logged in	
Post conditions	User account is update in the system.	
Flow of activities	Actor	System
	1. User select information to edit it.	1.1 System prompts for user's new information.
	2. User enter new information.	2.1 System validate information. 2.2 System ask User to confirm the edit.
	2. Confirm the edit.	2.1 Update and save account in the system.
Exception conditions	2.1 User's information invalid, fails to save updates.	

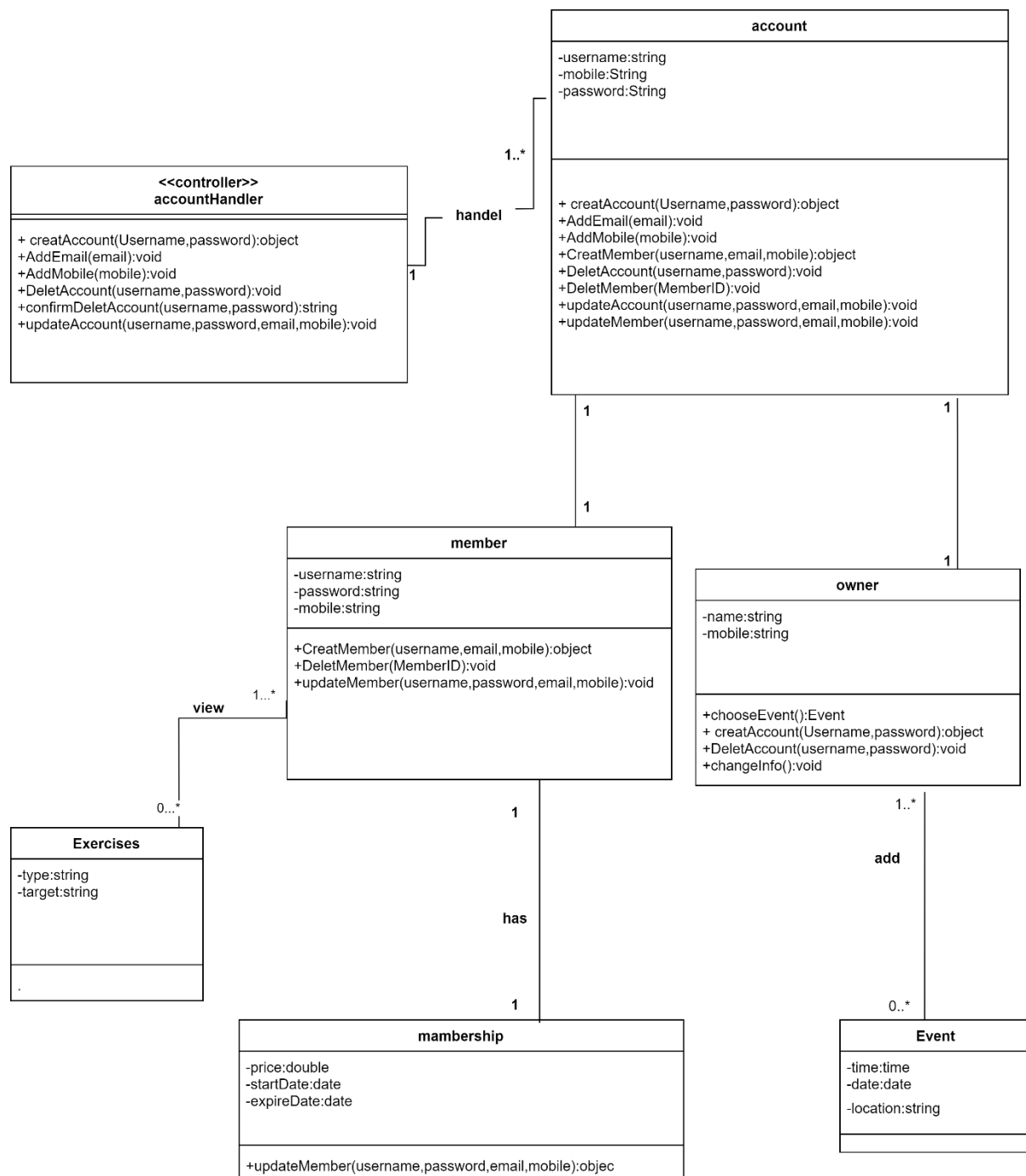
Use case name	<b>Select goal</b>	
Scenario	Members select goal for themselves	
Triggering Event	Member wants to select a goal.	
Brief description of the event	The member will select a goal (gain / lose weight) they want to achieve during their membership program.	
Actor	Member.	
Related use cases	None.	
Stakeholders	Member.	
Preconditions	The Member must have an account The member must have a membership.	
Post conditions	System saved member goal.	
Flow of activities	Actor	System
	1. Members select the goal.	1.2 System saves the goal.
Exception conditions	1.2 system fails to save goal.	

Use case name	<b>Freeze membership</b>	
Scenario	Member freeze his membership.	
Triggering Event	The member wants to freeze his membership.	
Brief description of the event	Member can freeze his membership when faced with difficult conditions.	
Actor	Member	
Related use cases	None	
Stakeholders	Member	
Preconditions	Member must have an account. The member must have a valid membership.	
Post conditions	The membership is freeze from the system.	
Flow of activities	Actor	System
	1. Member login.	1.1 The system opens the homepage
	2. Member select the membership to freeze it.	2.1 The system displays a list of options. 2.2 The system verifies the validity of the membership.
	3. Confirm freeze membership.	3.1 The system freezes membership
Exception conditions	1.1 The member submits incorrect/incomplete data when logging in 2.2 The membership is invalid	



### **3-System design**

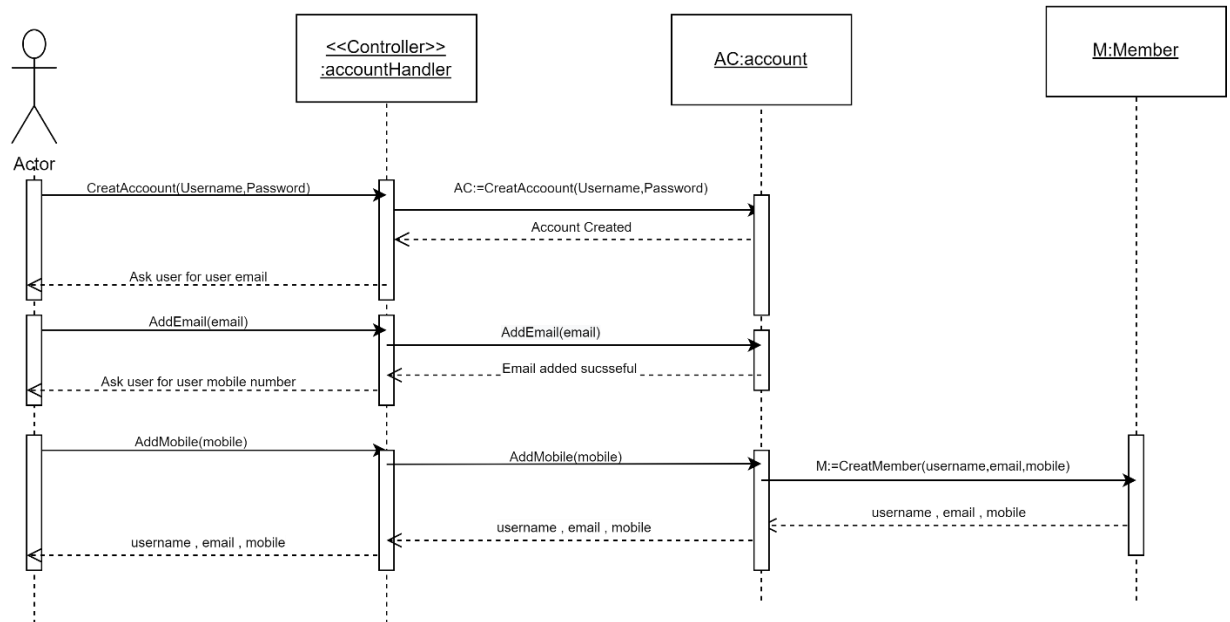
## Design class diagram:



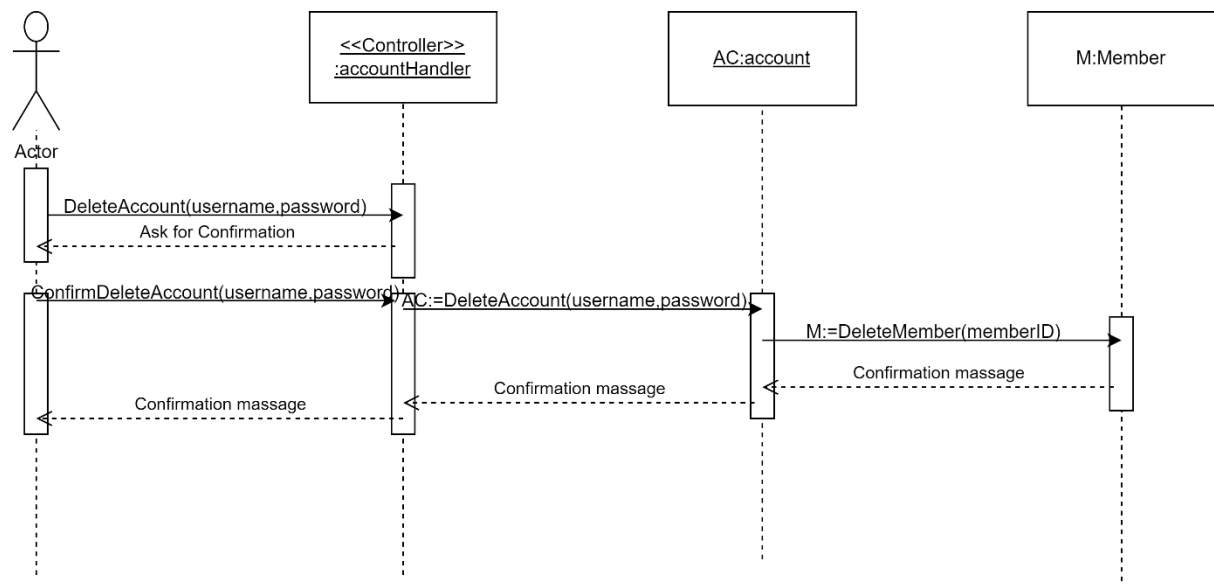


## Sequence diagrams:

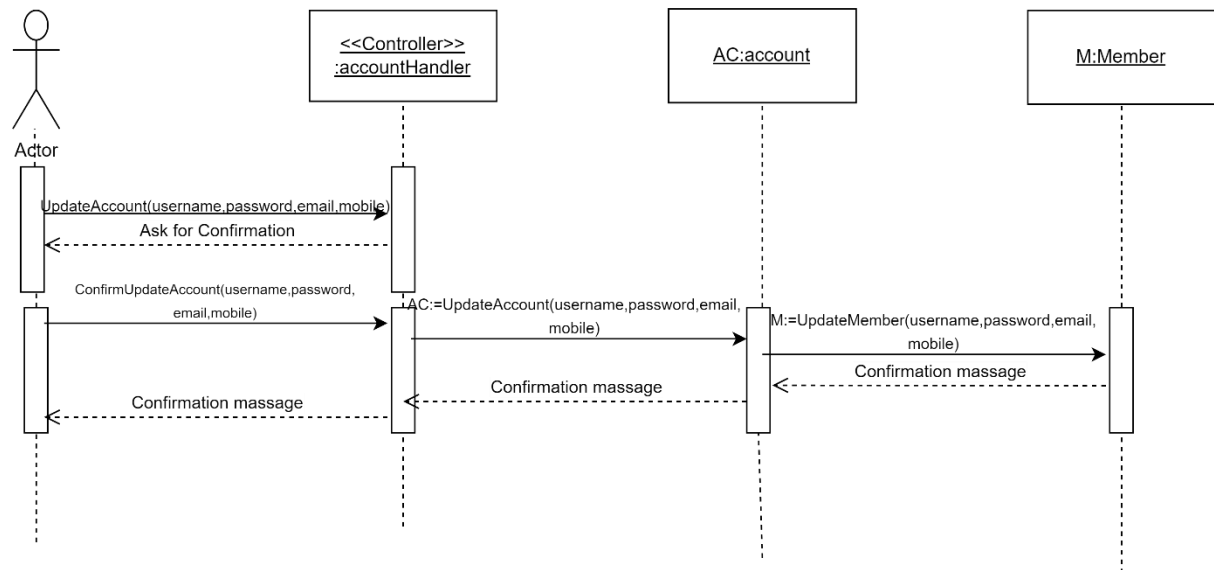
### Create Account:



### Delete Account:

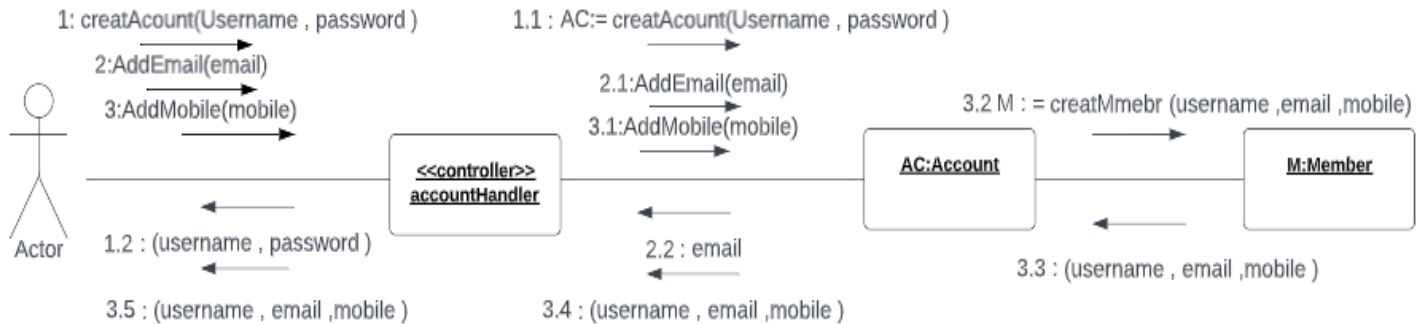


## Change Account Information:



## Communication diagrams:

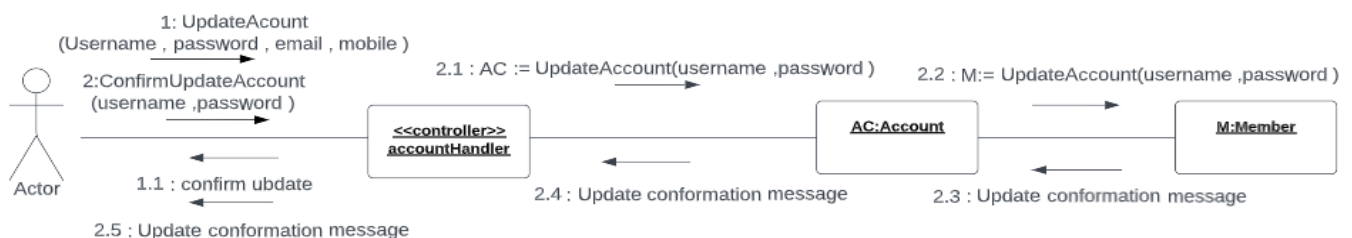
### Create an account:



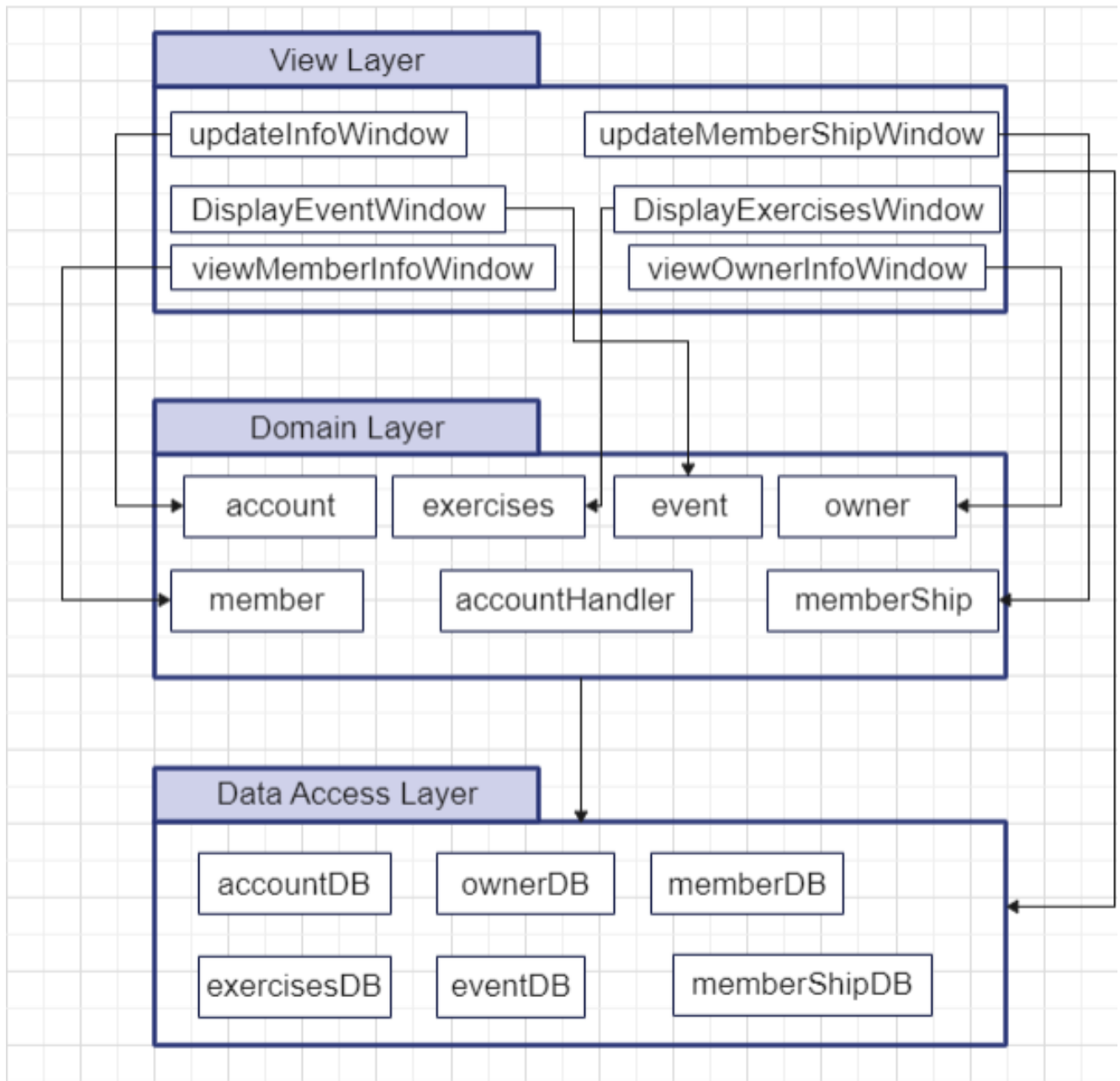
### Delete an account:



### Change account information:



### Package diagram:





## **4-System Testing**

## Test cases:

### 1. Login into account

- ❖ **Function:** login into account
- ❖ **Description:** test the ability of the users to login
- ❖ **Test input data:** Email, password

Case description	Expected result	Actual result
1. The user presses 'login 'button without entering email and password.	<ul style="list-style-type: none"><li>• The user will not login.</li><li>• The system will notify the user with the required procedure to login</li></ul>	Pass
2. The user presses 'login 'button with entering email and without entering password.	<ul style="list-style-type: none"><li>• The user will not login.</li><li>• The system will notify the user with the required procedure to login</li></ul>	Pass
3. The user presses 'login 'button with entering password and without entering email.	<ul style="list-style-type: none"><li>• The user will not login.</li><li>• The system will notify the user with the required procedure to login</li></ul>	Pass
4. The user presses 'login 'button with entering incorrect email and correct password.	<ul style="list-style-type: none"><li>• The user will not login.</li><li>• The system will notify the user that is invalid input information.</li></ul>	Pass
5. The user presses 'login 'button with entering correct email and incorrect password.	<ul style="list-style-type: none"><li>• The user will not login.</li><li>• The system will notify the user that is invalid input information.</li></ul>	Pass
6. The user presses 'login 'button with entering correct email and password.	<ul style="list-style-type: none"><li>• The user logs in to the system.</li><li>• System directs the user to the 'Home page '</li></ul>	Pass

## 2. Create user account

- ❖ **Function:** create new account in the system
- ❖ **Description:** test the ability of the users to create an account.
- ❖ **Test input data:** Name, Email, phone number, Username, password.

Case description	Expected result	Actual result
1. The user presses 'create new account' button with complete and correct information.	<ul style="list-style-type: none"><li>• The user will create account.</li><li>• The system will direct the user to the 'Homepage'.</li></ul>	Pass
2. The user presses 'create new account' button without entering any information.	<ul style="list-style-type: none"><li>• The user will not create account.</li><li>• The system will notify the user with required procedure to create new account.</li></ul>	Pass
3. The user presses 'create new account' button without completed all the information.	<ul style="list-style-type: none"><li>• The user will not create account.</li><li>• The system will notify the user with required procedure to create new account.</li></ul>	Pass
4. The user presses 'create new account' button with invalid email form.	<ul style="list-style-type: none"><li>• The user will not create account.</li><li>• The system will notify the user with message 'please check the entered email'.</li></ul>	Pass
5. The user presses 'create new account' button with invalid password form.	<ul style="list-style-type: none"><li>• The user will not create account.</li><li>• The system will notify the user with message 'password must contain at least 5 letters, at least one capital letter, at least one number'.</li></ul>	Pass
6. The user presses 'create new account' button with used username.	<ul style="list-style-type: none"><li>• The user will not create account.</li><li>• The system will notify the user with message 'this username already used, try again with another one'.</li></ul>	Pass
7. The user presses 'create new account' button with used email.	<ul style="list-style-type: none"><li>• The user will not create account.</li><li>• The system will notify the user with message 'this email is already registered, try to login'.</li></ul>	Pass
8. The user presses 'create new account' button with invalid phone number (incomplete or incorrect data type)	<ul style="list-style-type: none"><li>• The user will not create account.</li><li>• The system will notify the user with message 'the phone number must consist of 10 integer digits'.</li></ul>	Pass

## 5-References:

- [1] “*Fitness Zone* “Canva, 2022 . [Free Design Tool: Presentations, Video, Social Media | Canva](#) ( accessed Nov.29,2022)
- [2] “*Diagrams.net*”- free flowchart maker and diagrams online, “Flowchart & Online Diagram Software, “Diagrams.net, 2022. [Diagram Software and Flowchart Maker](#) (accessed Nov. 29, 2022).
- [3] “Edrawmax”- <https://www.edrawmax.com/>

## 6-Appendices:

	الاسم	المدة	البداية	النهاية
1	Introduction	5 days	08:00 31/10/22	05:00 04/11/22
2	Problem	5 days	08:00 31/10/22	05:00 04/11/22
3	Goals And Objective	5 days	08:00 31/10/22	05:00 04/11/22
4	Solution	5 days	08:00 31/10/22	05:00 04/11/22
5	Project scope	5 days	08:00 31/10/22	05:00 04/11/22
6	Analysis	30 days	08:00 07/11/22	05:00 16/12/22
7	Functional Requirement	15 days	08:00 07/11/22	05:00 25/11/22
8	Non Functional Requirement	15 days	08:00 07/11/22	05:00 25/11/22
9	Use Case Diagram	15 days	08:00 26/11/22	05:00 16/12/22
10	Detailed Use Case Diagram	15 days	08:00 26/11/22	05:00 16/12/22
11	Design	30 days	08:00 19/12/22	05:00 27/01/23
12	Design Class Diagram	15 days	08:00 19/12/22	05:00 06/01/23
13	Sequence Diagram	15 days	08:00 19/12/22	05:00 06/01/23
14	Communication Diagram	15 days	08:00 07/01/23	05:00 27/01/23
15	Package Diagram	15 days	08:00 07/01/23	05:00 27/01/23
16	Testing	5 days	08:00 30/01/23	05:00 03/02/23
17	Test cases	5 days	08:00 30/01/23	05:00 03/02/23
18	Fix errors	5 days	08:00 30/01/23	05:00 03/02/23

