Zein Gym Software Report

Story with the customer:

The owner wants his own gym program (Zein Gym) to have some features which are:
he wants to be able to add a trainee or coach in the system, generating a barcode for the trainee that has been added to the system, reading a barcode for a trainee in the database to check validation of the barcode, ability to detect if the trainee tries to log in twice in the same day, Renewing the subscription of the trainee, searching or modifying a trainee's or coach's data, displaying all trainees' or coaches' data, showing a report about the monthly income
The owner also wants adding a password to any operations related to the coaches' data or showing the monthly report

Business Requirements:

The software system will be for Zein gym, it will simplify the dealing with the trainees' registration, modifying trainees' or coaches' data without any problems and showing a monthly report of the gym.

User Requirements:

The system user is expected to be able to generate, read a barcode and manage all trainees' data.

The owner is expected to be able to show monthly report and manage all coaches' data.

Requirements Specification:

External Interface Requirements:

The only link to an external system is the link to the Database to manage Trainees' data.

The database fields of interest to the trainee are name, age, gender, phone number, package type, price of the package, start and end date of the subscription.

The database fields of interest to the coach are name, age, gender, phone number and salary.

System Requirements:

A - Functional Requirements:

Use Case Name	Add Person
Trigger	The system user adds a new person to the database.
Precondition	
Path	1. The system presents an option to add a new trainee or coach 2. The system presents a blank grid to enter the person information 3. The user enters the information and submits the form. 4. The system user will confirm the data 5. The system will check from 2 things: A - All fields related to a person are not blank B – The system will Check for duplicates data in the phone number and name fields.
Post condition	The person has been added to the data base.

Use Case Name	Generate a barcode
Trigger	Generate a bar code to a trainee
Precondition	There is a trainee we want to add him to the data base.
Path	1- Generate barcode once the trainee is added to data base 2- The system create a unique barcode related to the trainee according to the range of the bar code reader (Bar Code will contain 16 number Limit Number of barcodes that can be generated = 10^16)
Post condition	The generated barcode will be assigned to the trainee in the system

Use Case Name	Search for a Person
Trigger	The system user selects to search for a person from the database.
Precondition	
Path	1- The system presents an option to search for a trainee or coach. 2- The system is displayed with two grids of searching. 3- The system user enters the phone number of the person or the name and confirm the process 4- The system has to make sure that at least one field isn't blank.
Post condition	The person's data will be showed to the user.
Exception Paths	The system user may abandon the operation at any time.

Use Case Name	Reading a barcode.
Trigger	Read a bar code of an existing trainee.
Precondition	the trainee is already in the database.
Path	1- The system user reads the bar code using the machine. 2- The system will check two things: A - The end subscription date. B – The trainee didn't try to login twice in the same day.
Post condition	The message is showed to the system user to make a decision.

Use Case Name	Renew Subscription.
Trigger	Renewing the subscription of the trainee.
Precondition	The barcode becomes invalid because the current day exceeds the end subscription date.
Path	1 – The system user search for the trainee. 2- The system user chooses the package type and start subscription data according to the trainee needs. The system checks that required fields are not blank.
Post condition	-The end subscription date will be updated according to the package. -The barcode will be valid according to the end subscription date. -The data of the trainee has been updated in the data base.

Use Case Name	Modify Person's data.
Trigger	The system user selects to modify a person's data.
Precondition	the person is already in the database.
Path	1. The system user selects coach or trainee. 2. The system creates an option to search by phone number or name. 3. The system user enters the data and confirm. 4. The system will show the person's information and ask about the fields that you want to modify. 5. The system user will choose the fields. 6. The system presents the of the person's fields that has been chosen in grid form for modification. 7. The system user updates the information and submits the form. 8. The system checks that required fields are not blank.
Post condition	The database has been updated.
Exception Path	If he person is not already in the database, the use case is useless. In addition, The system user may abandon the operation at any time.

Use Case Name	Remove Person
Trigger	The system user selects to remove a person from the database.
Precondition	the person is already in the database.
Path	1. The system user selects to remove a coach or trainee 2. The system creates an option to search by phone number and name. 3. The system presents the database information of the person. 4. The user confirms the deletion.
Post condition	The person is removed from the database.
Exception Paths	The system user may abandon the operation at any time.

Use Case Name	Display person's information
Trigger	The user selects to display a person's data from the database.
Precondition	
Path	The system user selects to display a coach or trainee
Post condition	The system presents the database information of all trainees' or coaches' data
Exception Paths	The system user may abandon the operation at any time.

Use Case Name	Owner Login
Trigger	Managing coaches' data or Showing monthly report
Precondition	
Path	1- The system will ask for a password 2- The owner will enter the password 3 – The system will check the validity of password:
Post condition	The owner has ability to manage coaches' data or Showing monthly report
Exception pass	The owner may abandon the operation at any time.

Use Case Name	Show a monthly report
Trigger	Computing the monthly revenue of the gym and giving details about all new package subscription related to specific month.
Precondition	
Path	3- The owner will enter the maintenance fees. 4- The system will compute the total package prices from the trainees' data related to specific month, and the total salary from the coaches' data.
Post condition	The system will show the revenue of the month giving details about all new package subscription related to specific month.

B - Non-Functional requirements:

Interface: The users should feel comfortable while looking at it and browsing through it.

The design should not be too colorful and using the colors of the gym's logo.

Usability: The system should not require a massive amount of time learning how to use the system. It should be a self-explanatory system that does not ideally need any tutorial section.

Performance: The operations related to the data base in the system must not take more than 2 seconds to complete without any failures.

Availability: Any updates that will happen on the system should be during our closing times.

If any updates happen during our opening times, we should know about it two days before and it must not affect these operations

1- Generating or reading barcodes

2- Adding a new trainee

3 – Renew Subscription

Scalability: The system must grow without negative influence on its performance and be scalable enough to manage the increasing in database.

Model Used: Why agile scrum?

We ‘ll use Agile Scrum Model on this project due to many points:

1)customer wants unique product from unique specifications.

2)we’re a team of five members and we all communicate with each other daily and meets face-to-face, so we can easily make daily scrum.

3)we have the ability of communicating with the customer

4)we like to work as a one person so anybody can know what happens at any time without any secrets in work.

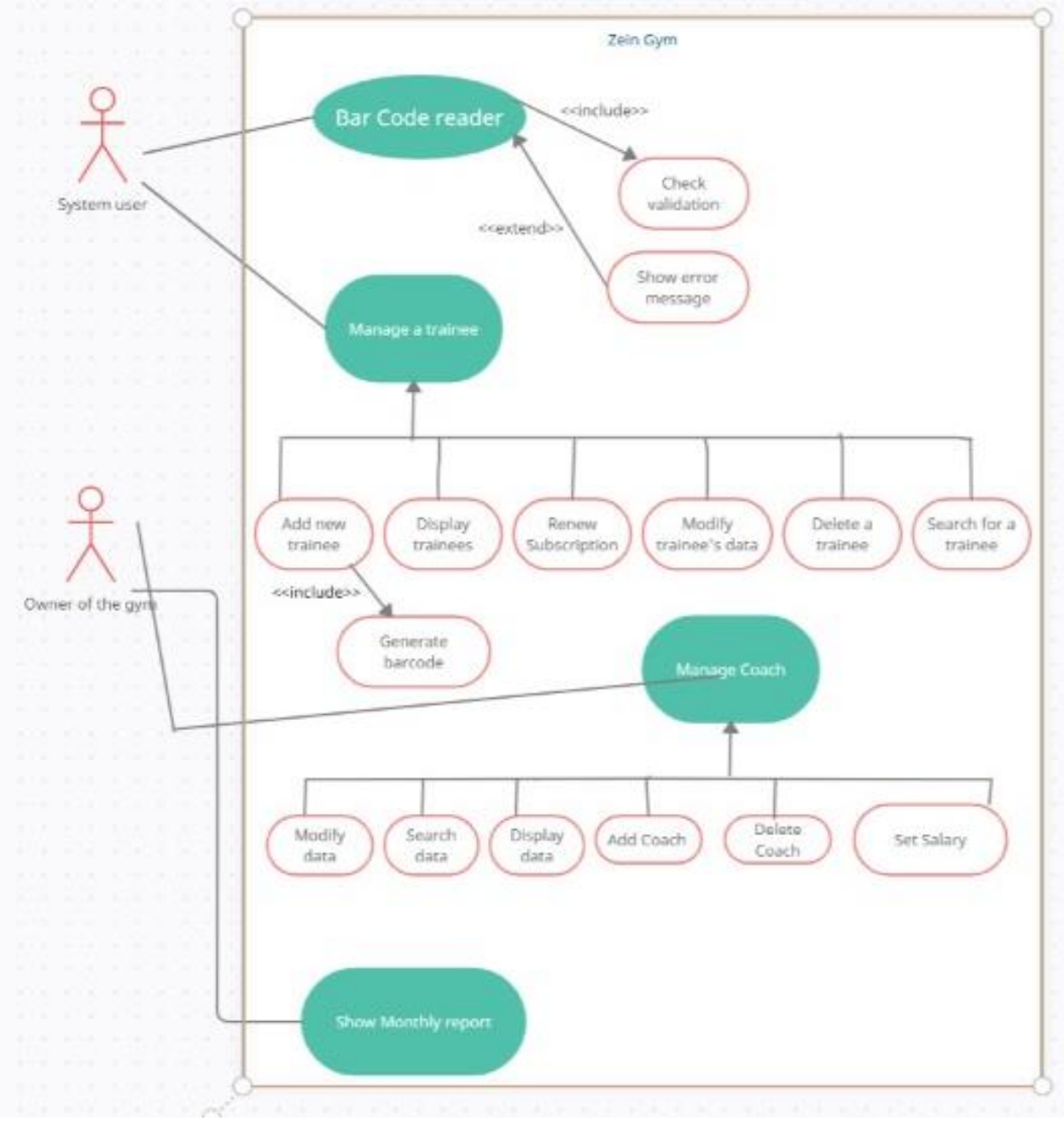
5)we are all friends so we love to self-assessment after each sprint.

6)we will make a self-organization at the beginning of every sprint and team will decide which tasks should every team member will do.

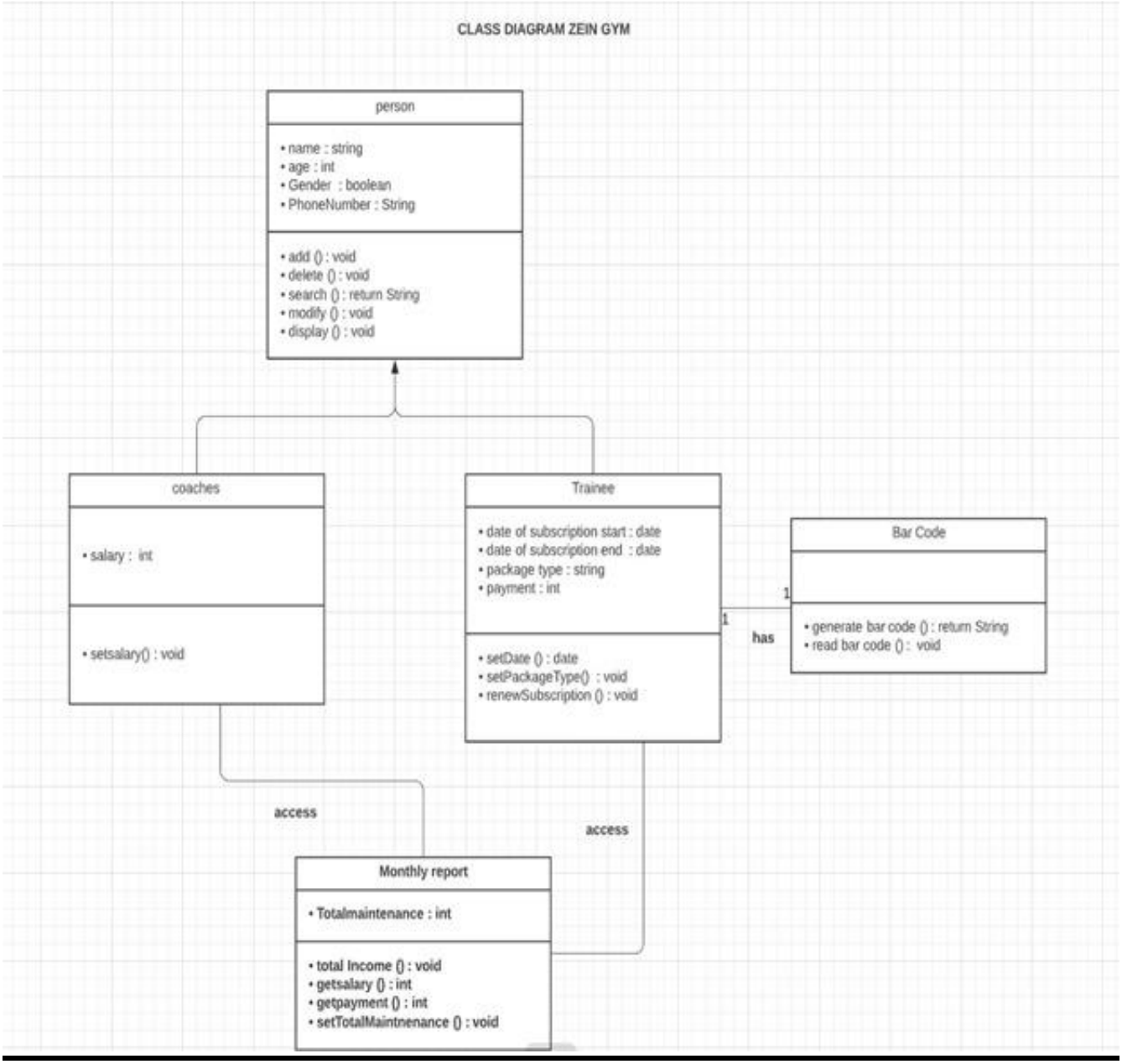
Risk Analysis:

Risks	Risk type	probability	effect
1) The database used in the system cannot process as many transactions	Technology	Moderate	Serious
2) The time required to develop the software is underestimated	Estimation	High	Serious
3) Customers fail to understand the requirement changes	Requirements	Moderate	Tolerable
4) software tools cannot work together in an integrated way	Tools	high	Tolerable
5) Late delivery the software to the customer	Technology	Moderate	Tolerable
6) The size of the software is underestimated	Estimation	High	Tolerable

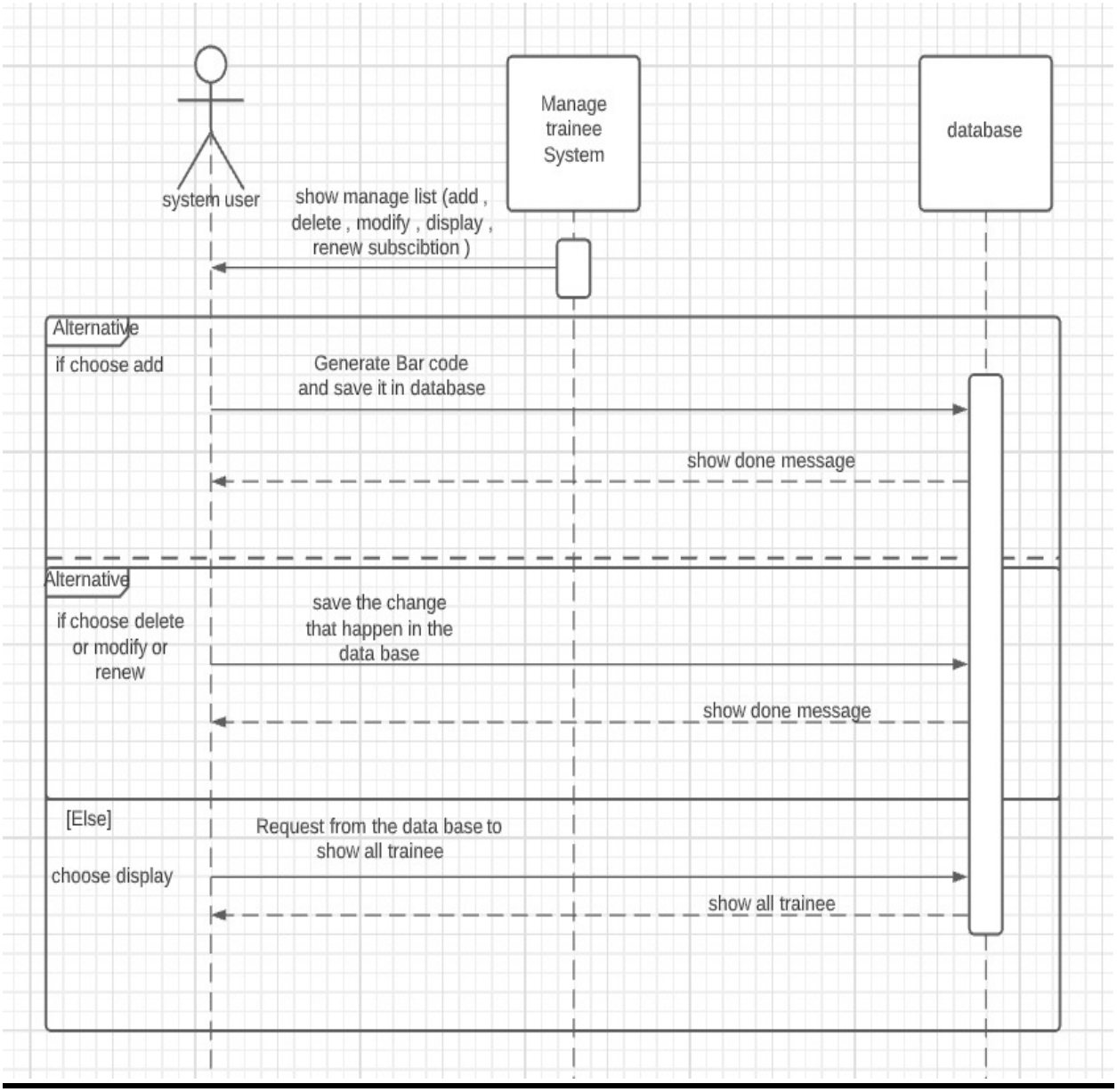
Use Case Diagram:

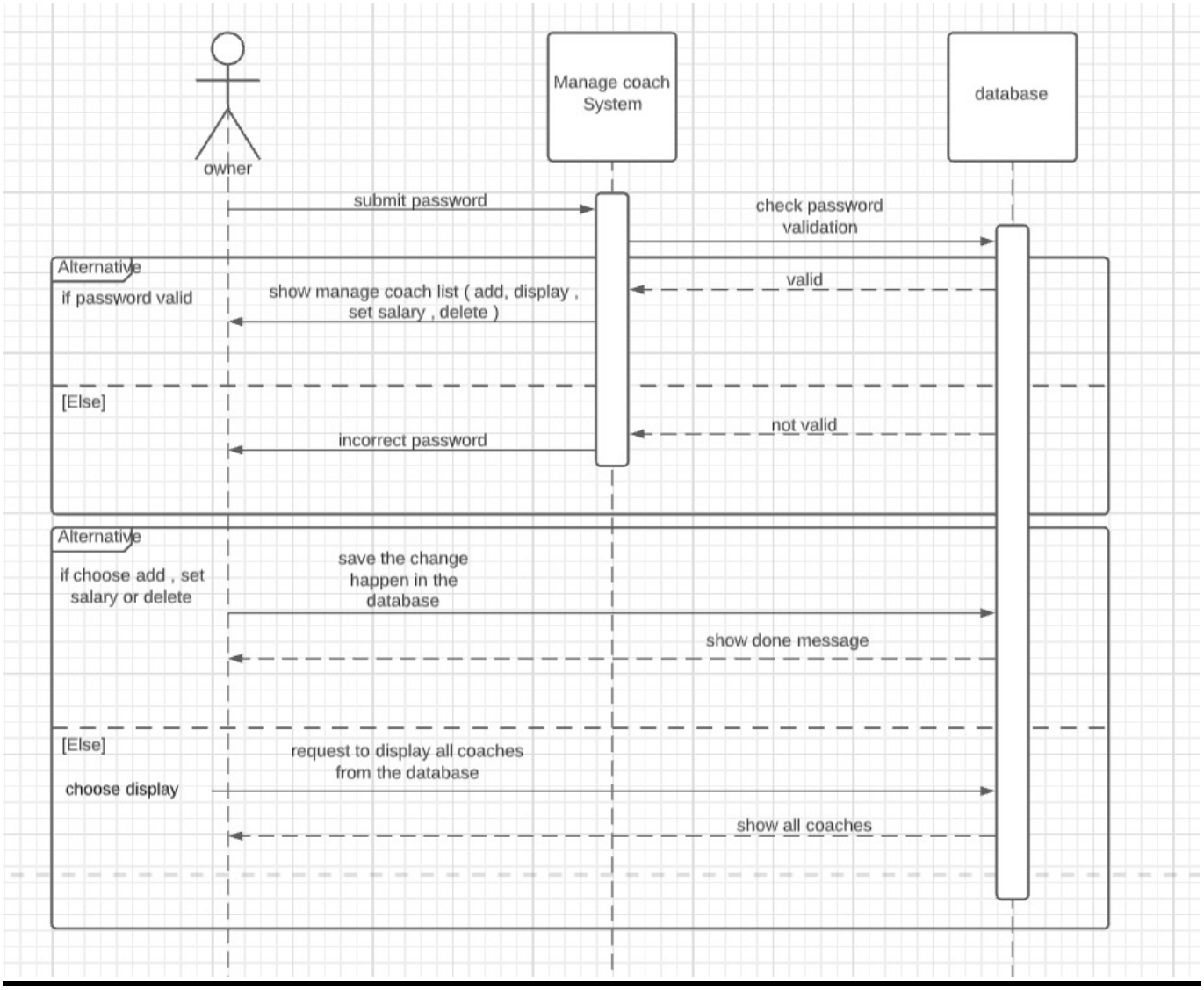


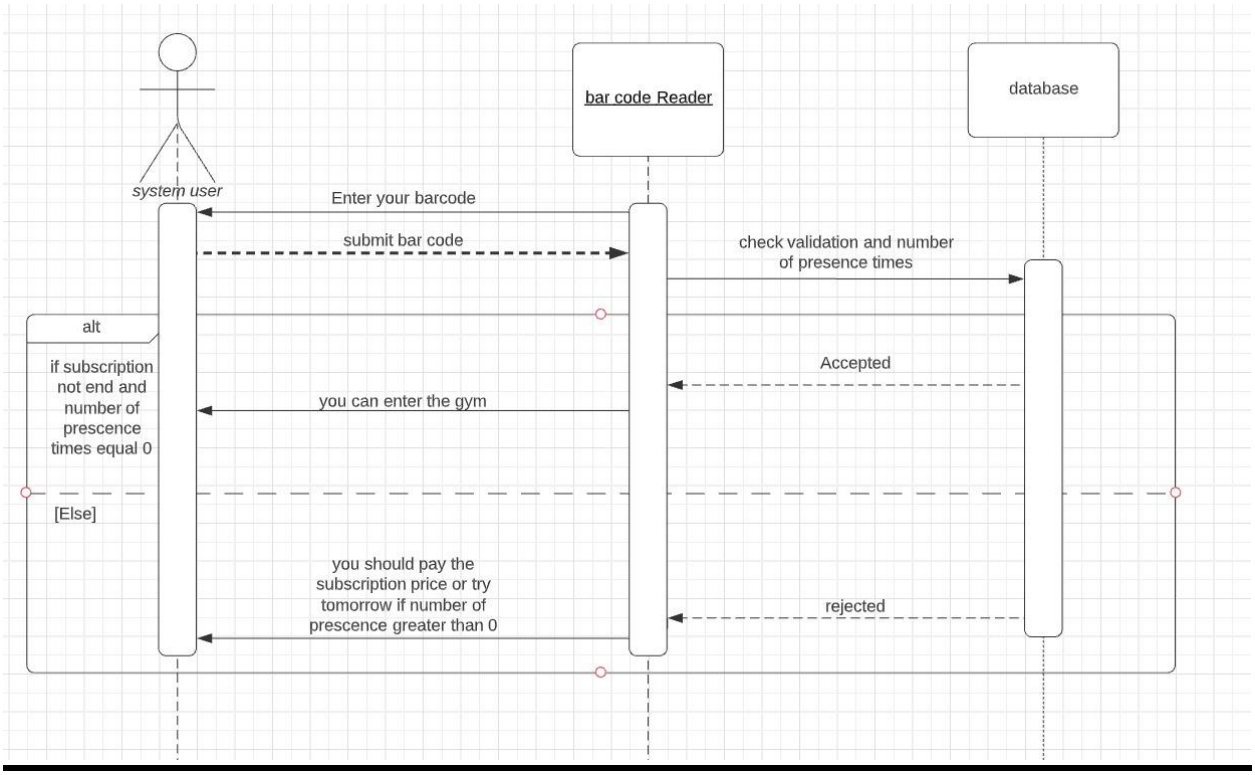
Class Diagram:

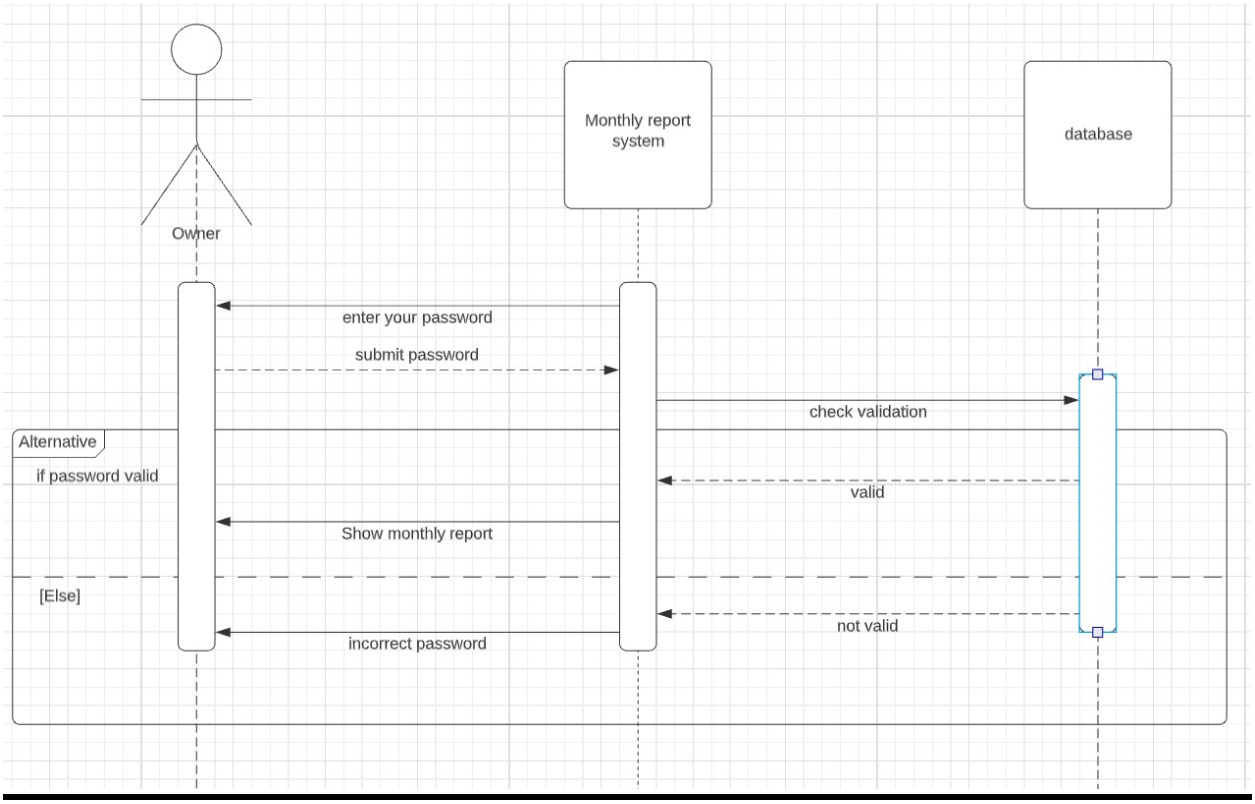


Sequence Diagrams:




owner
Manage coach System
database
submit password
check password validation
Alternative
if password valid
valid
show manage coach list (add, display , set salary , delete)
[Else]
not valid
incorrect password
Alternative
if choose add , set salary or delete
save the change happen in the database
show done message
[Else]
request to display all coaches from the database
choose display
show all coaches


bar code Reader
database
system user
Enter your barcode
submit bar code
check validation and number of presence times
alt
if subscription not end and number of prescence times equal 0
Accepted
you can enter the gym
[Else]
you should pay the subscription price or try tomorrow if number of prescence greater than 0
rejected


Monthly report system
database
Owner
enter your password
submit password
check validation
Alternative
if password valid
valid
Show monthly report
[Else]
not valid
incorrect password

Testing

Test Type: White box testing

Test Cases (One for each requirement):
1)Test case for Add Person (Coach):

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-APC001	Check adding a new coach to the system using (name, age, gender, phone number, salary).		1)Launch system. 2)owner login 3)click add coach. 4)Click Add.	Name=’Mahmoud Alaa’ Age= 20 Gender=’Male’ Phone Number=’ 01279383491’ Salary= 5000	Coach Added to the data base	Coach Added to the data base	Passed

2)Test case for Add Person (Trainee) :

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-APT001	Check adding a new trainee to the system using (name, age, gender, phone number, start date, end date, package type).	person's phone number isn't in the system.	1)Launch system. 2)click add trainee. 3)Click Add.	Name='Mahmoud Alaa' Age='20' Gender='Male' Phone Number='01279383491' Start date = '1/1/2022' Package type = '1 month'	Trainee Added to the data base and returned end date.	Trainee Added to the data base and returned end date.	Passed

3)Test case for Modify Person’s data (Coach, Trainee):

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-MP001	Check that modifying data for coach or trainee in the system using (name, age, gender, phone number) is working or not.	The person we want to modify his data is already registered on the system.	1)Launch system. 2)click Modify person. 3)choose trainee, or coach. 4)check if person’s data is already registered. 5) choose person you want to update his data. 6) choose what you want to update (name, age, gender or phone number). 7) click Modify.	Phone Number=’ 01090446098’	Person’s New Data Updated to data base.	Person’s New Data Updated to data base.	Passed

4)Test case for Renew Subscription (Trainee):

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-RS001	Check Renewing the subscription of the trainee on the system using (name, age, gender, phone number).	The barcode becomes invalid because the current day exceeds the end subscription date	1)Launch system. 2)search for trainee. 3) choose package type and start subscription date 4)click renew subscription.	Date of subscription start = '1/12/2021' Date of subscription Package type = '1 month'	Subscription renewed, New end date returned.	Subscription renewed ,New end date returned .	Passed

5)Test case for Remove Person (Coach, Trainee):

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-RP001	Check Remove person from data base.	Person is already in data base.	1)Launch system. 2)search for person. 3) choose person. 4)click remove.	Phone Number=' 01279383491'	Person Removed from data base.	Person Removed from data base.	Passed

6)Test case for Search for Person (Coach, Trainee):

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-SP001	Check Searching for person in data base.	Person's data is already in data base.	1)Launch system. 2)write person phone number. 3)click search.	Phone Number=' 01279383491'	Person found, return person data.	Person found, return person data.	Passed

7)Test case for Display person's information:

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-DP001	Check Displaying database informatio n.	Person's data is already in data base.	1)Launch system. 3)click display.		All data base displayed .	All data base displayed .	Passed

8)Test case for generating a barcode:

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-GB001	Check generating a barcode.	There is a trainee we want to add him to the data base.	1)Launch system. 2)add trainee. 3)click generate barcode.		Unique number related to trainee.	Unique number related to trainee.	Passed

9)Test case for reading a barcode:

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-RB001	Check Reading a barcode.	Barcode is already in data base, Subscription is still valid, the trainee didn't try to login twice in the same day.	1)Launch system. 2)put trainees' Id on barcode reader.	'126645219652'	Allowed To Enter.	Allowed To Enter	Passed

10)Test case for owner login:

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-RB001	Check owner login	User must write the right password, password is already saved in database.	1)Launch system. 2)click log in button. 3)write password.	‘692001mallh’	Login success.	Login success.	Passed

11)Test case for show monthly report:

Test Case Id	Test Case	Pre-Conditions	Test Steps	Test Data	Expected Result	Actual Result	Status
TC-RB001	Check show monthly income.	User must be log in, password is already saved in database.	1)Launch system. 2)owner login. 2)click show monthly report button. 3)write password.		Monthly Income Report.	Monthly Income Report.	Passed

Task Duration and dependencies:

Task	Duration (Weeks)	Dependencies
T1(add person)	4	
T2(Generate Barcode)	2	T1(M1)
T3(Search for person)	4	
T4(Read Barcode)	2	T2, T1, T3(M2)
T5(Renew Subscription)	4	T1, T2(M3)
T6(Modify Person's data)	3	T3(M4)
T7(Remove Person)	2	T3(M4)
T8(Display person information)	1	
T9(Owner Login)	1	
T10(Show monthly report)	1	

Time And Cost

Time analysis of our system using COCOMO:

Effort = a(KLOC)^b
Time = c(Effort)^d

Our system is Organic so we ‘ll use Organic numbers for a, b, c and d.

Software Projects	a	b	c	d
Organic	2.4	1.05	2.5	0.38

Effort = 2.4(6)^1.05 = 15.7496 person-month
Time = 2.5(15.7496)^0.38 = 7.1269 ~ 7 months
Cost = 7 * 5 * 2 = 70k EGP

This Work has done under the supervision of Prof: Yasser Fouad, With Our Greetings, Team Work:

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Customer Sign: