Faculty of Engineering and Technology

Computer Science Department

COMP433 – Group Assignment phase 2

<<E-Gym >>

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Introduction

FitnessPro is looking for an alternative for their desktop GYM application. Which is a basic members management system with restricted benefits in terms of membership. So, they are feeling of embracing a new advanced, contemporary fitness center that incorporates forefront technology to excellently assist their clients. The existing system utilized at the FitnessPro center depends on a strict, outdated, and dead desktop application. Trainers and accountants also use Excel sheets!

The current system lacks many abilities, for instance creating new memberships, new advertising memberships, creating training schedules, schedules for trainers, stalking the progress in habits and style of living for each member in the center, informing the trainees of the approaching expiration date of their membership practically, and the intersection of memberships as some memberships can be intersected together.

Moreover, Excel sheets are used by the trainers to take the measurements (height, weight, etc.) of each member regularly and used by the accountants to track member subscriptions, fees of the center, payroll for employees, and so on.

Using Excel sheets and a crisp application will lead to information scattering so it will be difficult to generate reports for the management.

Sports have always been an integral part of the human lifestyle, becoming even more popular nowadays, with numerous fitness apps and trackers. Because of its importance, we will present our application that specializes in helping sports clubs to be interactive with their clients, tracking individual progress, view live streams from training sessions or seminars, and where the trainee has the right to choose the appropriate trainer which will help him to customize his workout by tailoring his schedule (days, times, a female only trainer or a unisex trainer, etc...).

The additional features that our application provides will reduce many problems and improve the performance of the club in various aspects. For instance, we will facilitate the registration process by offering a convenient way to pay for subscriptions and personal training by having a tablet in the reception that enables the customer to register and pay

himself and keep track of his financial and registration matters. Also, one of the problems that we realized that you usually face is that the customers are notified verbally and manually about their training and nutrition programs, which is very unpractical and inefficient, so our application will make it more automated by sending notifications frequently to the customer's phone to keep them up to date. This solution does not only benefit the customer but also the gym, by decreasing the employees.

One of the major catastrophes that we realized while reviewing your system is that you depend on Excel sheets significantly which may lead to real problems difficult to solve in the future. for instance, loss of data, scribbling while entering data, etc... in addition to the time spent filling in the data. So the Excel sheet can be replaced with an efficient database system linked with the application to store and retrieve data easily without time consumption.

System Features

Our new system will focus on solving the problems that the old system had, also the system will be supported with new smart features that help both the gym crew and members. Let's give you a look of the new system.

Old system was dealing with excel sheets to store member's data, payments, etc. and that's may lead to real problems difficult to solve in the future. for instance, loss of data, scribbling while entering data, etc... in addition to the time spent filling in the data. So, we will move all the data in the excel sheets and put it into databases, which in turn, will be more efficient and safer. As for registration and membership's part, we will make the registration process easier. Old and current members will get an access to the app from home, they will have the ability of renewing their subscription, promote their membership, also subscribe in more than one membership. For new members, they must register from the reception unit for their first time, they will be asked to enter their information, membership type, etc.… on a tablet, and then they will be asked to pay for the subscription by using different methods. After completing their subscription for the first time, they will get access to the app, where they will be able to handle their own affairs easily. Talking about memberships, our system will handle the problem of memberships intersection, and that's by not allowing the member to join two or more memberships that their sessions intersect in time.

The new system will give the trainers the ability to create training schedules and nutrition programs, etc. for their trainees. This feature wasn't available in the old system.

One of the worst things that existed in the old system was the verbal notify, where the member was notified of his subscription end, progression, etc. verbally, from now on the member will be notified about these things through phone notifications, and also the member can have a look at these things by accessing his account on the app.

For accountants, they can now get financial reports, sale, new members, etc.… in a very easy way, as the new system is capable to provide all of these details quickly.

Features in the system:

- Online Store

In this feature we are going to design an online store within the software, the shop is divided into two parts:

1. Renting: as there are expensive equipment and tools, there is no need to buy them because their use is little, but they are important, so we give you the option to rent them. Examples of items offered for rent "Boxing gloves, yoga equipment, swimming kits, smart watches, etc.…"

2. Buying: Contains many basic items that anyone can buy such as sport wears, nutritional supplements regular sports equipment, healthy / diet meals, etc...

As there will be a different payment method as cash or credit cards and others if exist.

- Activity Tracing

  This feature will be designed to work as a data collector and report creator.

  As for data collection, the software will gather information from different in-system activity tracing apps (ex: Fitness app in iPhone (iOS)) and other apps in android, smart watches etc.., Then the system will analyze the collected data in light of the user physical features, and show the results on a specific screen.

  As for report creation, the system will provide the user a weekly / monthly report on the evolution of the body's physical characteristics.

- Smart In-Body

  Simply stand on the in-body scale, enter your ID, and the scale will insert all of the data it has collected about you, including your height, weight, fat percentage, muscle percentage, and more, into your profile, making it easier and more straightforward.

- Calorie Counter

  This feature will work smartly to calculate the quantity of calories, fats, proteins, and all other nutritional components in your meal, this program will employ one or both smart technologies.

  The techniques are:

  1. Type the brand or product name here.
  2. The product's barcode will be scanned using a camera scanner, which is the alternative technique.

  Healthy, delicious meal suggestions based on what's in your fridge might be added to this feature!

- Challenges

  Members can now challenge each other by posting their own challenge in the Challenges section, where other users can see and join these challenges.

- Equipment Maintenance

  This feature will give the equipment maintenance team a weekly/monthly reminder to check machines status, members will also be able to report malfunctioning machines, by submitting a ticket describing machine problem and some info about the machine. This

feature will give the maintenance team have the ability to handle any issue with any machine as fast as possible.

- Online Sessions
  For those who already have gym equipment at home and don't want to go to the gym, or for members who for some reason were unable to attend a face-to-face session, they can now enroll in an online session with their trainer or with other trainers. These sessions will be through an online video call.

- Smart Attendance
  Members can now get in the gym without going through the reception guy. Each member now has a unique QR Code that the member to enter the gym by scanning it through a specific device.

- Online booking
  This feature will provide members with the ability to view the weekly schedule of sessions and the ability to enroll in these sessions online "by using the app", also members now have the ability to see if there are lockers available to book, and the ability to book a locker through the app.

- Chat-bot
  A gym Chabot interacts with the users using a chat interface and solves their FAQs, also a Chabot can recommend workouts for each member based on the data collected about him.

- New payment method
  In addition to the old payment methods, members now have the ability to pay online through their credit cards.

- Member feedback
  Members will get the ability to give feedback, whether it's about a crew at the gym, an issue at the gym itself, etc. All such feedback will go directly to the gym manager so that he can handle it in the appropriate manner.

Dealing with the system will be intuitive, as any user can deal with most of the services available in it, but users may face difficulty using some services, and that's why we are going to attach some instructions "Videos, Texts" in the system which will explain how to use these services. In terms of providing updates and maintenance of the system, we will provide you with these services, but an annual financial payment will be required. In terms

of performance, the application will be available for all android devices that supports android 8.0 or higher versions, and for Apple devices that supports IOS 7.0 or higher versions, as for computers a 64-bit OS is recommended.

Software development process

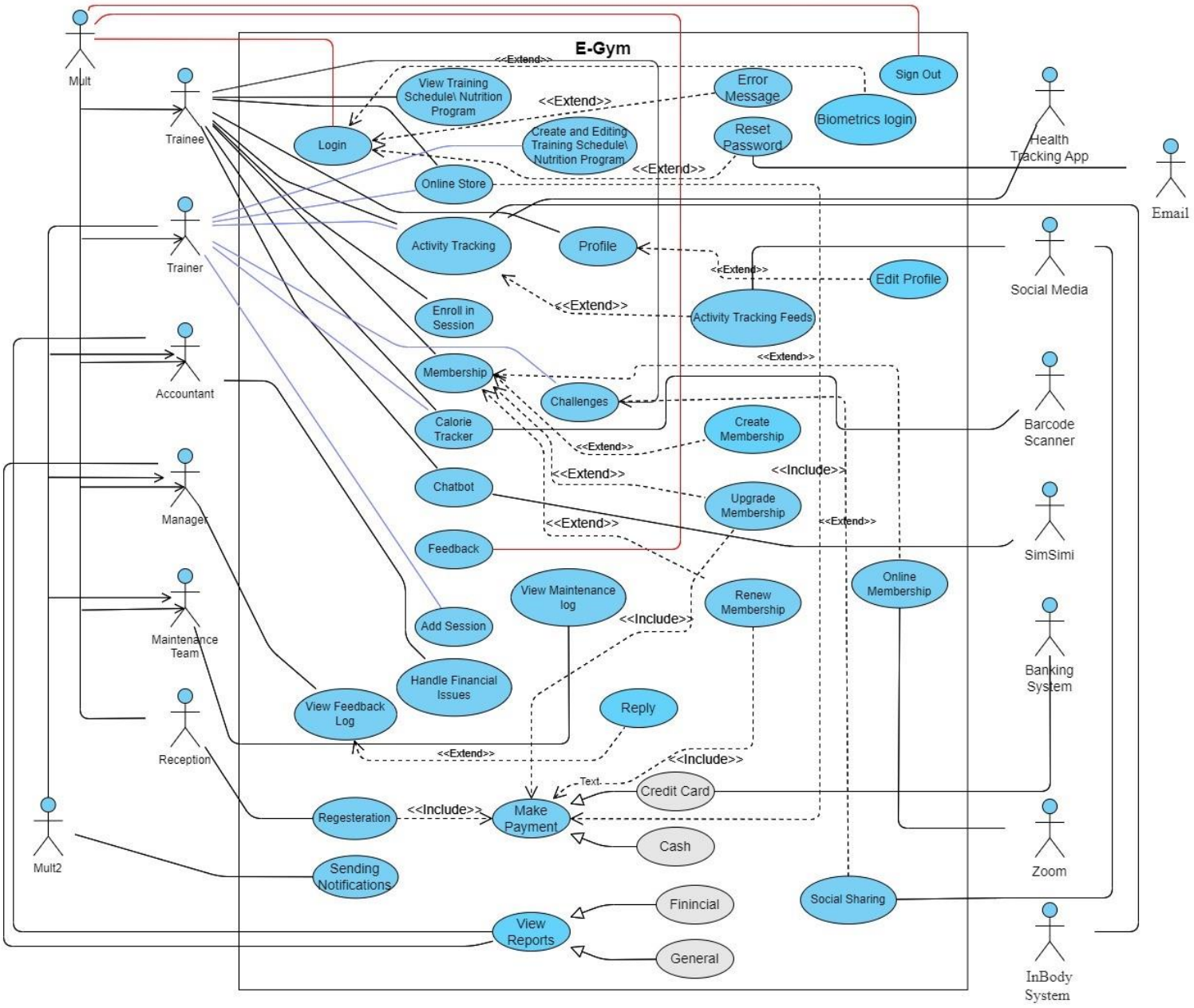
An appropriate model is mixed between incremental and critical software development.

Incremental because It is very possible for the client to change or add many features to the gym management process, for example, a client may want to add a subscription with unusual specifications that enable the subscriber to subscribe according to the number of days he trains (there is no specific day for the expiration of the subscription), of course, it will be costly, but we will be able to accommodate all these changes and addition.

Critical because one of the sprints will take more than two weeks to finish, this critical sprint is the online payment. Online payment details are complex and sensitive, any errors can cause losses to the companies, thus it must be built with high accuracy and without errors.

To make this application come to life, we will use a framework called Flutter and the programming language will be Dart. We be developing the software as Mobile app using Flutter because Flutter widgets enable us to build the app for different screen sizes smoothly and accurately, it operates on different operating systems thus reducing time and cost, we will have access to the original code because it is an open-source framework, so we can reach to any ready widget and modify it according to demand, it provides a test for your code, and most importantly its fast.

- **Use Case Diagram**



Identifying Use Cases and Actors

View training schedule\ nutrition program

Both the trainee and the trainer have the right to view the trainee's training schedule and nutrition program, and this will help both of them update him with any modifications and updates.

Chat-bot

SimSimi, a chatbot driven by artificial intelligence that is accessible to *customers* 24/7, will respond to inquiries from customers at any time, day or night. In addition, if the chatbot is unable to respond to any queries, the trainee will be directed to the reception area. Staff members' worries will be reduced, and consumers will appreciate the quick reactions and solutions.

Login

Every employee must log in to the system by inputting his data, whether they are a *trainer, a trainee, an accountant, a manager, a member of the maintenance crew, or the front desk agent*. When necessary, they can also reset their passwords. If their information is incorrect, an error message will appear.

Registration

The receptionist will be able to register new members by having them complete the provided form with their information and then displaying the membership options and payment options to them. The gym card that is received by the new member has a special QR code that enables him to use the Smart Attendance feature.

Challenges

Trainers and trainees will have access to this new tool, which will enable them to post challenges, view a list of challenges that are currently accessible and if so, they can join one of the accessible challenges.

Payment

Since *members* can now make purchases using credit cards in addition to cash, they have access to a wider range of payment choices. Old members, for instance, can renew their

memberships and make purchases from the online gym store using their credit cards. New members can finish the registration process using their credit cards. To process credit card payments securely and safely, the system will link with a bank system.

Activity Tracking

The activity tracking system enables trainees to monitor and control their daily activities, create goals, and get a daily snapshot of their development and successes. To aid trainees in reaching their objectives and raising their overall activity levels, the health tracking app will offer feedback and support.

Also, our system is integrated with *social media*. People love to communicate and show off their accomplishments, so the system takes advantage of this human weakness and allows users to share their activity status on social media.

Enroll in Session

When using *the fitness app, trainees* can watch previously recorded fitness videos and live exercise courses. Additionally, customers can seek for assistance and receive access to a recording if they miss an online session. This enables trainees to watch workout videos whenever they want and catch up on missed courses.

Memberships

Trainees have the option of using credit cards or the more conventional cash payment method to acquire or renew their subscriptions. Additionally, the system has the capacity to generate new promotional memberships, which motivate trainees to remain in the club for the longest amount of time feasible and bring in money for the club.

The trainee can purchase multiple memberships, allowing him access to the club's many areas, including the pool, boxing, etc.

Create and edit training schedule and nutrition program

The right workout and dietary plan will be developed by *the trainer*. This enables the trainer and the trainee to keep tabs on each other and understand what is needed for the trainee to achieve their objectives. This functionality will also aid in data gathering and report creation.

Online Store

Trainees can buy and rent gym equipment through our system's own store without having to leave the facility. the trainees' lives are made simpler by this feature.

View maintenance log

The *equipment maintenance staff* will receive a weekly or monthly reminder feature to assess the devices' status. Each machine will have a unique number to make maintenance easier.

Through the feedback feature, trainers and trainees can report any device issue by calling the device's number.

Sending notifications

The manager, trainer, accountant, or maintenance crew can all send notifications. When the class is about to start or is canceled, for example, the trainer will send a reminder. It is also possible to inform members when the club will be closed on a specific day.

In order to inform users that a machine won't be used until it has been repaired, the maintenance team can also send notifications about the existence of a problem with that particular equipment.

View report

Only *the accountant and the manager* will be able to view reports. Reports can be either general or financial. When it's general, they can examine reports that contain poll results and assessments of the state of the gym. When it comes to finances, they can examine budgets and in-depth financial reports on the status of the gym during each period, such as a financial report on the gym's earnings during a certain period.

Feedback

Feedback can come from trainers, students, accountants, the maintenance crew, and receptionists. The manager reserves the right to act on any feedback submitted. Feedback on the gym's efficiency and condition may come from the maintenance team, for instance.

Also, if senior accountants discover a program that better serves the gym, they will suggest alternatives.

Use Cases Specifications

Use Case 1 Specification: **Login**. (Nour Rabee' 1191035)

UR 1: Every employee must log in to the system by inputting his data, whether they are a trainer, a trainee, an accountant, a manager, a member of the maintenance crew, or the front desk agent.

SR 1.0: The system requests that the actor enter his/her unique ID and password.

SR 1.1: The actor can be a trainer, an accountant, a manager, a trainee, a member of the maintenance crew, or the receptionist enters his/her unique ID and password.

SR 1.2: The system shall show the result of validation in no more than 3 milliseconds.

SR 1.3: Validation status can be one of the following: valid data or invalid data.

SR 1.4: If the data was validated, the user shall be logged in successfully.

SR 1.5: If the data was invalidated; the system shall display an error message.

SR 1.6: The actor can choose to either return to the beginning of the login process or cancel it.

SR 1.7: In case of forgetting the password, the actor can click on 'Forgot Password' functionality to reset the password.

SR 1.8: The system shall ask you to enter your email.

SR 1.9: When the email entered is correct, the user shall receive an email with a verification code.

SR 1.10: The verification code is working only for a specified amount of time about three minutes only and then shows a time-out message.

SR 1.11: The user enters the received code in the text field before the code get expired.

SR 1.12: The user enters the new password in the password Field.

SR 1.13: If the new password matches with required specifications for characters (e.g. special characters, upper case characters, numeric, etc.), the reset password shall succeed.

SR 1.14: If the user enters the code verification after the code expired, an error message shall be displayed asking him to click to resend a new verification code.

SR 1.15: The system shall ask the user if he wants his password to be saved or not for facilitate the login operation next times.

SR 1.16: If the user clicks “Save”**,** the user then, does not have refill his data into the text fields.

SR 1.16: The system should handle 1000 users at the same time trying to login.

Use Case 2 Specification: **Chat-bot**. (Nour Rabee' 1191035)

UR2: Any time the actor has a real issue or concern; he should use the Chabot to be answered. If the Chabot is unable to respond to any queries, the trainee will be directed to the reception area.

SR 2.0: User can click on the chatbot button whenever he has any concern or query.

SR 2.1: The chatbot shall respond almost instantly, about fractions of a second about 5 milliseconds to process user input and generate a response with extensive use of emoticons to invite the user to continue the conversation.

SR 2.1: A welcome message shall be displayed to the user. "Hello! Welcome to E-Gym! I am Rock the bot and I will try to assist you today. 💪🏋" this kind of greetings for those who use the feature for the first time. Another kind of greetings is used for former users, "Welcome back ☺ How can I help you?".

SR 2.3: The chatbot must understand English for its operation, but it should be considered to extend the available languages in the future.

SR 2.2: Different options shall be presented as buttons so the user knows exactly what to expect.

SR 2.5: The user asks the question he would like to enquire about inside the appropriate text field.

SR 2.6: The chatbot shall give information that is either requested or pertinent to the conversation.

SR 2.7: The user will receive the answer that satisfies him or he will continue to inquire.

SR 2.8: When the chatbot doesn't understand or fails to fulfill a request. The chatbot shall apologize and serve as a bridge to alternative solutions by presents the user with relevant actions or options.

SR 2.9: When things get complicated, the chatbot shall direct the user to the reception unit to be well served.

SR 2.10: When the user wants to end the conversation, all you need to do is to use the 'End' tag. The bot will display a goodbye message to the user and end the session.

Use Case 3 Specification: **Online Store** (Randa Samhan 1193050)

UR 3: The private store in the system should allow trainees to buy and rent some gym supplies without having to go out and buy them. Two sections: a first section for rent, and a second section for sale. In order to facilitate the trainees.

SR.3.0. When the trainee wants to enter the online store, he must press the "Online store" button.

SR.3.1. After entering the online store, the trainee can choose whether he wants to enter the purchase section or the rental section by pressing a button.

SR.3.2. The system supports the advanced search feature, which is for the trainee to write the first word up to half of the word and it shows him several options.

SR.3.3. If the trainee clicks on the "Buy Section" button, the page will appear to the trainee containing the products with their picture, price and a simple explanation for each product. It also allows pressing the “Like” button, so that the product appears to the trainee next time and similar products related to what he likes, and this increases ease of use. The online store helps to know the interests of the trainee.

SR.3.4. The search takes less than a second.

SR.3.5. After the trainee chooses all the products he wants, he keeps them in a shopping bag for a week.

SR.3.6. If the trainee clicks on the "Rent Section" button, a picture of the product and the rental price will appear to the trainee. It depends on the rental period. The longer the period, the higher the rental price.

SR.3.7. If the trainee completes the purchase or rental process, he presses the payment button.

SR.3.8. If the payment method is a credit card, a notification will be sent to the front desk.

SR.3.9. Credit card payment takes 5 seconds.

SR.3.10. If the payment method is cash, the trainee must go to the front desk to pay.

Use Case 4 Specification: **Create Training Schedule & Nutrition Program**. (Randa Samhan 1193050)

UR1. The trainee asks the trainer to follow up with him on his training or diet schedule, by creating his own schedule, and this feature will be designed to work as a data collector and report generator.

SR.3.0: The trainer needs to log in to the app by entering their ID and password.

SR.3.1: The trainer must click the "View InBody Results" button to be able to read some information from InBody. The trainer can set a suitable schedule for the trainee, and find out if the trainee suffers from any health problem, in addition to the goal he wants to reach such as losing weight, building muscles, stabilizing weight, etc. Based on that, the training schedule and food schedule are created.

SR.3.2: The trainer clicks the "Create Schedule" button, and then clicks the "Create Training Schedule" button, and the process of creating the schedule is simple and smooth. The form must include the following data fields: ID number, exercise name, target muscles, auxiliary muscles, exercise mechanism, strength type, repetitions, number of weekly training days, and duration of each exercise.

SR.3.3: The trainer clicks the "Create Schedule" button, and then clicks the "Create Diet" button, and the process of creating the schedule is simple and smooth. The form must include the following data fields: ID number, food name, quantity (gm), calories, protein, carbohydrates, fats, fiber.

SR.3.4: The trainer sends the table to the trainee through the application, and the trainee can print the table by pressing the print button so that it takes 7 mm / sec.

SR.3.5: The trainee gets to know the appropriate schedule for him and follows the system, in addition to being able to modify the schedule by pressing the modification button that contains deletion or addition and takes 5 mm/sec.

Use Case 5 Specification: **View report (**Khaled Roub 1192941)

UR 5: Manager and the accountant can view reports, whether they are general or financial.

SR 5.0: When the manager or accountant wants to view a report, he clicks on the reports button which resides on their main page of the system.

SR 5.1: The system shall provide the accountants with the financial reports, and the manager with both financial and general reports.

SR 5.2: The system will display two buttons for the manager to choose between a general report or a financial report.

SR 5.3: If the manager chooses the financial report option, five buttons will be displayed. Each button shall show a specific kind of reports, month-to-date membership sales reports, invoice detail reports, daily delinquency report, daily billing statement reports, and daily revenue and deposit reconciliation reports.

SR 5.4: If the manager selects "general report," three buttons will be displayed. Each button shall show a specific kind of report: the reports that show the number of people registered and details about them such as age, gender, and the enrolled courses; the reports about the employees and their full data; and the reports about the machines and details about whether they need to be renewed or repaired or not.

SR 5.5: The system shall enter the accountant directly into the financial reports page that was mentioned before.

SR 5.6: The system shall allow the actors to search for reports based on dates and names to facilitate the process.

SR 5.7: Also the system shall allow the actors to print any report needed.

SR 5.8: The process of collecting system information should not take more than 2 seconds.

SR 5.9: The accuracy of the information in the reports must be 100%.

Use Case 6 Specification: **Sending notifications**. (Khaled Roub 1192941)

UR 6: Every employee except the manager can send notifications. The employee can be a trainer, manager, trainer, accountant, or maintenance team can all send notifications.

SR 6.1: When a notification is sent, the user will click on the "Messages" icon.

SR 6.2: The system shall open a page that contains the "Message Subject" field, the "To whom will it be sent" field, “Send” button, and a text area to write the message details.

SR 6.3: Sending system will be arranged in a smooth manner, as it contains a few buttons distributed on the page in a simple way to be user friendly.

SR 6.4: When the sender clicks on the “Send” button, the system shall display a message “The message has sent successfully!”.

SR 6.5: The message shall be delivered to the recipients in about 1.5 seconds.

SR **6.6:** If internet issues occur; the message will be directed to the "Draft" field.

SR **6.7:** The system shall allow the sender to resend the drafted message again.

SR **6.8**: The system shall allow the user to change the font size, font type, and font color.

SR **6.9:** When a notification is sent successfully, the recipient's phone must issue an alert when a notification arrives, and the title of the subject shall appear to the recipient immediately after it is sent in the notification list.

SR **6.10:** When the recipient clicks on the notification that he received, the details of the notification will be shown to him, as the time and date of the notification and the sender.

Use Case 7 Specification: **Registration (**Yousef Shamasneh 1190300)

UR 7: E-Gym system shall give the receptionists the ability to sign up new members, by going through easy and clear steps.

SR 7.0: When a new member arrives to the reception unit, the receptionist will select new member.

SR 7.1: After selecting new member, a form will appear on the receptionist screen, and on a tablet or smart screen facing the member, which s/he can use to fill out the form himself.

SR 7.2: The form should include the following data fields. Member personal info, which will be summarized as the following, full name, street address, city, phone number, email address, and an optional part asking to write any disease s/he has. Besides personal info, the member should add at least one emergency contact info, which will be summarized as the following, contact name, contact phone, and the relationship.

SR 7.3: If the member needs to edit any of his/her info after the receptionist moved to the next step, s/he can ask the receptionist to go back to the form, so s/he can edit as the wrong data.

SR 7.4: After filling out the form, the receptionist will move to the next step by clicking on Next, and that's will take him to the membership part.

SR 7.5: An interface with all available memberships with details of each membership will appear on the screen of both the receptionist and the member. This will give the ability to the member to take a look at the available memberships, so s/he can choose from.

SR 7.6: For the membership details, the name of the membership should be included, also the price and the duration of the membership. And a description of the membership includes what unique features s/he will get access to and which parts of the gym "Working out, Swimming pool, Muay Thai, etc." will be included in this membership.

SR 7.7: Members will have the ability to subscribe to more than one membership.

SR 7.8: At the end, the receptionist can choose 'Finish Registration'.

SR 7.9: The receptionist will ask the member to specifies payment method.

SR 7.10: If the member chooses to pay by credit card, s/he will get a choice either to use the credit card reader or to enter the credit card info manually in the specified place. Paying by credit card will be secure enough, because a Bank System will involve with this process.

SR 7.11: If the member faced any problem with paying through credit card, such as no available balance or card declined, s/he can pay cash.

SR 7.12: After completing the registration, the system will send a request to the Card Printer to print a card for the new member, which will have his/her name on it, a unique ID that will be used to log into the system in future, as well as a unique QR Code that can be used in Smart Attendance feature. Sending a request to the printer should happen immediately after finish paying process, so less than 0.5 sec should be between finishing registration and printing process.

SR 7.13: The system will take care of updating the databases related to the registration process. The registration process should be very clear to the receptionists. This means that they won't take more than hour of training to become a professional with this process.

Use Case 8 Specification: **Challenges**. (Yousef Shamasneh 1190300)

UR 8: Challenges feature shall provide the ability for trainers and trainee to post challenges, and join others challenges.

SR 8.0: After the trainers or the trainee log into the system, they will get access to a page specified for challenges, by clicking on it.

SR 8.1: When the user gets into the challenges page, he will get an interface with different functions on it, such as, post a challenge, view available challenges, and view my challenges history.

SR 8.2: When the user clicks on post a challenge, the software will give him a form to fill. The form should be as following, the personal info of the challenge creator, such as his name, age and email, which should be filled automatically based on his info in the database, and a challenge details part, which should have the following fields, challenge name, start date, end date, duration, for who this challenge, challenge difficulty, number of people who can join, challenge description, and a part for trainers only, that they can use to mention if the challenge is rewarded or not.

SR 8.3: Trainees have a limited number of challenges that they can post.

SR 8.4: Trainees can use the points they get from the challenges as a reward, to get a discount on their membership or on their purchases from the GYM Online Store.

SR 8.5: When the user clicks on view available challenges, he will get a list of the available challenges. When the user clicks on a challenge name, he will get all the details he needs to know about that challenge "publisher, start/end date, participation age, difficulty, if he can participate or not based on the challenge capacity and age, challenge description, if it's rewarded or not", along with that, a join button that he can click if he wants to join the challenge. View all available challenges with their details should be so fast, which should take less than 5 milliseconds.

SR 8.6: The users can sort available challenges list by their difficulty, sports type "Working out, swimming, etc…", participation age, or the publisher "Trainer or Trainee". Sorting process shouldn't take more than 5 milliseconds.

SR 8.7: The user who posted the challenge has the ability to cancel it, as well as the user who participated in the challenge has the right to withdraw.

SR 8.8: For the view my challenges history part, the user will have the ability to see the challenges he had posted or participated in, and the results of those challenges. Viewing the history shouldn't take more than 5 milliseconds.

SR 8.9: The users can share their achievements through the social media.

Working with this feature should be intuitive, so it's expected that any new member will have no problem accessing the challenges menu and working with its features.

Use Case 9 Specification: **Activity tracking**. (Saif Battah 1170986)

UR 9: The activity tracking section is a sub system that will be integrated with our gym system, it will allow trainees and trainers to easily track and manage their daily activities, set goals, and view progress towards those goals. The system will provide an interface with a form that allows trainees and trainers to input data about their activities, including the type of activity, duration, and intensity. The tracking feature will provide personalized recommendations, progress tracking, and alerts or reminders to help users achieve their goals and improve their overall activity levels.

SR 9.0: After clicking on the Activity Tracking button in the main page, trainees and trainers will be presented with a dashboard displaying their current activity levels, as well as any goals they have set for themselves.

SR 9.1: Trainees and trainers will have the ability to input their daily activities into the activity tracking system. This can be done by manually entering the activity type, duration, and intensity level within the new activity section, or by connecting it to a compatible wearable device that automatically tracks the user's activity.

SR 9.2: The activity tracking section will store this data and use it to calculate the trainee or trainer's daily activity levels, as well as their progress towards any goals they have set, and the user can access to this data by clicking on the view-data button.

SR 9.3: Trainees and trainers will be able to set goals for themselves by accessing the goal setting section within the activity tracking page. This may include setting daily activity targets, such as a specific number of steps to take or distance to travel, or longterm fitness goals, such as training for a marathon or losing a certain amount of weight.

SR 9.4: Trainees and trainers will be able to share their results to the social media, including daily activity results and long-term fitness results via share button.

SR 9.5: The activity tracking feature will send notifications which provide feedback and assistance to help trainees and trainers achieve their goals and improve their overall activity levels. This may include personalized recommendations for activities based on the user's current activity levels and goals, reminders to stay active, and progress tracking tools.

SR 9.6: Trainees and trainers will be able to view their progress towards their goals at any time by accessing the live activity tracking section. This may include data such as the number of steps taken, distance traveled, and calories burned, as well as a graphical representation of the user's progress over time.

SR 9.7: The activity tracking section will continuously update and store data related to the trainee or trainer's activity levels and goals, allowing them to track their progress and make adjustments to their activities as needed.

SR 9.8: The app will also provide tools and resources to help trainees and trainers track and understand important health metrics, such as heart rate, sleep quality, and nutrition.

SR 9.9: The activity tracking shall provide a user-friendly platform for trainees and trainers to manage and improve their physical health and fitness.

SR 9.10: The system will be able to handle large amounts of data and a high volume of users without experiencing performance issues. This could include optimizing the system for performance and implementing load balancing to distribute traffic evenly across multiple servers.

SR 9.10: The system should have a response time of less than 2 seconds when loading pages or performing actions.

Use Case 10 Specification: **Membership**. (Saif Battah 1170986)

UR 10: The fitness app will allow trainees to make payment to create memberships. After the membership creation process done the trainee now can view their membership information, cancel their membership if needed, upgrade their membership, and renew their membership if desired. These actions should enable users to access the app's features and resources and manage their membership status.

SR 10.0: The fitness app will have a payment gateway that allows trainees to make payments to create their membership using a variety of payment methods, such as visa card, cash, checks, installments.

SR 10.1: The main page will have a button that leads the membership to view their membership information, including the type of membership they have, the duration of their membership, and any additional features or resources that are included with their membership. This information should be displayed in a clear and organized manner.

SR 10.2: The app will allow trainees to cancel their membership if needed via visiting the membership settings page this will be done through a simple and straightforward process within the app which is hitting the cancel membership button and confirm the process.

SR 10.3: Within the same membership settings page, the app will enable trainees to upgrade their membership to access additional features or resources. This will be done through select the upgrade type, payment method and length of upgrade.

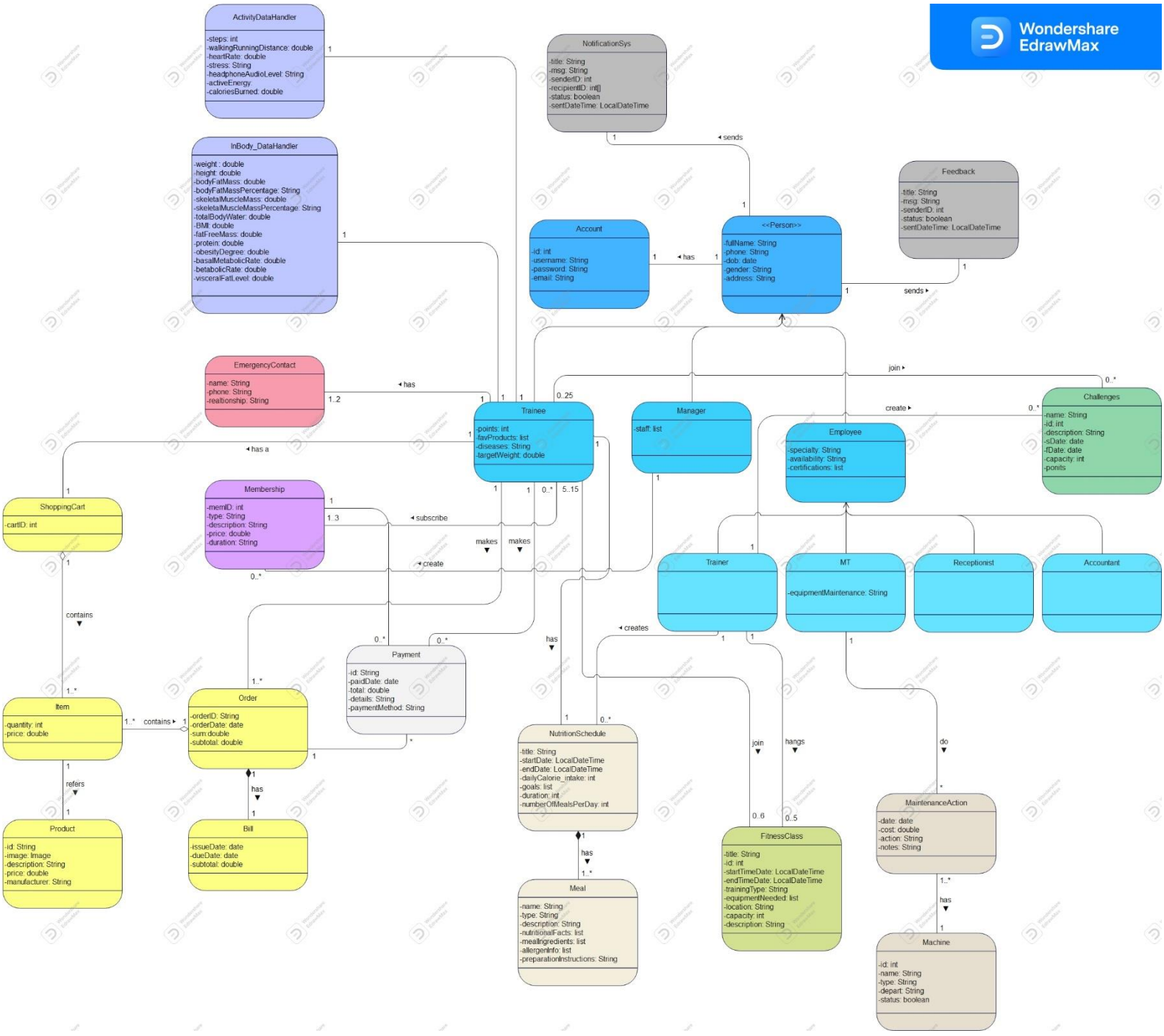
SR 10.4: The app will allow trainees to renew their membership when it expires.at first the app sends notification to the trainee that his membership duration as about to expire and he has to renew it so this should be done through the payment gateway and should include options for different duration lengths and membership types.

SR 10.5: The fitness app's payment gateway should be secure to protect users' personal and financial information. This may include measures such as encryption and secure socket layer (SSL) technology.

SR 10.6: The membership management features of the app should be user-friendly and easy to navigate. This includes the payment gateway and any other features related to membership management.

SR 10.7: The app should have a fast response time when trainee is accessing their membership information or making payment transactions, also when high number of trainees are access this feature at the same time, also The payment gateway should also be efficient and reliable.

- **Class Diagram**



The link of the class diagram:

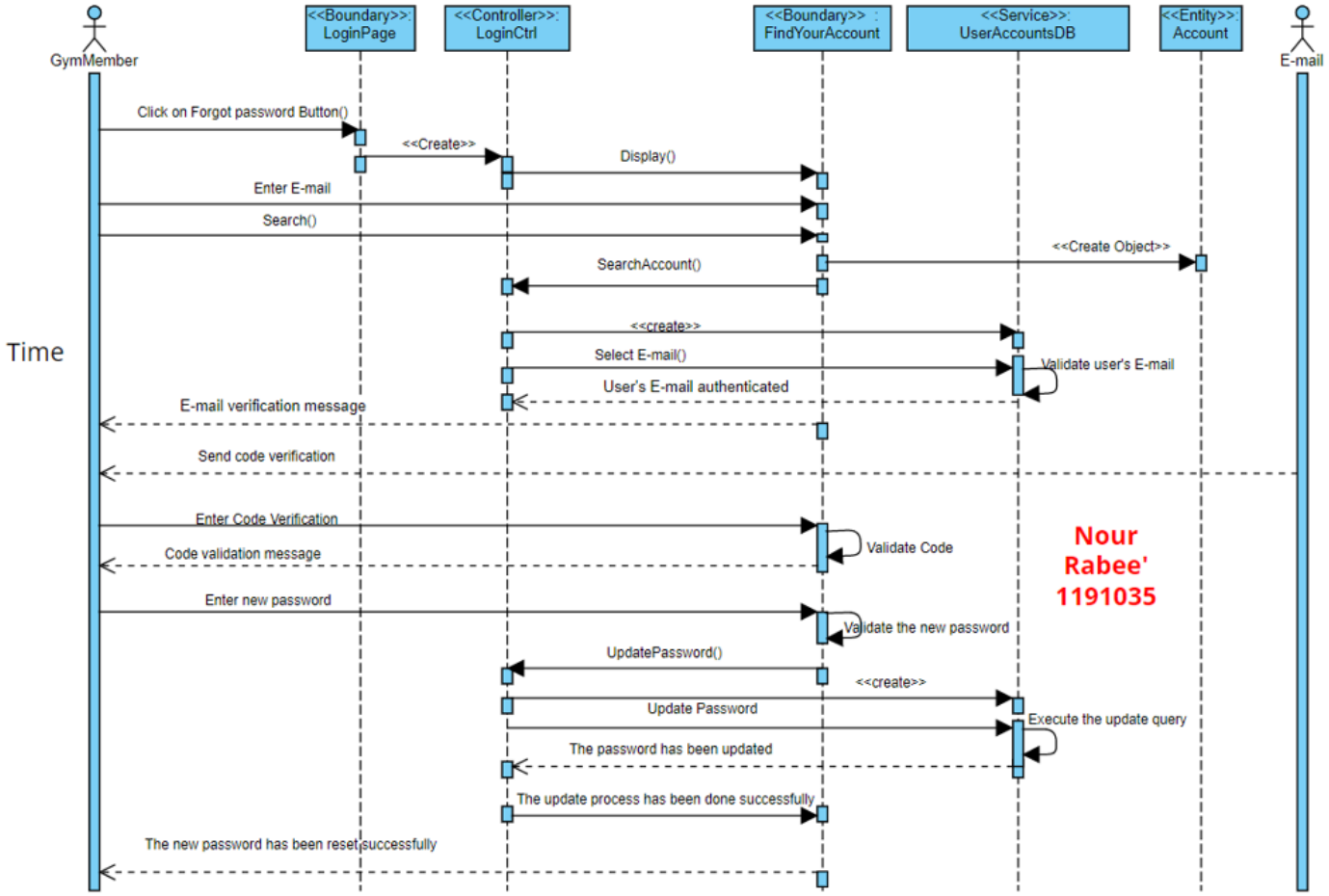
Flows and Sequence Diagrams

- **First basic flow - Forgot password while logging in**: ***"Nour Rabee' 1191035"***

1. In case of forgetting the password, the actor clicks on 'Forgot Password' functionality to reset the password. The 'Forgot Password' button displayed on the Login page.
2. The system displays a boundary called FindYourAccount
3. The actor enters his/her email and selects 'search' option.
4. The system searches for the email that was entered by the user in the database 'UserAccountsDB'.
5. An object from Account class would be created and the system will search for the user's E-mail account in the database.
6. If the entered E-mail matches the one that stored in the database, a confirming E-mail verification message will be displayed to the user and the user shall receive an E-mail with a verification code.
7. The user enters the received code in the appropriate text field before the code get expired.
8. The user enters the new password in the password Field.
9. If the new password matches with required specifications for characters (e.g. special characters, upper case characters, numeric, etc.), the reset password shall succeed.
10. A confirming message will be displayed to user that the new password has been reset successfully
11. Steps [1-10] will displayed to each user that forgot his password.

    - ✓ Actor: GymMember, E-mail.
    - ✓ Boundary: LoginPage, FindYourAccount.
    - ✓ Controller: LoginCtrl.
    - ✓ Entity (Model): Account.
    - ✓ Service (Model): UserAccountsDB.

- Sequence diagram

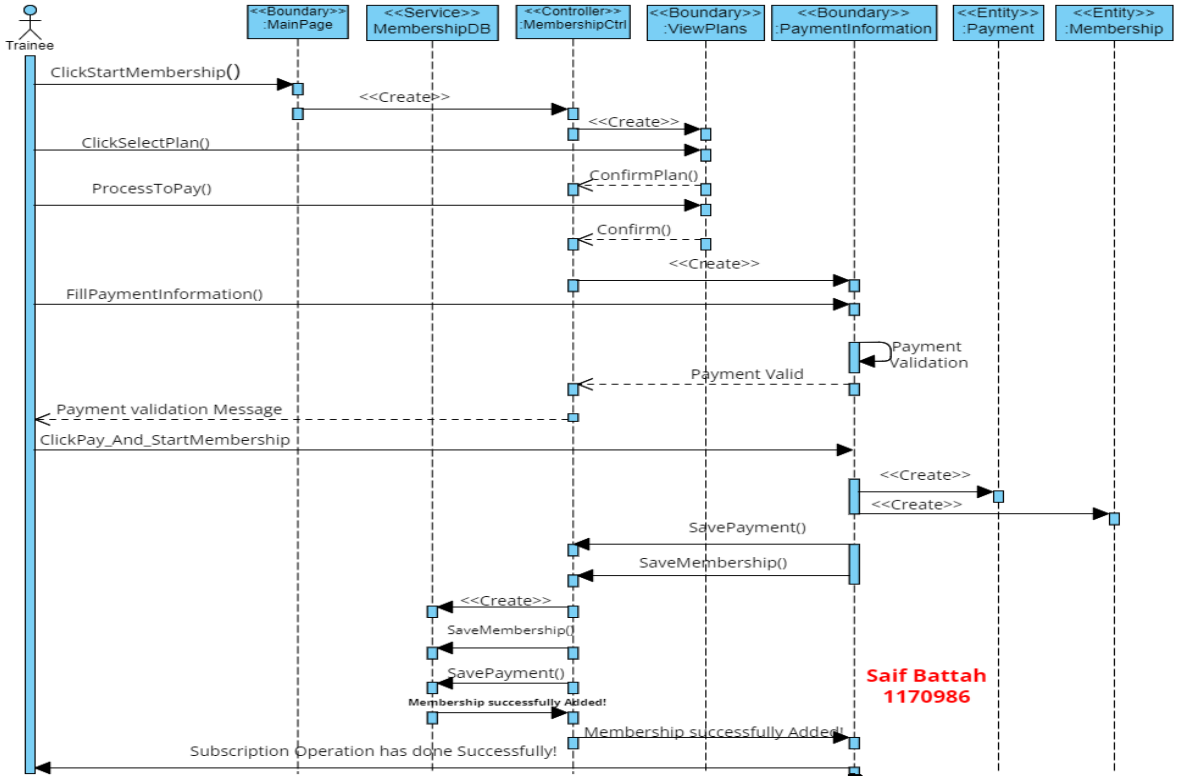


- **Second basic flow - Create new membership: *"Saif Battah 1170986"***

1. Trainee clicks "Start Membership" button from main Page.
2. The System displays membership-plans page, with all available plans and their information.
3. The Trainee selects one of the displayed plans and hit the "ProceedToPay" Button.
4. The system will display page "Payment Information", he will choose one of the payments method available, such as: pay in-cash, PayPal, debit/credit card.
5. Trainee will fill his payment information and select agree the "Terms of Use", he will click on the "Pay & Start Membership" button.
6. The system will validate his payment information, if valid then it will create his membership, payment information and saves it into database.
7. A confirming message will be displayed to user that the subscription operation has done successfully.
8. Steps [1-7] will displayed to each new trainee.

- ✓ Actor: Trainee.
- ✓ Boundary: Main Page, View Plans, Payment Information.
- ✓ Controller: MembershipCtrl.
- ✓ Entity (Model): Payment, Membership.
- ✓ Service (Model): MembershipDB.

- ➢ Sequence diagram

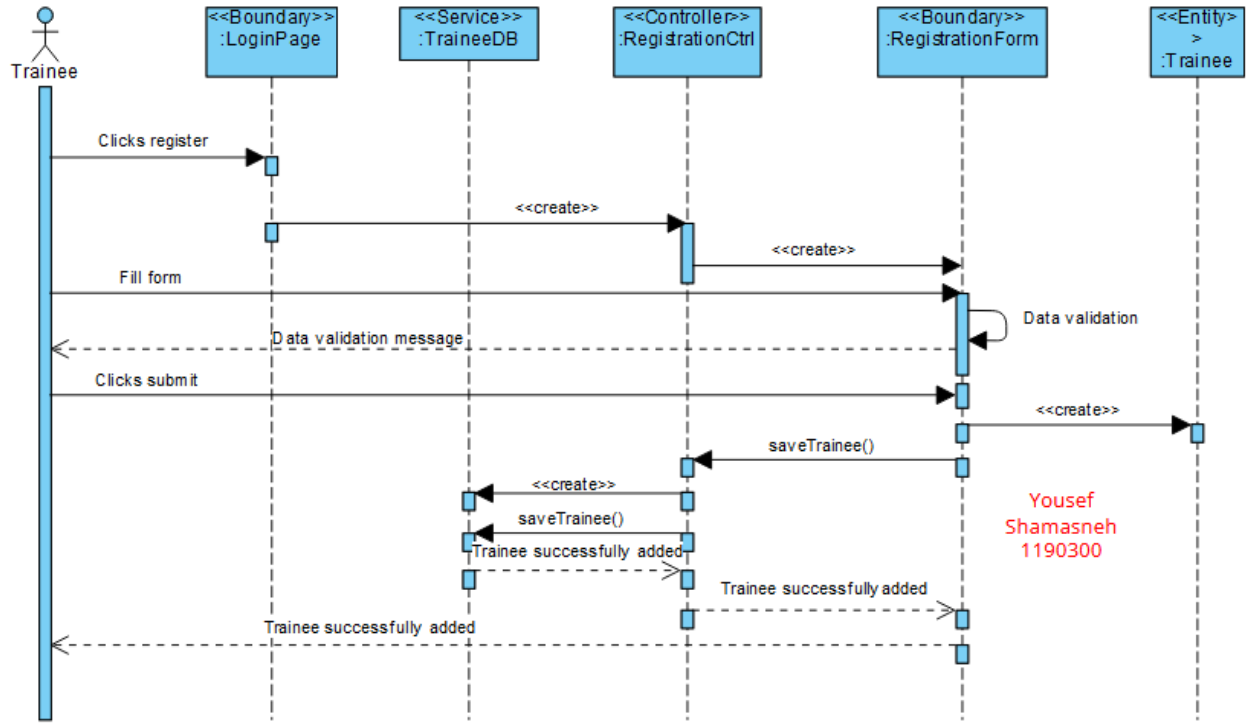


- **Third basic flow - Create new membership: "*Yousef Shamasneh 1190300*"**

1. The user will be able to access the registration page from the app itself by clicking on the Register button that appears on the login page.
2. The registration form will appear to the user asking him to fill it with its data.
3. The system will check if the inserted data is correct, and if it's filled in the right place.
4. After that, a message will be displayed to the user telling him that the form has been filled correctly.
5. The user will click on Submit button to submit the form.
6. The system will save the new user "trainee" into the Trainees database. After that a message will be generated for the user telling him that the registration process was successful.
7. Steps [1-6] will displayed to each new member.

   ✓ Actors: Trainee
   ✓ Boundary: LoginPage, RegistrationForm
   ✓ Controller: RegistrationCtrl
   ✓ Entity: Trainee
   ✓ Service: Trainee

   ➢ Sequence diagram

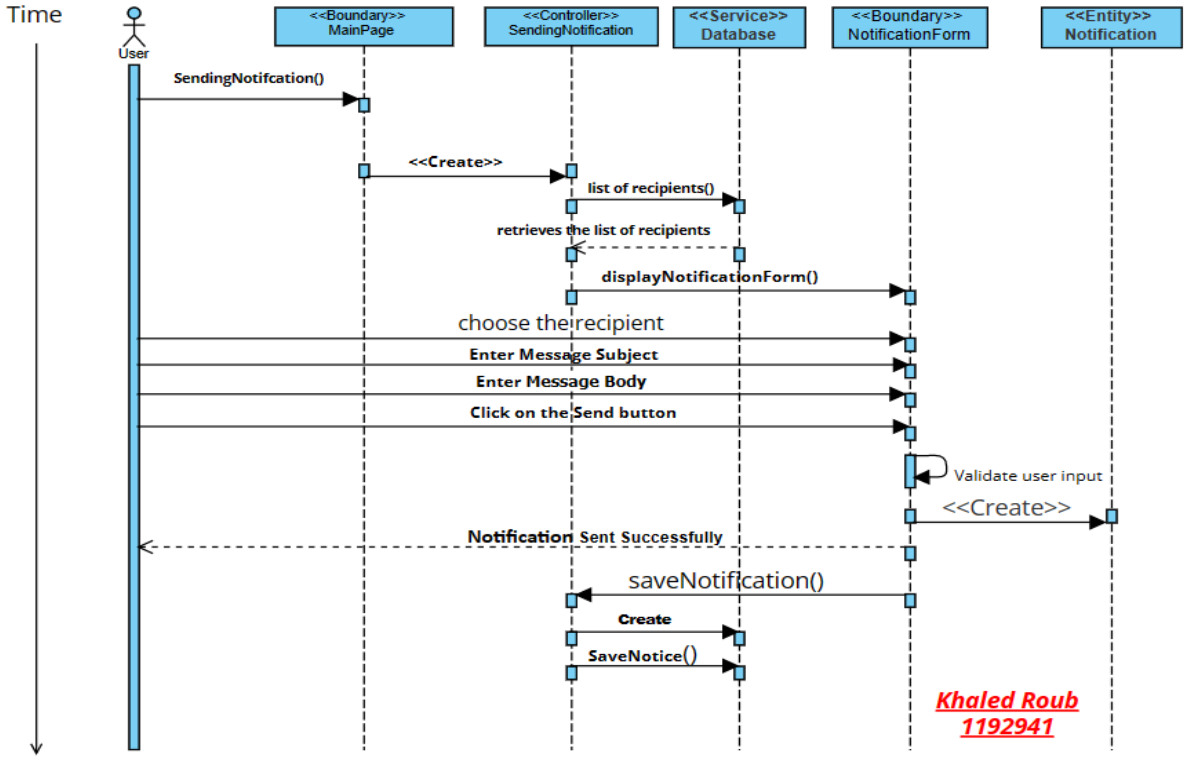


- **Fourth basic flow - Sending notification: "*Khaled Roub 1192941*"**

1. The user logs into the system and presses the "Send Notification" button on the home page of the site.
2. The system will show him a list of recipients who are authorized to send them notifications from the databases.
3. The system displays a boundary called NotificationForm.
4. The user will fill the form with the required information.
5. The system will validate the data.
6. A message will be generated for the user telling him that the sending notification process was sent successfully.
7. The system logs the delivery of the notification that the user can view them at a later time and for future reference and analysis.
8. Steps [1-7] will displayed to each time a user wants to send a notify message.

   - ✓ Actors: User (Trainer, Accountant, Manager, Maintenance team)
   - ✓ Boundary: LoginPage, NotificationForm.
   - ✓ Controller: SendingNotification.
   - ✓ Entity: Notification
   - ✓ Service: Database

   - ➢ Sequence diagram



- **Fifth basic flow – Online Store: "*Randa Samhan 1193050"***

1. User clicks on the (Online Store) button from the main page.
2. The system displays a boundary called OnlineStore.
3. The user clicks and adds the desired items.
4. An Item and shoppingCart objects will be created.
5. Each time the user selects and adds an item, it will be saved to the database.
6. Steps 3 and 4 will be repeated each time the user wants to buy a new item.
7. When the user finishes his purchase, he clicks on the checkout button.
8. The system will display a boundary called Payment.
9. The user will choose the appropriate payment method.
10. A Payment object will be created, and all the data that is related to that object will be saved on the database.
11. A message will be generated for the user telling him that the purchase process has been completed successfully and a bill will be displayed to the user with all the payment details.

- ✓ Actor : Trainee.
- ✓ Controller : OnlineStoreCtrl.
- ✓ Boundary : OnlineStore, ShoppingCart, PaymentUI.
- ✓ Entity : Item, Payment, Bill, ShoppingCart1.
- ✓ Service : ShoppingCartDB.

- Sequence diagram