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*I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked.*

*I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.*

## **Table of Contents**

1. Introduction .....	1
2. Gantt Chart .....	2
3. Use Case Diagram.....	3
3.1 High Level Use Case Descriptions.....	4
3.1.1 Login.....	4
3.1.2 Register Customer.....	4
3.1.3 Deregister Customer .....	5
3.1.4 Generate Report.....	5
3.1.5 Daily Task.....	6
3.1.6 Payment .....	6
3.1.7 To Do List .....	6
3.1.8 Register Staff.....	6
3.1.9 Deregister Staff.....	7
4. Communication Diagrams.....	8
4.1 Collaboration Diagram (Generate Report) .....	8
4.2 Sequence Diagram (Generate Report) .....	10
5. Class Diagram.....	11
6. Moving on with the system.....	13
7. System Designing .....	14
7.1 Login Page.....	14
7.2 Customer Registration .....	15
7.3 Dashboard – Customer .....	16
7.4 Dashboard – Admin .....	17
7.5 Dashboard – Staff .....	18
7.6 Payment Report .....	19
7.7 Progress Report.....	20

7.8	Make Payment .....	21
7.9	Staff Registration.....	22
8.	Conclusion .....	23
	References.....	24
	Bibliography .....	24

## **Table of Figures**

Figure 1 Use Case Diagram .....	3
Figure 2 Drawing domain classes .....	8
Figure 3 Boundary Object .....	8
Figure 4 Controller Object .....	8
Figure 5 Collaboration Diagram .....	9
Figure 6 Sequence Diagram .....	10
Figure 8 Class Diagram.....	12
Figure 9 Login Page .....	14
Figure 10 Customer Registration .....	15
Figure 11 Dashboard - Customer .....	16
Figure 12 Dashboard - Admin .....	17
Figure 13 Dashboard - Staff .....	18
Figure 14 Payment Report Viewed By Customer and Admin.....	19
Figure 15 Progress Details Viewed By Customer and Admin .....	20
Figure 16 For Payment Used By Customer.....	21
Figure 17 For Staff Registration by Admin .....	22

## **Table of Tables**

Table 1 Gantt Chart.....	2
Table 2 Domain Classes for Generate Report .....	8
Table 3 Use Case and Domain Class .....	11

## 1. Introduction

Software Engineering is the process of looking to user needs and designing, developing and testing the user applications which will fulfil these needs throughout the use of various programming languages. It is application of engineering principles for development of software. (Techopedia, 2019)

RUP stands for 'Rational Unified Process'. It is a software development process from Rational, a division of IBM. It divides the development into four phases. The phases are Inception, Elaboration, Construction and Transition. It provides a structured way develop a software. It reduces resources from being wasted and reduces unexpected development costs. (TechTerms, 2019)

This coursework helps to gain experience about how the planning and designing of an actual software takes place. Gantt chart helped us to learn about planning of the project. Use Case diagram made us clear about the roles of various users that will be involved in the system. Communication diagrams showed how the communication between the objects in the system will communicate to each other. The class diagram shows the relationship between the classes in the system.

## 2. Gantt Chart

TASKS	WEEKS						
	20	21	22	23	24	25	26
I: Planning and understanding the scenario and time division							
II: Use Case, High level description, expanded use case, collaboration diagram, sequence diagram							
III: Class diagram, prototype design							
IV: All documentation process							

Table 1 Gantt Chart

### 3. Use Case Diagram

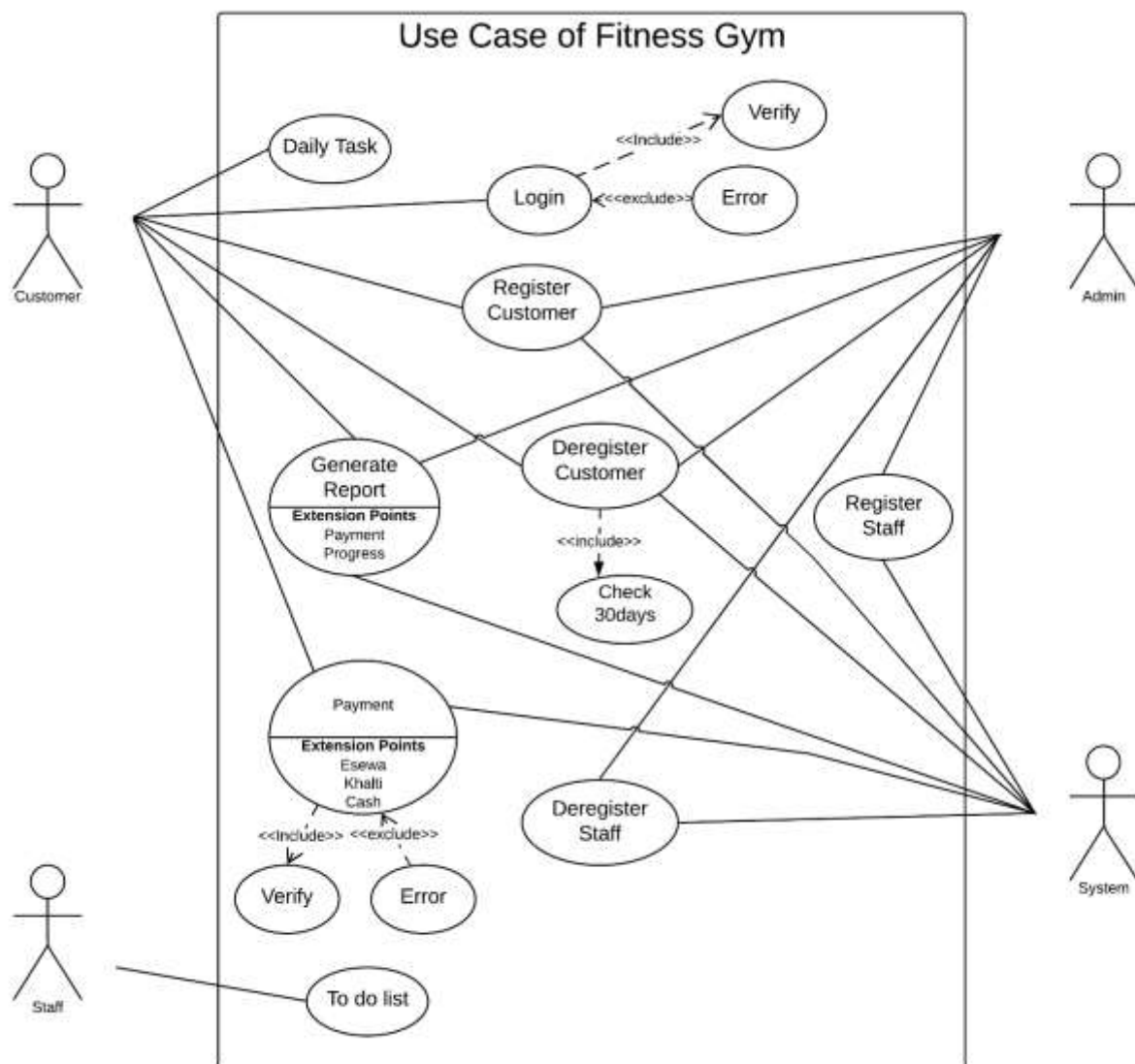


Figure 1 Use Case Diagram



### 3.1 High Level Use Case Descriptions

#### 3.1.1 Login

**Use Case:** Login

**Actor:** Customer

**Description:** This process is used by customer to login into the Fitness application.

#### Expanded Use Case: Login

##### 1. Actor Action

The customer enters the login details in the login UI.

##### 2. System Response

The system verifies the login details entered by user and checks if the details are valid. If the details are valid then the dashboard for respective detail is displayed.

#### 3.1.2 Register Customer

**Use Case:** Register Customer

**Actor:** Customer, Admin and System

**Description:** This process is used by customer and admin to register a customer whereas system verifies the login details and adds to system.

### 3.1.3 Deregister Customer

**Use Case:** Deregister Customer

**Actor:** Customer, Admin and System

**Description:** This process is used by customer and admin to deregister a customer whereas system takes the details and removes from system.

### 3.1.4 Generate Report

**Use Case:** Generate Report

**Actor:** Customer, Admin and System

**Description:** This process is used by customer to ask his/her report of payment or progress and admin approves the request if valid then system provides the report.

#### Expanded Use Case: Generate Report

##### 1. Actor Action

1. The customer or admin clicks on the 'Generate Report' button on UI.
3. The required type of report (payment or progress) is chosen.

##### 2. System Response

2. When the 'Generate Report' UI is clicked, the system displays and asks if the user wants report of payment details or the progress report of customer.
4. The required report of the customer is displayed on the basis of option chosen.

### 3.1.5 Daily Task

**Use Case:** Daily Task

**Actor:** Customer

**Description:** The process is used by customer to create a list of tasks to be performed on day to day basis.

### 3.1.6 Payment

**Use Case:** Payment

**Actor:** Customer and System

**Description:** The process is used by customer to pay the required amount of fee for the gym whereas system verifies the payment details of user.

### 3.1.7 To Do List

**Use Case:** To Do List

**Actor:** Staff

**Description:** The process is used by staff of the gym to create a list of activities that the customer has to perform by staying at home.

### 3.1.8 Register Staff

**Use Case:** Register Staff

**Actor:** Admin and System

**Description:** This process is used by admin to register a new staff in the gym and system verifies the details entered by admin.

### **3.1.9 Deregister Staff**

**Use Case:** Deregister Staff

**Actor:** Admin and System

**Description:** This process is used by admin to deregister a staff whereas system takes the details and removes from system.

## 4. Communication Diagrams

### 4.1 Collaboration Diagram (Generate Report)

1. The domain classes are separated for the 'Generate Report' use case.

Use Case	Domain Classes
Generate Report	GenerateReport
	Admin
	Payment
	Progress

*Table 2 Domain Classes for Generate Report*

2. The domain class objects are created.



*Figure 2 Drawing domain classes*

3. The boundary object and controller object are drawn.



*Figure 3 Boundary Object*



*Figure 4 Controller Object*

4. Then the created objects are joined logically.

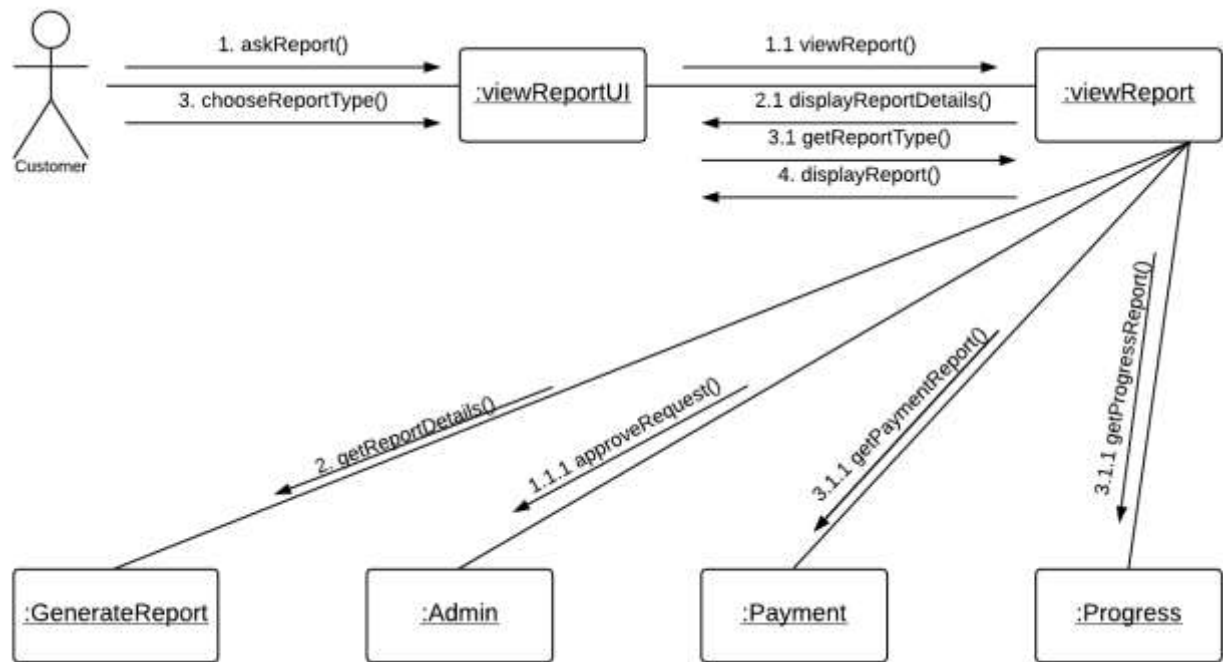


Figure 5 Collaboration Diagram

## 4.2 Sequence Diagram (Generate Report)

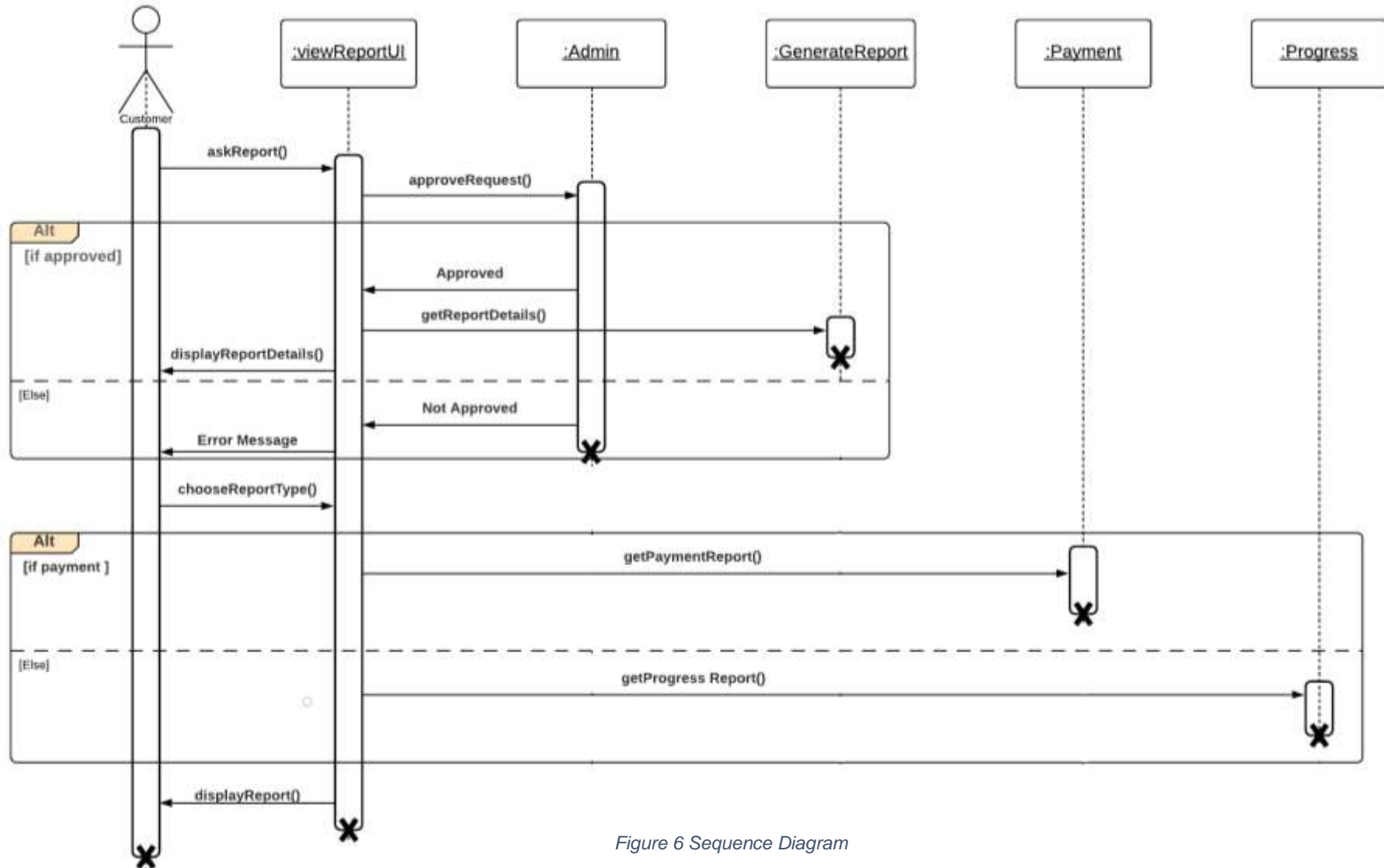


Figure 6 Sequence Diagram

## 5. Class Diagram

Use Case	Domain Class
Login	Login
Register Customer	Register
Deregister Customer	Register
Payment	Payment
DailyTask	Customer
Payment	Payment
Register Staff	Admin, Staff
Deregister Staff	Admin, Staff
To Do List	Staff
Generate Report	Report, Admin, Customer, Payment Report, Progress Report

*Table 3 Use Case and Domain Class*



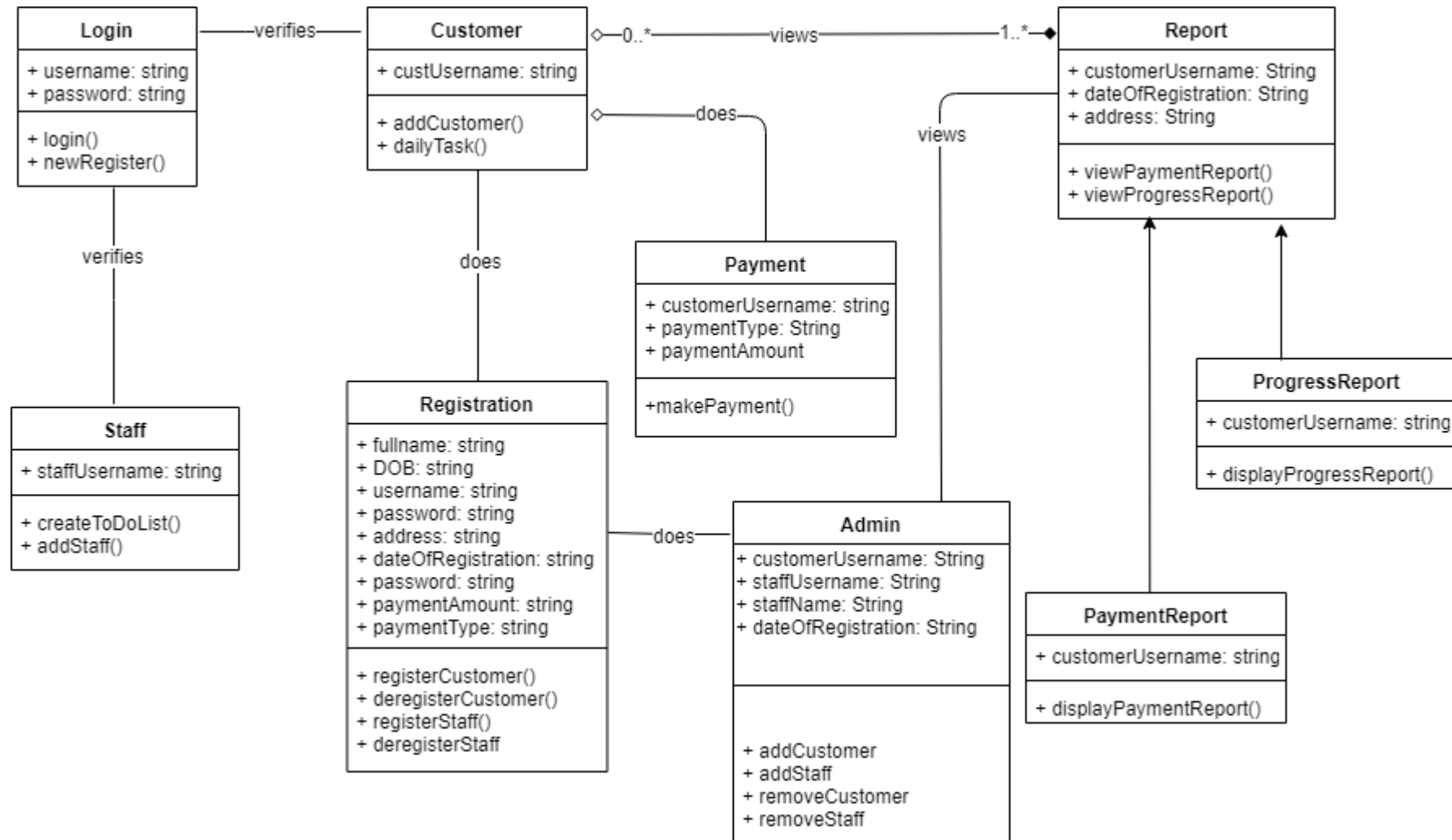


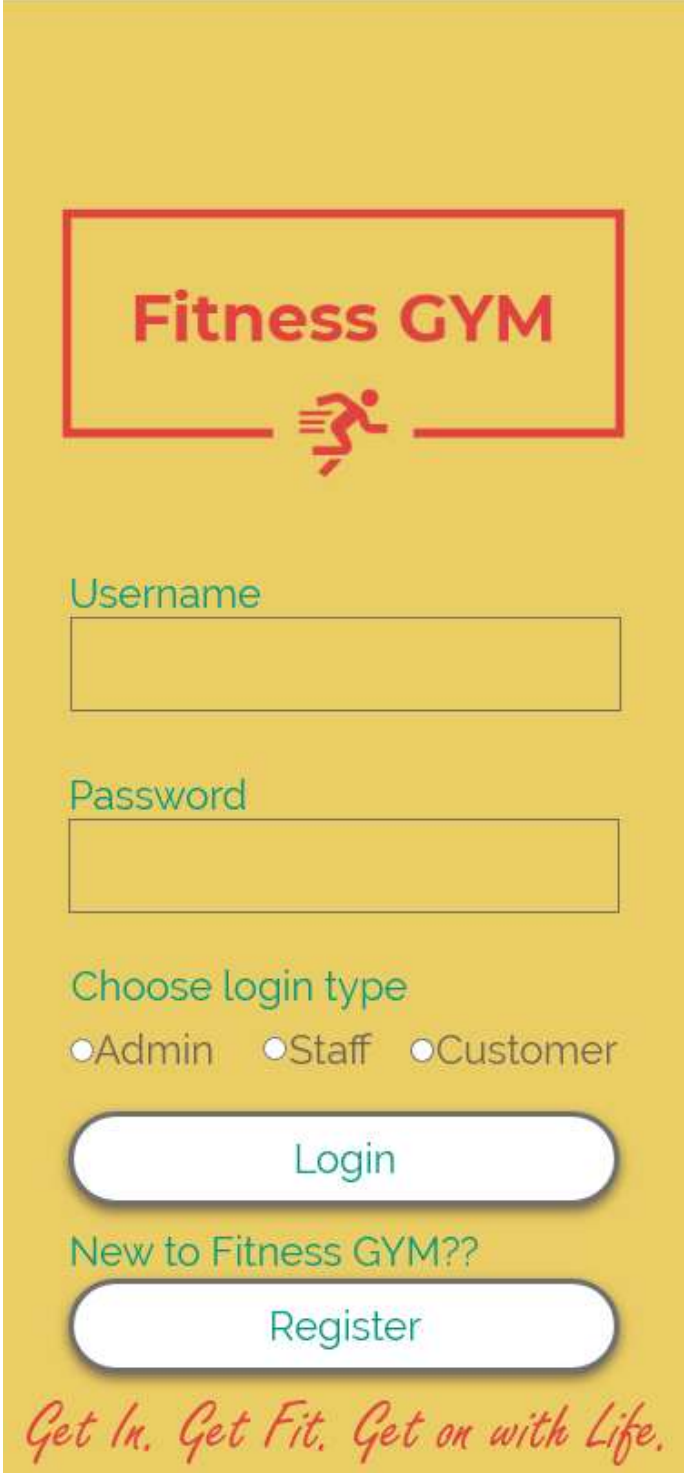
Figure 7 Class Diagram

## **6. Moving on with the system**

The system will go as per the planning that has been made. The RUP methodology will be followed for further development of system. The first phase of designing and development has been completed. There might be changes with of requirements. Frequent feedback from the client will be taken. All the changes in requirements will be addressed and changes in development or designing will be changed according to the requirement. Along with development works, frequent testing of the developed modules will be conducted. All possible ways of testing will be conducted so that there are no any flaws while delivering the product to the client. The changes in requirements will be adjusted with further development and designing of the system.

## 7. System Designing

### 7.1 Login Page



The image shows a login page for 'Fitness GYM'. It has a yellow background. At the top, there is a red-bordered box containing the text 'Fitness GYM' in red, with a red icon of a person running below it. Below this, there are two input fields: 'Username' and 'Password', both with green labels. Under the 'Password' field, there is a section titled 'Choose login type' in green, with three radio buttons labeled 'Admin', 'Staff', and 'Customer'. Below these are two large, white, rounded buttons with green text: 'Login' and 'Register'. At the bottom, there is a green link 'New to Fitness GYM??' and a red cursive slogan 'Get In. Get Fit. Get on with Life.'

**Fitness GYM**

Username

Password

Choose login type

☐ Admin ☐ Staff ☐ Customer

Login

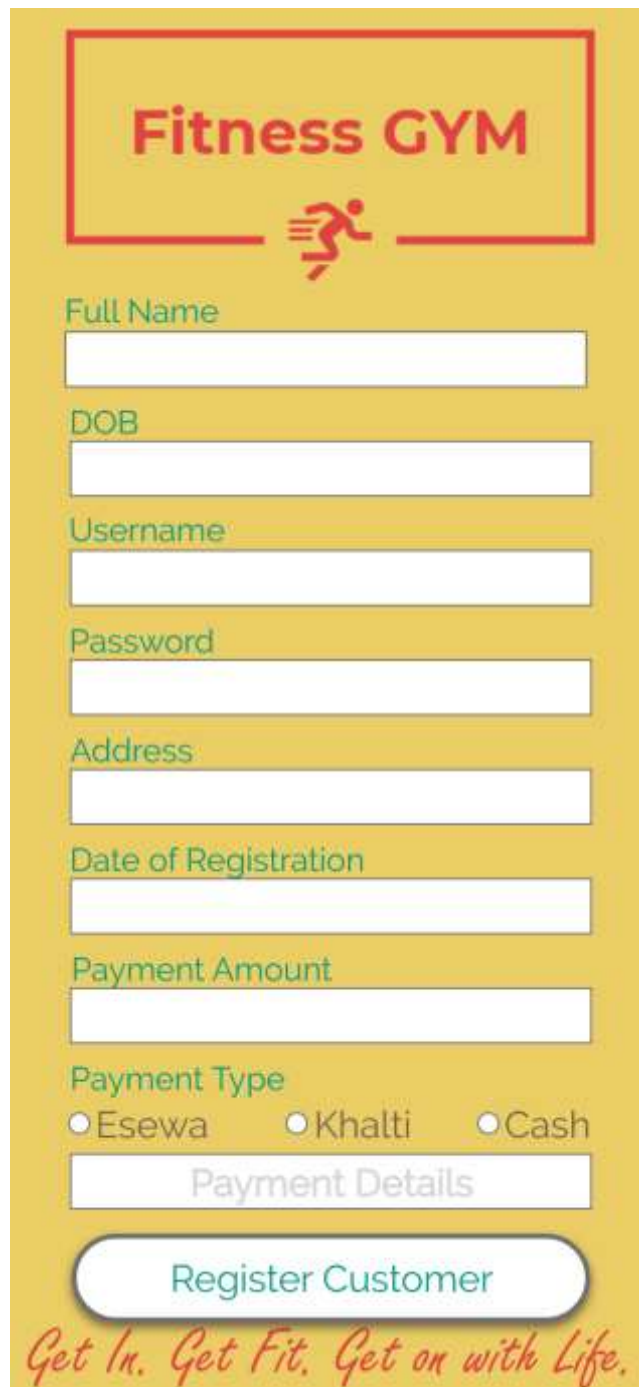
New to Fitness GYM??

Register

*Get In. Get Fit. Get on with Life.*

Figure 7 Login Page

## 7.2 Customer Registration



The image shows a customer registration form for 'Fitness GYM'. The form is set against a yellow background. At the top, the text 'Fitness GYM' is in red, with a red icon of a person running below it. The form contains several input fields: 'Full Name', 'DOB', 'Username', 'Password', 'Address', 'Date of Registration', 'Payment Amount', and 'Payment Type'. The 'Payment Type' field has three radio buttons labeled 'Esewa', 'Khalti', and 'Cash'. Below these is a 'Payment Details' field. A large 'Register Customer' button is at the bottom. At the very bottom, there is a red cursive slogan: 'Get In. Get Fit. Get on with Life.'

**Fitness GYM**

Full Name

DOB

Username

Password

Address

Date of Registration

Payment Amount

Payment Type

☐ Esewa ☐ Khalti ☐ Cash

Payment Details

Register Customer

*Get In. Get Fit. Get on with Life.*

Figure 8 Customer Registration

### 7.3 Dashboard – Customer

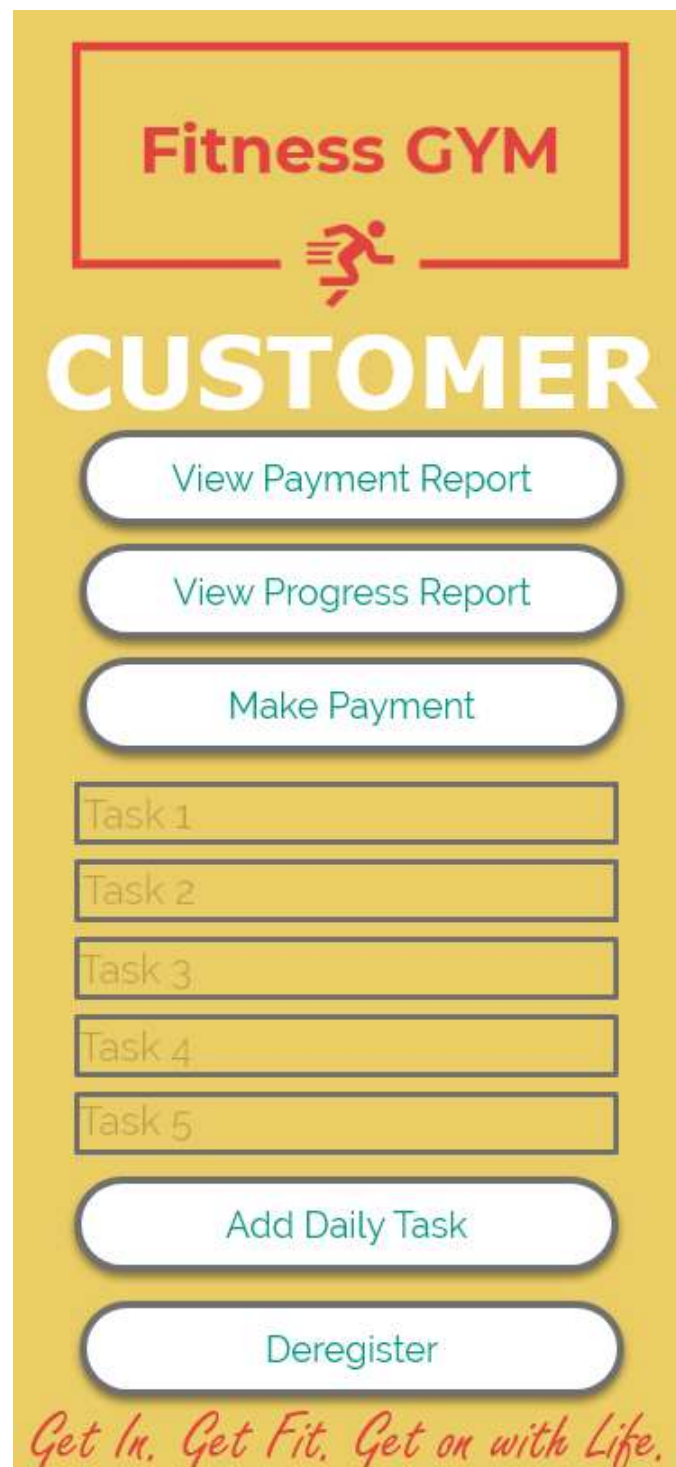
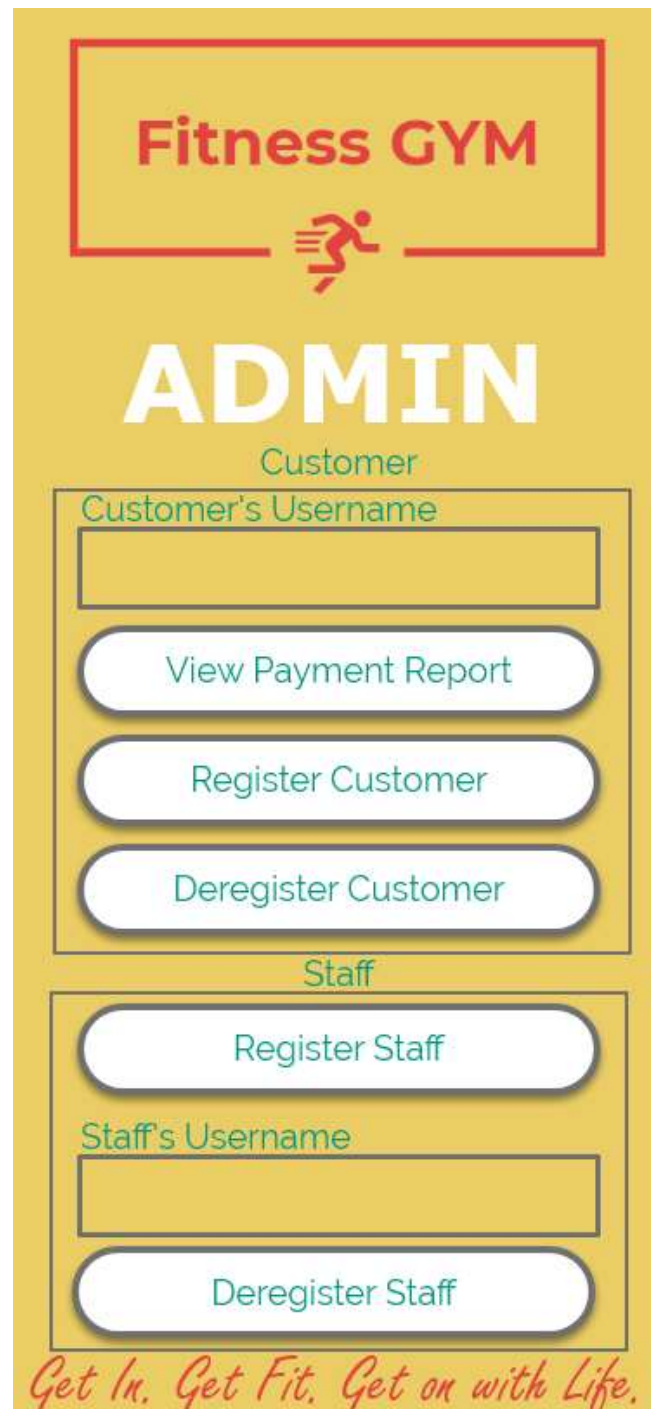


Figure 9 Dashboard - Customer

## 7.4 Dashboard – Admin



The image shows a mobile application interface for a 'Fitness GYM' admin dashboard. At the top, the text 'Fitness GYM' is displayed in red, accompanied by a red icon of a person running. Below this, the word 'ADMIN' is written in large, bold, white letters. The interface is divided into two main sections: 'Customer' and 'Staff'. The 'Customer' section includes a text input field for 'Customer's Username', followed by three buttons: 'View Payment Report', 'Register Customer', and 'Deregister Customer'. The 'Staff' section includes a button for 'Register Staff', a text input field for 'Staff's Username', and a button for 'Deregister Staff'. At the bottom of the dashboard, the slogan 'Get In. Get Fit. Get on with Life.' is written in a red, cursive font.

**Fitness GYM**

**ADMIN**

Customer

Customer's Username

View Payment Report

Register Customer

Deregister Customer

Staff

Register Staff


Staff's Username

Deregister Staff

*Get In. Get Fit. Get on with Life.*

Figure 10 Dashboard - Admin

## 7.5 Dashboard – Staff

**Fitness GYM**  


**STAFF**

Customer's Username

View Payment Details

Task 1

Task 2

Task 3

Task 4

Task 5

Add To Do List

*Get In. Get Fit. Get on with Life.*

Figure 11 Dashboard - Staff

## 7.6 Payment Report

<div><div>Fitness GYM</div><div></div></div>		
<b>Payment Details</b>		
Date	Amount	Payment Type
Date1	Amount1	Type1
Date2	Amount2	Type2
Date3	Amount3	Type3
Date4	Amount4	Type4
Date5	Amount5	Type5
Date6	Amount6	Type6
<i>Get In. Get Fit. Get on with Life.</i>		

Figure 12 Payment Report Viewed By Customer and Admin



## 7.7 Progress Report

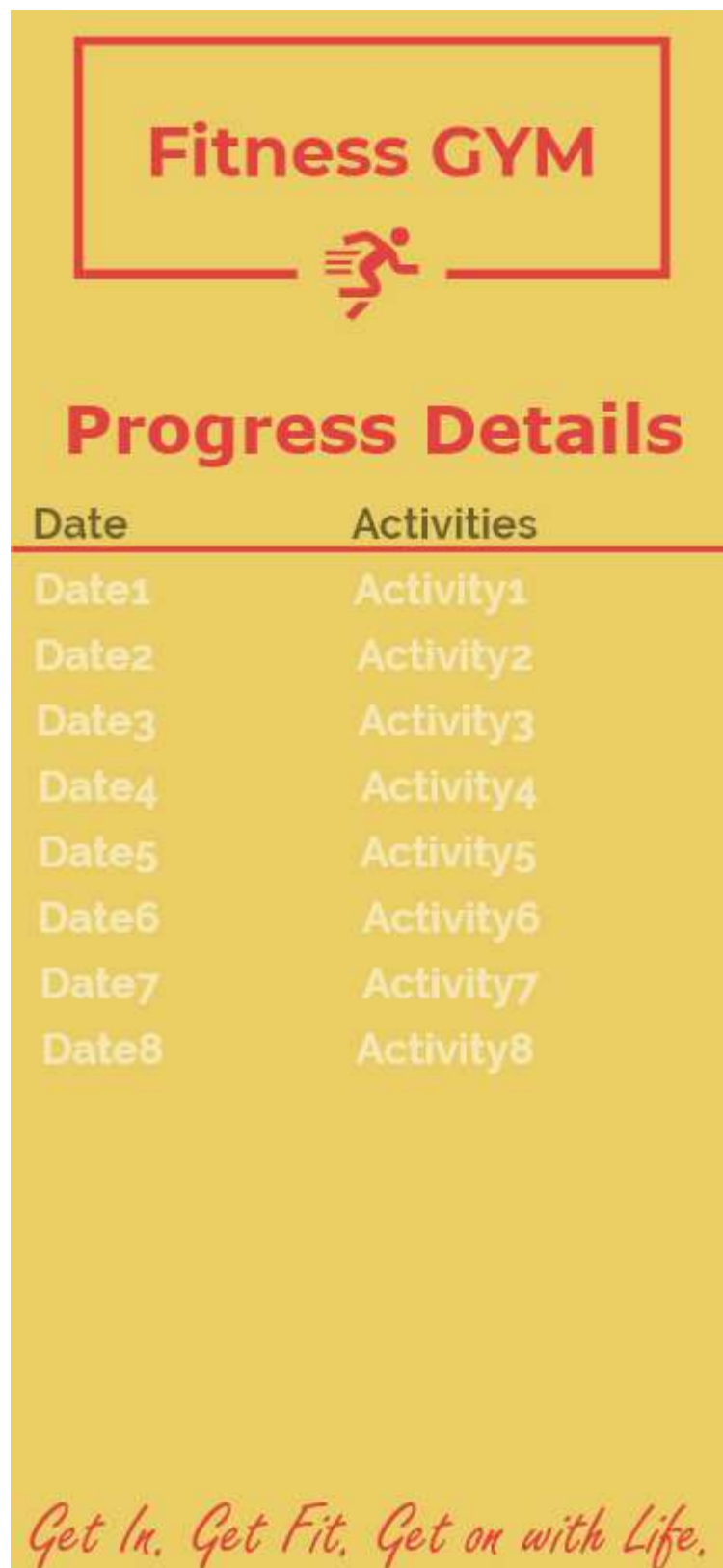



Figure 13 Progress Details Viewed By Customer and Admin

## 7.8 Make Payment



The image shows a mobile application screen for 'Fitness GYM' with a yellow background. At the top, the text 'Fitness GYM' is in red, with a red icon of a person running below it. Below this, the text 'MAKE PAYMENT' is in white. A section titled 'Packages' in red contains three radio button options: 'Package 1', 'Package 2', and 'Package 3'. Each option has a corresponding 'Description' label and a light green input field. Below the packages, there is a section titled 'Choose Payment Type' in white, containing three radio button options: 'Esewa', 'Khalti', and 'Cash'. At the bottom of this section is a large white button with a green border and the text 'Make Payment' in green. At the very bottom of the screen, the text 'Get In. Get Fit. Get on with Life.' is written in a red, cursive font.

**Fitness GYM**

**MAKE PAYMENT**

**Packages**

- ☐ Package 1  
Description
- ☐ Package 2  
Description
- ☐ Package 3  
Description

**Choose Payment Type**

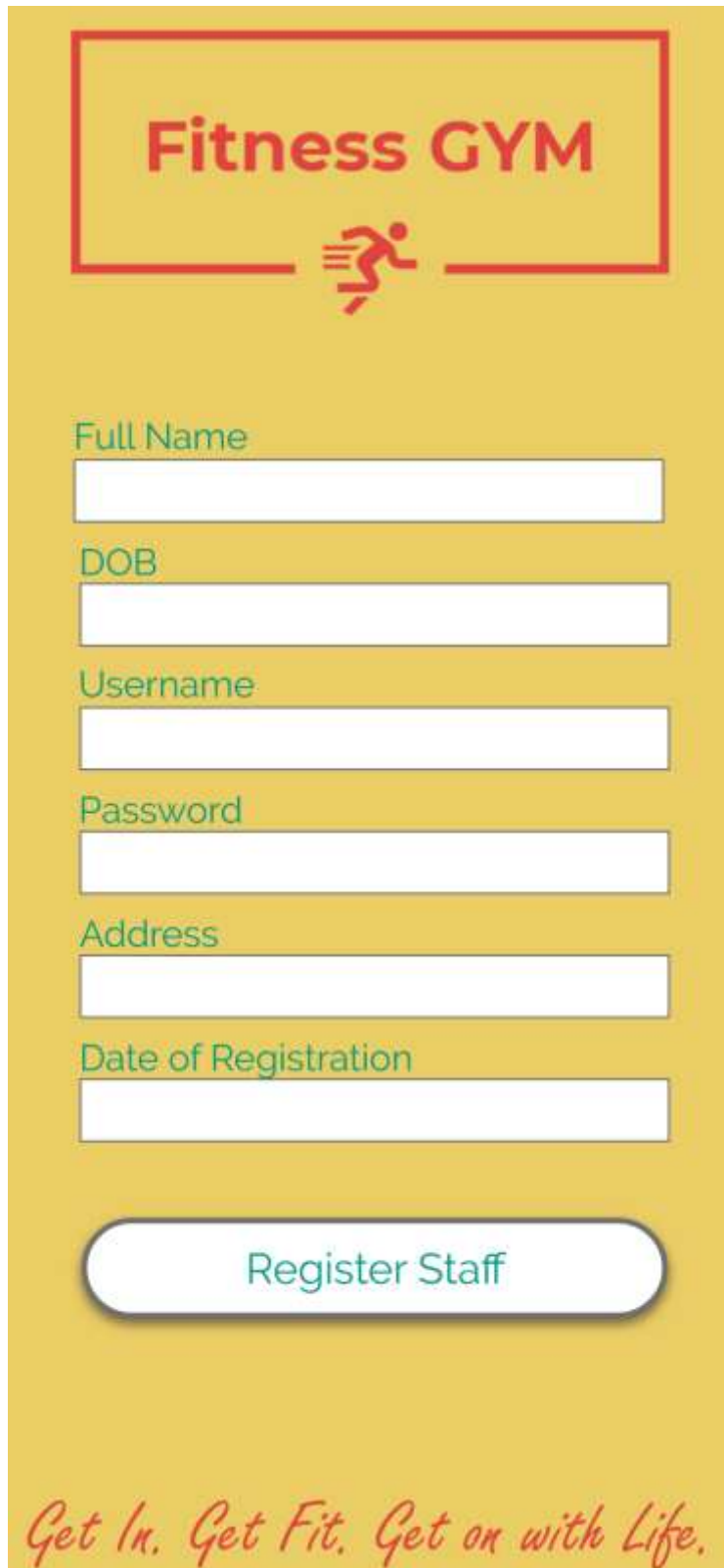
- ☐ Esewa
- ☐ Khalti
- ☐ Cash

**Make Payment**

*Get In. Get Fit. Get on with Life.*

Figure 14 For Payment Used By Customer

## 7.9 Staff Registration



The image shows a staff registration form for 'Fitness GYM'. The form is set against a yellow background. At the top, the text 'Fitness GYM' is in red, with a red icon of a person running below it. The form contains six input fields, each with a green label: 'Full Name', 'DOB', 'Username', 'Password', 'Address', and 'Date of Registration'. Below these fields is a white button with rounded corners and a green border, labeled 'Register Staff'. At the bottom, there is a red cursive slogan: 'Get In. Get Fit. Get on with Life.'

**Fitness GYM**

Full Name

DOB

Username

Password

Address

Date of Registration

Register Staff

*Get In. Get Fit. Get on with Life.*

Figure 15 For Staff Registration by Admin

## **8. Conclusion**

The coursework was completed with much research regarding various topics. All the tasks in the assessment were completed after many trials and errors. The module helped us to gain knowledge on how an actual software development process takes place in a real scenario. This coursework helped us to get a momentum to learn more about the software development process. Even though the system was not a big one, it was a difficult task to some extent as it was the first time experience.

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