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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.

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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

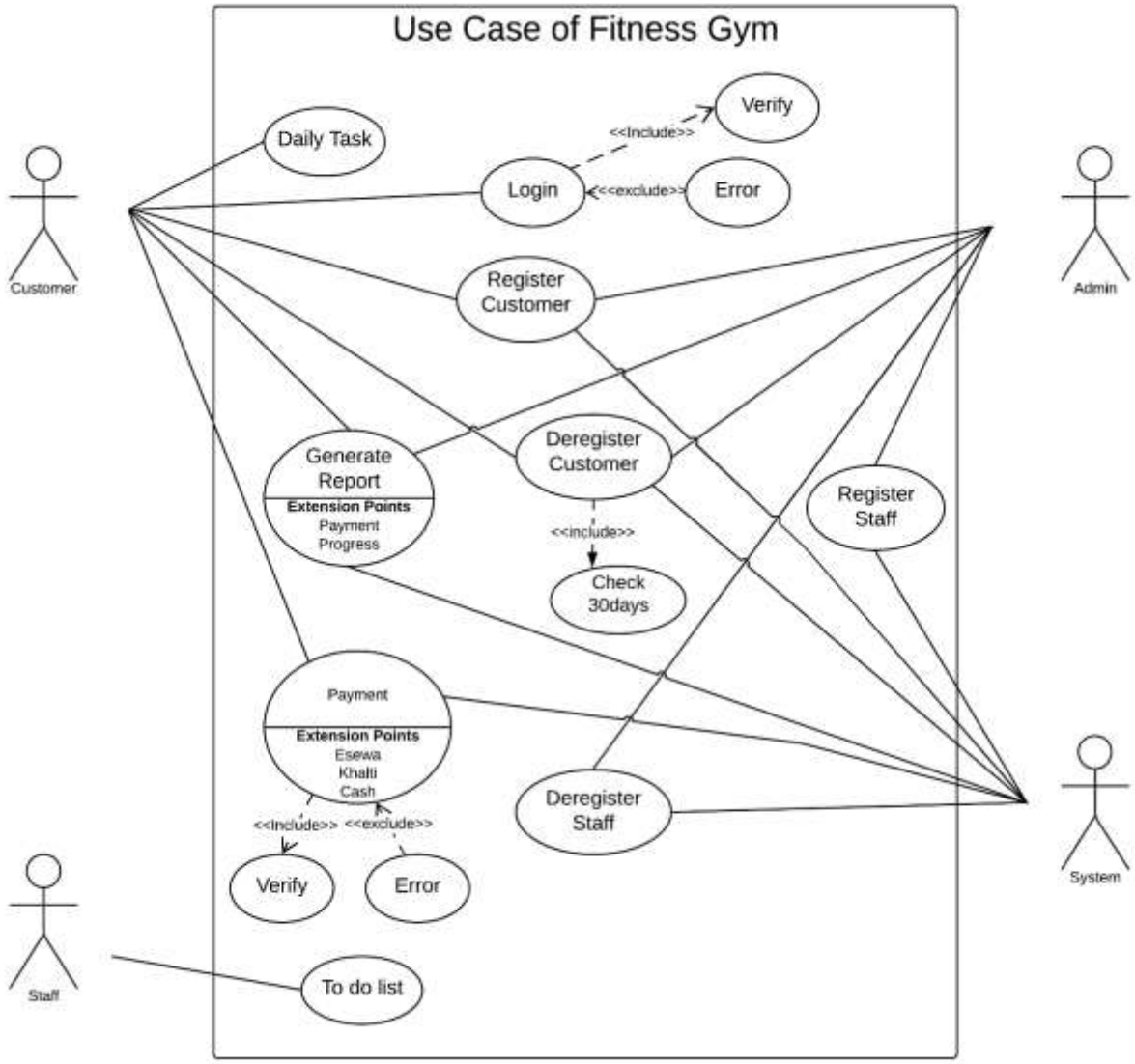

Figure 1 Use Case Diagram

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

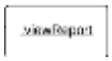

Figure 4 Controller Object

4. Then the created objected are joined logically.

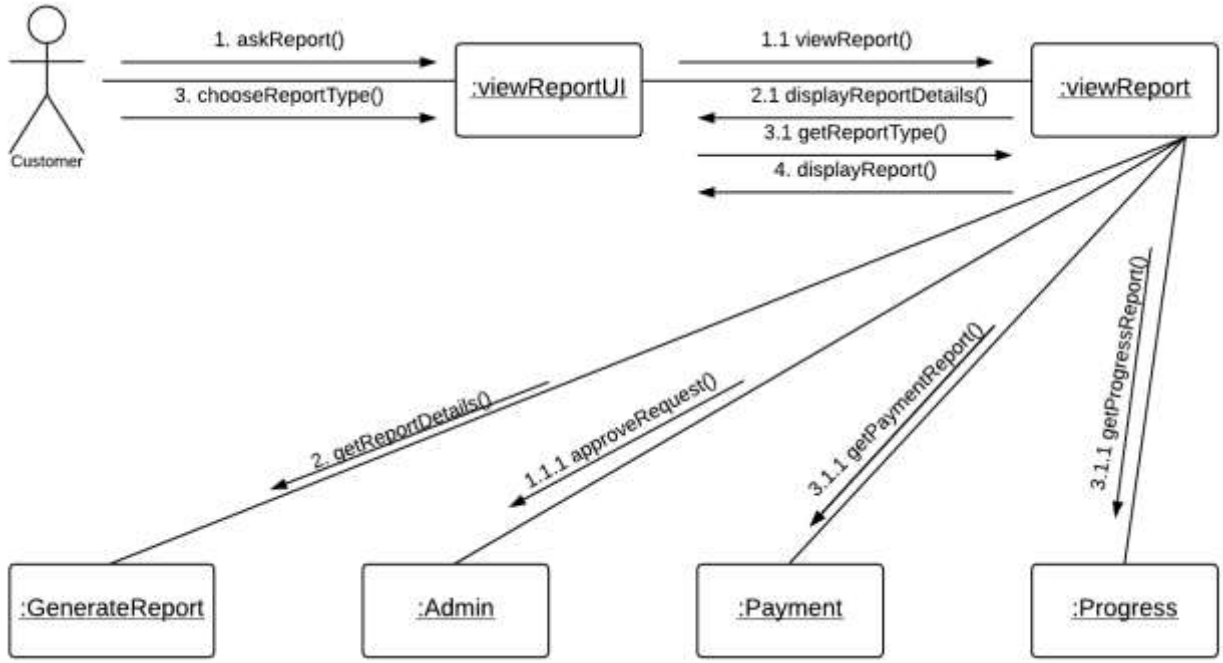

Figure 5 Collaboration Diagram

4.2 Sequence Diagram (Generate Report)

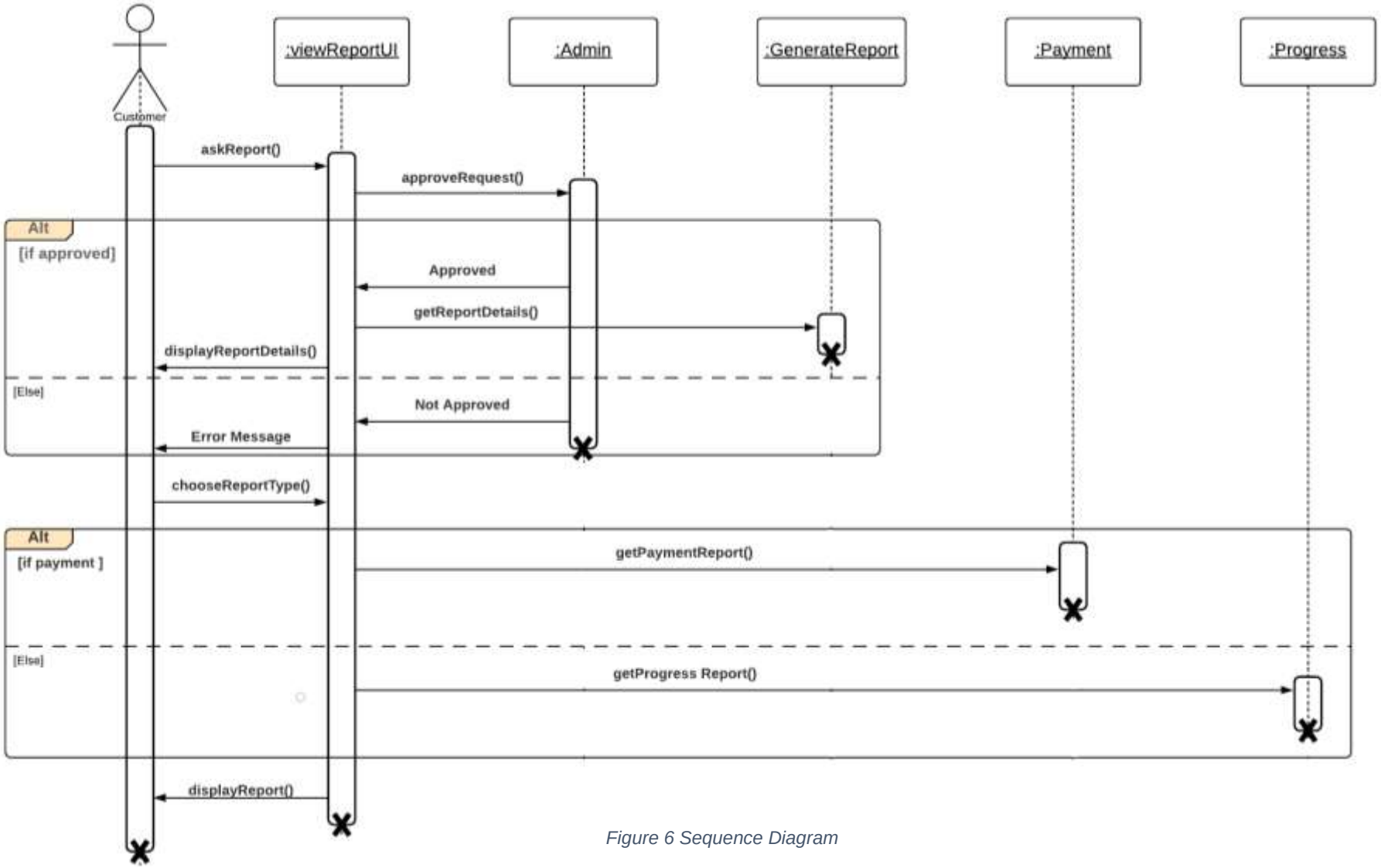

Figure 6 Sequence Diagram

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

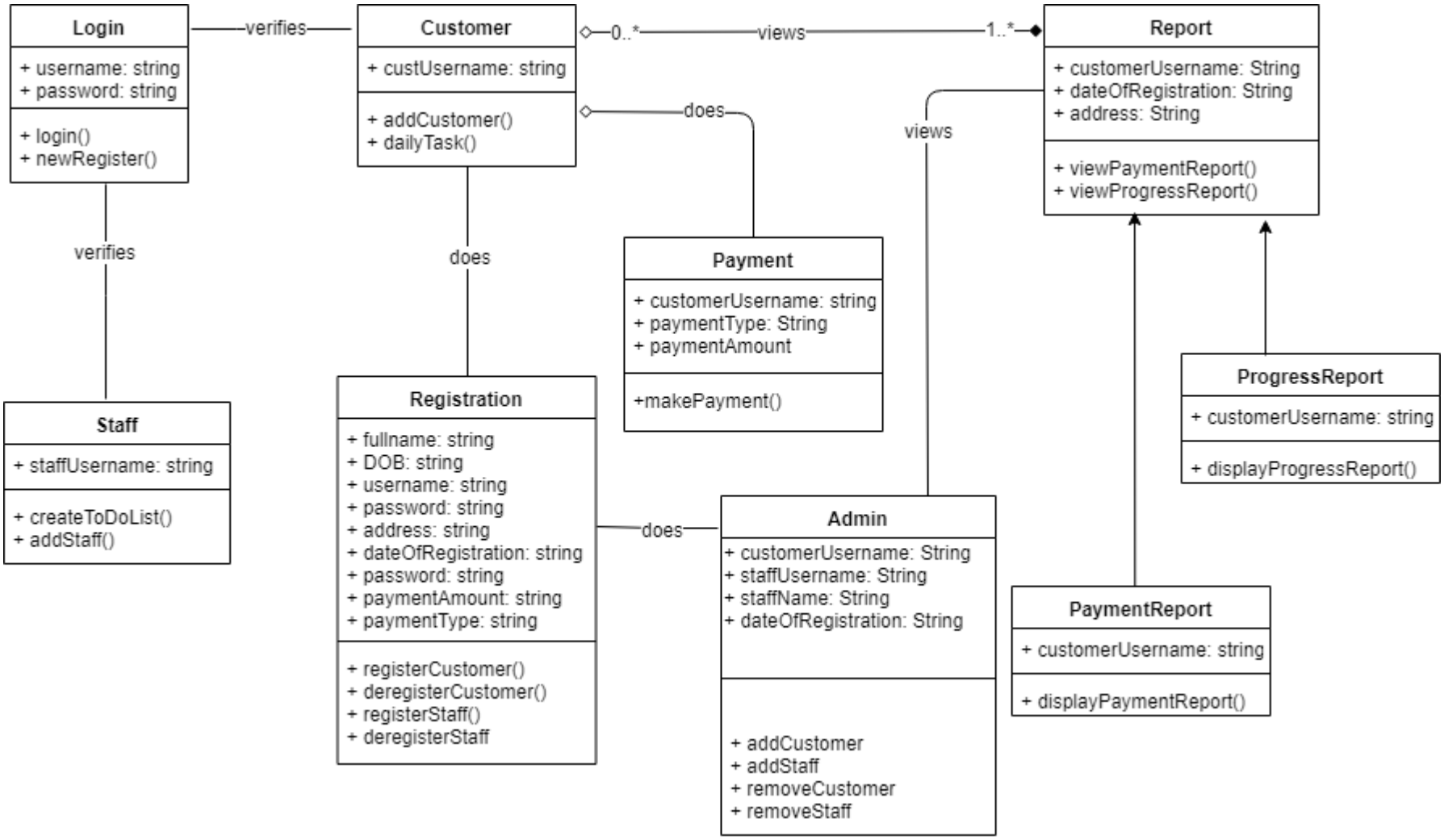

Figure 7 Class Diagram

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

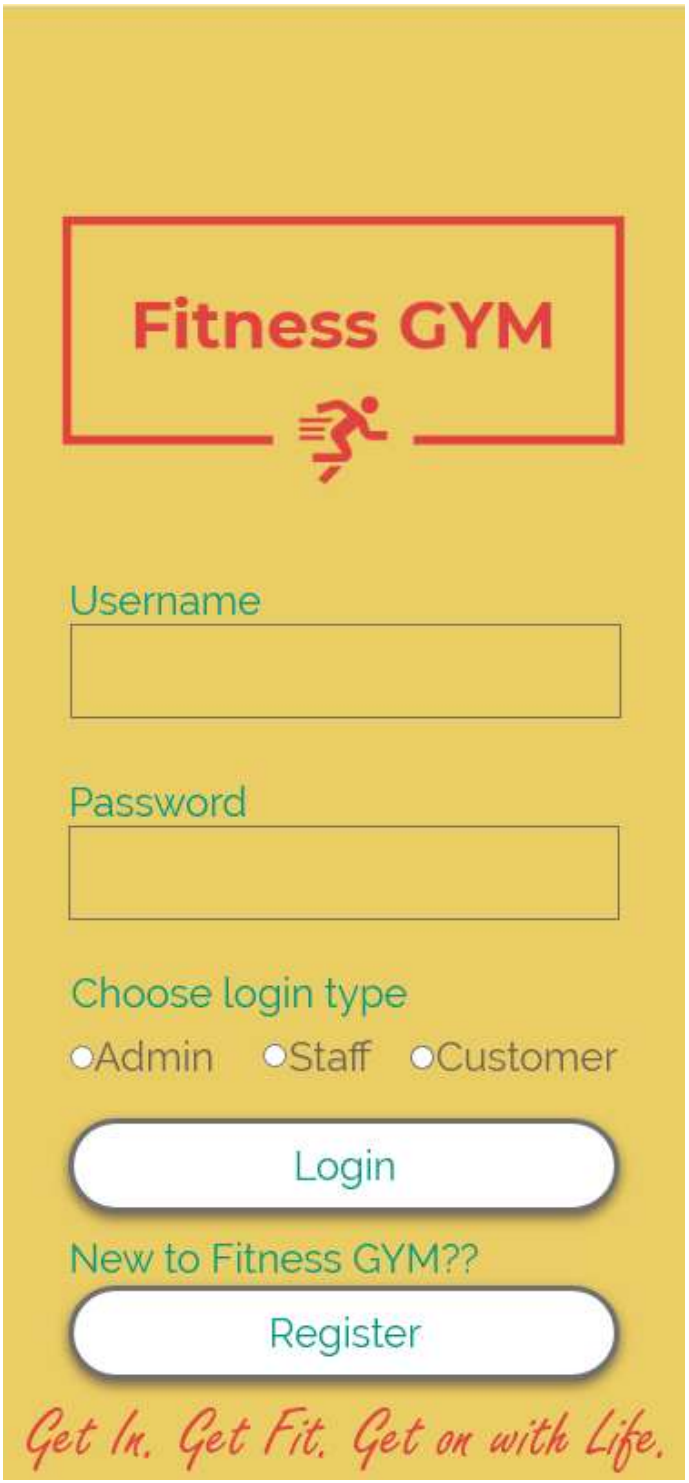

Figure 7 Login Page

7.2 Customer Registration

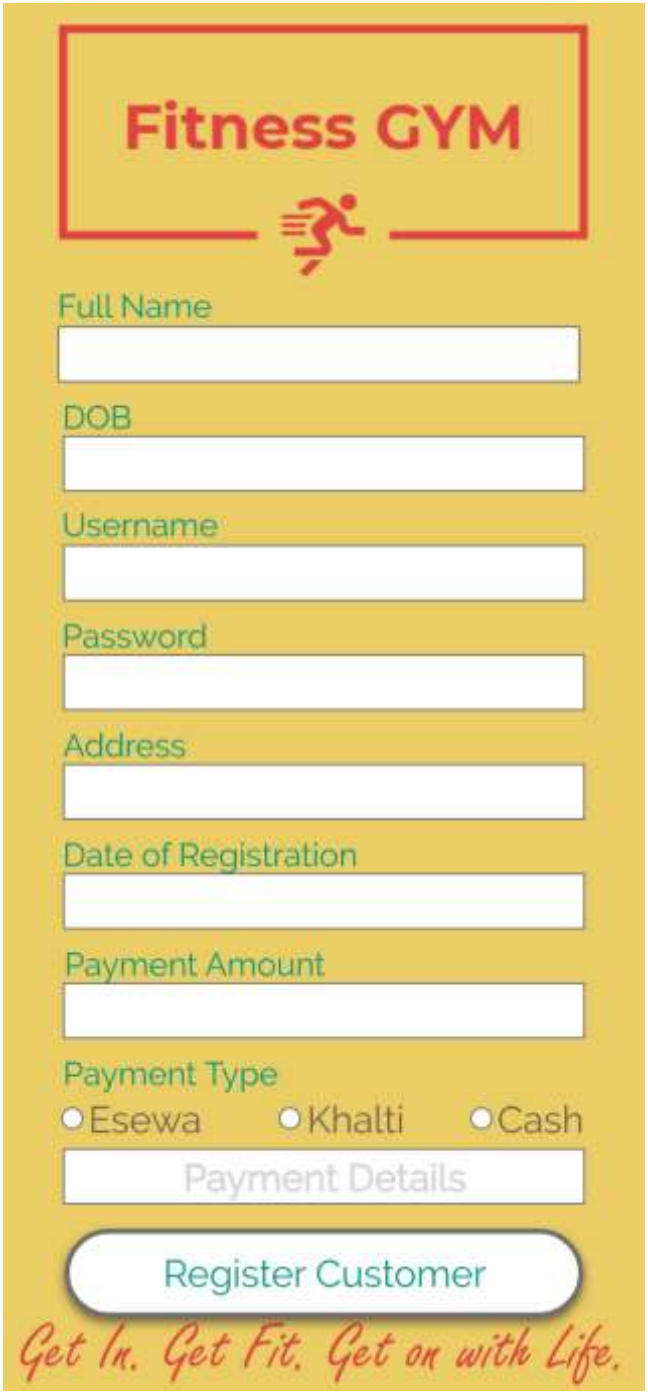

Figure 8 Customer Registration

7.3 Dashboard – Customer

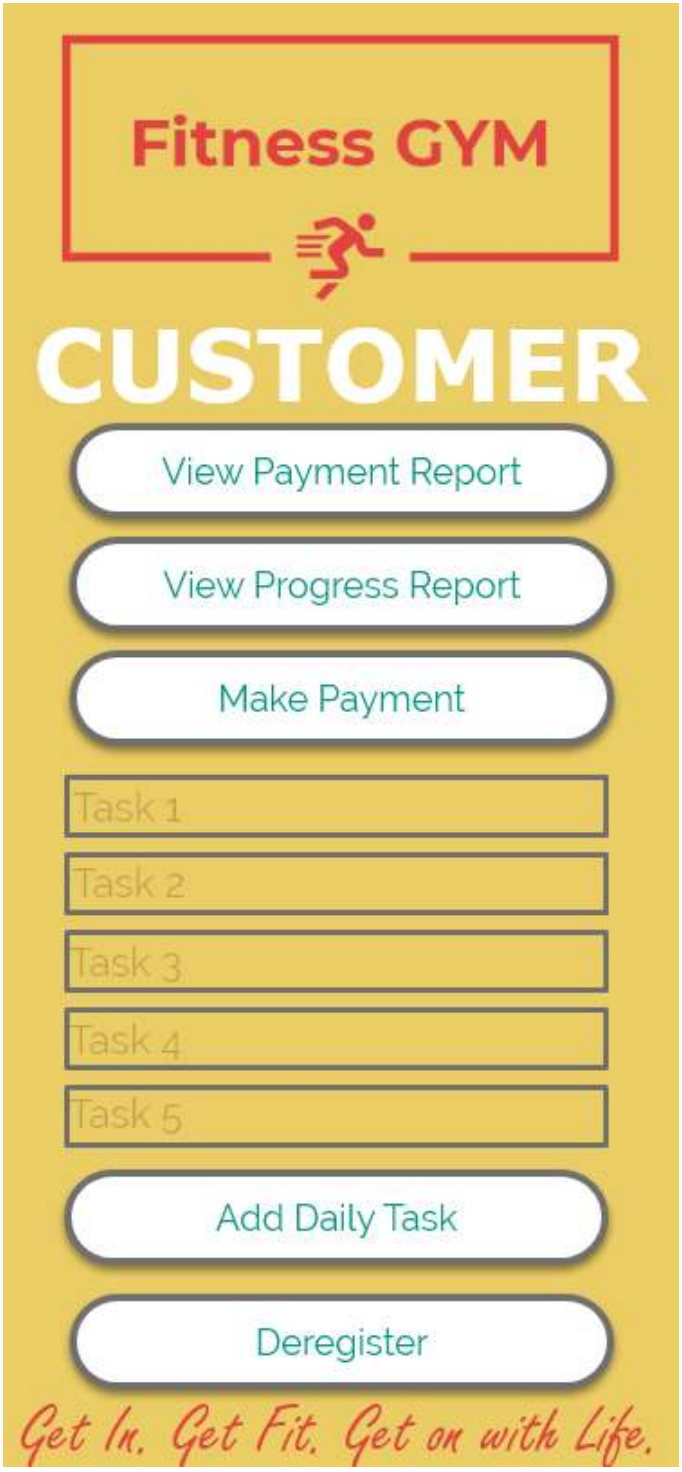

Figure 9 Dashboard - Customer

7.4 Dashboard – Admin

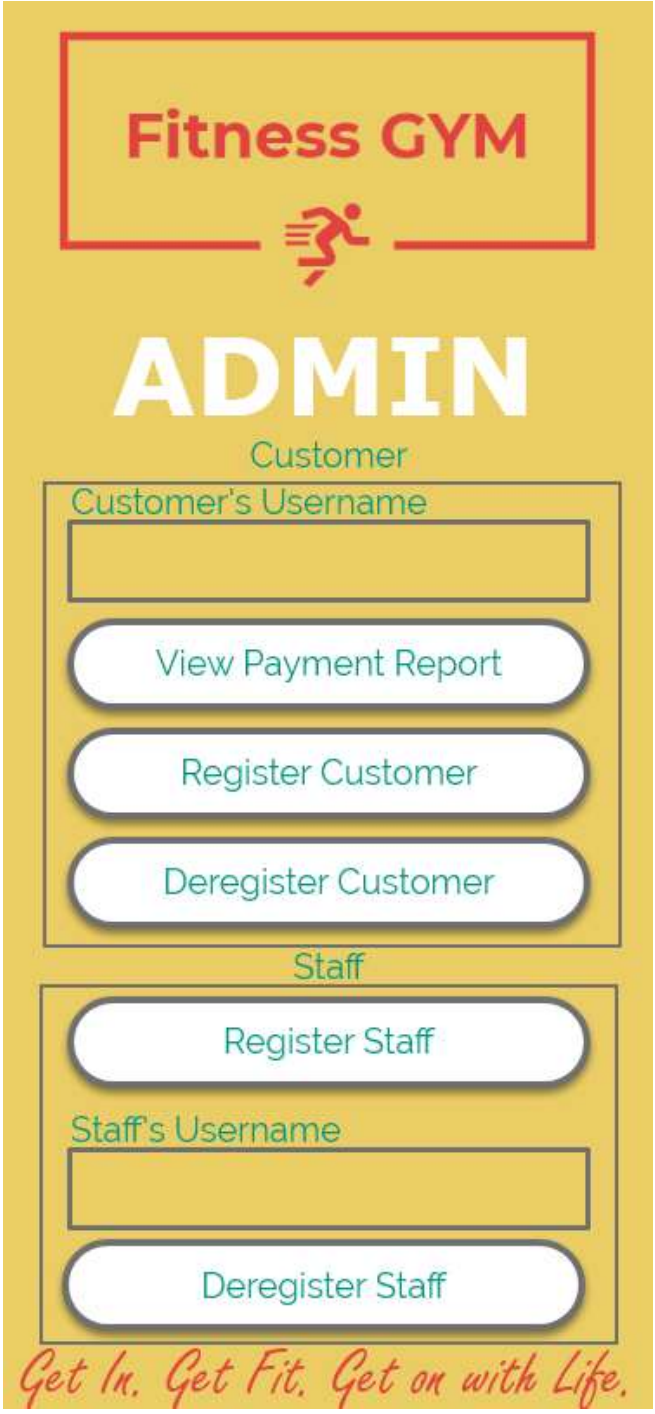

Figure 10 Dashboard - Admin

7.5 Dashboard – Staff

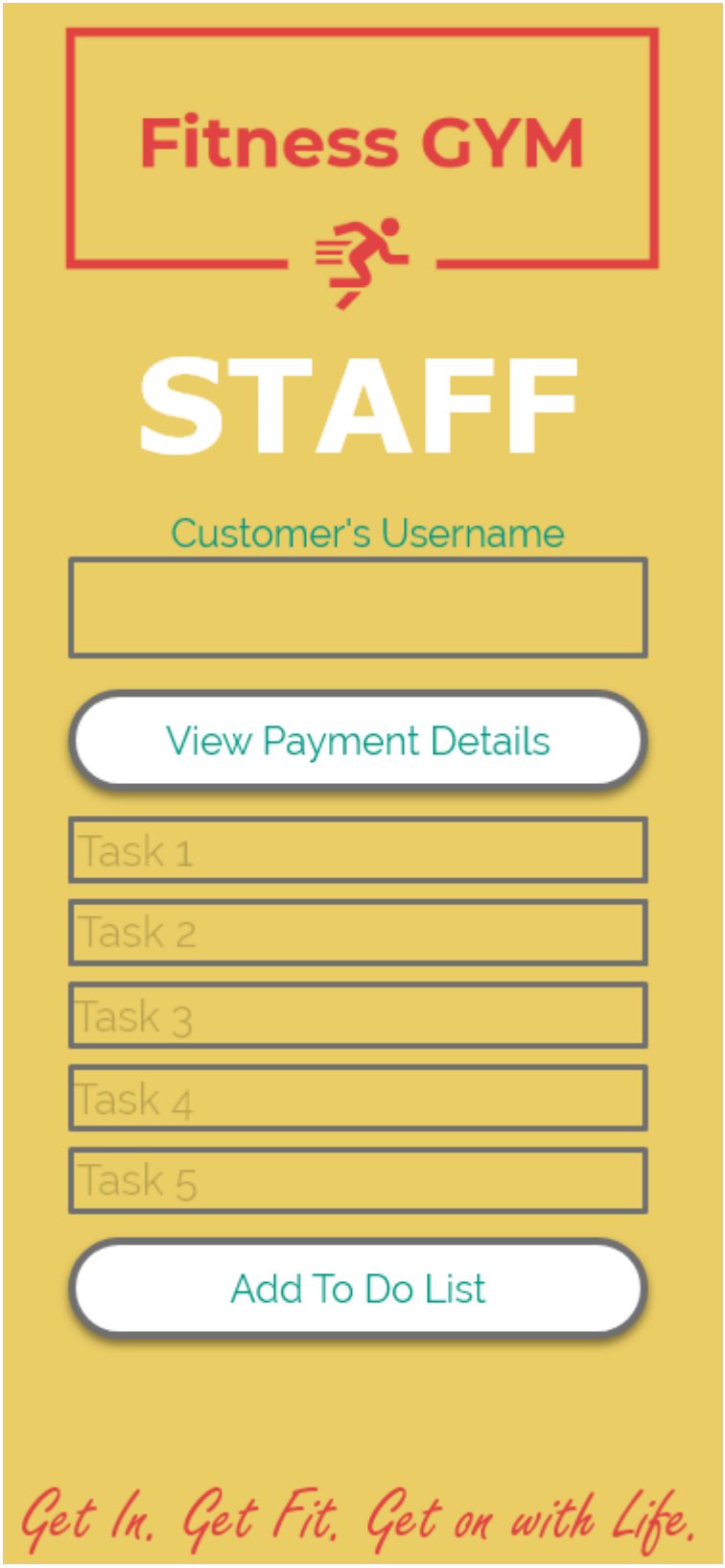

Figure 11 Dashboard - Staff

7.6 Payment Report

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

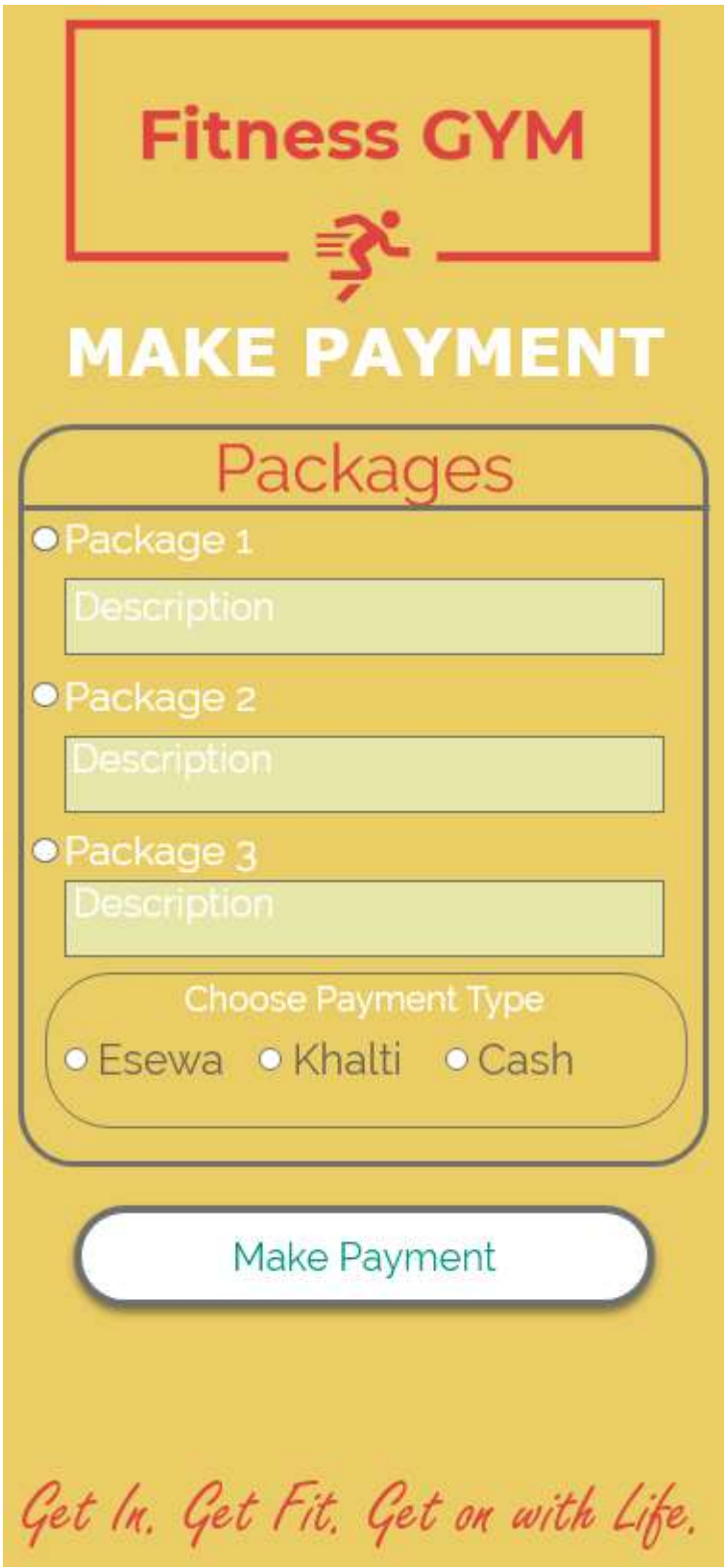

Figure 14 For Payment Used By Customer

7.9 Staff Registration

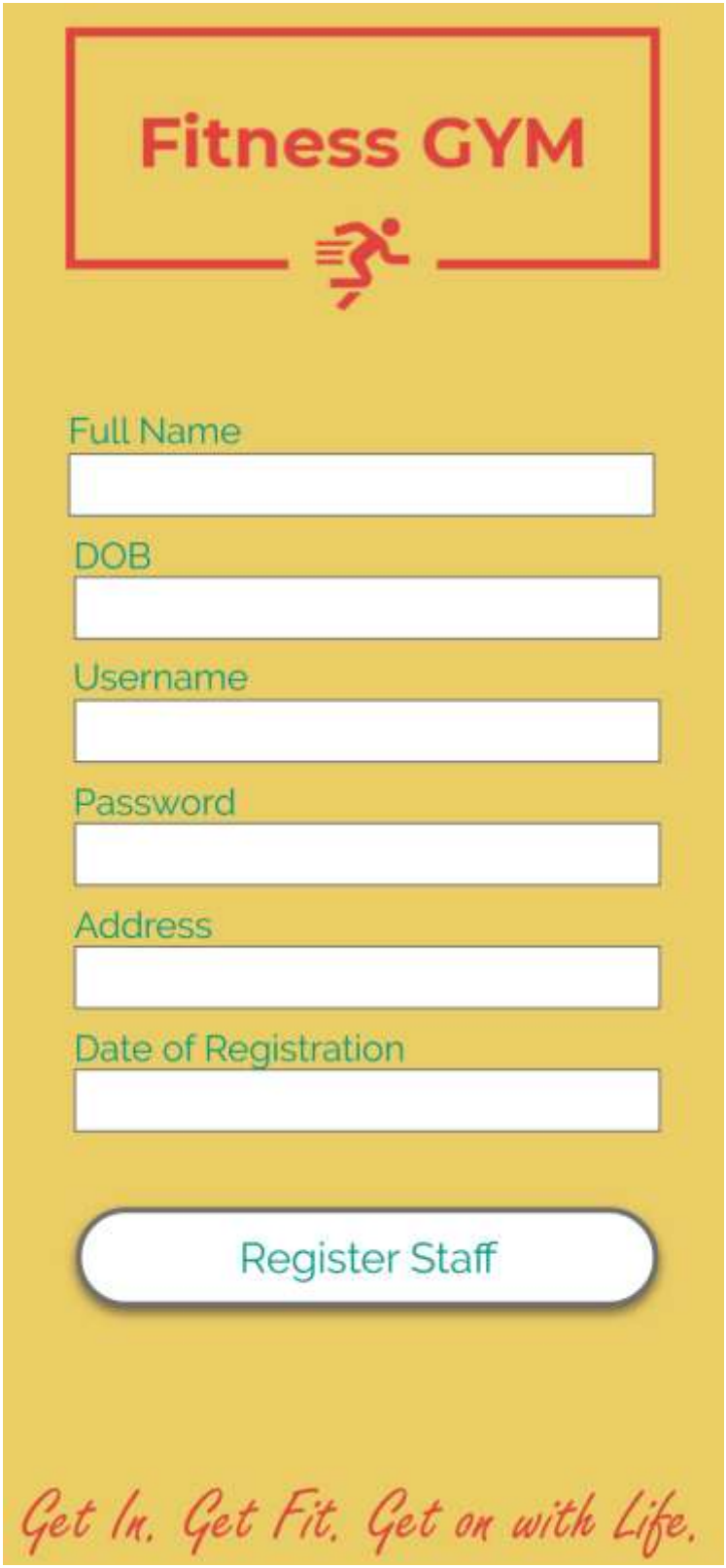

Figure 15 For Staff Registration by Admin

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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