PhysioTrack
1_4
SE 321/305 – Software Specification and Design
Term Project Design Document

İsmet Umut Çakıcı
Can Çalışkan
Eren Köselerlerli
Eren Çivril
Çağatay Yalçın
Didem Yamaner

December 27, 2023

1. Introduction
PhysioTrack aims to develop a system that improves communication between physiotherapists and patients, enhancing the overall physiotherapy experience. In today's healthcare setting, effective communication and continuous monitoring are crucial for patient outcomes. The proposed system provides a platform where patients share progress, symptoms, and treatment details, while physiotherapists input their observations, aiming to optimize the physiotherapy process.

2. Problem Definition

Conventional physiotherapy faces a challenge – the lack of an efficient means for patients to share progress and challenges between sessions, affecting physiotherapists' ability to tailor treatments. PhysioTrack addresses this by introducing a dynamic platform facilitating real-time communication. It includes features like progress tracking, giving feedback, personalized goals, and instructional videos, aiming to enhance the effectiveness of physiotherapy.

3. Proposed System Design

3.1. Requirements

Functional Requirements

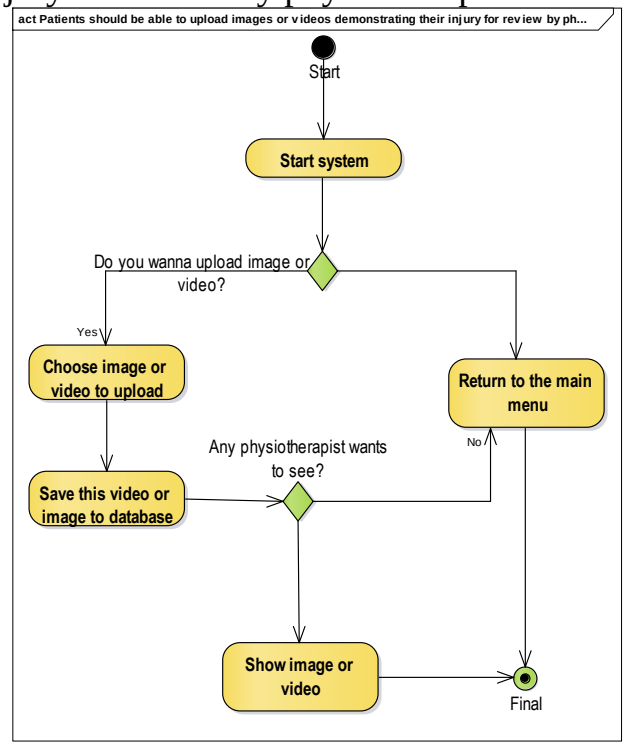
1. User should be able to filter physiotherapists by treatment type.
2. Users should be able to give a score to a physiotherapist from one to ten after a completed treatment.
3. Patients should get notifications that remind their daily home exercise.
4. Patients should get a prepared questionnaire that asks them about their pain level
5. Patients should be able to upload images or videos demonstrating their injury for review by physiotherapists.
6. The system should generate a summary report for each patient at the end of their treatment plan, including progress charts and physiotherapist notes.
7. Physiotherapists should be able to schedule and modify appointments with patients.
8. Patients should have access to a library of instructional exercise videos tailored to their treatment plan.
9. Physiotherapists should be able to set personalized goals for each patient, and the system should track their progress toward these goals.
10. System should send a confirmation code to both patient and the physiotherapist by message.

Non-Functional Requirements

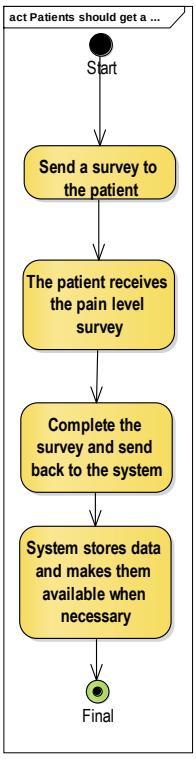
1. System should store the treatment documents in .docx format.
2. System should allow physiotherapists to use the app while they are offline.
3. The system should ensure data encryption by using AES algorithm for all patient-related information to maintain confidentiality.
4. The personal information of each patient except their age, job and sex must be hidden from the physiotherapist at first match on system.
5. The reports of patients and questionnaires of patients should be prepared in pdf format.

3.2. Activity Diagrams

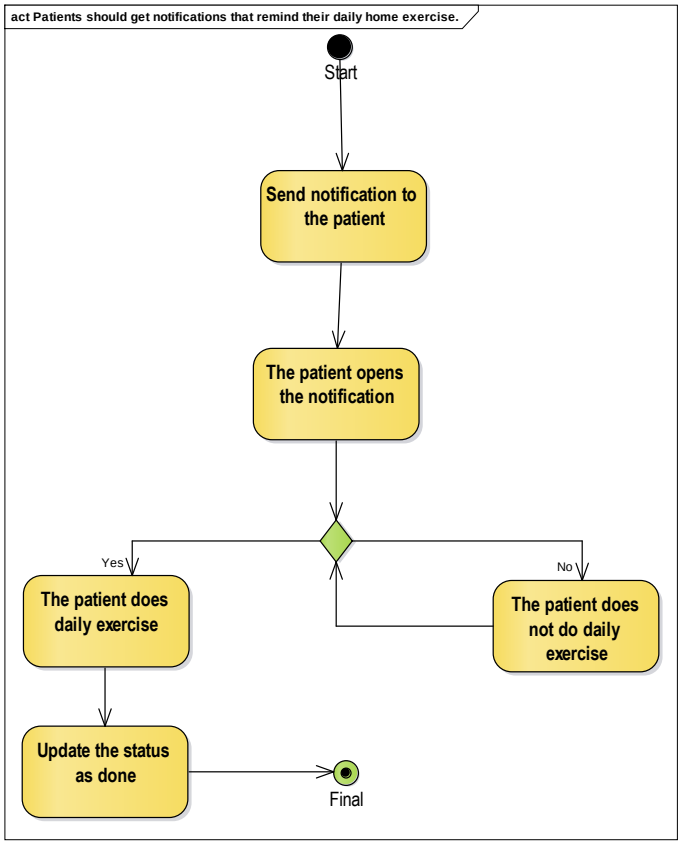
3.2.1. Activity Diagram 1: Patients should be able to upload images or videos demonstrating their injury for review by physiotherapists.



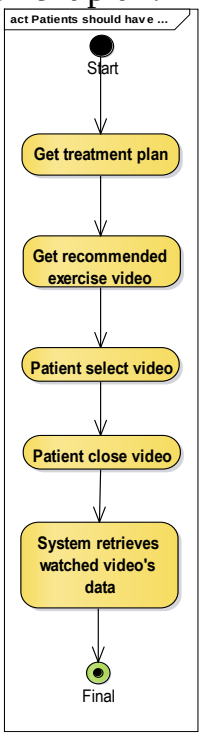
3.2.2. Activity Diagram 2: Patients should get a prepared questionnaire that asks them about their pain level.



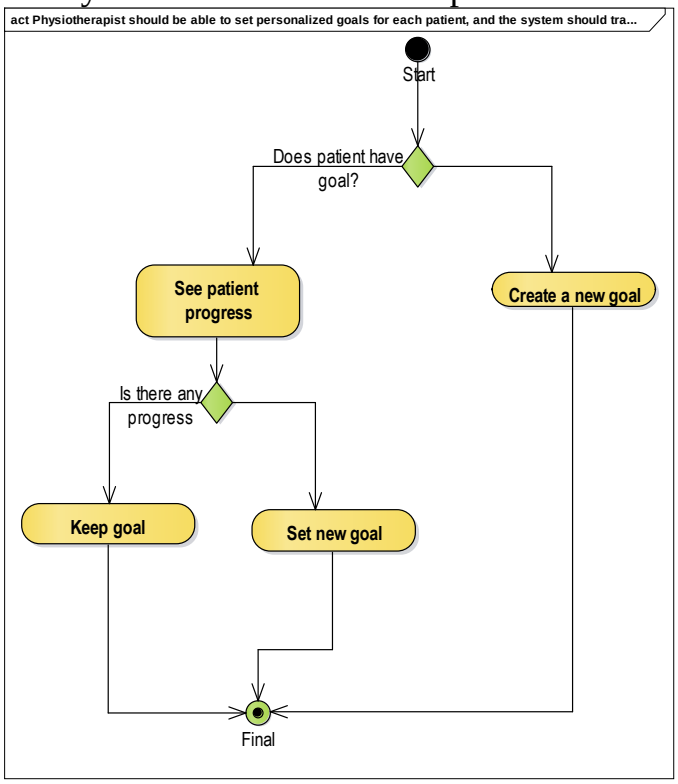
3.2.3. Activity Diagram 3: Patients should get notifications that remind their daily home exercise.



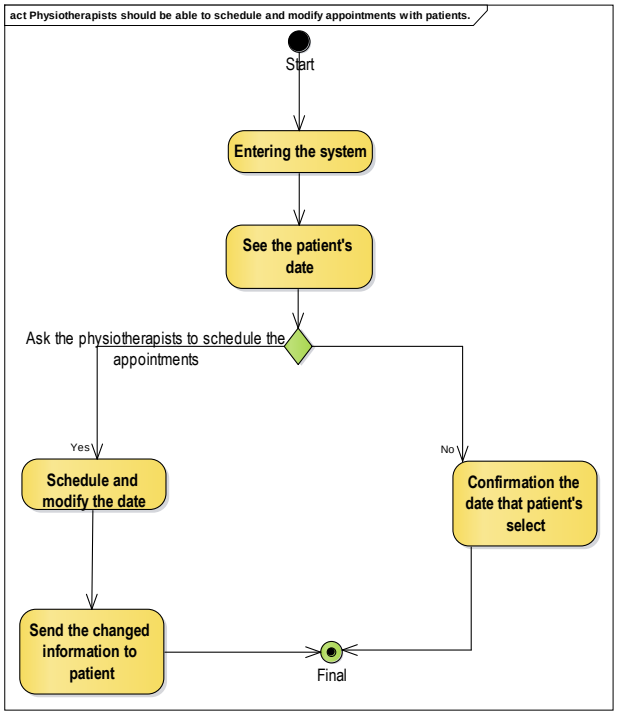
3.2.4. Activity Diagram 4: Patients should have access to a library of instructional exercise videos tailored to their treatment plan.



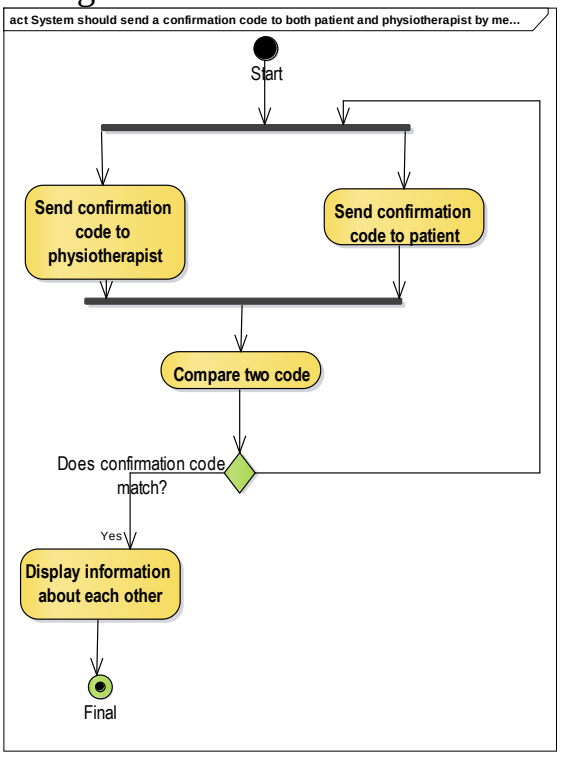
3.2.5. Activity Diagram 5: Physiotherapist should be able to set personalized goals for each patient, and the system should track their process toward these goals.



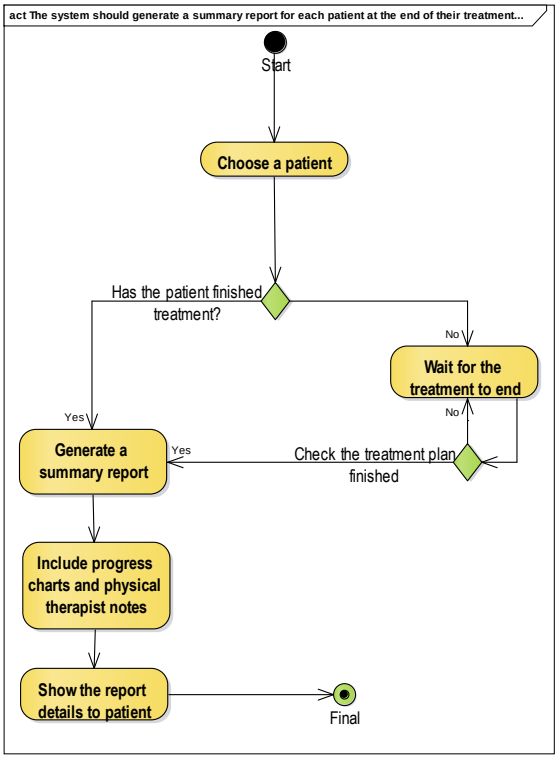
3.2.6. Activity Diagram 6: Physiotherapists should be able to schedule and modify appointments with patients.



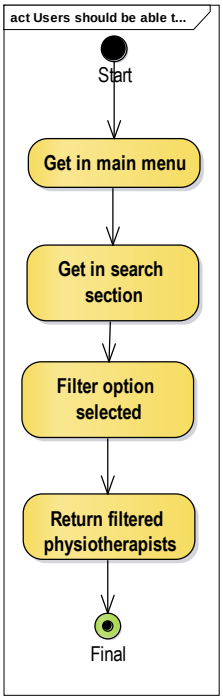
3.2.7. Activity Diagram 7: System should send a confirmation code to both patient and physiotherapist by message.



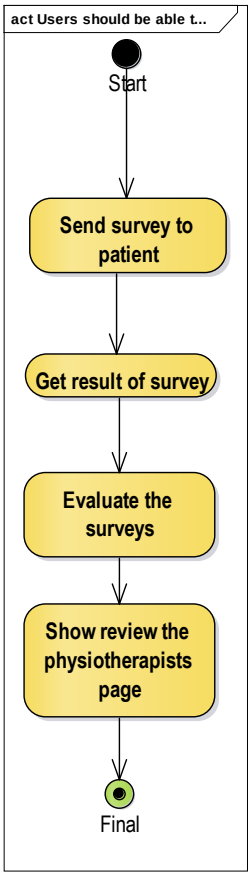
3.2.8. Activity Diagram 8: The system should generate a summary report for each patient at the end of their treatment plan, including progress charts and physiotherapist notes.



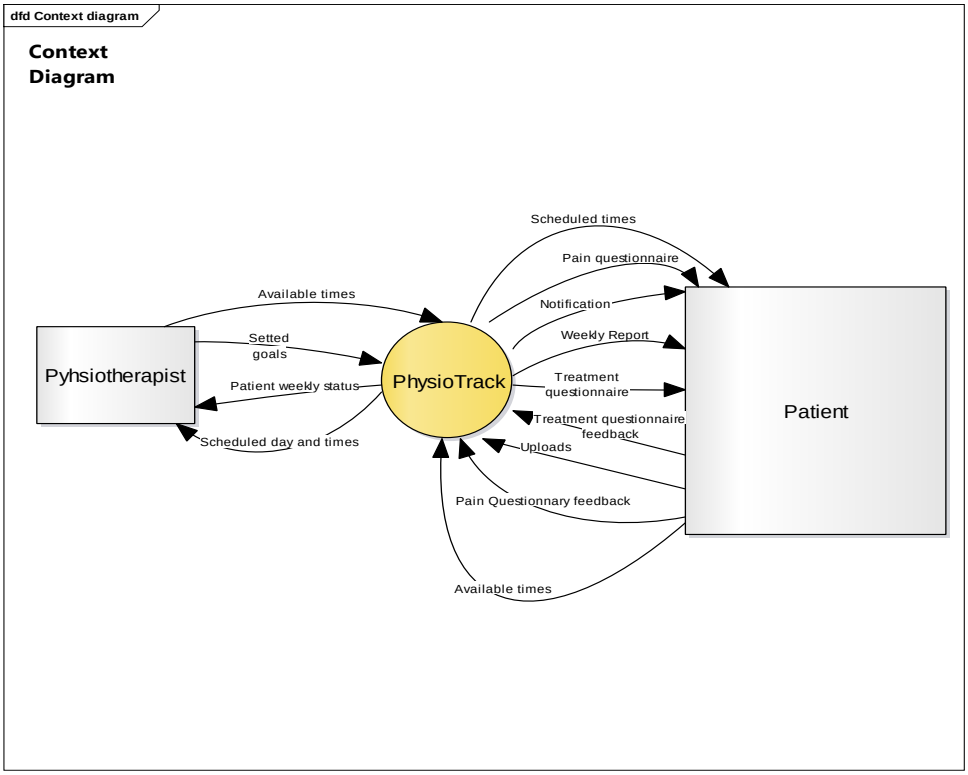
3.2.9. Activity Diagram 9: Users should be able to filter physiotherapists by treatment type.



3.2.10. Activity Diagram 10: Users should be able to give a score to a physiotherapist from one to ten after a completed treatment.

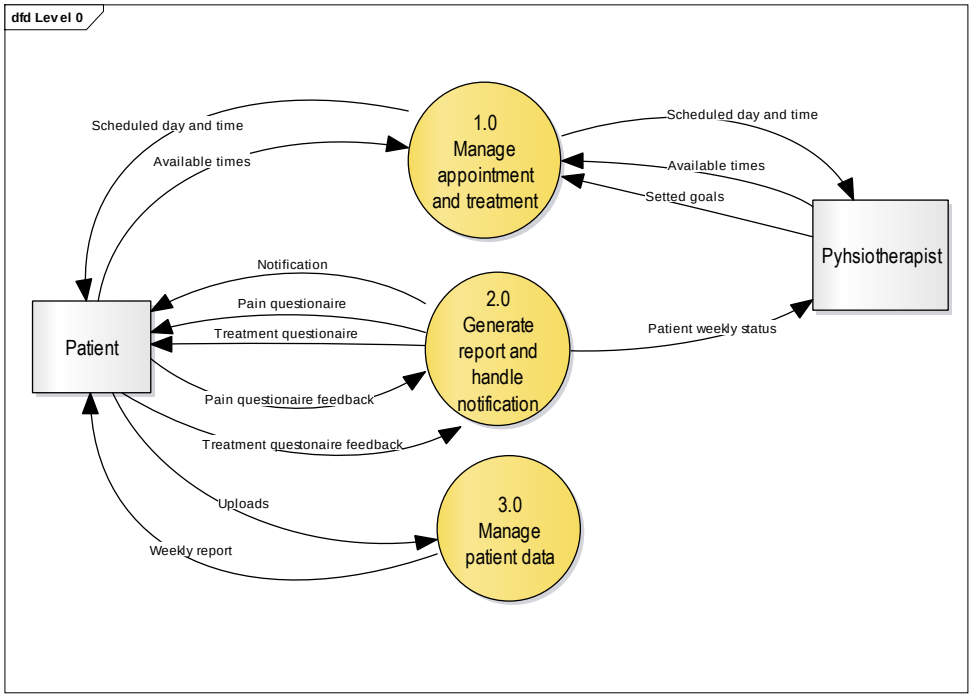


3.3. Context Model

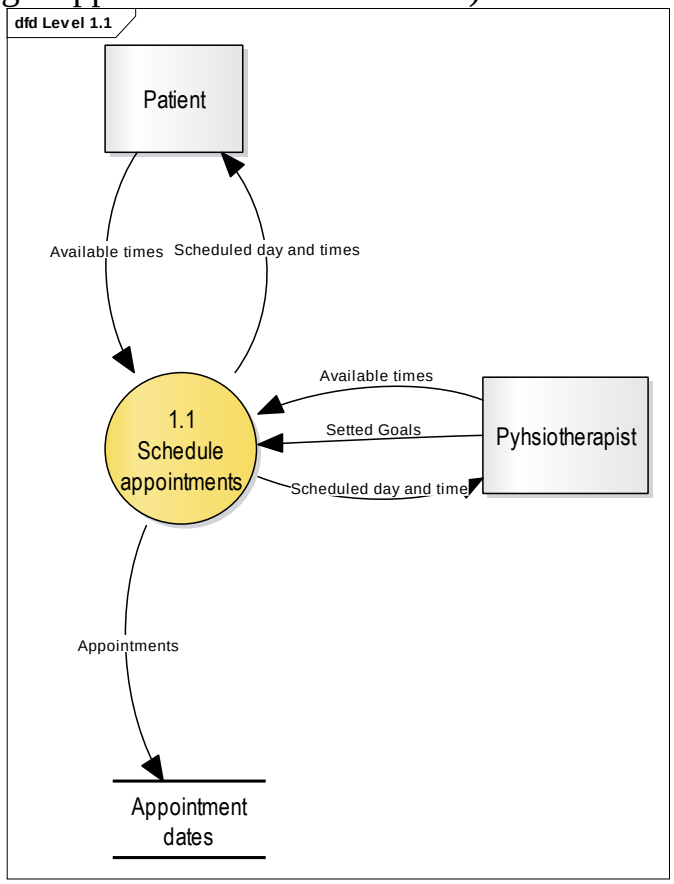


3.4. Data Flow Diagrams

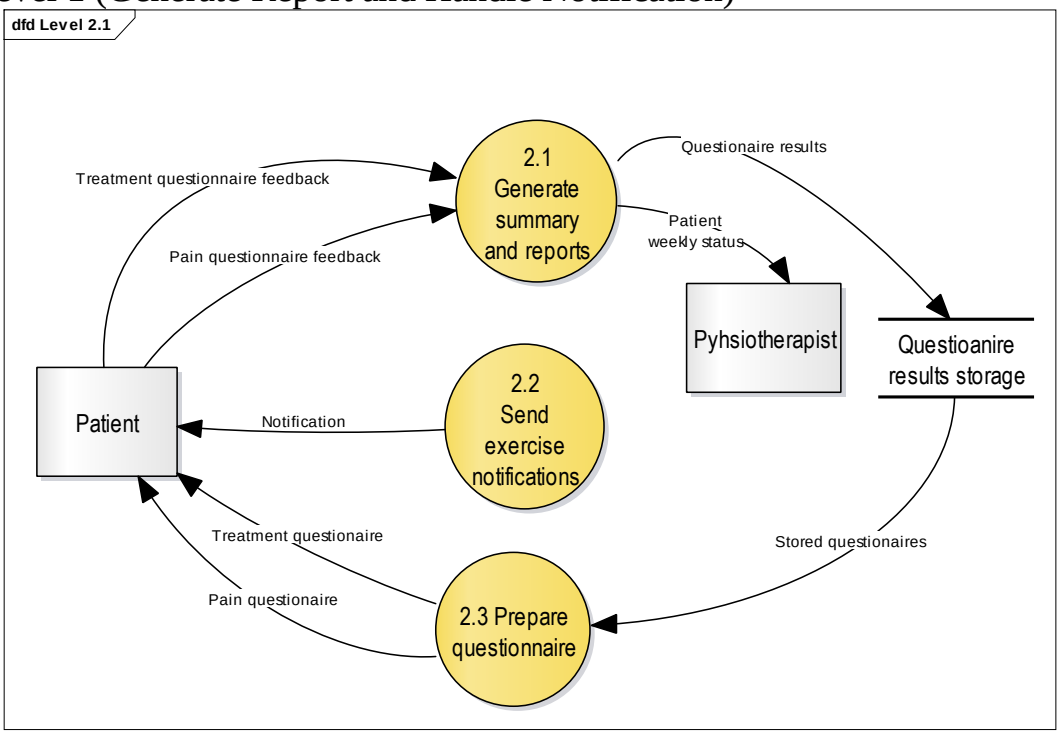
DFD Level 0



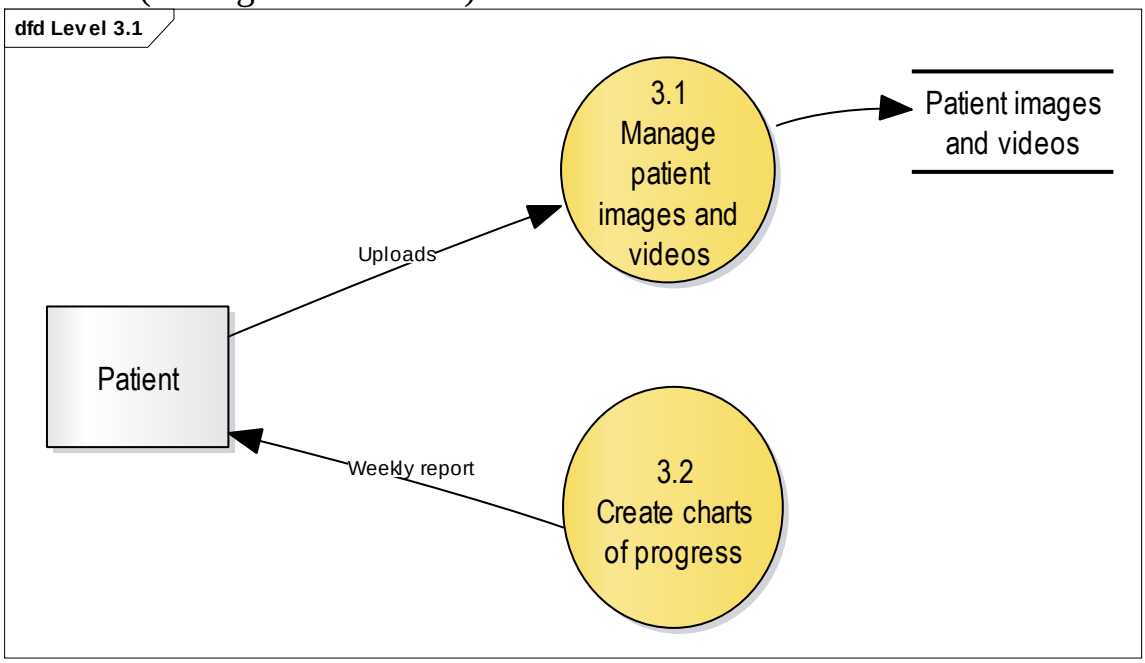
DFD Level 1 (Manage Appointment and Treatment)



DFD Level 1 (Generate Report and Handle Notification)

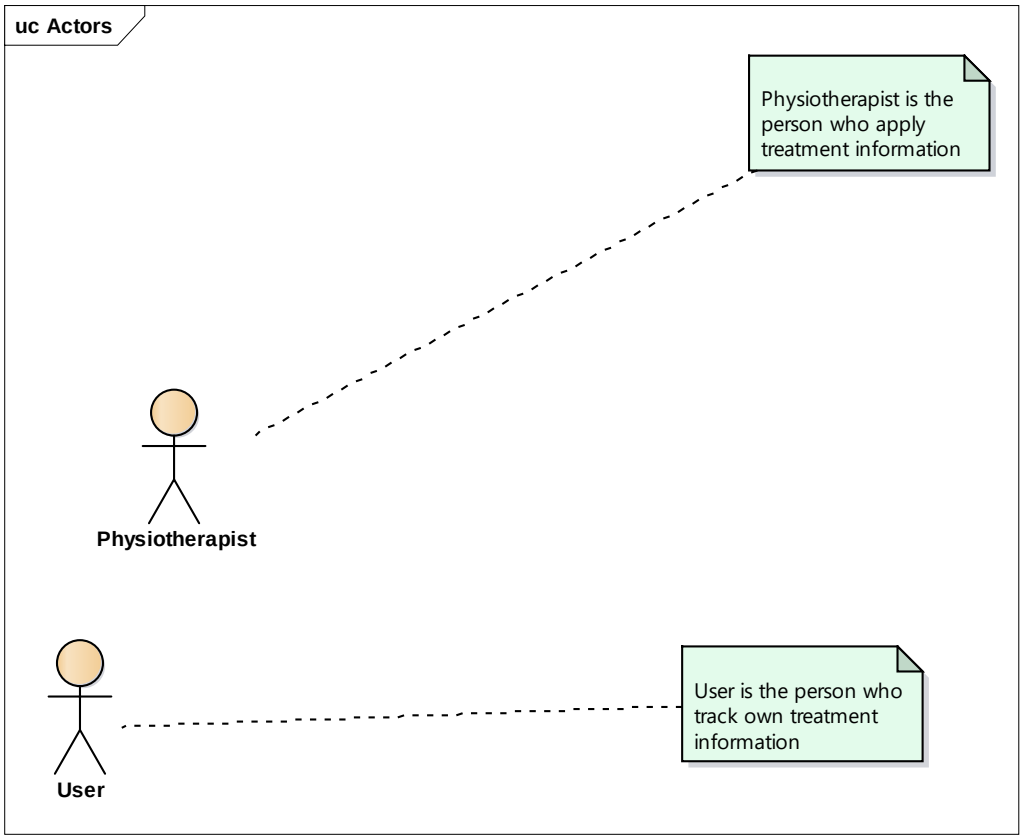


DFD Level 1 (Manage Patient Data)

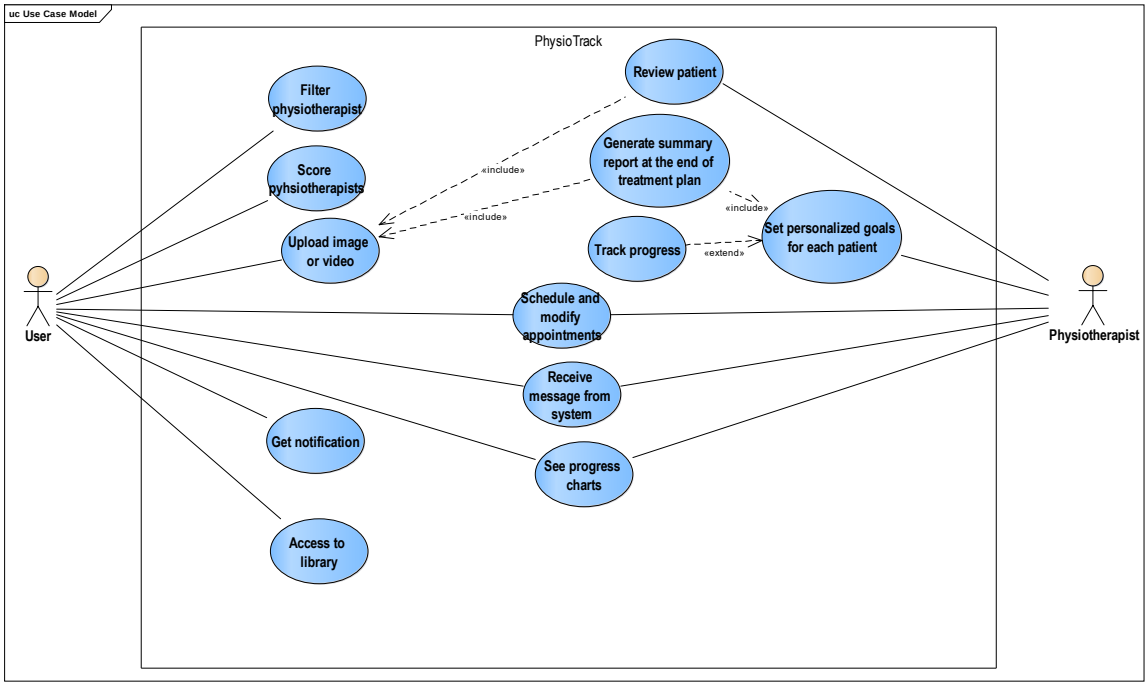


3.5. Use Cases

3.5.1. Actors

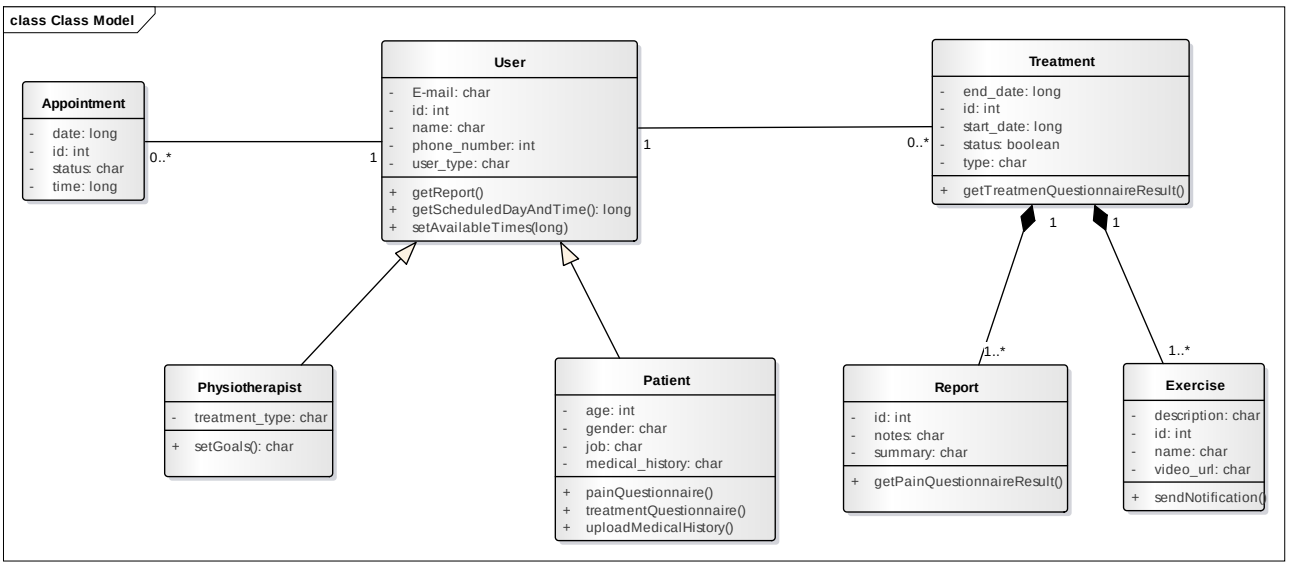


3.5.2. Use Case Diagrams



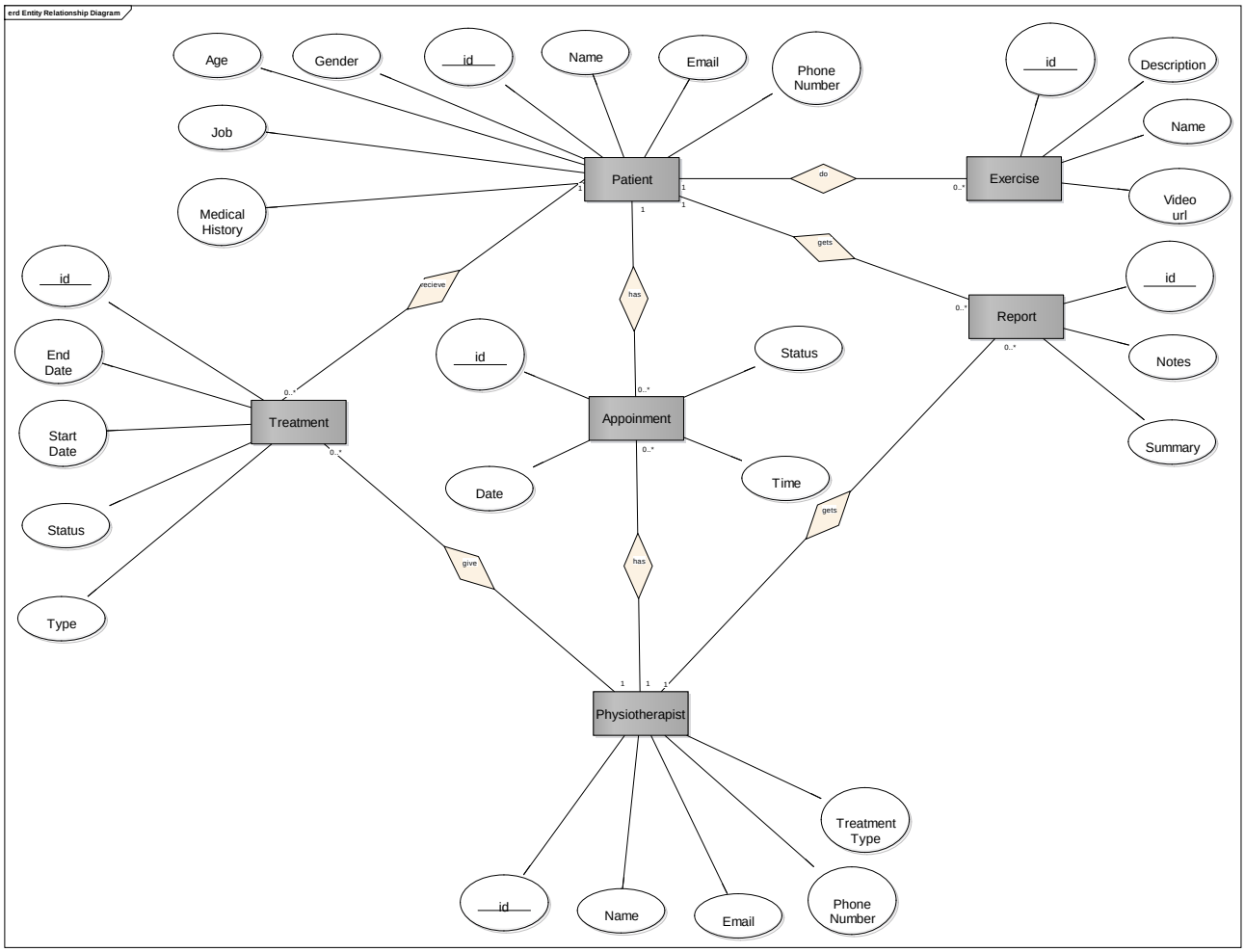
3.6. Class Diagrams

3.6.1. Class Diagram 1: PhysioTrack Class Model



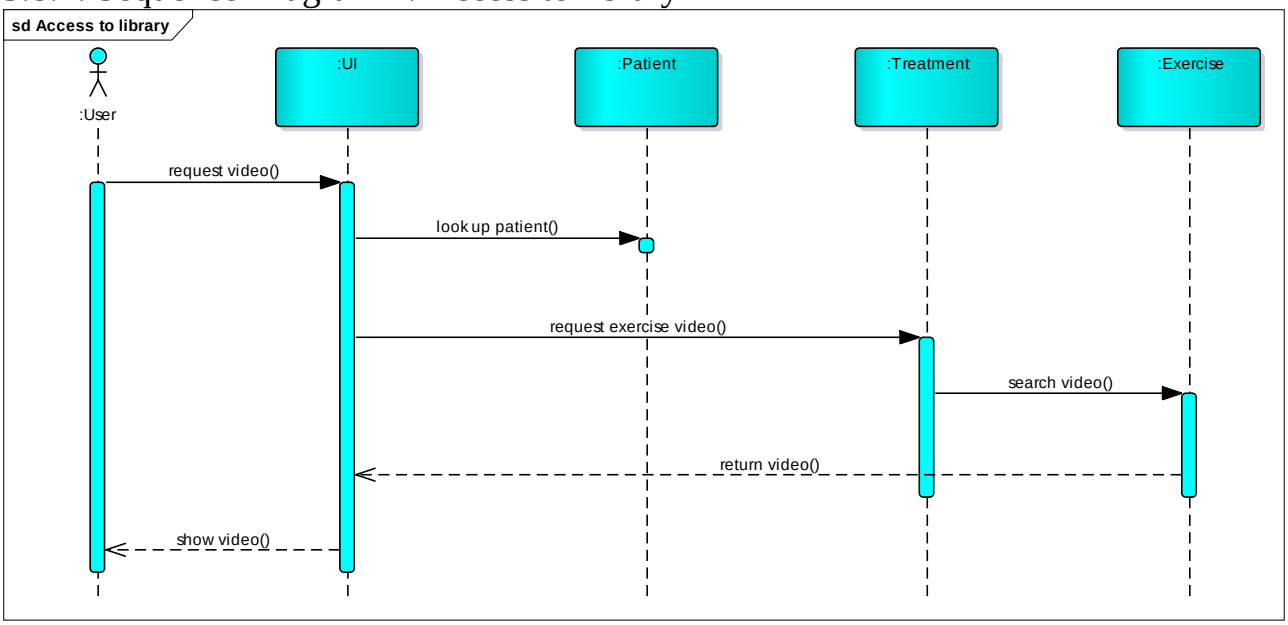
3.7. E/R Diagrams

3.7.1. E/R Diagram 1: PhysioTrack Entity Relationship Diagram

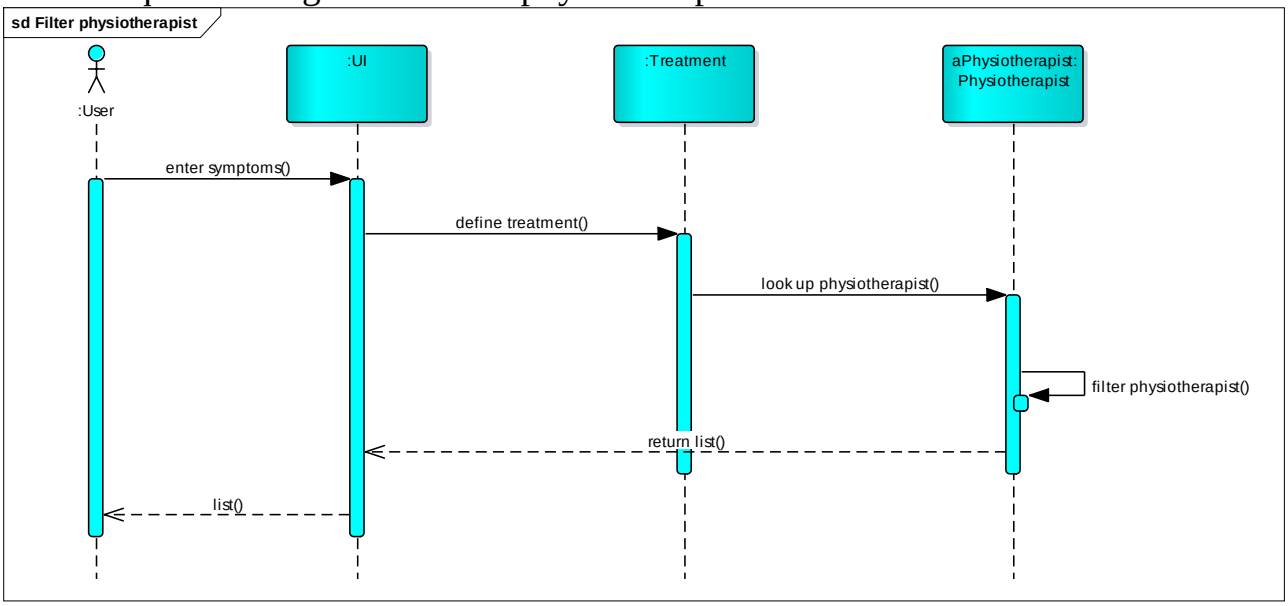


3.8. Sequence Diagrams

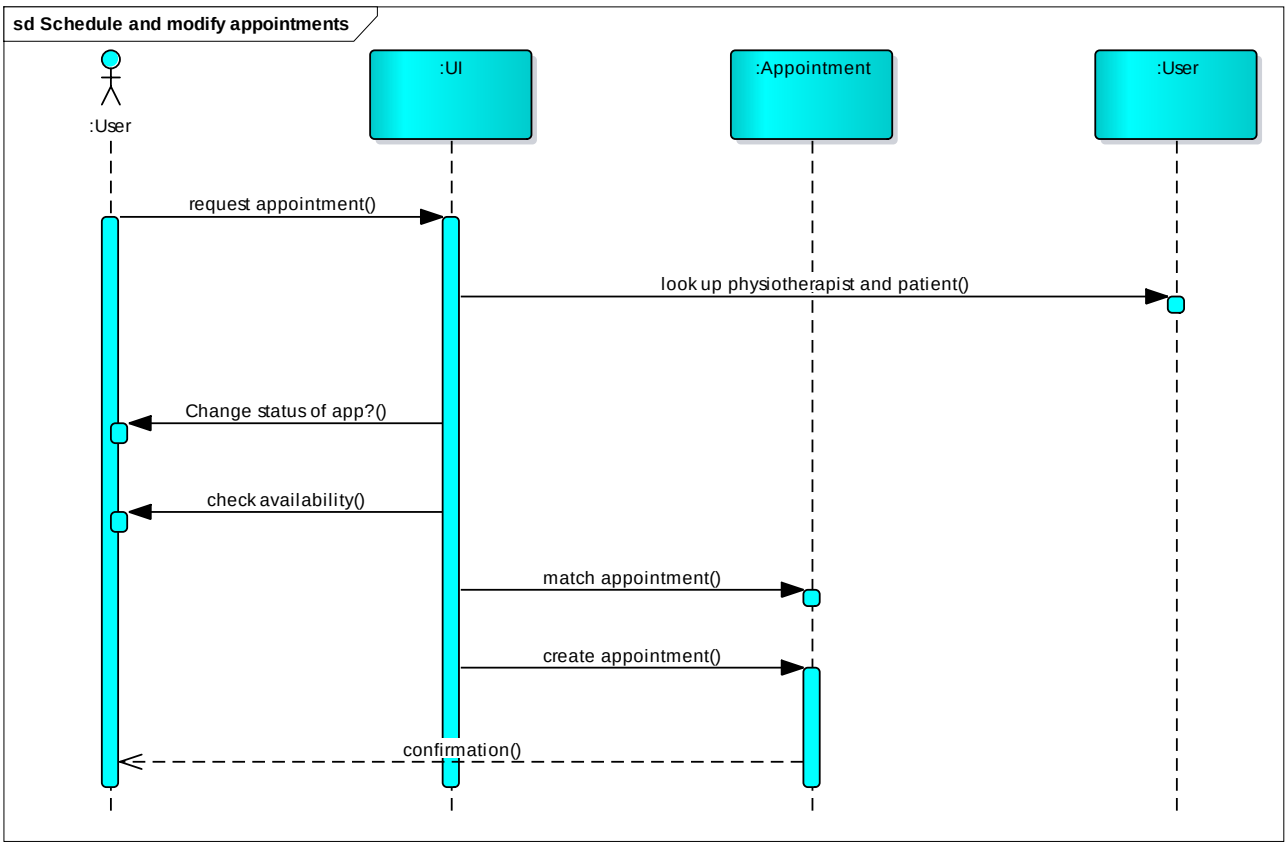
3.8.1. Sequence Diagram 1: Access to library



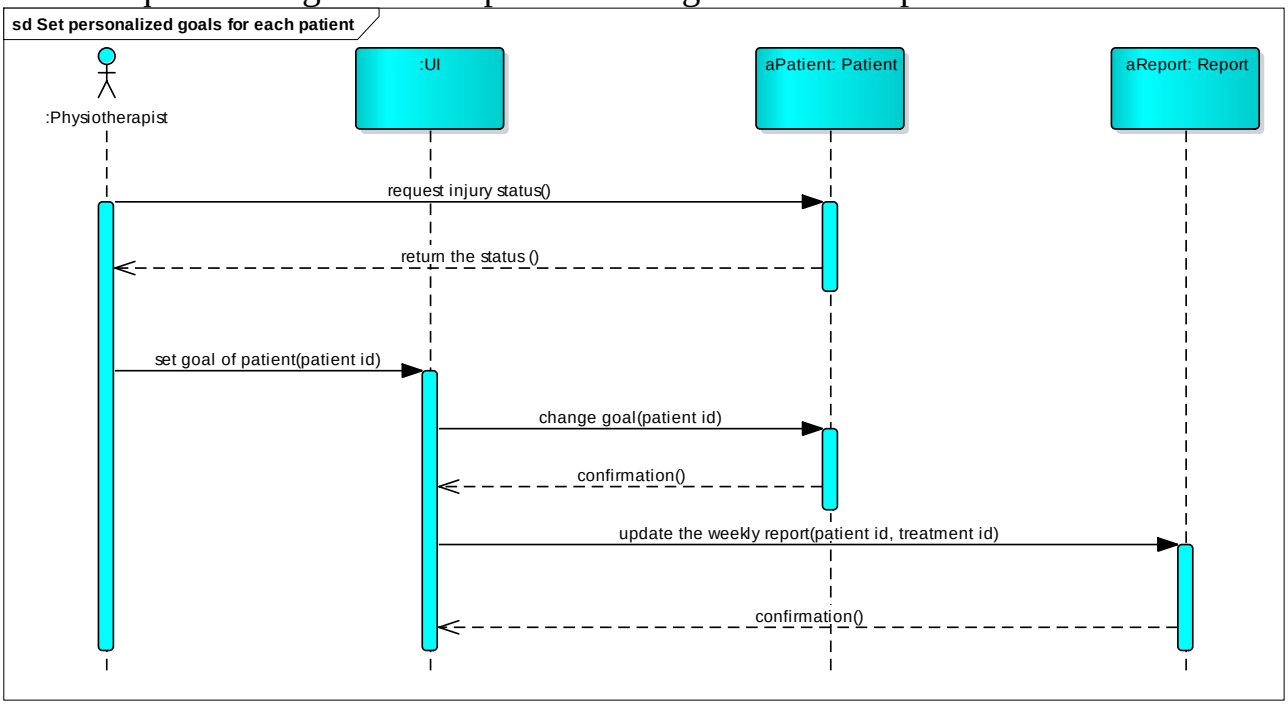
3.8.2. Sequence Diagram 2: Filter physiotherapist



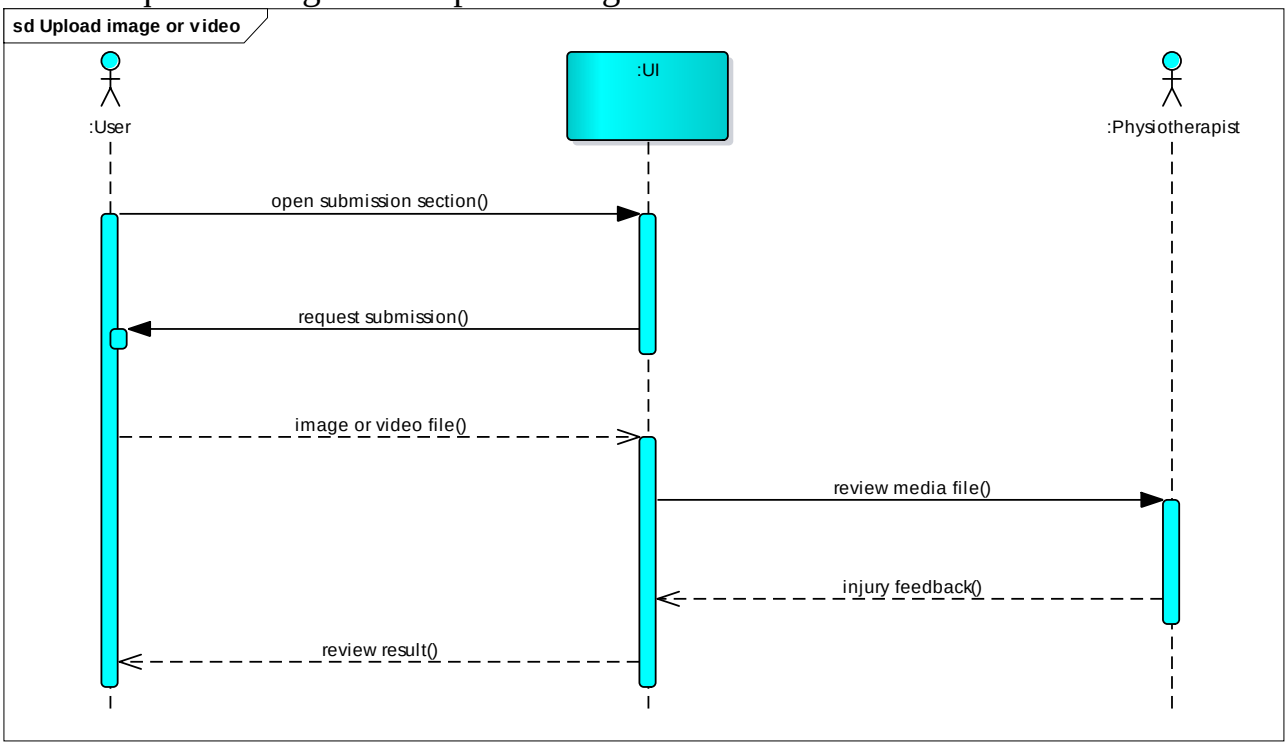
3.8.3. Sequence Diagram 3: Schedule and modify appointments



3.8.4. Sequence Diagram 4: Set personalized goals for each patient

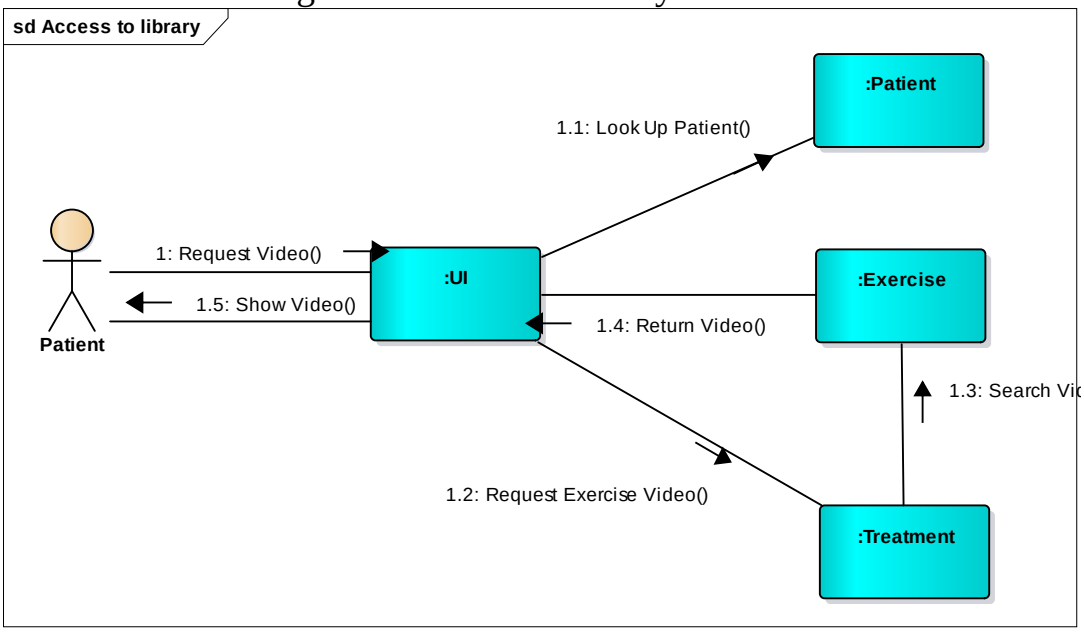


3.8.5. Sequence Diagram 5: Upload image or video

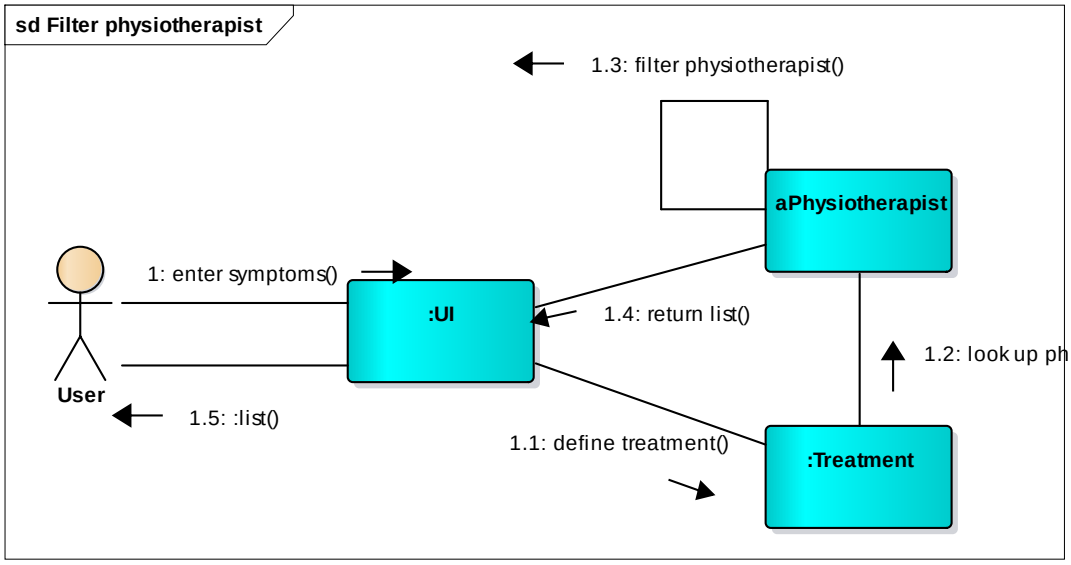


3.9. Communication Diagrams

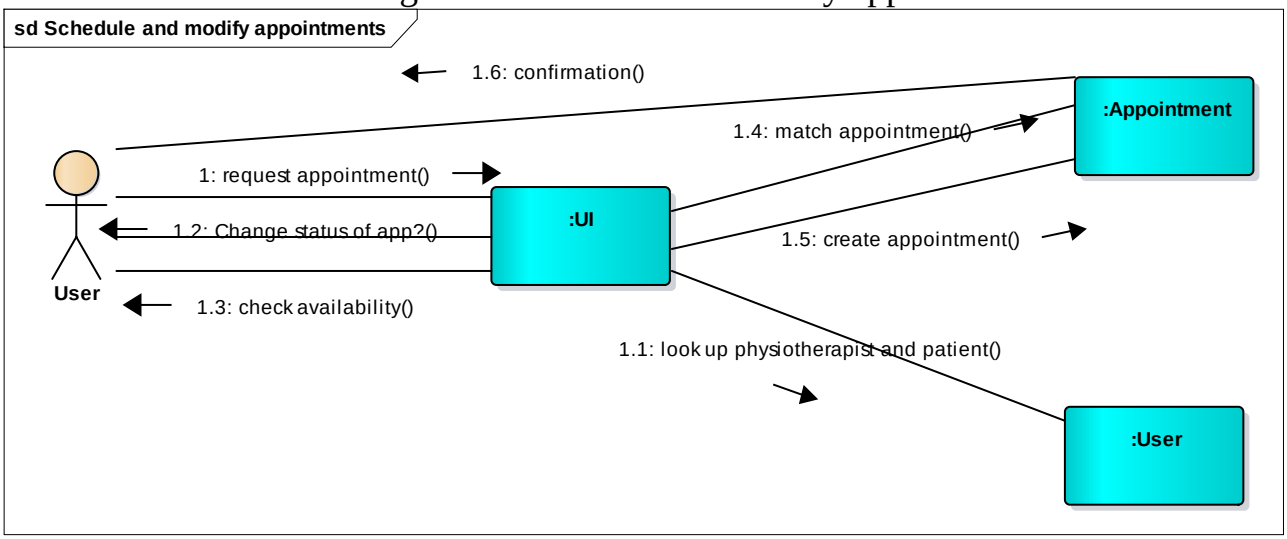
3.9.1. Communication Diagram 1: Access to library



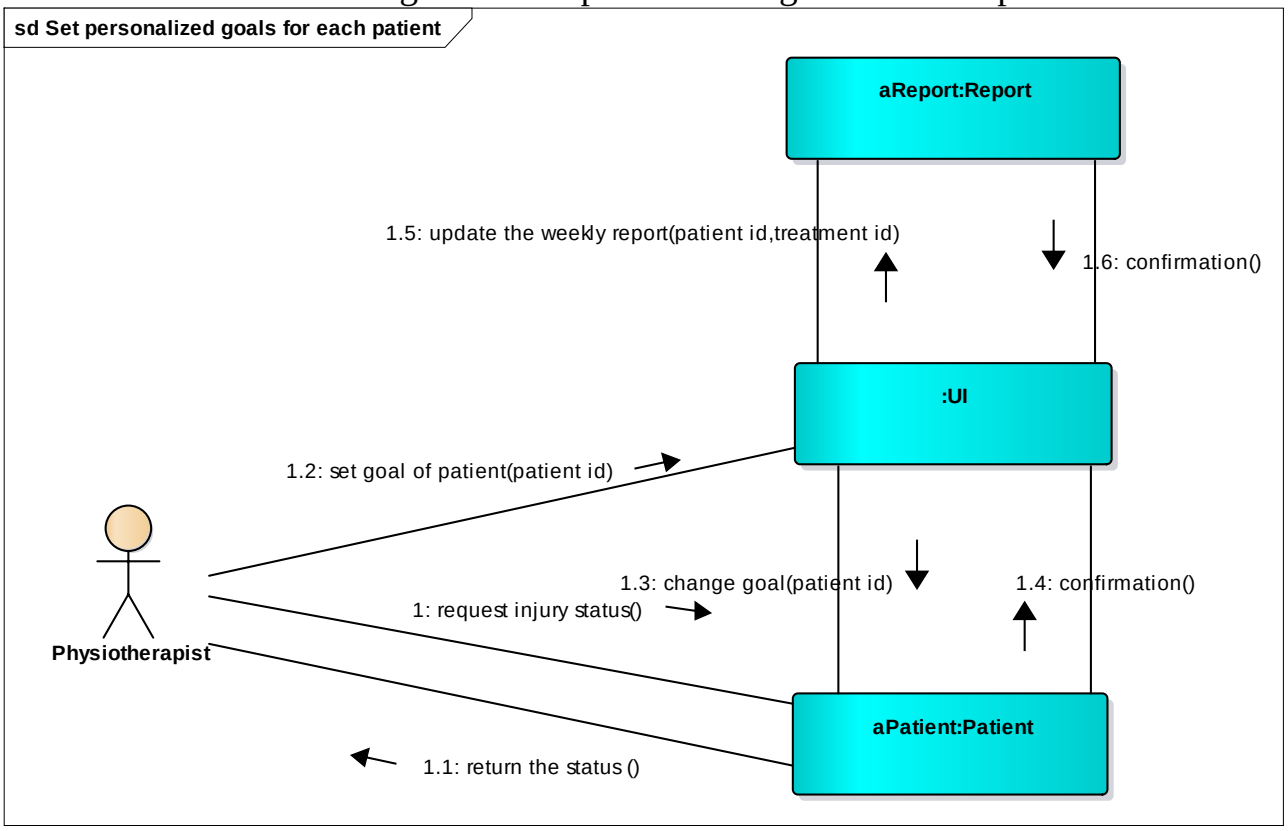
3.9.2. Communication Diagram 2: Filter physiotherapist



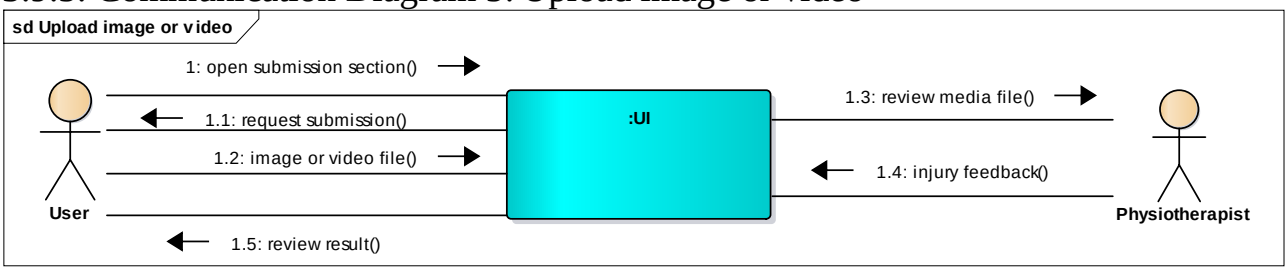
3.9.3. Communication Diagram 3: Schedule and modify appointments.



3.9.4. Communication Diagram 4: Set personalized goals for each patient.



3.9.5. Communication Diagram 5: Upload image or video



4. Conclusion

In conclusion, the PhysioTrack is a step forward in addressing challenges in traditional practices. By integrating patient-reported data, treatment details, and progress assessments, the system offers a comprehensive solution for both patients and physiotherapists. This progress highlights the important role technology plays in healthcare, not just improving patient outcomes but also providing insights into the efficiency of physiotherapy products. PhysioTrack will make a significant contribution to the development of healthcare.