# Deliverable #3

SE 3A04: Software Design II – Large System Design

**Tutorial Number: T03**

**Group Number: G09**

**Group Members:**

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Jackson Beach

Amal Hamid

Zayed Umer

Saad Salman

# 1 Introduction

## 1.1 Purpose

This document provides further information about the *PolyCare* system architecture which includes sequence diagrams, state chart diagrams, and a detailed class diagram.

The intended audience for this document is the internal *PolyCare* stakeholders. This can include developers, project managers, subject matter experts and investors. *PolyCare* Deliverable 1 and 2 provide prior context for a better understanding of the scope, indented purpose/execution and construction of this application.

## 1.2 System Description

As highlighted in Deliverable 1, *PolyCare* is an Android-based health application designed to provide women with a PCOS likelihood percentage. The system uses three different input types (symptoms, blood test results, and ultrasound images) to calculate the overall likelihood. A streamlined interface presents the results and allows for secure sharing of data with trusted third parties.

As discussed in Deliverable 2, the system will follow the Blackboard architecture style. This is due to the nature of the problem being addressed, as determining the overall likelihood of PCOS is not deterministic and relies on combining individual solutions from different knowledge source agents (a symptom-focused large language model, a blood test analyzer, and an ultrasound image analysis model).

This deliverable will provide a deeper understanding of how the system's various controller classes function (using state charts), how the system fulfills different use cases (using sequence diagrams), and present the overarching class-level structure of the entire system (via a detailed class diagram).

## 1.3 Overview

In the sections that follow, we present a detailed exploration of the PolyCare system's design through various diagrams. Section 2 contains the state charts for the primary controller classes, illustrating how each controller transitions between states in response to events. Section 3 provides sequence diagrams corresponding to the key business events (BE#1–BE#14), showcasing how different parts of the system collaborate to fulfill the application's purpose. Finally, Section 4 includes the detailed class diagram, outlining the system's structure at the class level and highlighting the relationships among those classes. A Division of Labour sheet is also provided, specifying each team member's contributions to this deliverable.

This document is organized by the different types of diagrams and charts that will be used to describe the functionality of the *PolyCare* application.

# 2 State Charts for Controller Classes

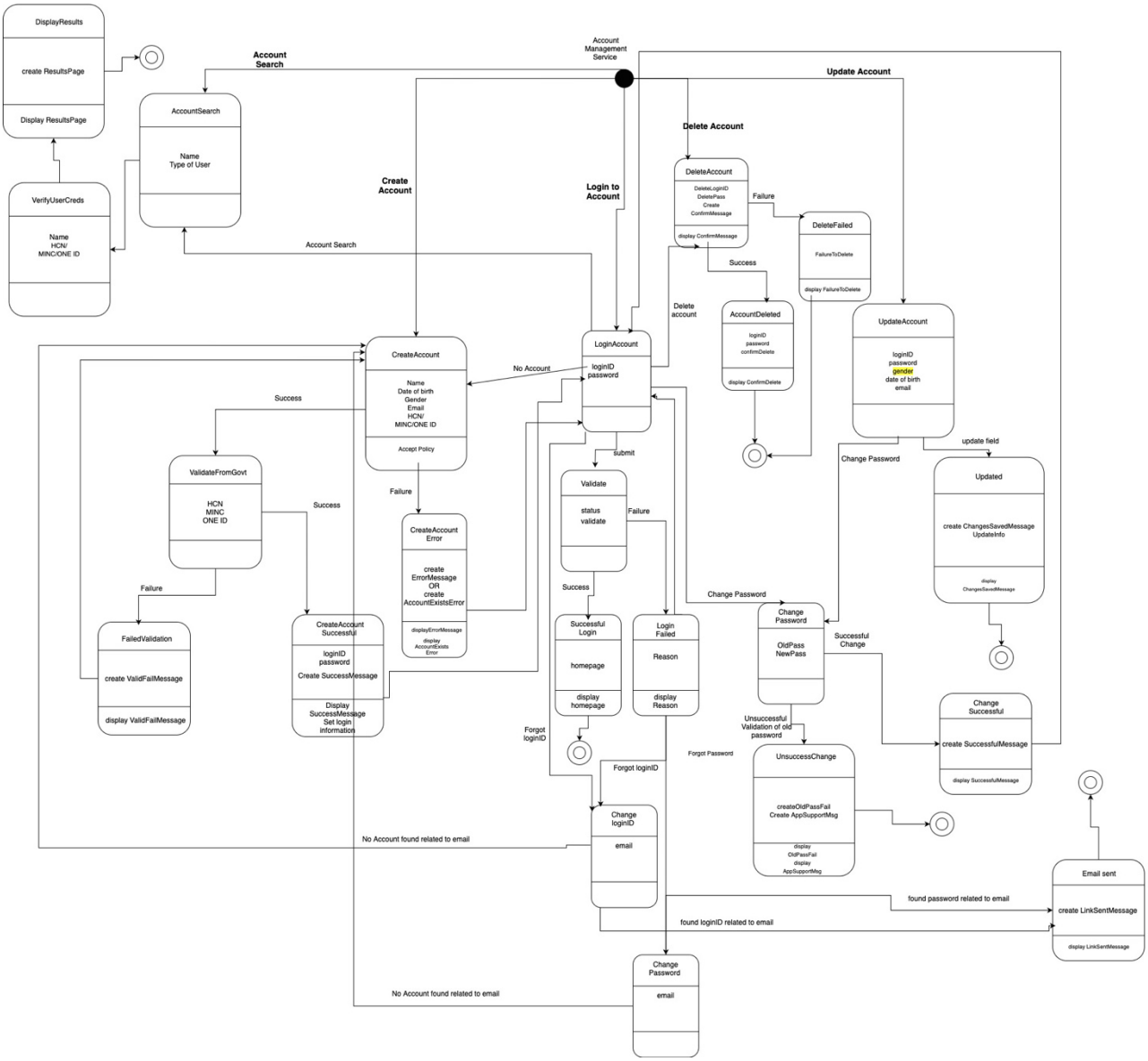


*Figure 1 - Account Management Controller*

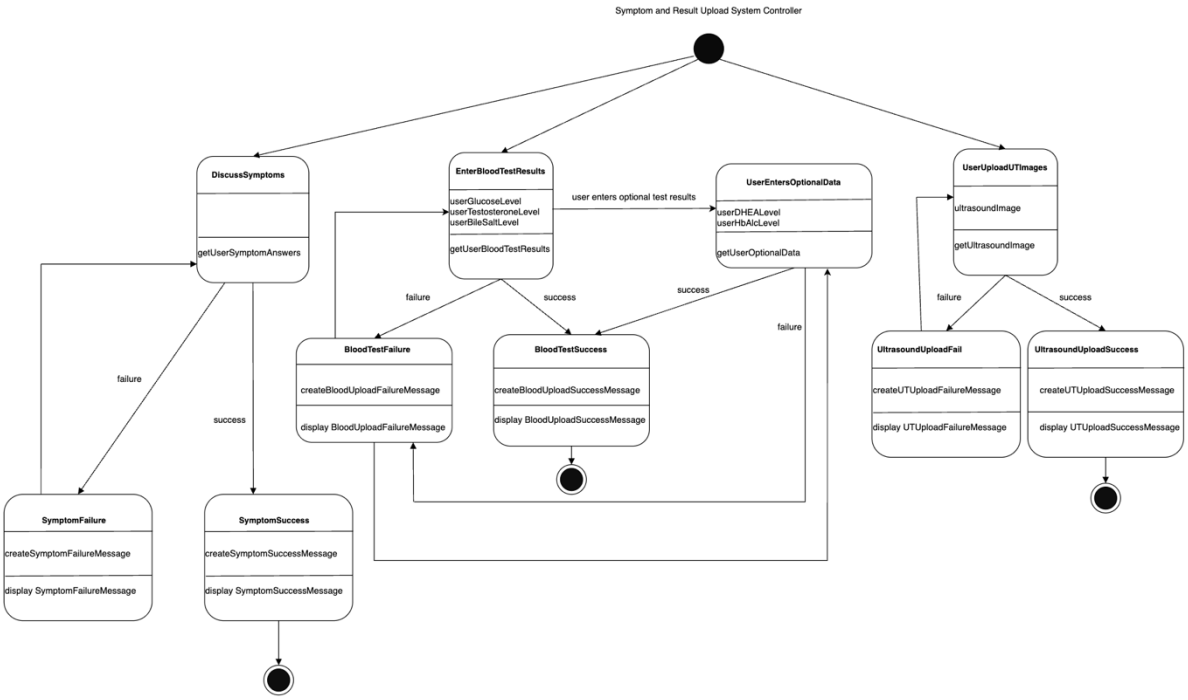


*Figure 2 - Symptom and Result Controller*

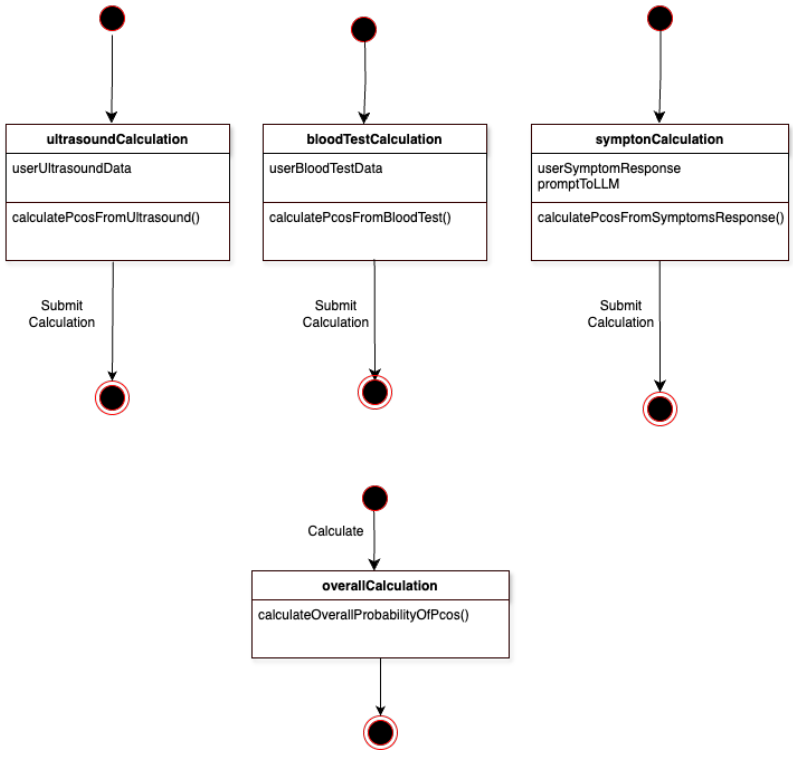


*Figure 3: Calculation Controllers*

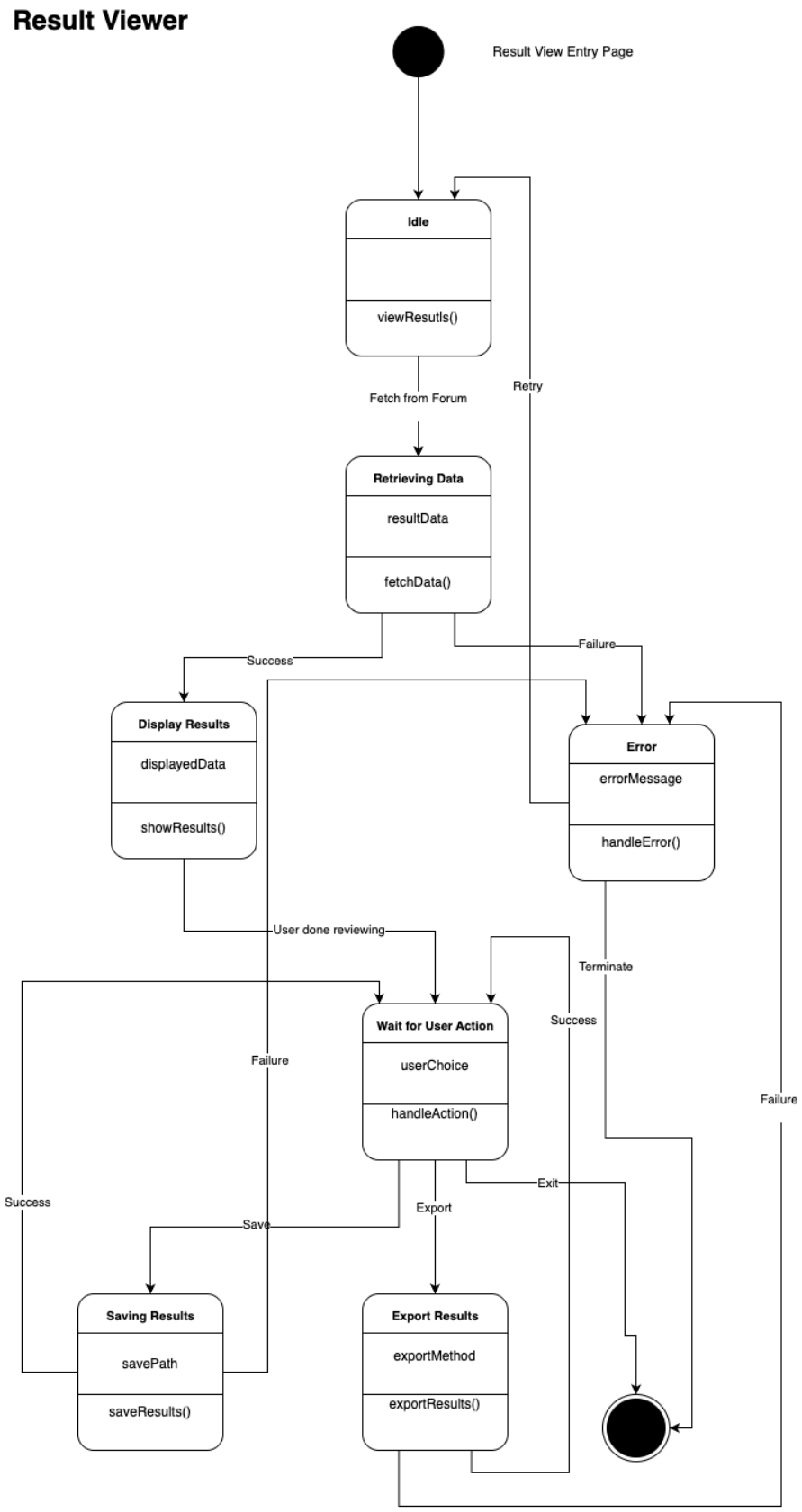


*Figure 3 - Result Viewer Controller*

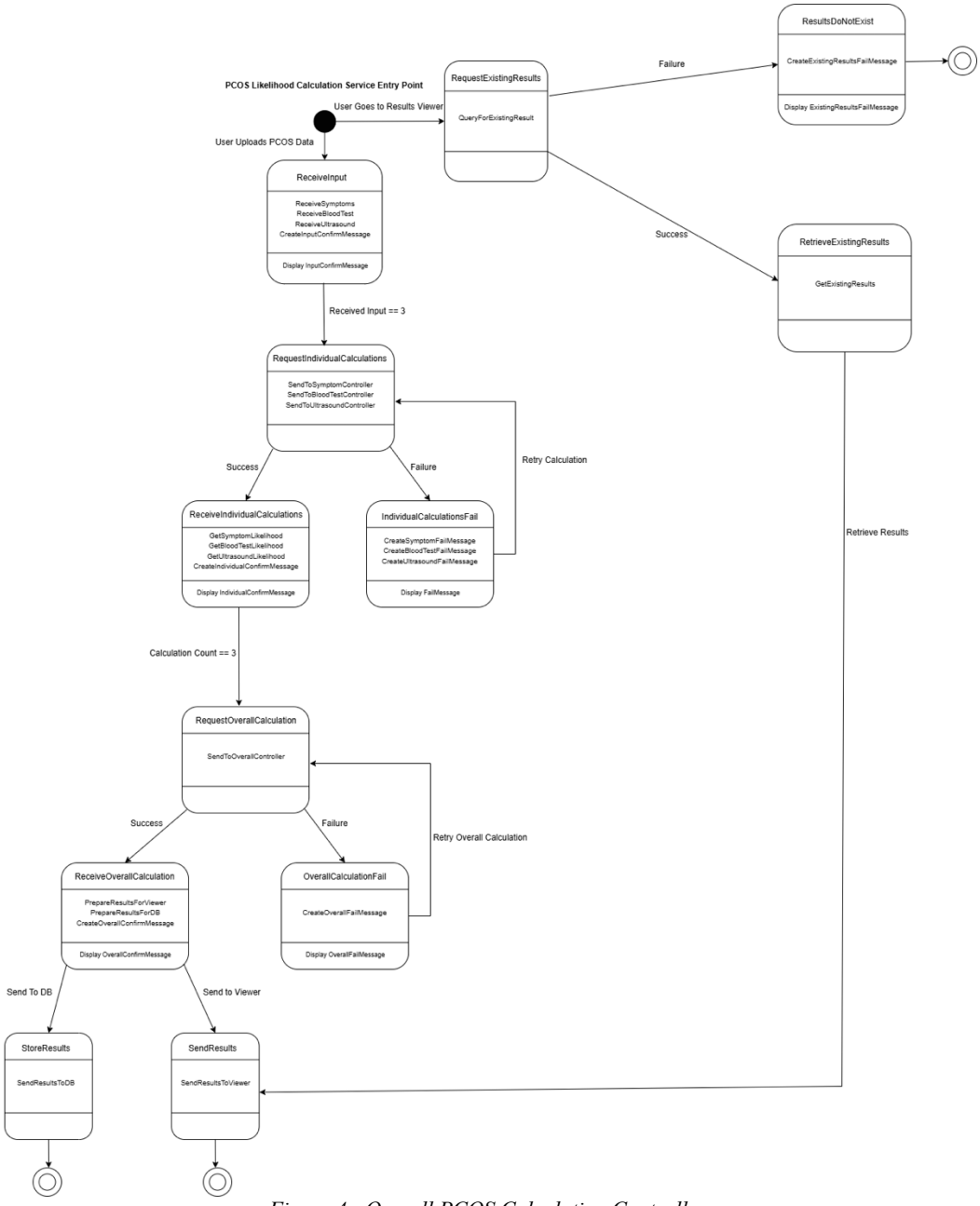


*Figure 4 - Overall PCOS Calculation Controller*

# 3 Sequence Diagrams

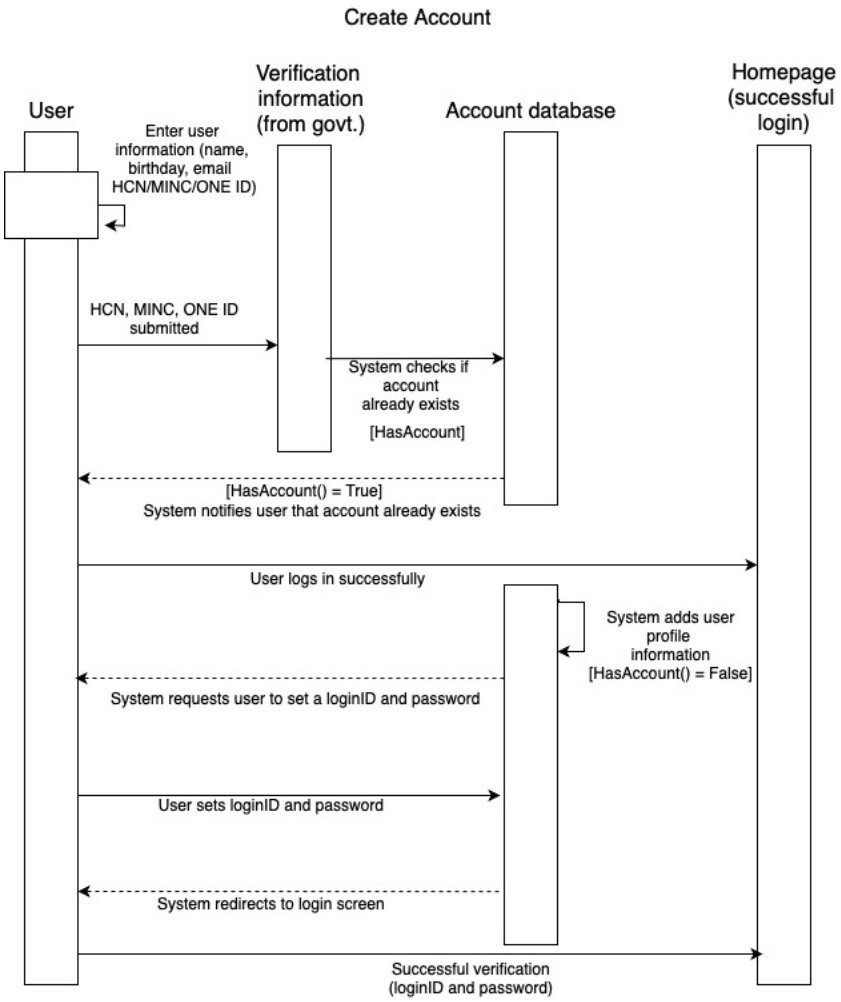


*Figure 5 - Create Account*

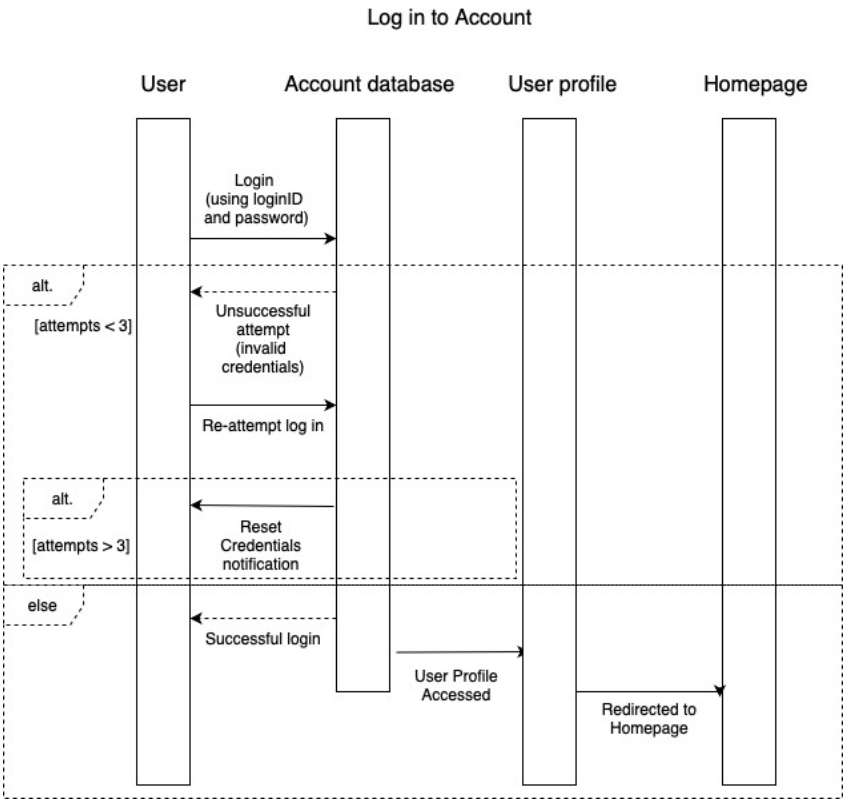


*Figure 6 - Login to Account*

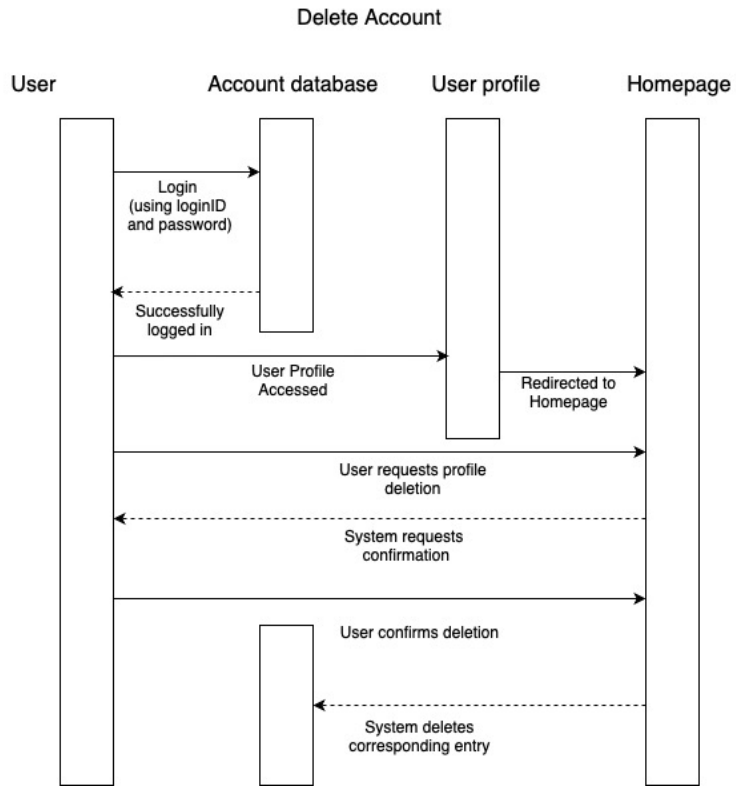


*Figure 7 - Delete Account*

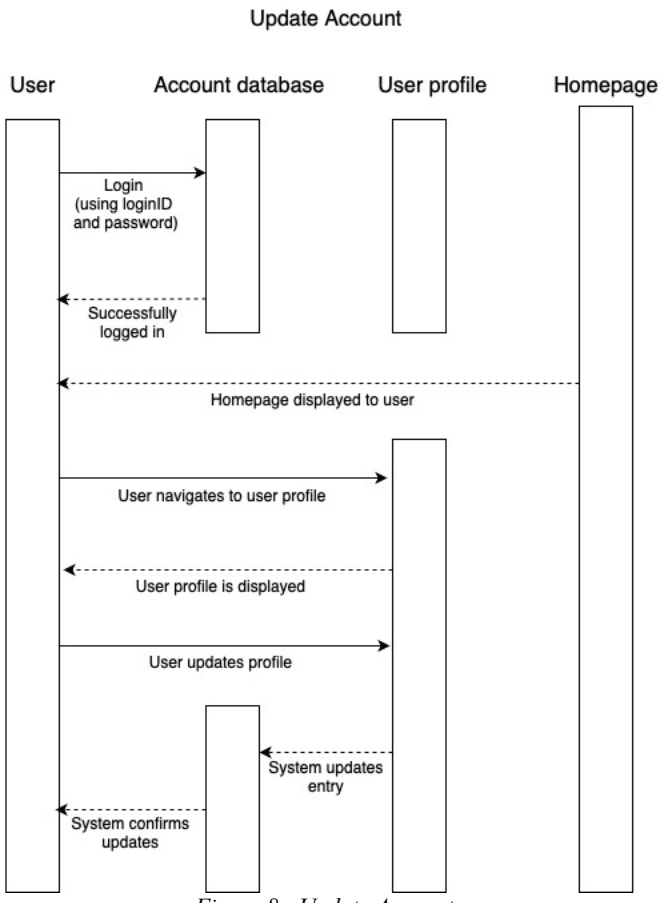


*Figure 8 - Update Account*

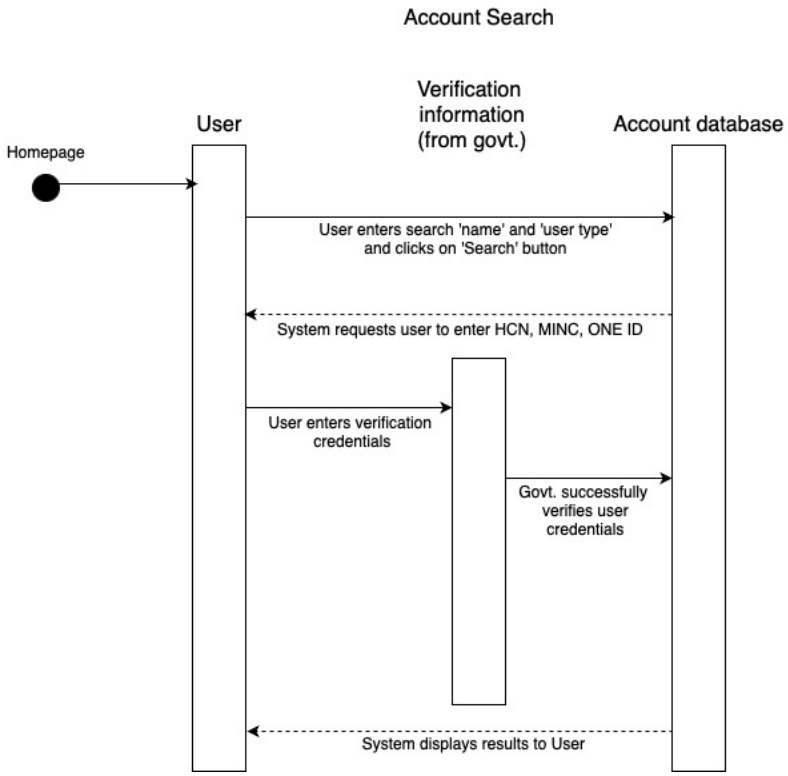


*Figure 9 - Account Search*

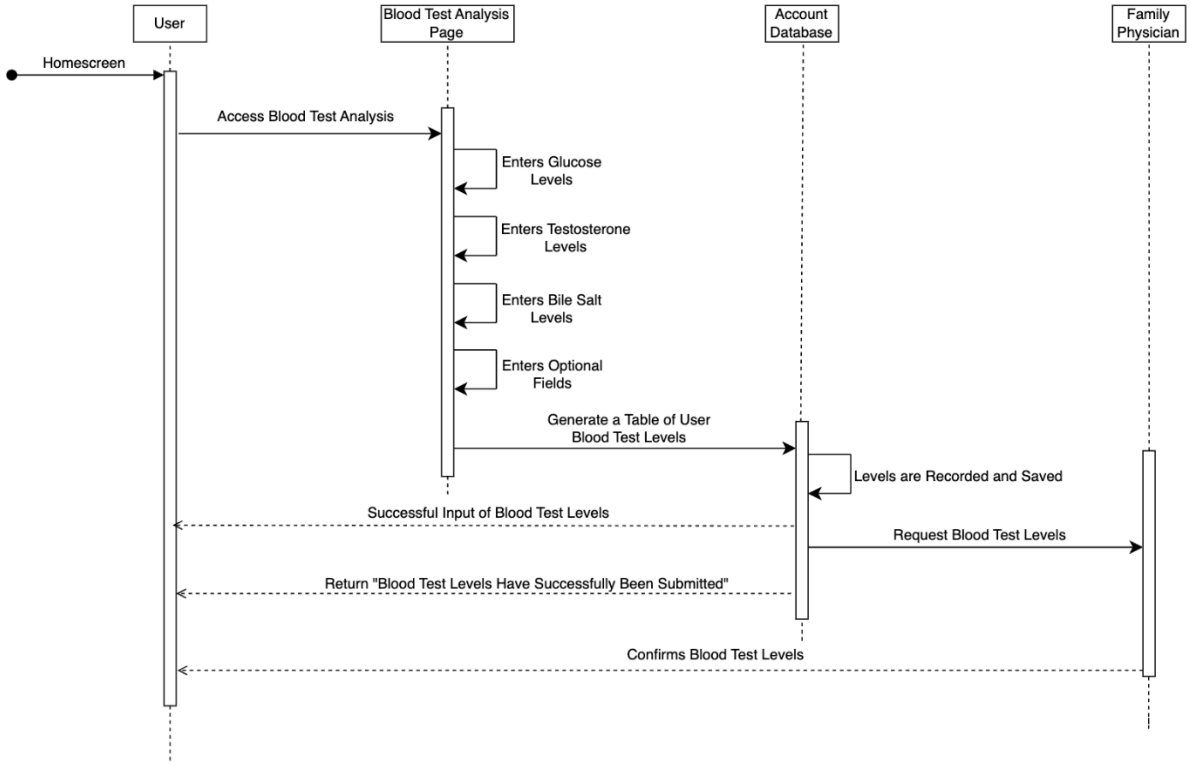


*Figure 10 - Blood test result submission*

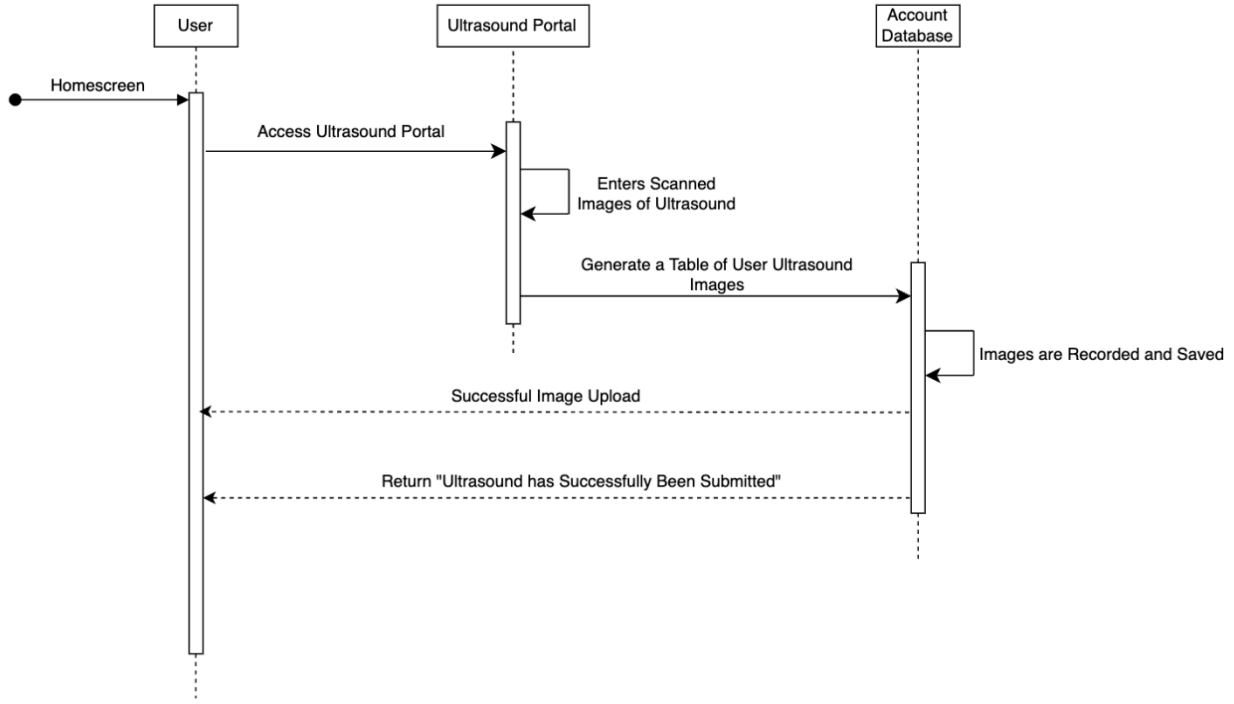


*Figure 111 - Ultrasound Submission*

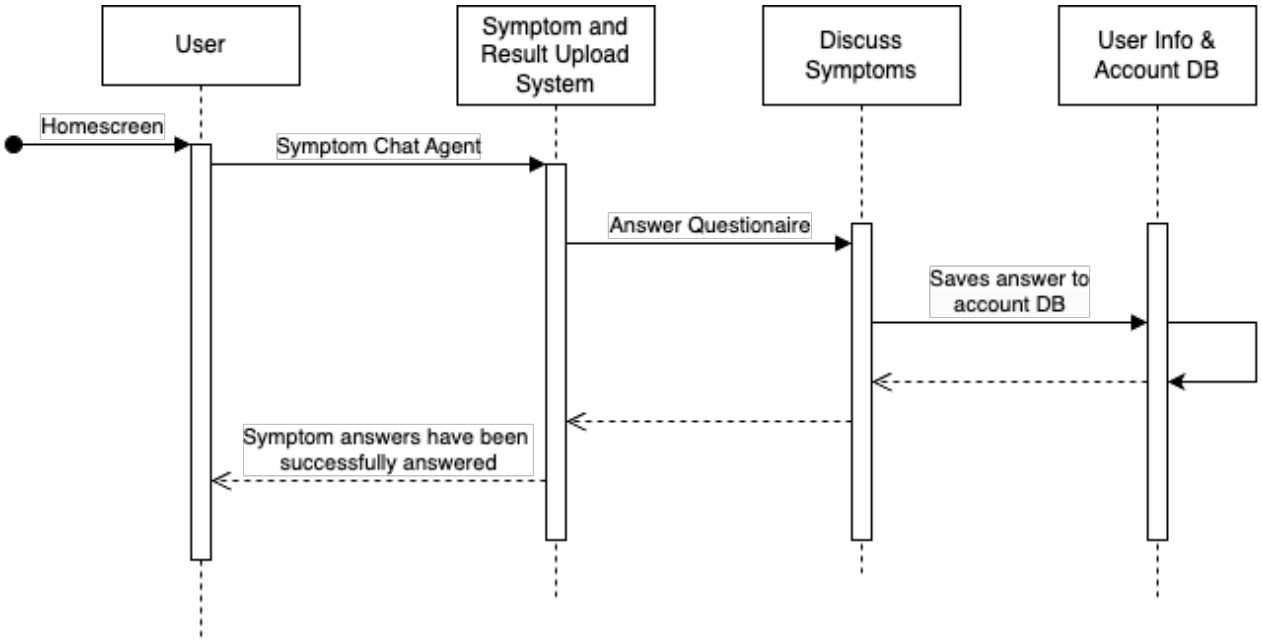


*Figure 12 - Symptom Submission*

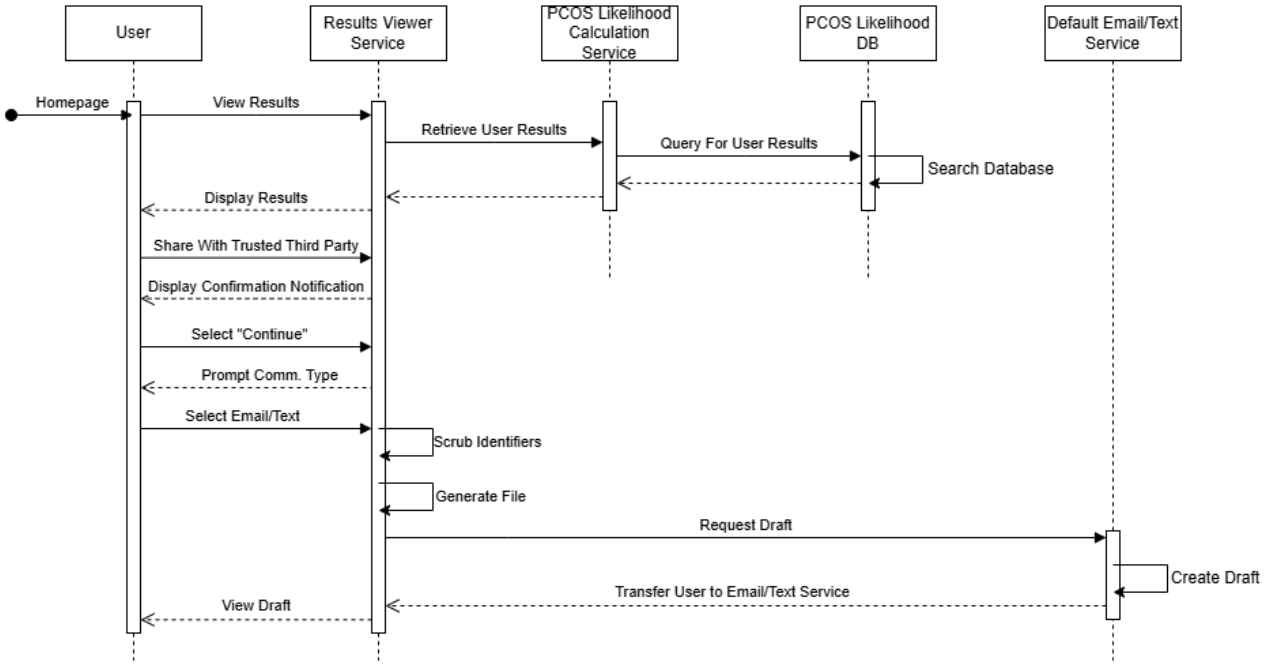


*Figure 13 - Sharing Results (Email or Text)*

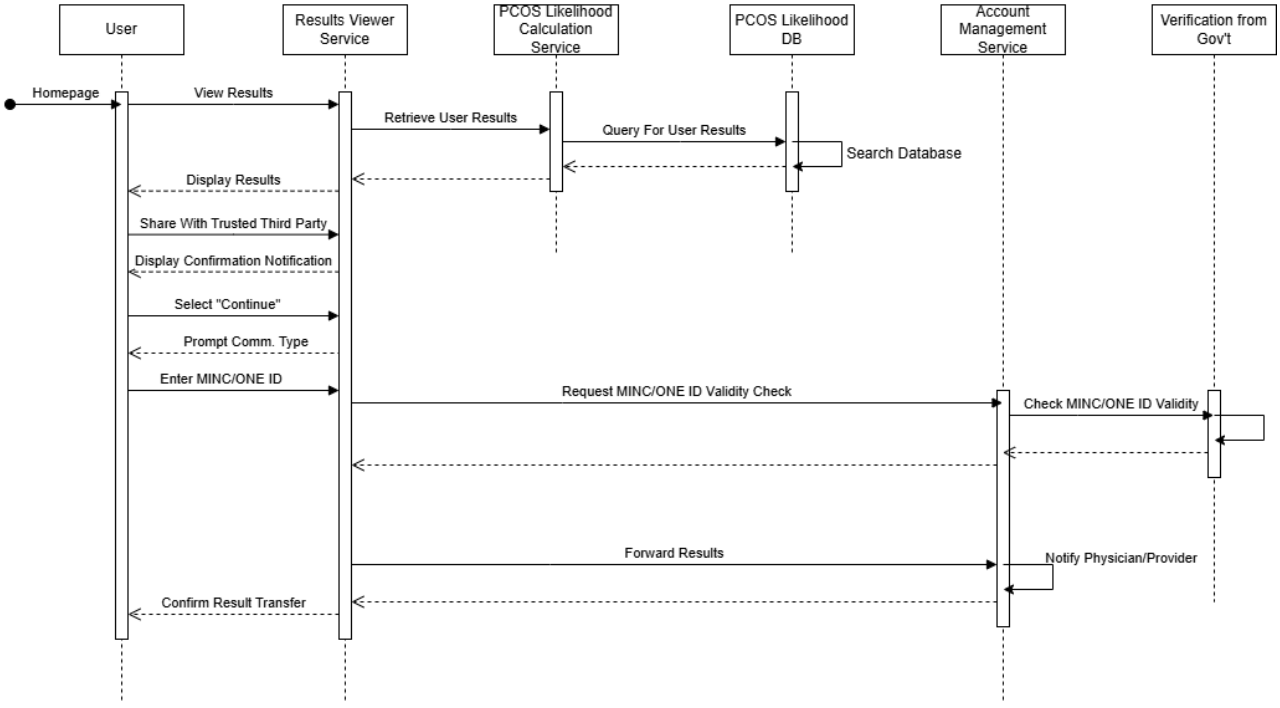


*Figure 14 - Sharing Results (with physician or healthcare provider)*

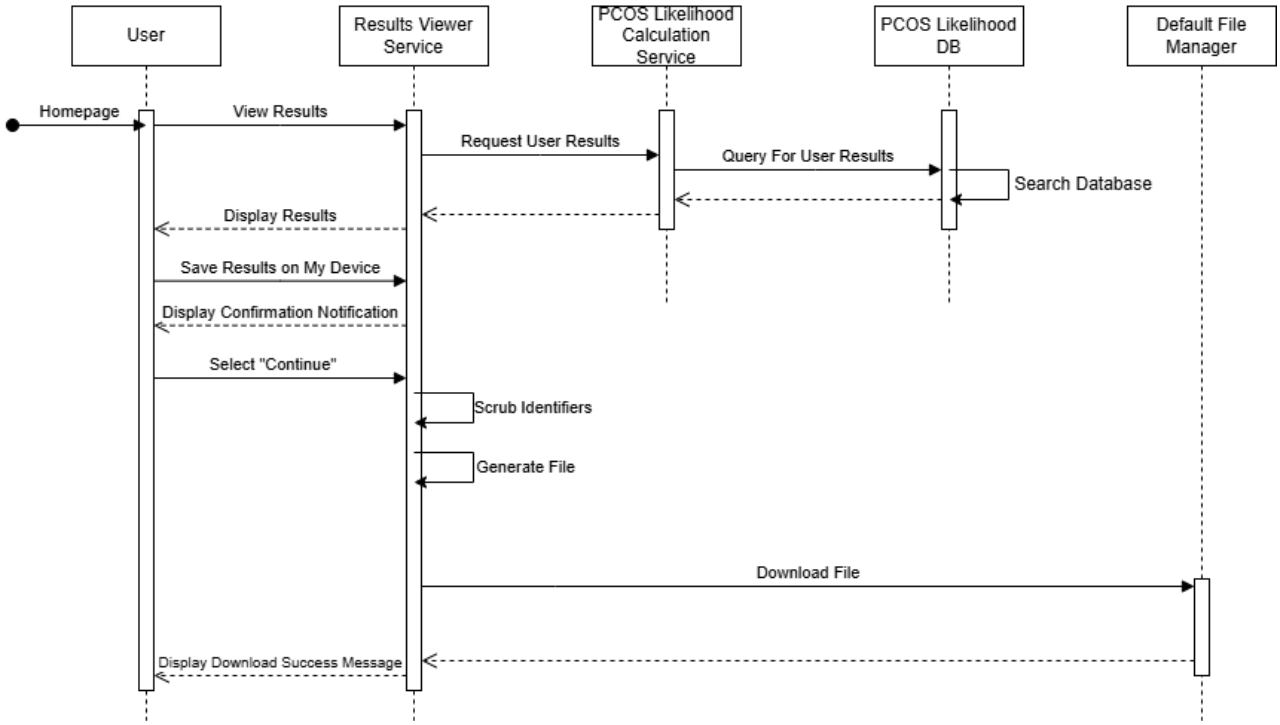


*Figure 15 - Saving Results*

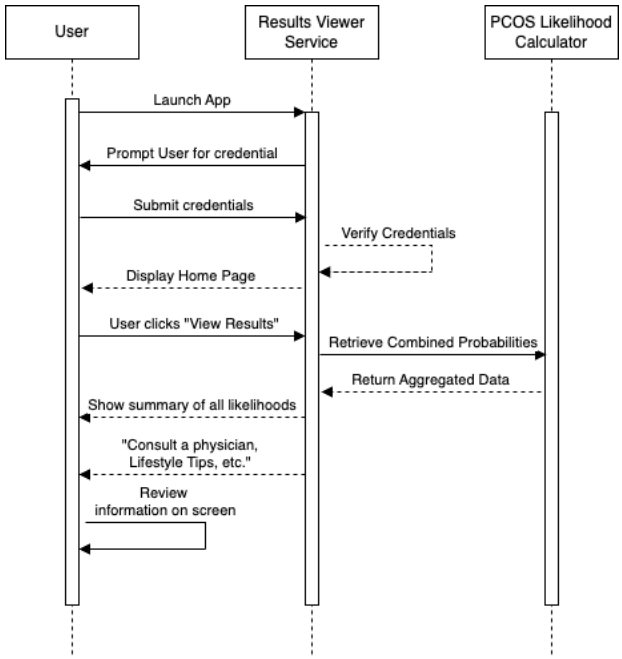


*Figure 16 - Display Likelihood Summary and Sharing Options*

# 4 Detailed Class Diagram

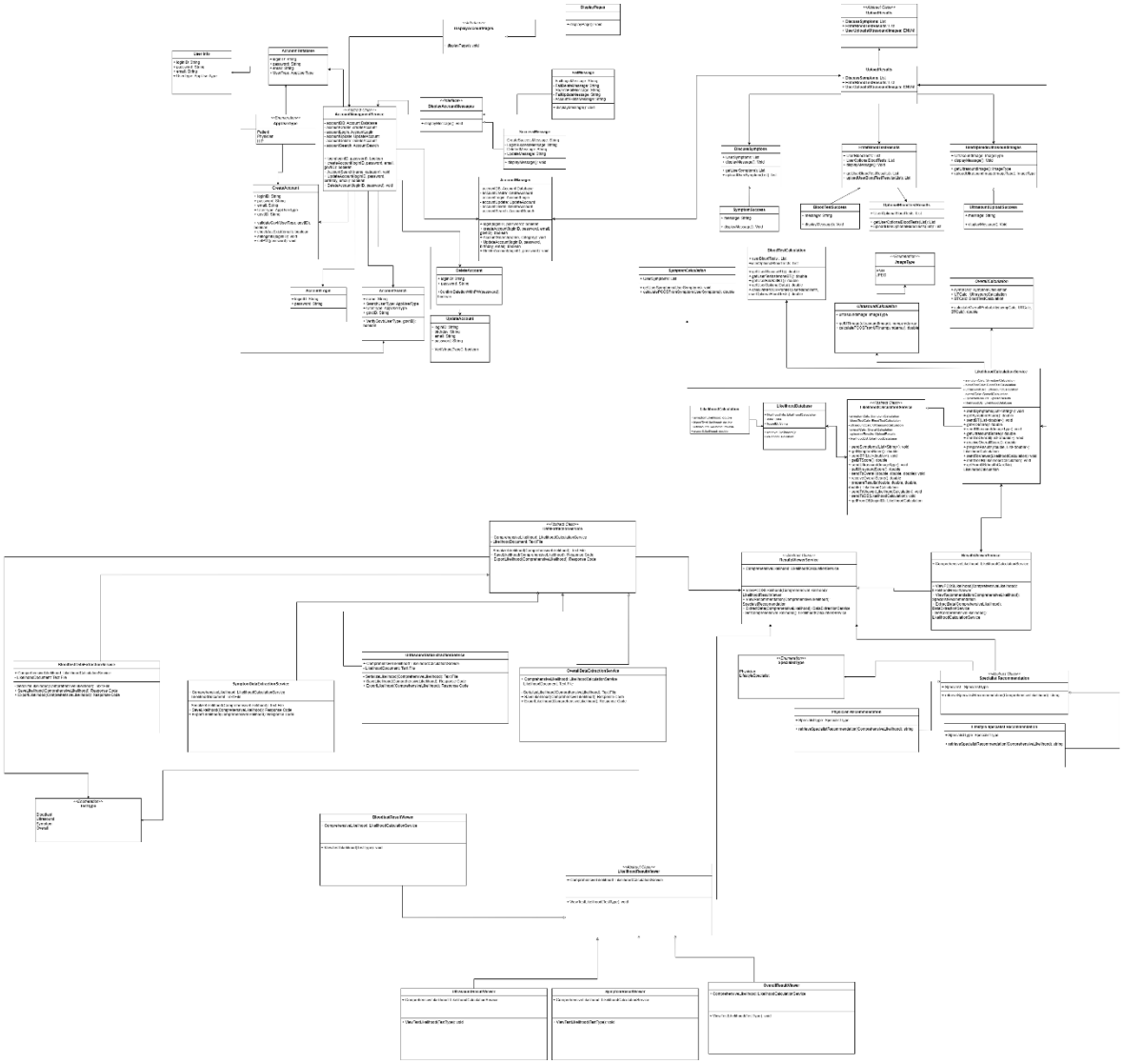

*Figure 17 - Detailed Class Diagram*

# A Division of Labour

Include a Division of Labour sheet which indicates the contributions of each team member. This sheet must be signed by all team members.

**Salman, Saad:**

- Introduction 1.1 (Purpose)
- Calculation Service State Diagram
- Business Event #11 Sequence Diagram
- Detailed Class Diagram

**Umer, Zayed:**

- Introduction 1.3 (Overview)
- Result Viewer Service State Diagram
- Business Event #14 Sequence Diagram
- Detailed Class Diagram

**Beach, Jackson:**

- Introduction 1.2 (System Description)
- PCOS Likelihood Calculation Service State Diagram
- Business Event #12 Sequence Diagrams
- Business Event #13 Sequence Diagram

- Detailed Class Diagram (with everyone)
- Final Document Editing (with everyone)

**Siddiqui, Maham:**

- Introduction (1.1 with Saad)
- Account Management Service Controller Diagram
- BE 1 – 8 Sequence Diagrams
- Detailed Class Diagram (with everyone)
- Final Document edits (with everyone)

**Hamid, Amal:**

- Introduction 1.3 (Overview)
- Symptom and Result Controller State Chart Diagram
- BE #11 Sequence Diagram
- BE #12 Sequence Diagram
- Detailed Class Diagram (with everyone)
- Final Document edits (with everyone)