TUT02_Group08_Deliv03

SFWRENG 3A04: Software Design III - Large System Design

Anando Zaman
Brian Kibazohi
David Yao
Qiushi Xu
Tamas Leung

1 Introduction

1.1 Purpose

The purpose of this document is to model the "Ready-player-one" architecture more formally through various Unified Modelling Language (UML) diagrams. This document will use the content (analysis diagram, architectural diagrams, CRC) from the previous deliverable documents as a basis to develop the following UML diagrams:

- class diagram
- sequence diagram
- state diagram.

These UML diagrams will outline the underlying structure and behaviour amongst the different modules and subsystems. This ensures that future developers, stakeholders, or project managers have documentation available to reference if further information is needed on how the system works and behaves.

1.2 System Description

"Ready-Player-One" is a mini-game library system that allows users to play a variety of arcade-style games and compete with each other using high-scores. The user will have the ability to login and pick from a selection of games. Once the game starts, they continue playing until it ends depending on the specific game rules. As the game runs, the system will maintain the overall score and update the max high-score in the external database, if the users' current score exceeds the current maximum high-score.

In regards to the system architecture, "Ready-player-one" utilizes the Presentation-Abstraction-Control (PAC) architecture which separates the agents into distinct partitions containing their own controller, abstraction/entity, and boundary modules. This ensures that the system has properties of high-cohesion & low-coupling amongst the modules. Thus, the code structure becomes modular and prevents a single controller from doing several activities. The system is broken down into the following agents: "Main-menu", "In-game", and "Authentication". These agents communicate with each other to transition the player into different states such as authentication and "in-game" gameplay. The authentication agent is the first agent that will be used by the player during startup in order to authenticate them. Next, the main-menu agent will allow the player to view their score fetched from an external database. Additionally, it will also allow them to pick the game of their choice from the list of available games. The "in-game" module will be responsible for handling the user-interactions within a specific game.

1.3 Overview

This document is organized by the following sections: State Charts for Controller Classes, Sequences Diagrams, and Detailed Class Diagram.

1.3.1 Section 2 - State Diagrams Overview

Section 2 contains the state diagrams which are made with reference to the Analysis Class Diagrams from Deliverable 2. Each of the controller classes will have a state diagram outlining their states and events required for transitions.

1.3.2 Section 3 - Sequence Diagrams Overview

Section 3 contains sequence diagrams which are made with reference to the Business Events & Use case diagrams from Deliverable 1. This will show the interaction and communication between the system and the user.

1.3.3 Section 4 - Detailed Class Diagram Overview

Section 4 contains the detailed class diagram, which complements the previous sequence diagrams by illustrating the internal structure of each class. It also transforms the responsibilities detailed in the CRC cards into class attributes and functions.

2 State Charts for Controller Classes

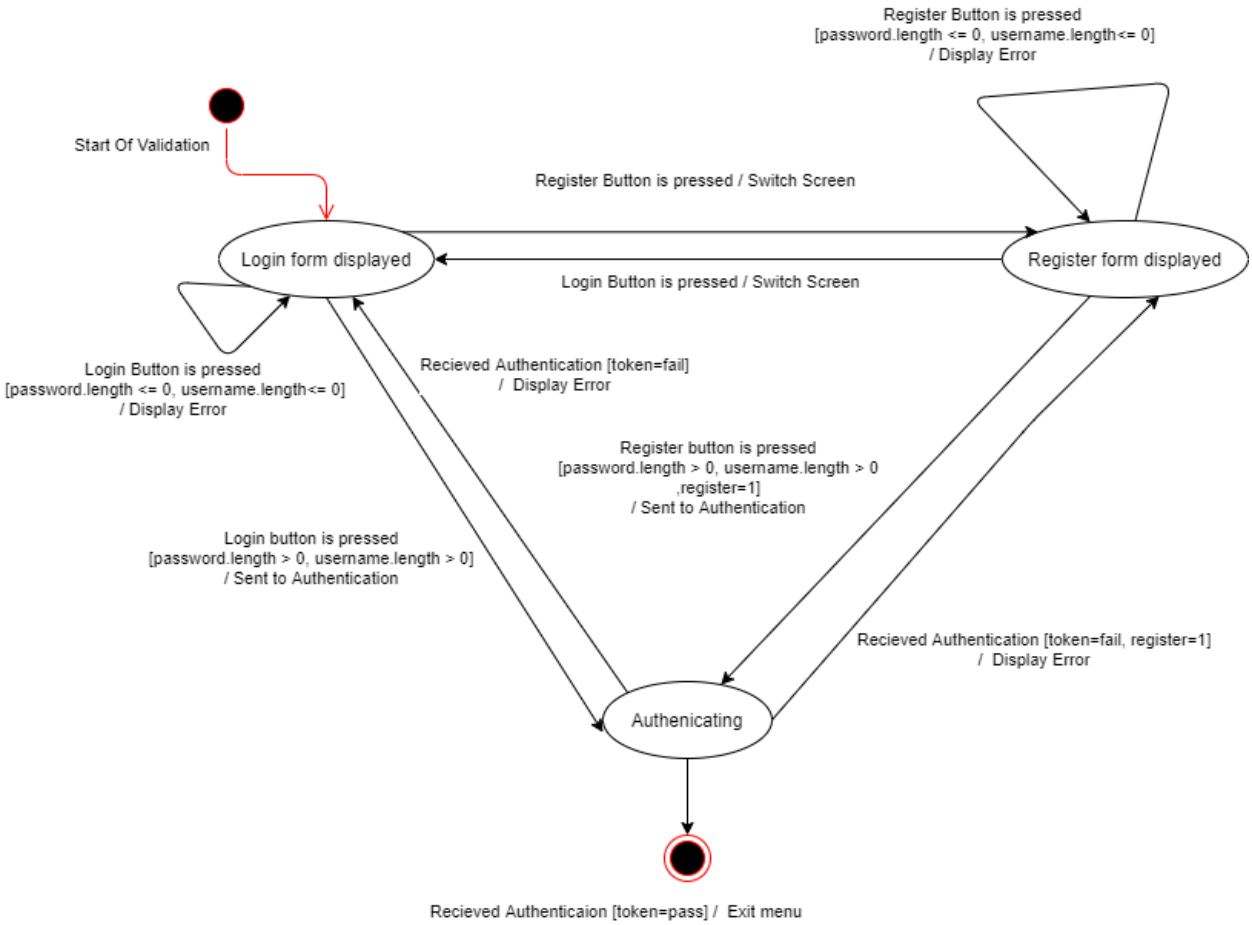

Figure 1: State Chart - Validation controller

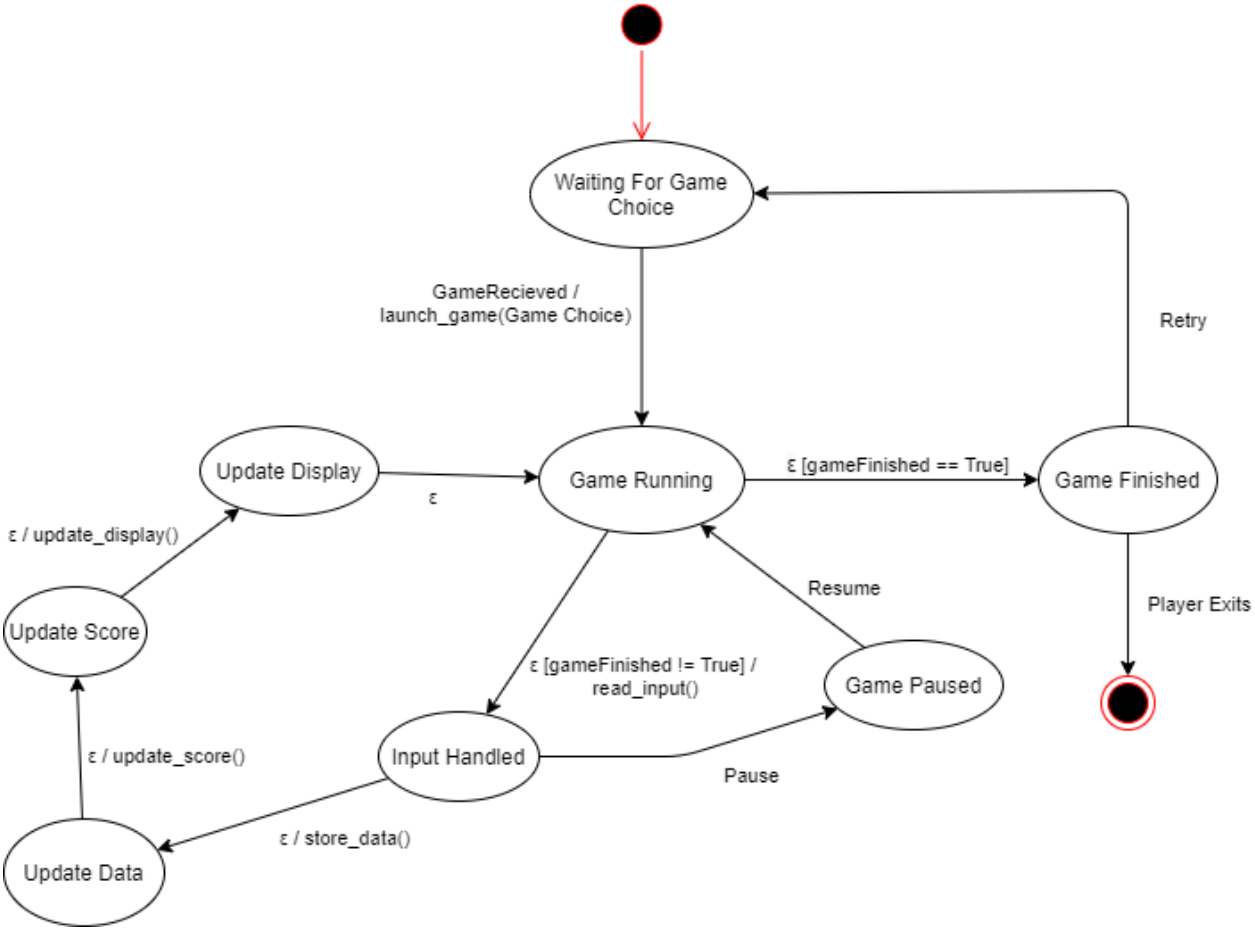

Figure 2: State Chart - game state controller

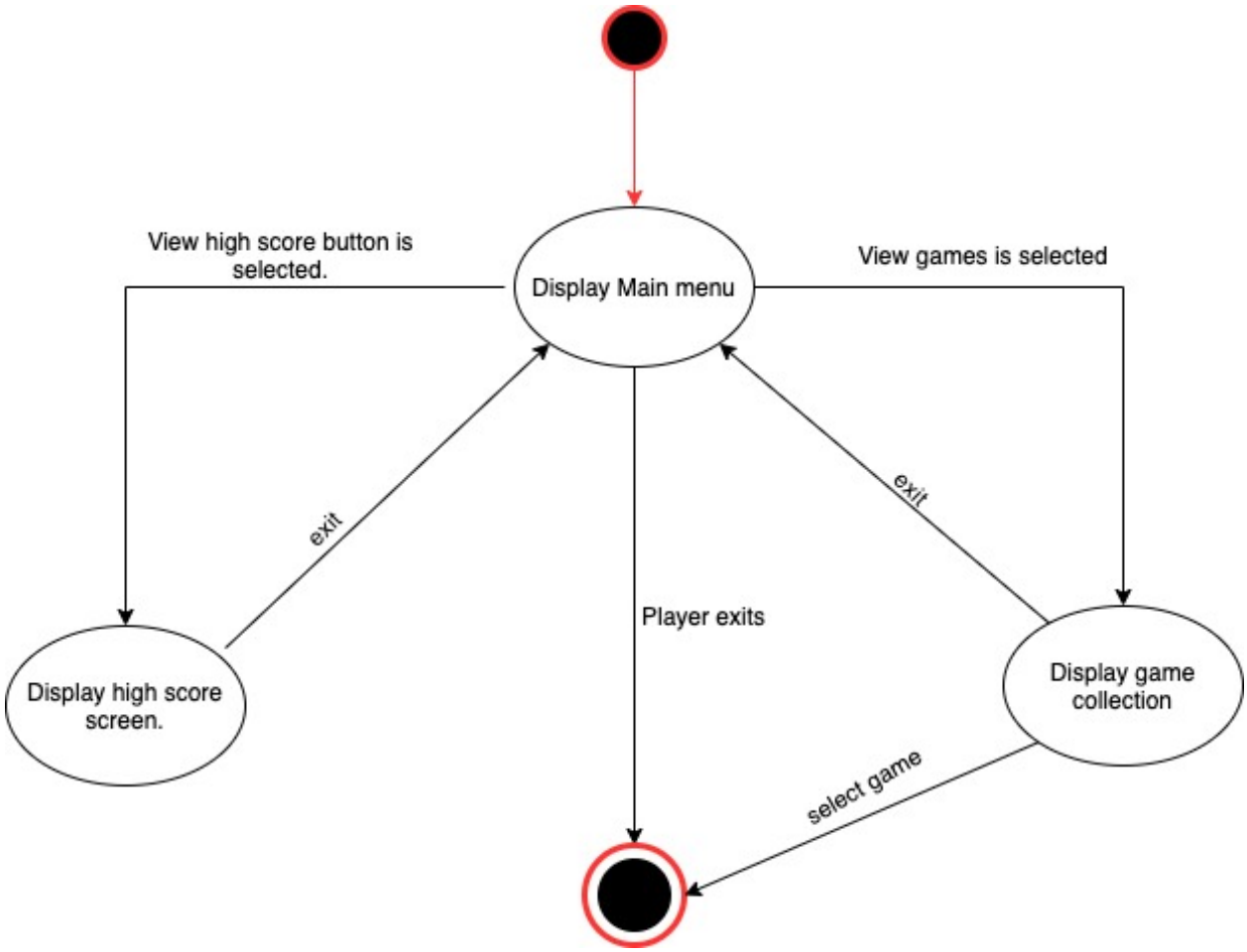

Figure 3: Main-menu controller

3 Sequence Diagrams

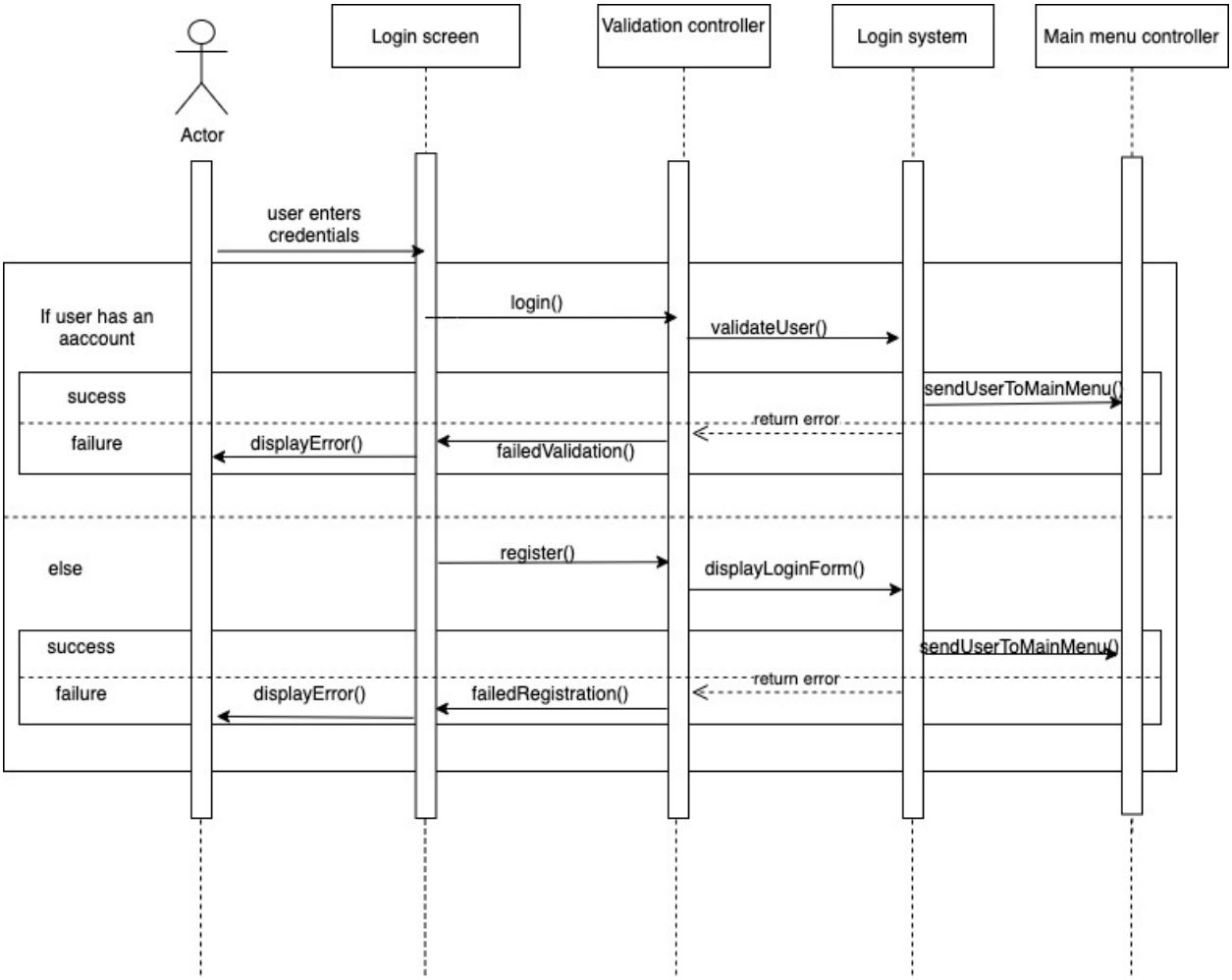

Figure 4: User attempts to login/register

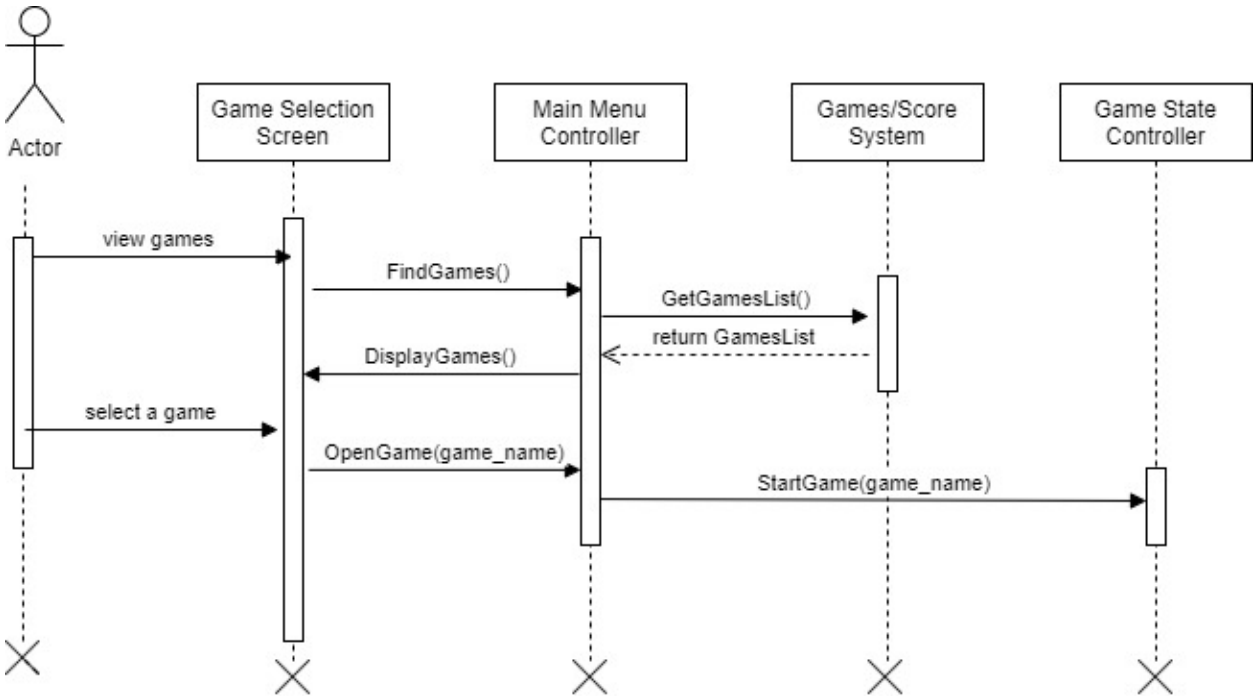

Figure 5: User selects a game

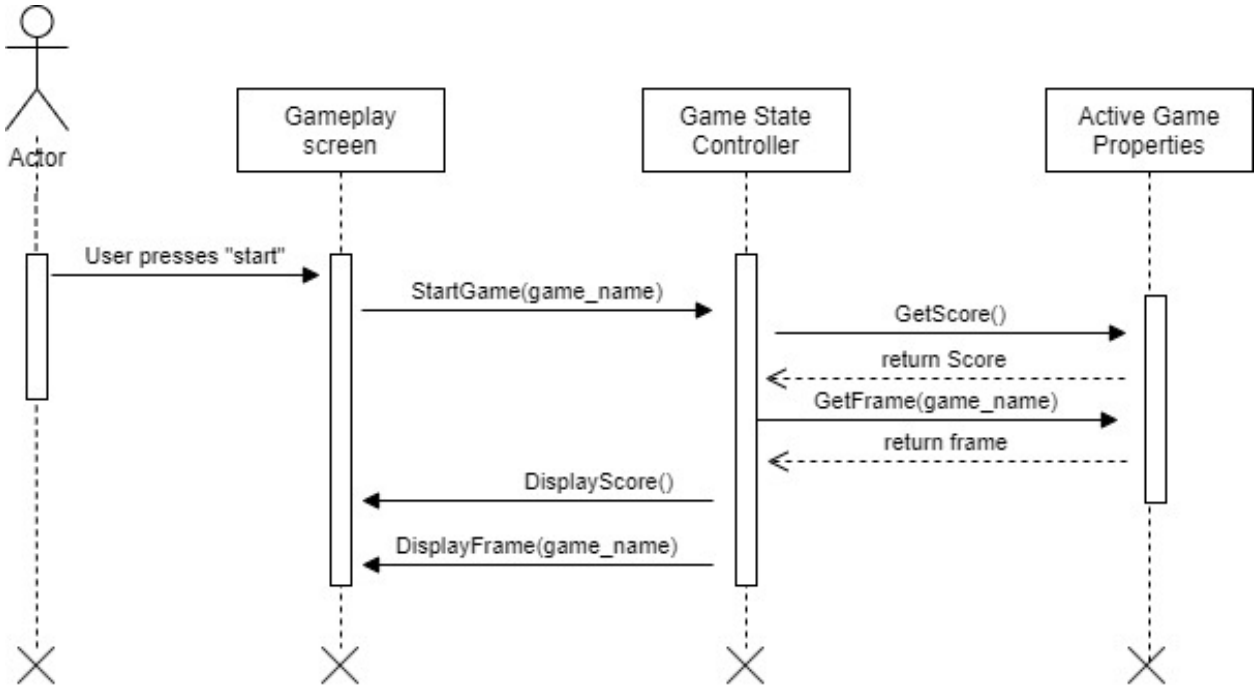

Figure 6: User starts a game

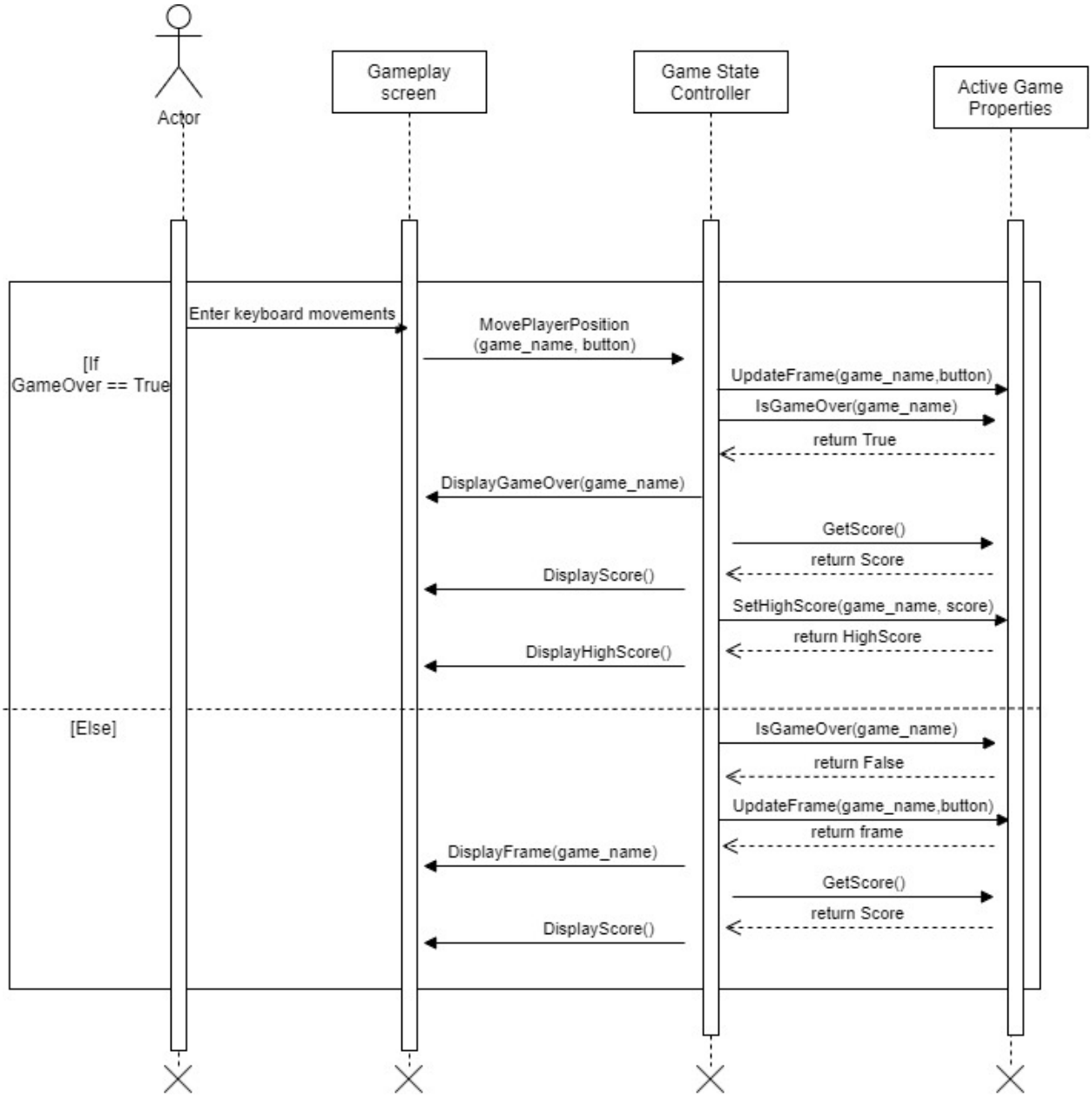

Figure 7: User plays a game

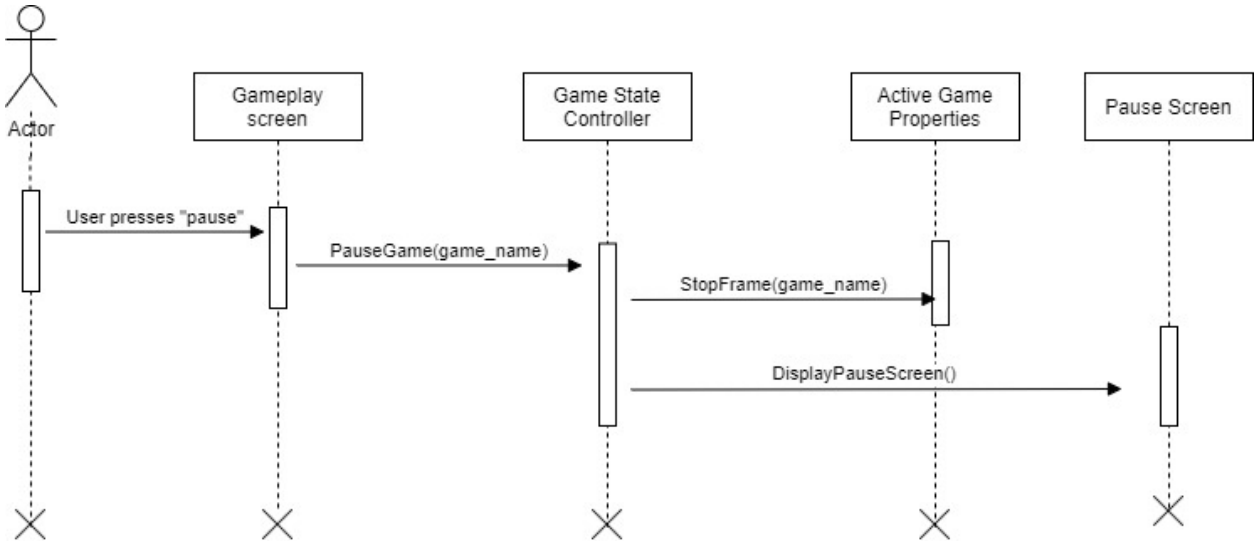

Figure 8: User pauses a game

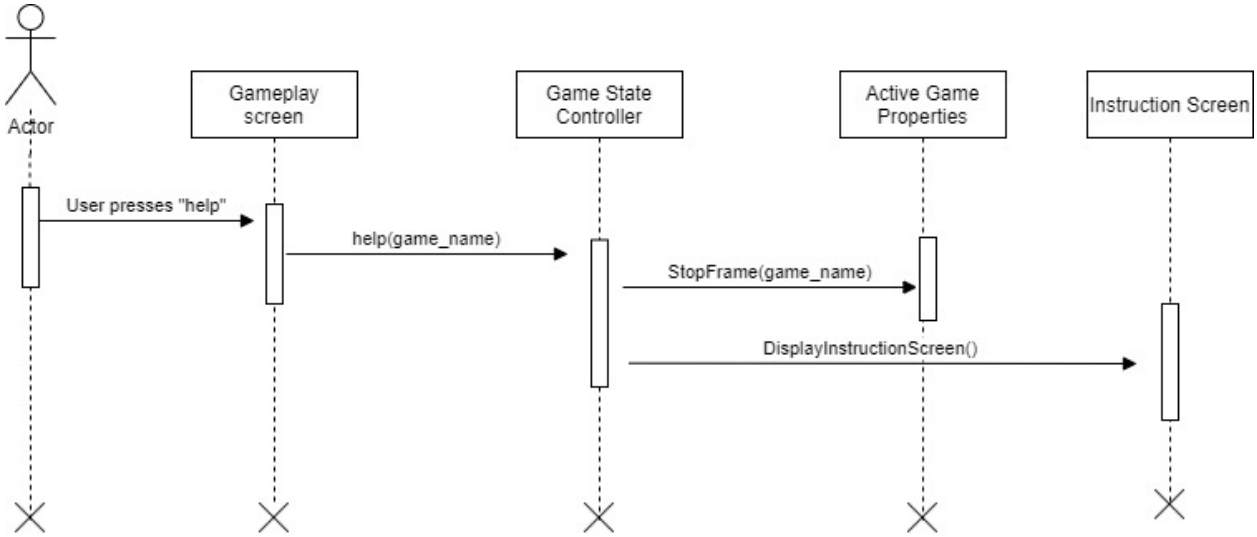

Figure 9: User views game instructions

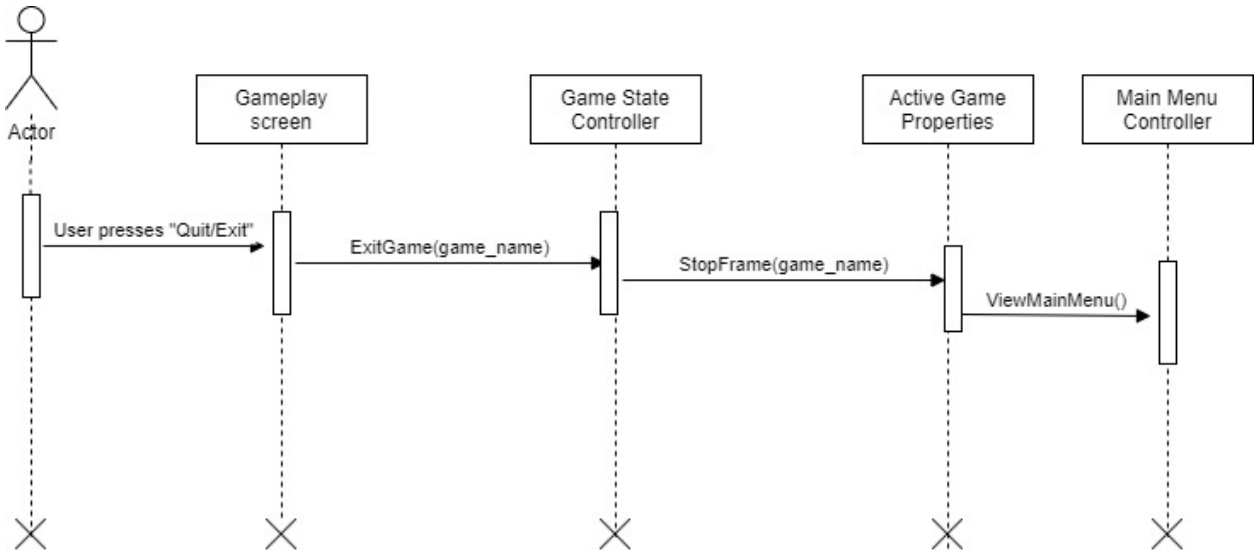

Figure 10: User exits a game

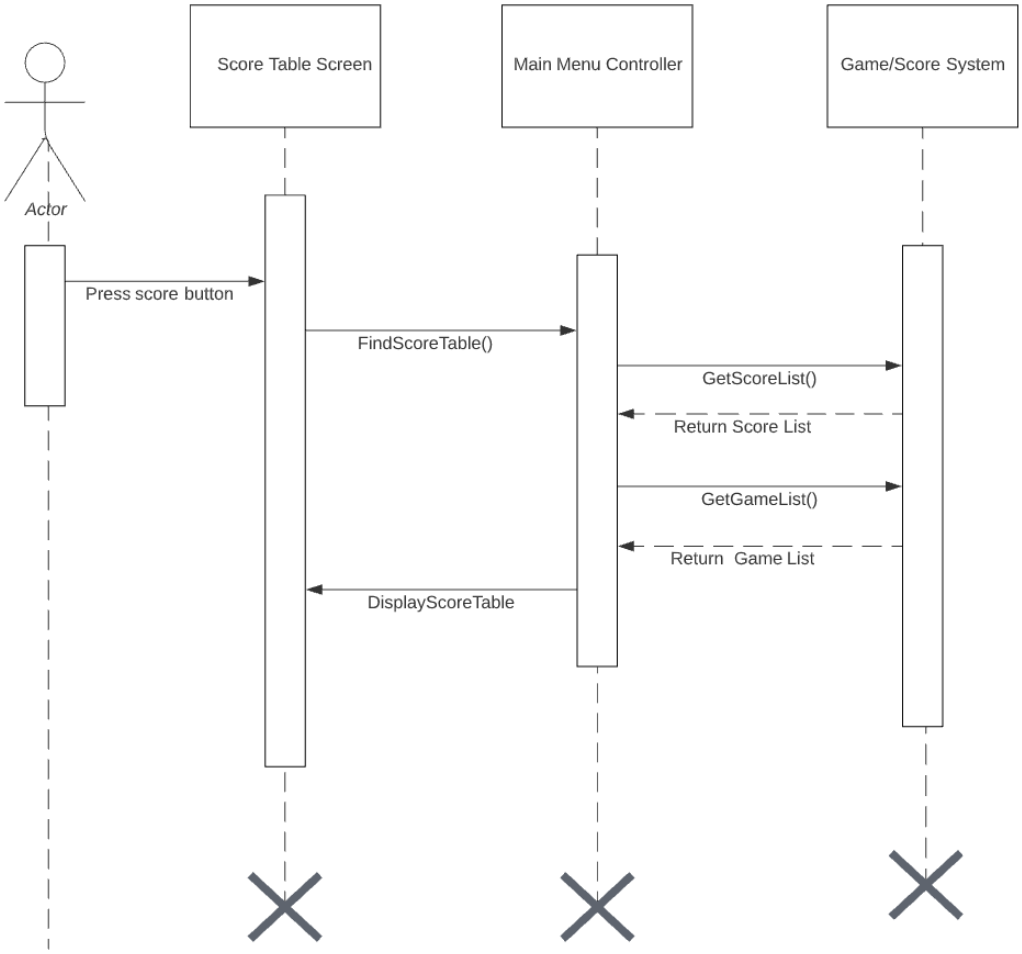

Figure 11: User views their score

4 Detailed Class Diagram

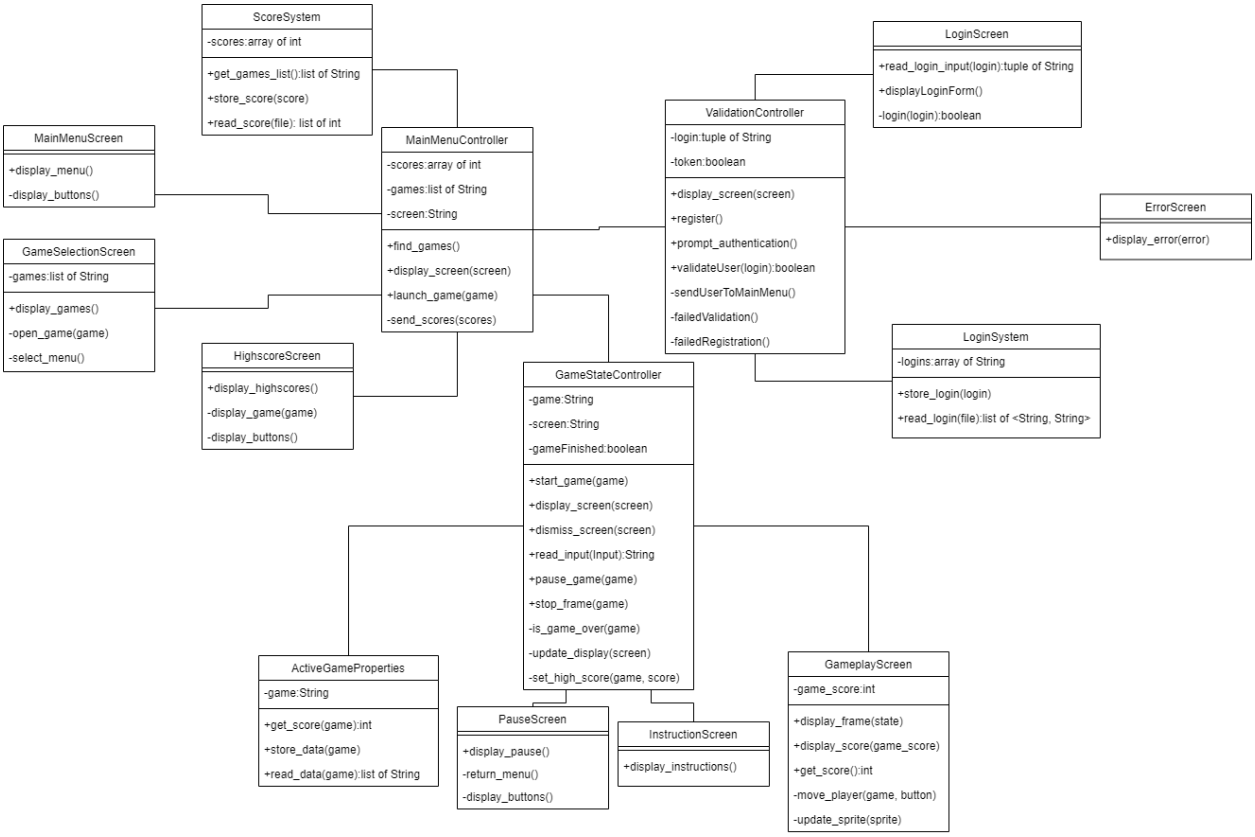

Figure 12: Detailed Class Diagram - Ready-Player-One

A Division of Labour

Table 1: Contributions

Name	**Contribution**
Tamas	Game State Controller & Validation Controller State Diagrams
Anando	Introduction section & game Sequence diagrams
David	Detailed Class Diagram
Brian	Login/ Register Seq Diagram & Main Menu Controller State Diagrams
Quishi	User View Their Score Sequence Diagram

T.L
Tamas Leung

A.Z
Anando Zaman

D.Y
David Yao

B.K
Brian Kibazohi

Q. X
Quishi Xu