Dungeons and Dragons: Deliverable #3
SE 3A04: Software Design II – Large System Design

Group6, Tutorial 2

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1 Introduction

The document provides three types of detailed diagrams which explain how the system work when processing information and interacting with users.

1.1 Purpose

The purpose of this detailed design document is to explain how each of the components work and interact with each other within the system and gives response to the users in the external environment. It describes how the architecture is built in the system.
Stakeholders and developers will have access to this document to understand the product-to-be and how it will be implemented.

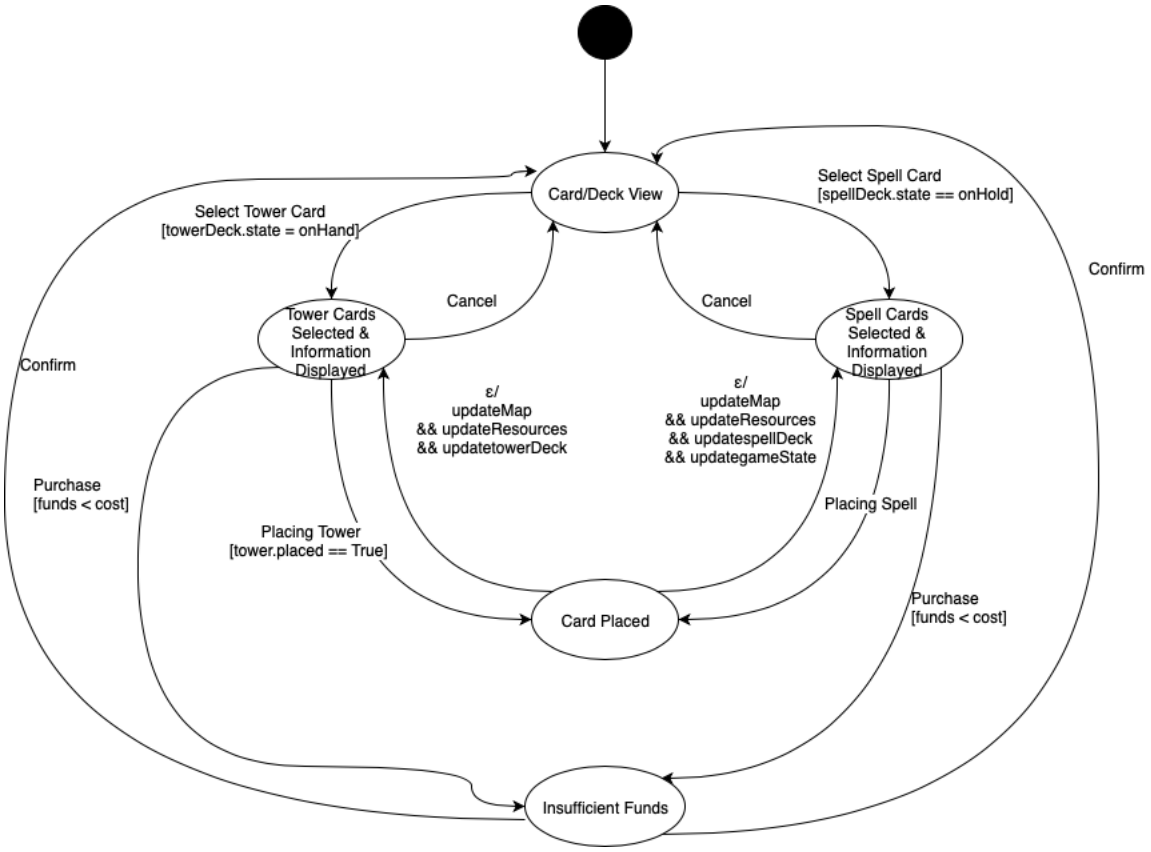
1.2 System Description

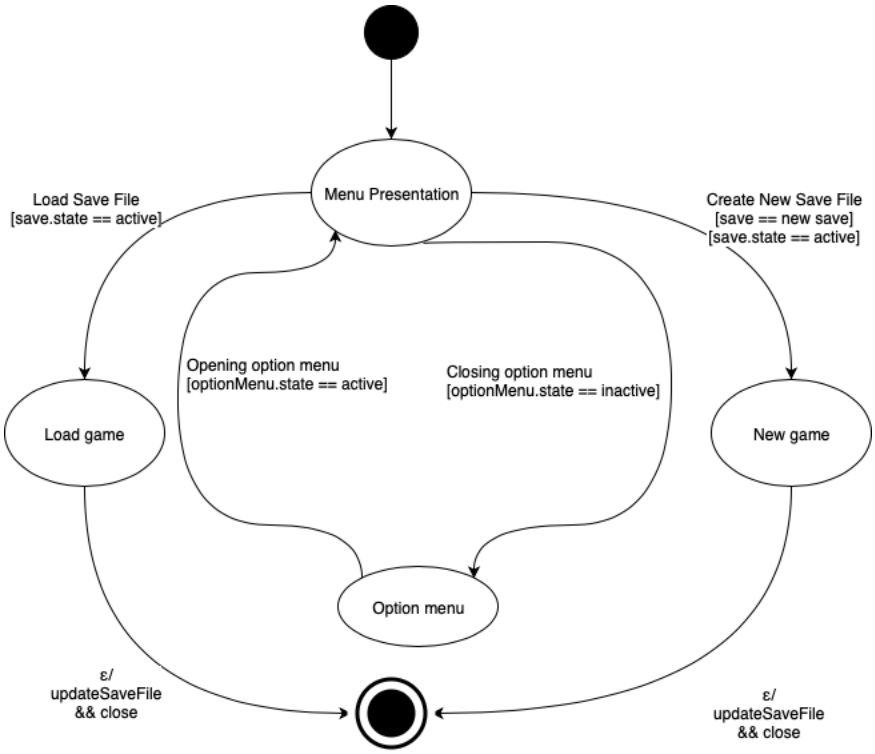
This document provides a high level design understanding of the game to be; Dungeons and Dragons. This medieval themed game will be a twist on classic tower defense games by combining dungeon crawler elements to present a unique experience for users.
This game will be available for mobile devices running Android 6.0 and up. Users may download and update the app through the Google Play Store. It will require user memory access to store local save files and will not require an internet connection to play.

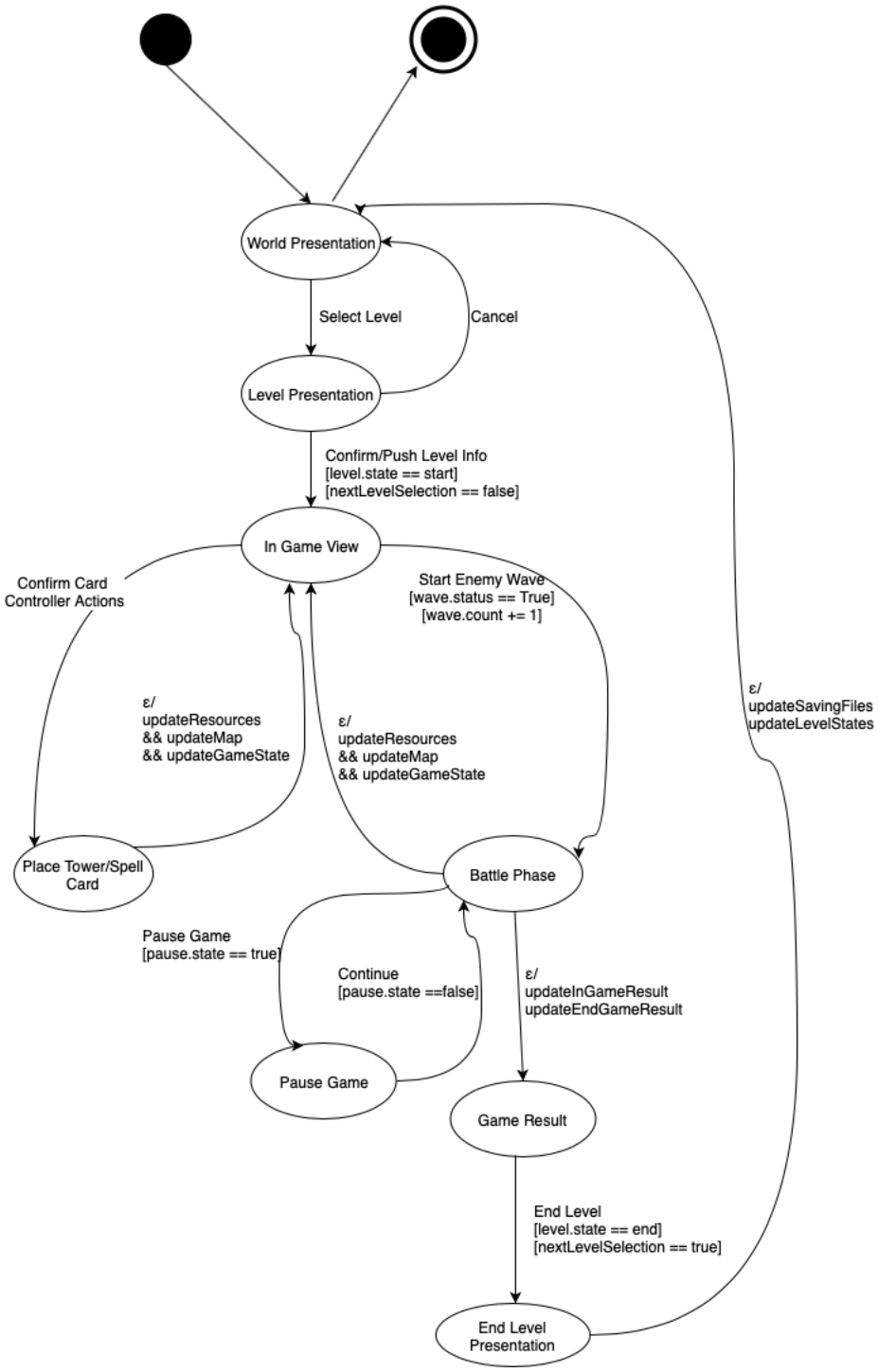
1.3 Overview

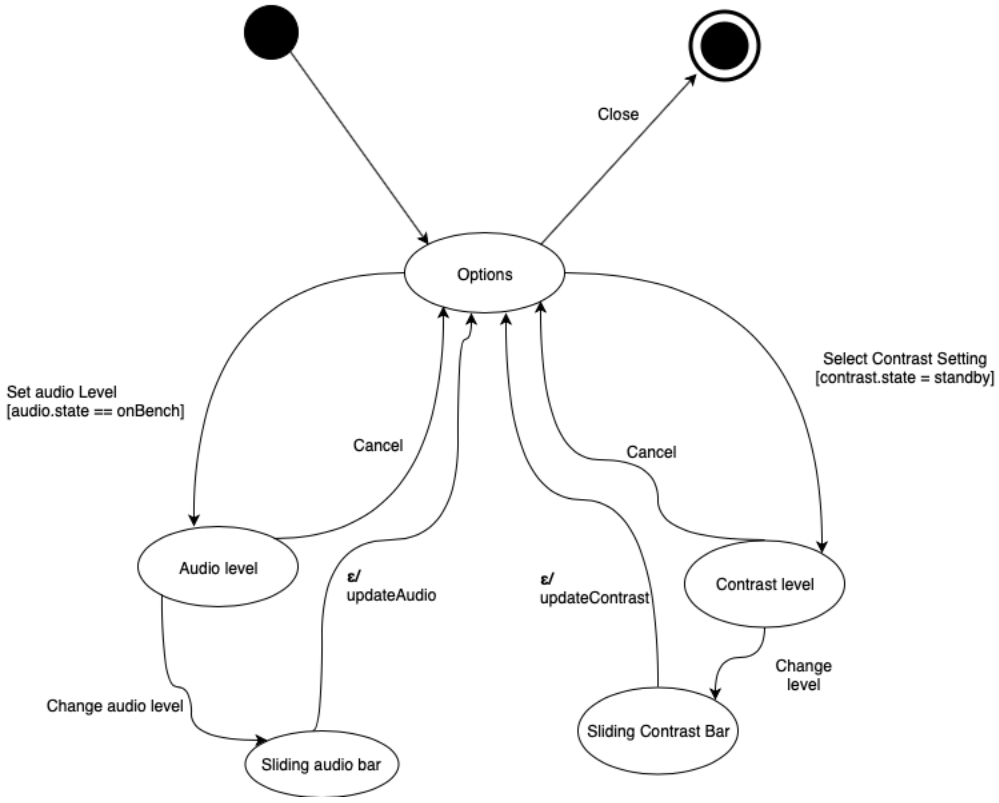
The remaining sections of this document will provide further information/context onto the previous High Level Architectural Design document. Section 2 provides the state-chart diagrams which express the actions of the controller classes.Section 3 contains Sequence Diagrams which depict the interactions/messages between objects in sequential order. Section 4 contains the Detailed Class Diagram which describes the system structure by showing the attributes, operations and the relationships among objects.

2 State Charts for Controller Classes



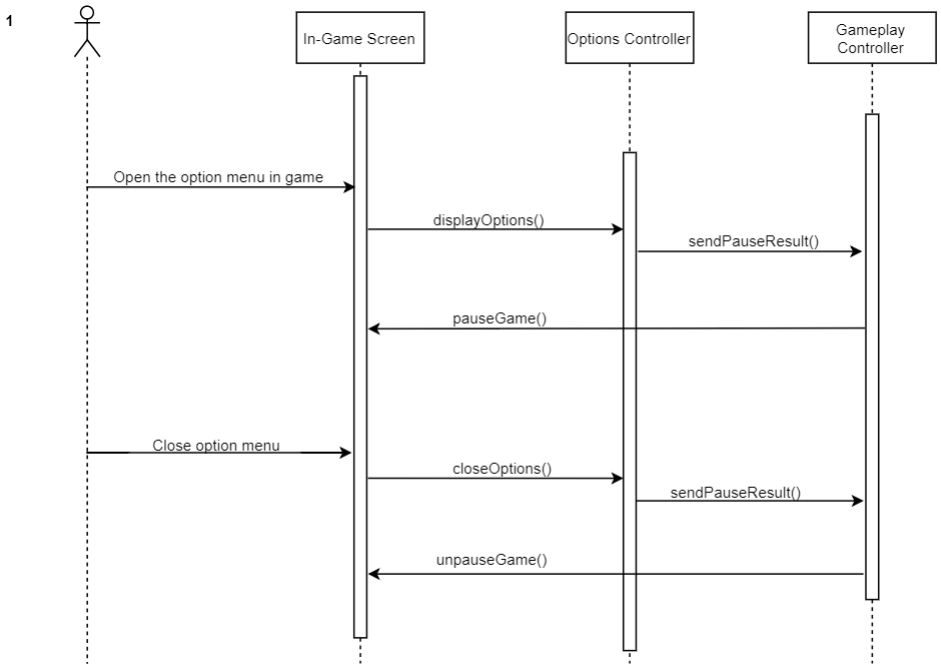



World Presentation
Select Level
Cancel
Level Presentation
Confirm/Push Level Info
[level.state == start]
[nextLevelSelection == false]
In Game View
Confirm Card
Controller Actions
Start Enemy Wave
[wave.status == True]
[wave.count += 1]
ε/
updateResources
&& updateMap
&& updateGameState
ε/
updateResources
&& updateMap
&& updateGameState
ε/
updateSavingFiles
updateLevelStates
Place Tower/Spell
Card
Battle Phase
Pause Game
[pause.state == true]
Continue
[pause.state ==false]
ε/
updateInGameResult
updateEndGameResult
Pause Game
Game Result
End Level
[level.state == end]
[nextLevelSelection == true]
End Level
Presentation

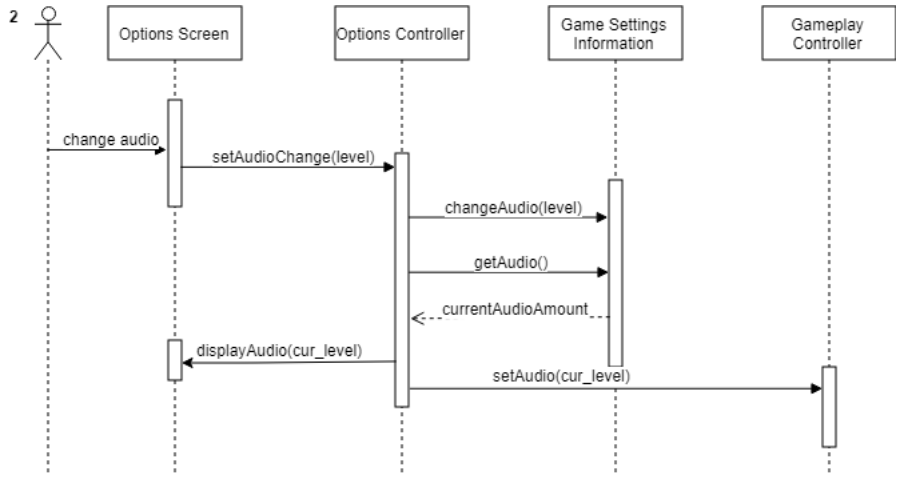


3 Sequence Diagrams

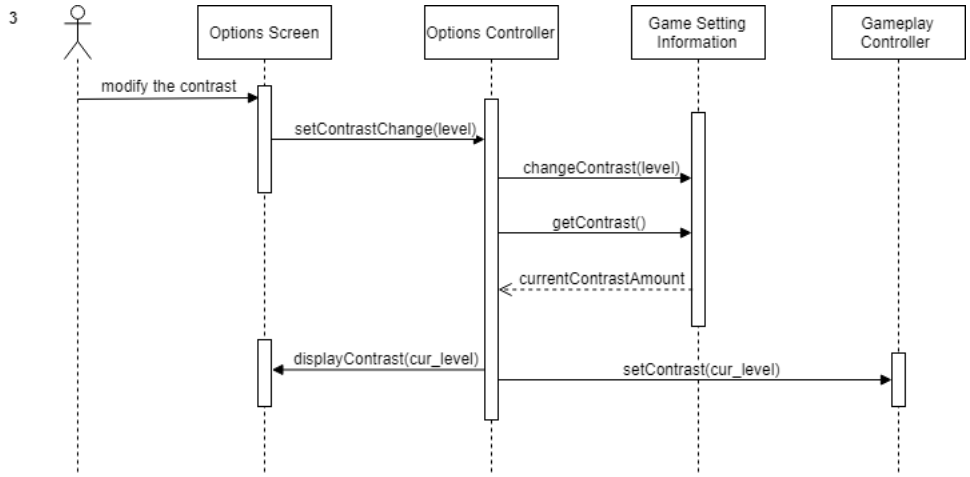
UseCase 1. The user selects the options during gameplay, at which point the level gameplay must be paused.



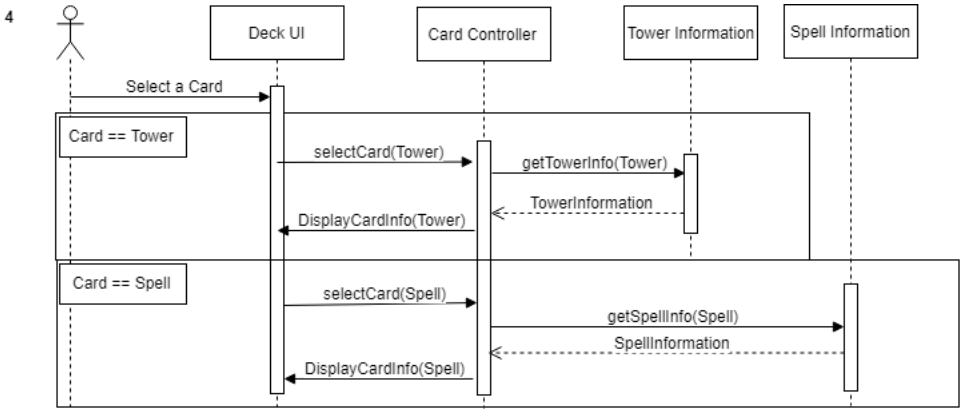
UseCase 2. The user sets the audio and the change is implemented into the relevant modules.The change in volume value will also be displayed on the screen.



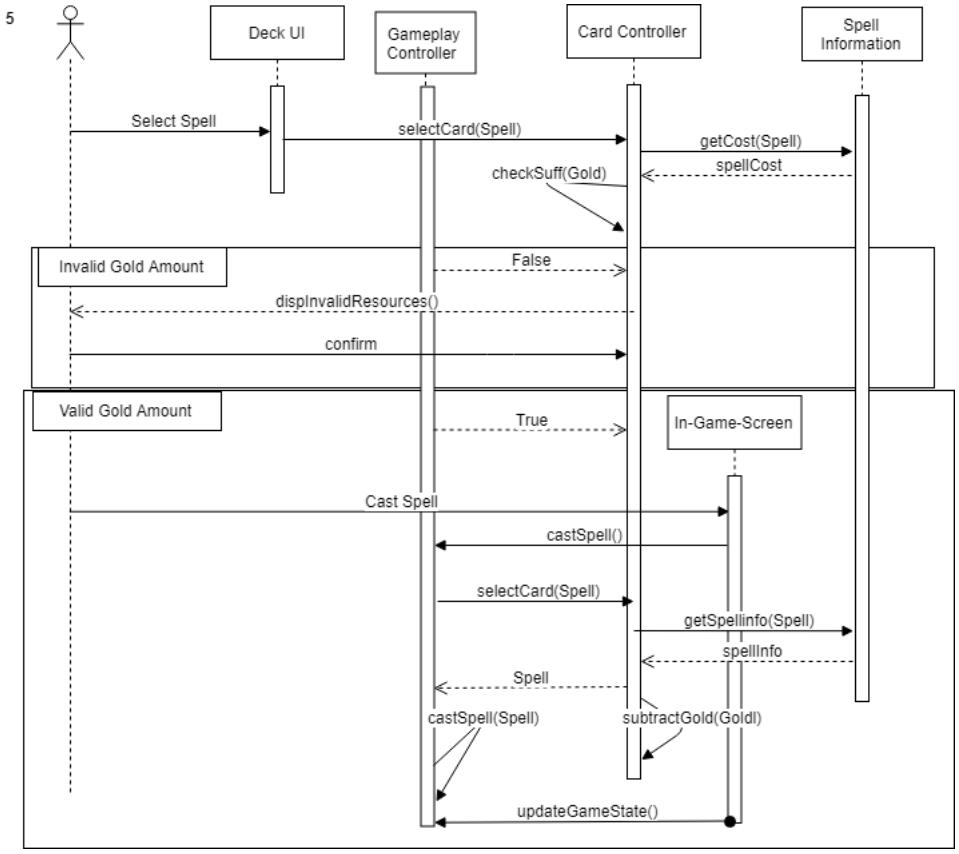
UseCase 3. The user sets the change is implemented and the change is implemented into the game play screen. The change in contrast value will also be displayed on the options screen.



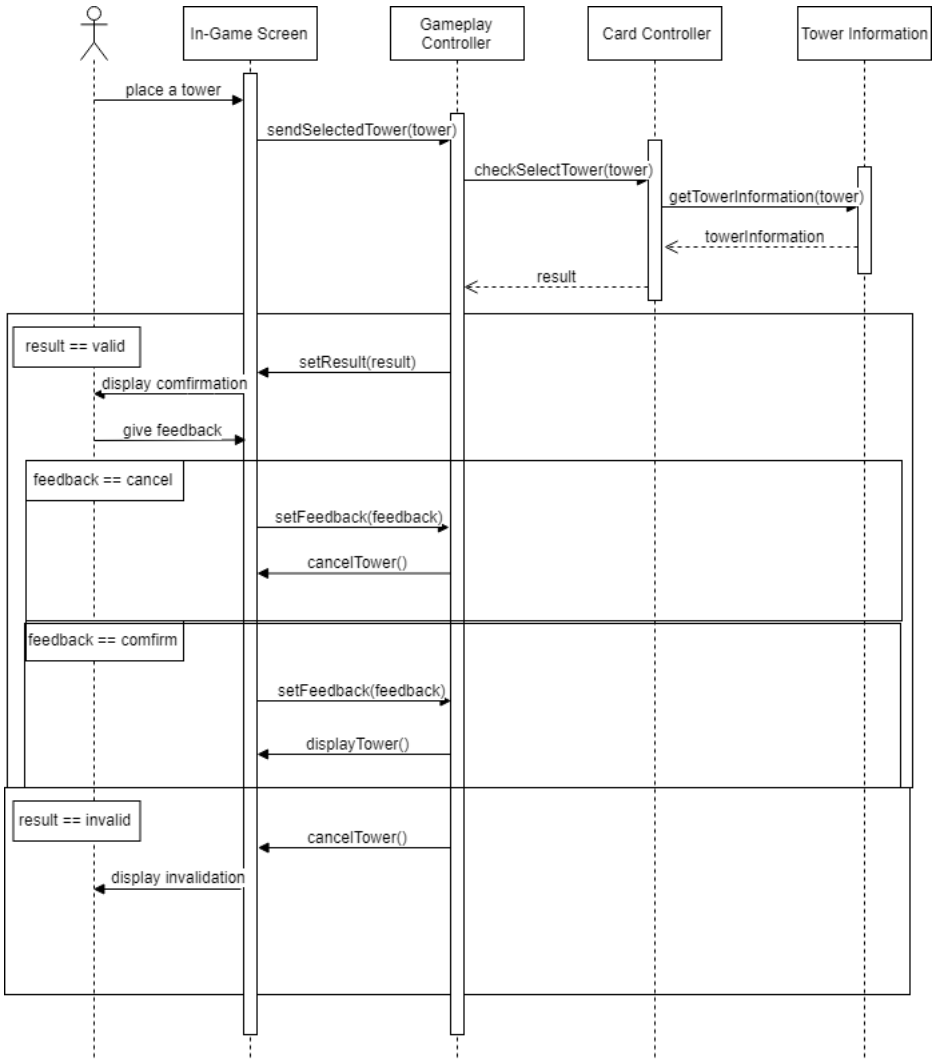
UseCase 4. Once the user selects a car, the relevant card information depending on the type of card such as (area of effect, damage,and etc) is presented to the user.



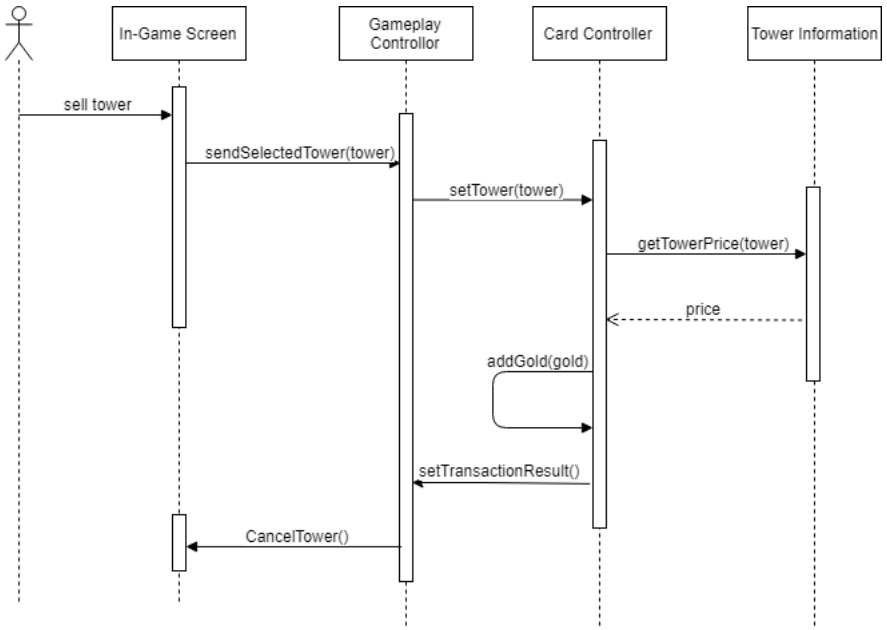
UseCase 5. The User attempts to cast a spell, if the user does not have sufficient resources to cast the spell then a message prompt is displayed to the user indicating low resources; otherwise the user is free to place the spell onto the map.



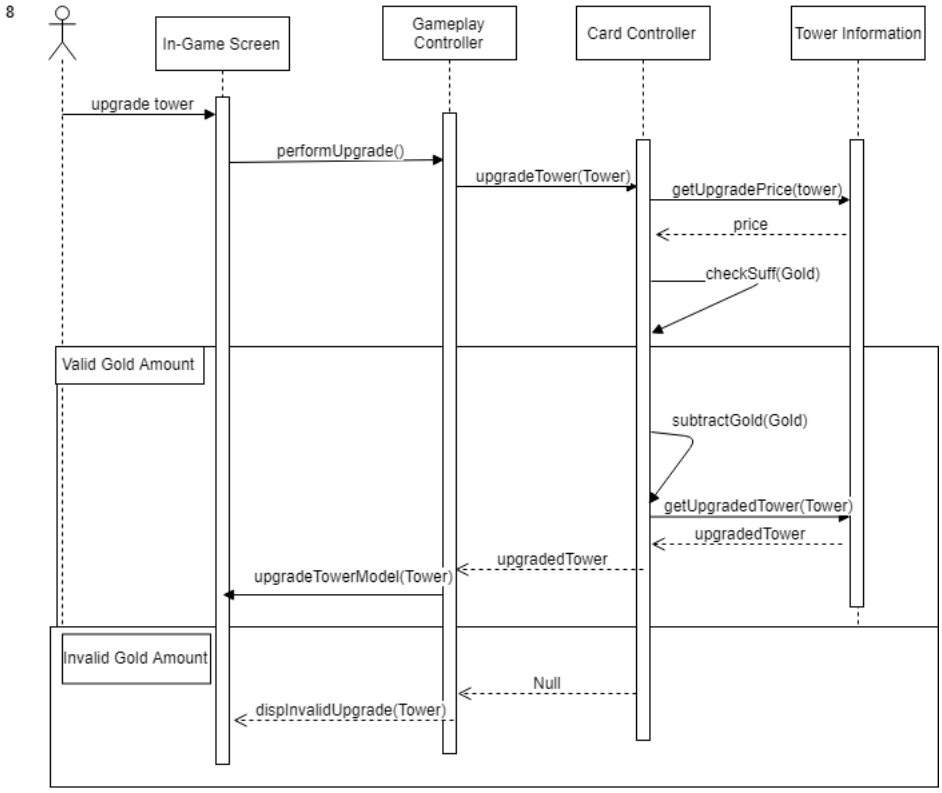
UseCase 6. The User attempts to validly place a tower. If the placement of the tower is not valid then an error message stating invalid placement is displayed to the user and the tower placement is cancelled. If the placement of the tower is valid, the user is given a prompt to confirm the placement. Upon confirmation, the tower will be permanently placed onto the level map.



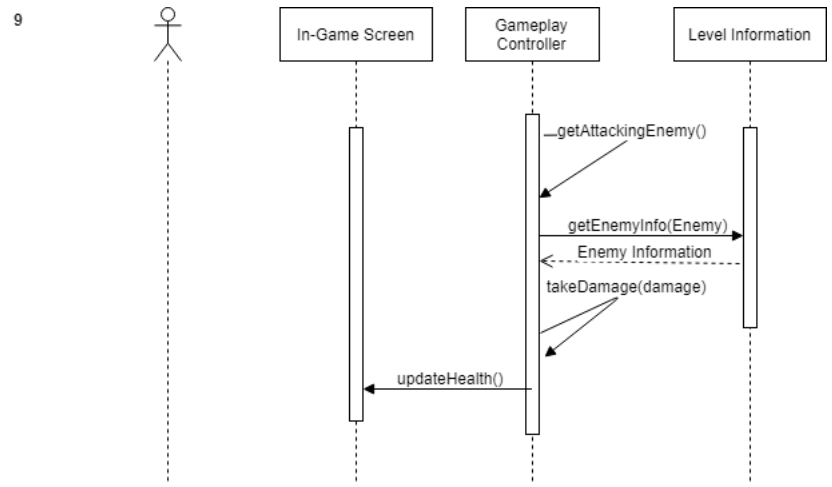
UseCase 7. The User sells a placed tower on the map. The users gold amount is updated by the correct amount depending on the tower that was sold; subsequently, the tower is then deleted off the in-game screen.



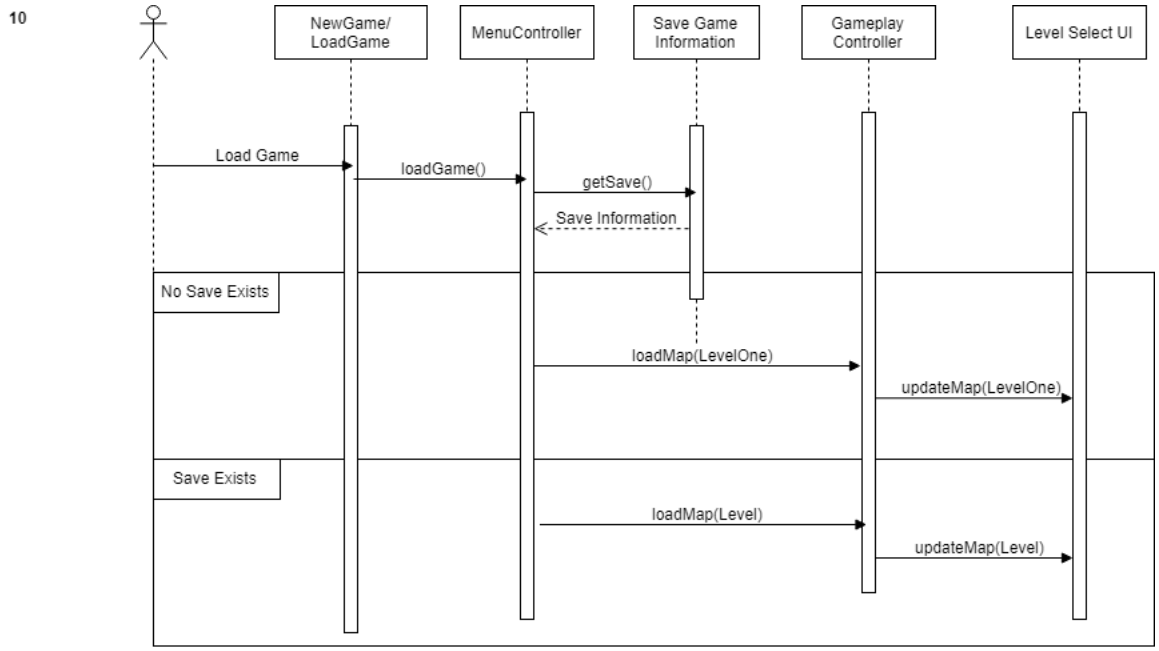
UseCase 8. The User chooses to upgrade a placed tower on the map. If the users gold amount is sufficient to upgrade the tower, then the appropriate gold is subtracted from their level gold and the tower is subsequently upgraded. If the user does not have sufficient gold to upgrade the tower, then a message is displayed on the screen, stating that the tower cannot be upgraded.



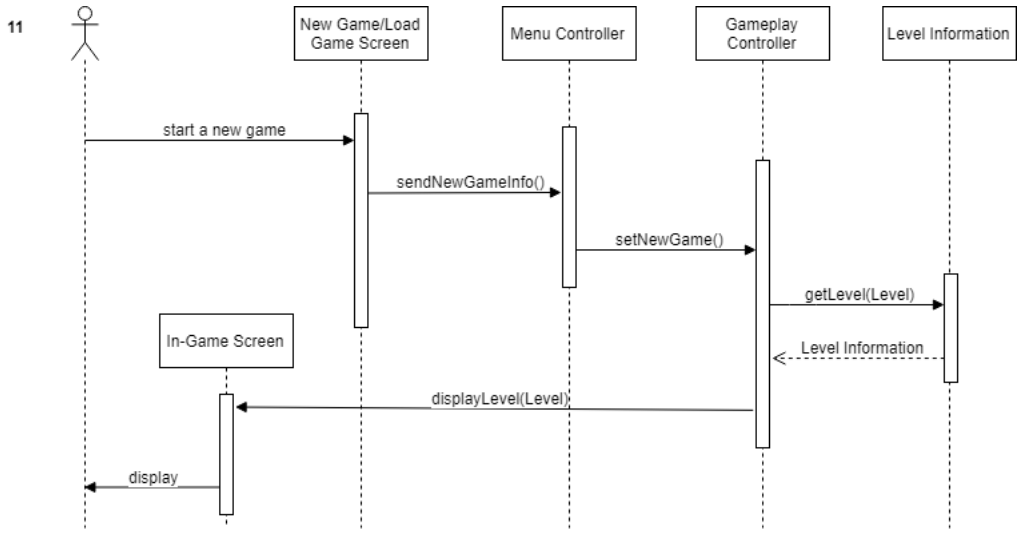
UseCase 9. The user is attacked by the enemy. The user will then lose health according to the enemy that attacked the user.



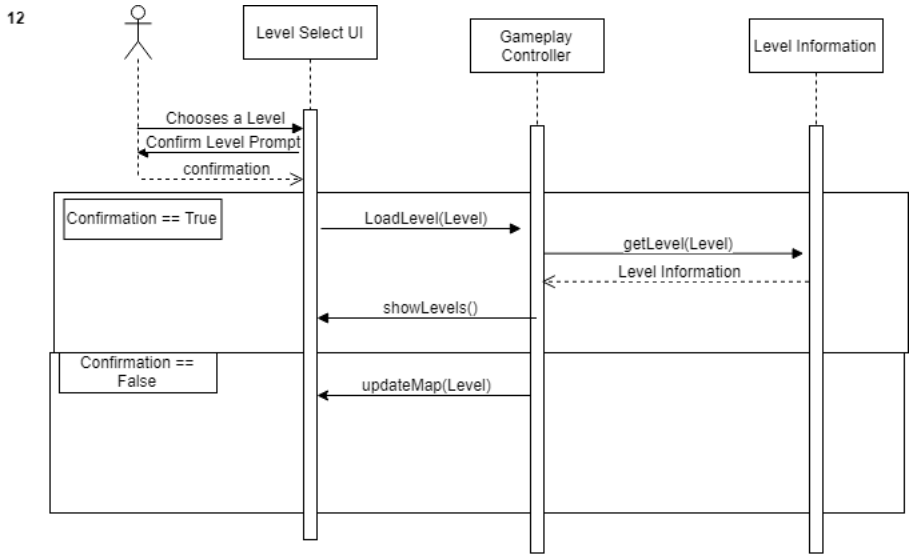
UseCase 10. The user loads the game from the main menu. If a previous save state does not exist, then the user is loaded into the game map for level 1; otherwise the user is loaded into the game map from the level that last saved.



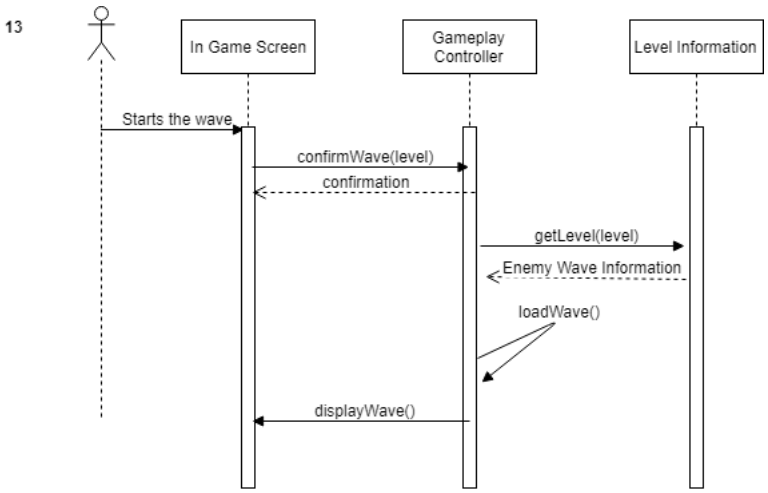
UseCase 11. The user starts a new game, at which point the user is directly loaded into the first level.



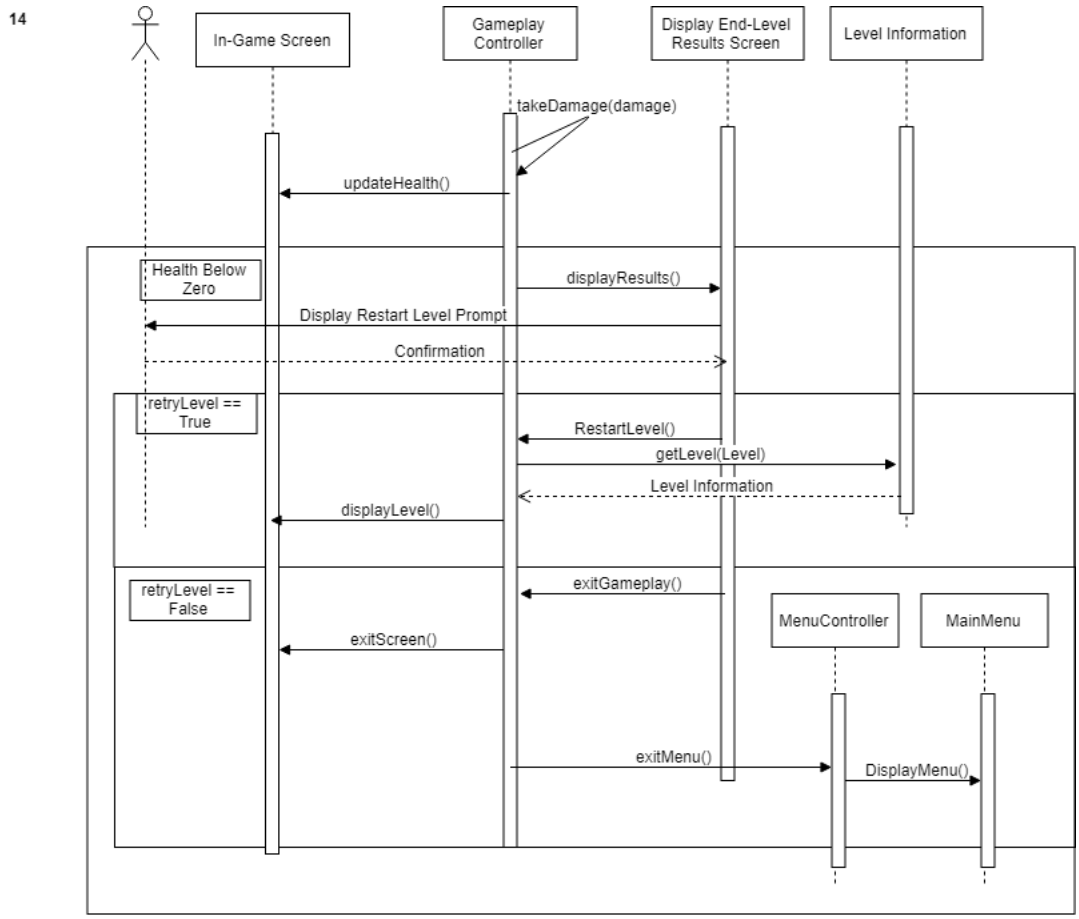
UseCase 12. The user select a level from the level select menu. The user will then be asked to confirm their choice; after which, the user will be loaded into the level. If the user declines to enter the level then the user is brought back to the level select screen, where they can choose another level.



UseCase 13. The user starts the wave; at which point, the appropriate enemies for the level start advancing from the start of the map towards the end of the map. The user is prompted to indicate that the wave has started approaching.



UseCase 14. The users health reaches zero during the course of the level; after which the user is given a choice to retry the level or quit to the main menu.



UseCase 15. The user wins the level by defeating all the enemies; after which the user is given a choice to retry the level or quit to the main menu. The user is then prompted to choose a card and is taken back to the level select screen to choose a new level. The chosen card is added to the users deck and the chosen level is then loaded.

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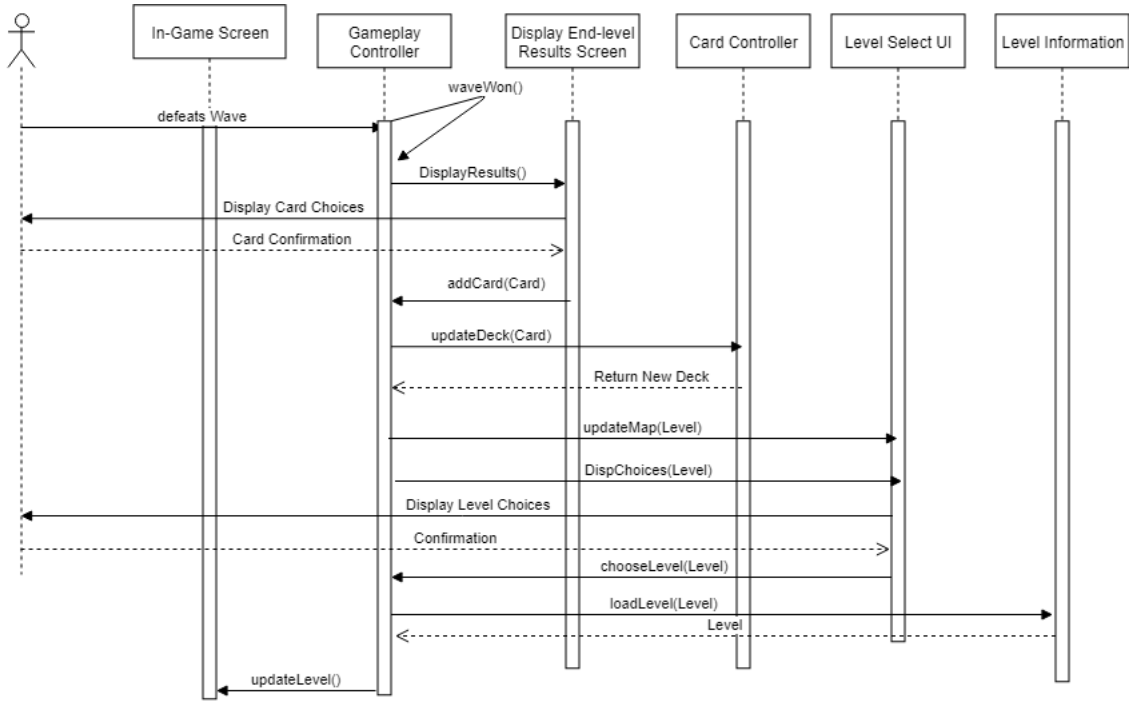

UseCase 16. The user quits the game and their current progress such as their deck, current level, and other significant information is saved.

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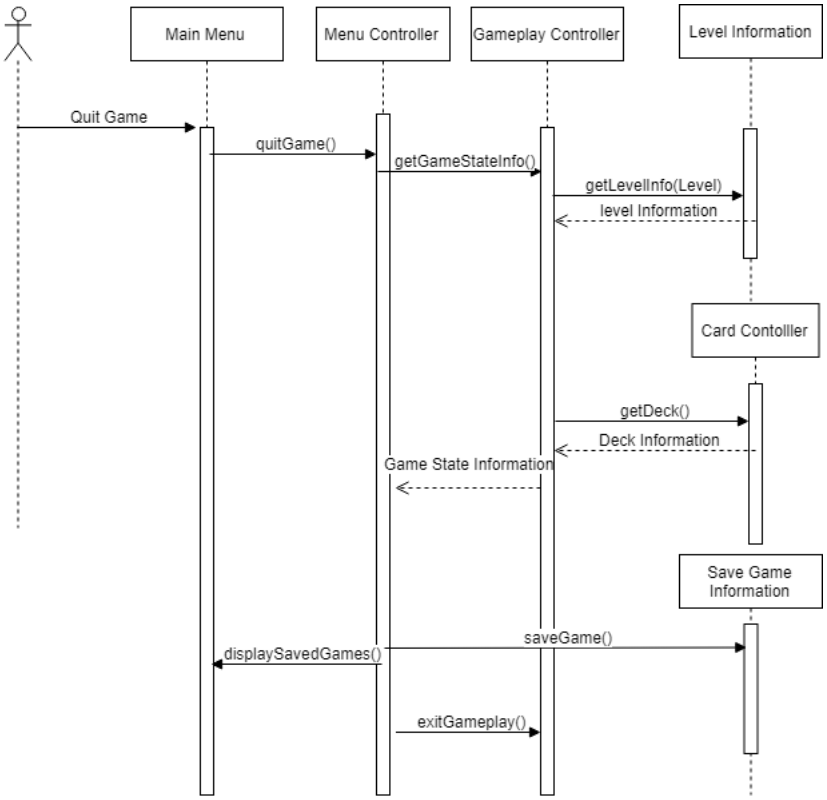
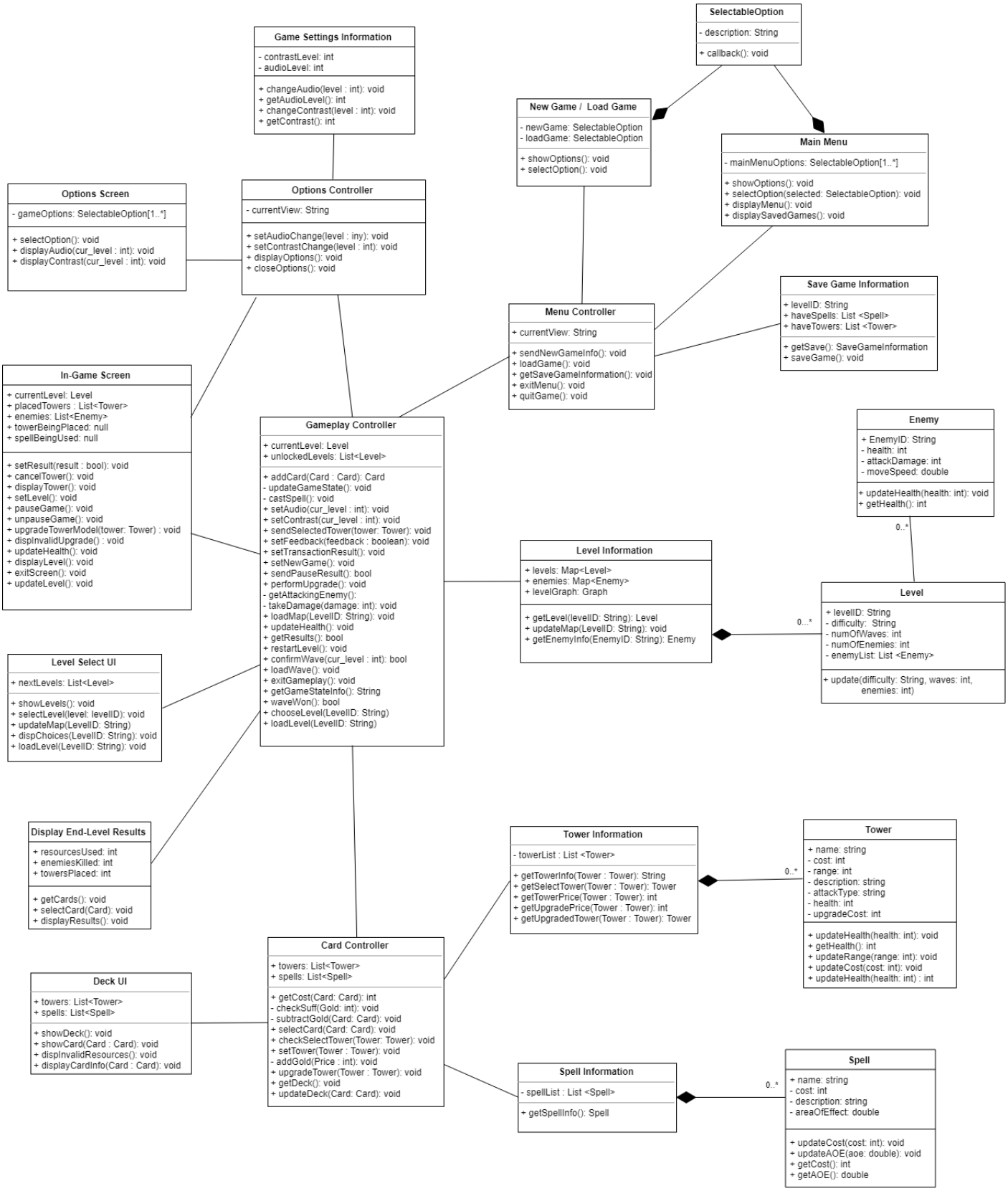


4 Detailed Class Diagram



A Division of Labour

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Francis Bajamunde, 400031789 - Detailed Class Diagram, Editing

Shardool Patel, 400080843 - Detailed Class Diagram

Saad Ali, 400079576 - State Diagram, Sequence Diagram

Mohammnhed Mirage, 400088406 - Sequence Diagrams, Editing, Use Cases