

# 1 SRS

## 1. Introduction

### 1.1. Aim of the document

Software specifications for the game Hypnos, created by the following authors:

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### 1.2. Overview of the defined system

Hypnos is a platformer game, where the user controls one main character. We are designing a game that is supposed to provide entertainment to the users. The player tries to survive obstacles and enemies while running (the screen scrolls on the x axis). The player starts with one life, but can move up/down while running to collect companions (up to five companions at a time) - these companions can be used as special powers to help defeat enemies or get rid of the obstacles. After a certain running distance, the player faces a boss level (the screen stops scrolling) where they must survive for a set amount of time before defeating the level and proceeding (back to running/screen scrolling). A high score is kept of the longest running distance the player stays alive.

### 1.3. Stakeholders

- 308 project group
- Davide Falessi (Advisor)
- Customers (Gamers)

### 1.4. Operational settings

Hypnos should work on all standard computers that are compatible with Java.

### 1.5. Related Systems (at least 2)

- 1.5.1. **Yoshi's Island** - the two are similar in that collected "items" follow the player and can be used for the player's survival. However the two differ in that each of the "companions" that follow the player in Hypnos have specific, unique effects and can potentially alter game mechanics. The pro is that this feature allows for a more dynamic gameplay environment. However, this requires that the user remember and be mindful of all the effects associated with each companion and may also result in the game screen being "too busy."
- 1.5.2. **Touhou** - In the boss fights the player has to avoid the projectiles fired just like in Hypnos but the way that it differs is that we do not defeat the boss but try to survive as long as possible. The pro is that it requires the user to think about how to survive throughout the time limit. The con is

that some users might not like the time component depending on how long the user is required to stay.

- 1.5.3. **Jetpack Joyride** - This game continues forever with the goal of surviving and acquiring as much coins as possible. However, Hypnos differs in that we have an endless running portion that is not simply for a score, but for acquiring power-ups and whatnot to be used directly in the following corresponding boss level. The difference provides pros-and-cons. The pro is that each stage in the game is meaningful. However, if a player simply wants to just run and focus on the score, rather than the overall plot, then the player will not be interested in the Story Mode of Hypnos.

## 2. User Stories

- 2.1. As a user, I want to have multiple players in one game, so that I can play with my friends.
- 2.2. As an inexperienced gamer, I want a game with simple controls, so that I can learn quickly.
- 2.3. As a gamer, I want to play a game with leaderboards, so that I can compete with others.
- 2.4. As a new gamer, I want a tutorial level, so that I can learn the rules.
- 2.5. As a gamer, I want to view profile information, so that I can compare my accomplishments with other gamers.
- 2.6. As a gamer, I want the game to last at least an hour, so that I can be entertained.
- 2.7. As a player, I want to use companions to attack enemies, so that I can progress to higher levels.
- 2.8. As a player, I want to see my character die, so that I know when I have lost a life.
- 2.9. As a user, I want to pause the game, so that I do not have to restart the game.
- 2.10. As a casual gamer, I want to finish the game, so that I can feel accomplished.
- 2.11. As a competitive gamer, I want to replay the game, so that I can achieve a higher score.
- 2.12. As an inexperienced gamer, I want change difficulty levels, so that I can play the game that suits my gaming skills.
- 2.13. As a gamer with multiple devices, I want my game data saved, so that I can access my saved game data through different devices.
- 2.14. As a user, I want to adjust the audio settings, so that I can make the music softer.
- 2.15. As a user, I want to save my progress, so that I don't have to start from the beginning.
- 2.16. As a new user, I want to read a help section, so that I can understand the game.
- 2.17. As an experienced user, I want to have a timer, so that I know if I beat my high score.
- 2.18. As a player, I want to avoid obstacles, so that I can have a better reaction.

## 3. Functional Requirements

### Dictionary

- The game: Game developed by CPE 308 group, Hypnos.

- End of the game: This occurs when the user's character has been defeated in the game (by a boss or hit by obstacles) or has completed the entire game (defeated the last boss).
  - Companions: Power-ups that the user can collect throughout the game to help defeat obstacles and bosses. It has different designs and abilities.
  - High score: It is a count of the most number of seconds the user has survived the game.
  - Level: A scene in which the player is placed in.
- 3.1. The system shall display success within 10 seconds of the user defeating the final boss level.
  - 3.2. The system shall play music within 2 seconds of the user starting or continuing the game.
  - 3.3. The system shall provide a jumping, crouching, and running action for the game character.
  - 3.4. The system shall override the user's previous high score after the user ends the game only if the current score is greater than the previous high score.
  - 3.5. The system shall have a button to return to the main menu on every screen.
  - 3.6. The system shall display the time during gameplay from when the game starts until the player dies.
  - 3.7. The system shall provide a page that contains user achievements.
  - 3.8. The system shall provide an input during the game that allows the user to pause and resume the game.
  - 3.9. The system shall indicate numerically the user's lives during gameplay.
  - 3.10. The system shall allow the user to remap their preferred controls.
  - 3.11. The system shall provide a help panel by displaying tips within 10 ms after the user has clicked the Help button.
  - 3.12. The system shall display the main menu within 10 ms after the program has started.
  - 3.13. The system shall have a forest level.
  - 3.14. The system shall provide a multiplayer mode for players to play together.
  - 3.15. The system shall provide a button to exit the game.
  - 3.16. The system shall save the user's game data between one to five seconds of the user triggering a save point.
  - 3.17. The system shall provide a means of adjusting the audio level.
  - 3.18. The system shall remove the user's game data between one to five seconds of the user requesting that their data be deleted.
  - 3.19. The system shall create a new user account between one to five seconds of the user submitting their account information.
  - 3.20. The system shall reset the user's current score to zero between one and five seconds after the score is compared with the user's high score.
  - 3.21. The system shall show the player's final score when the player dies.
  - 3.22. The system shall have a water level.
  - 3.23. The system shall show the player's highest score on the main menu.
  - 3.24. The system shall provide an instructions page that the user can reference.

- 3.25. The system shall have sharks in a water level that the player must avoid to survive.
- 3.26. The system shall spawn one new companion at varying intervals between 4 and 6 seconds from the start of the game until the user dies.
- 3.27. The system shall allow the user to turn “Tips” on or off.
- 3.28. The system shall have a sky level.
- 3.29. The system shall update the high score rankings within ten seconds after a user has died or completed the game.
- 3.30. The system shall display companions following the main character once the user collects it.

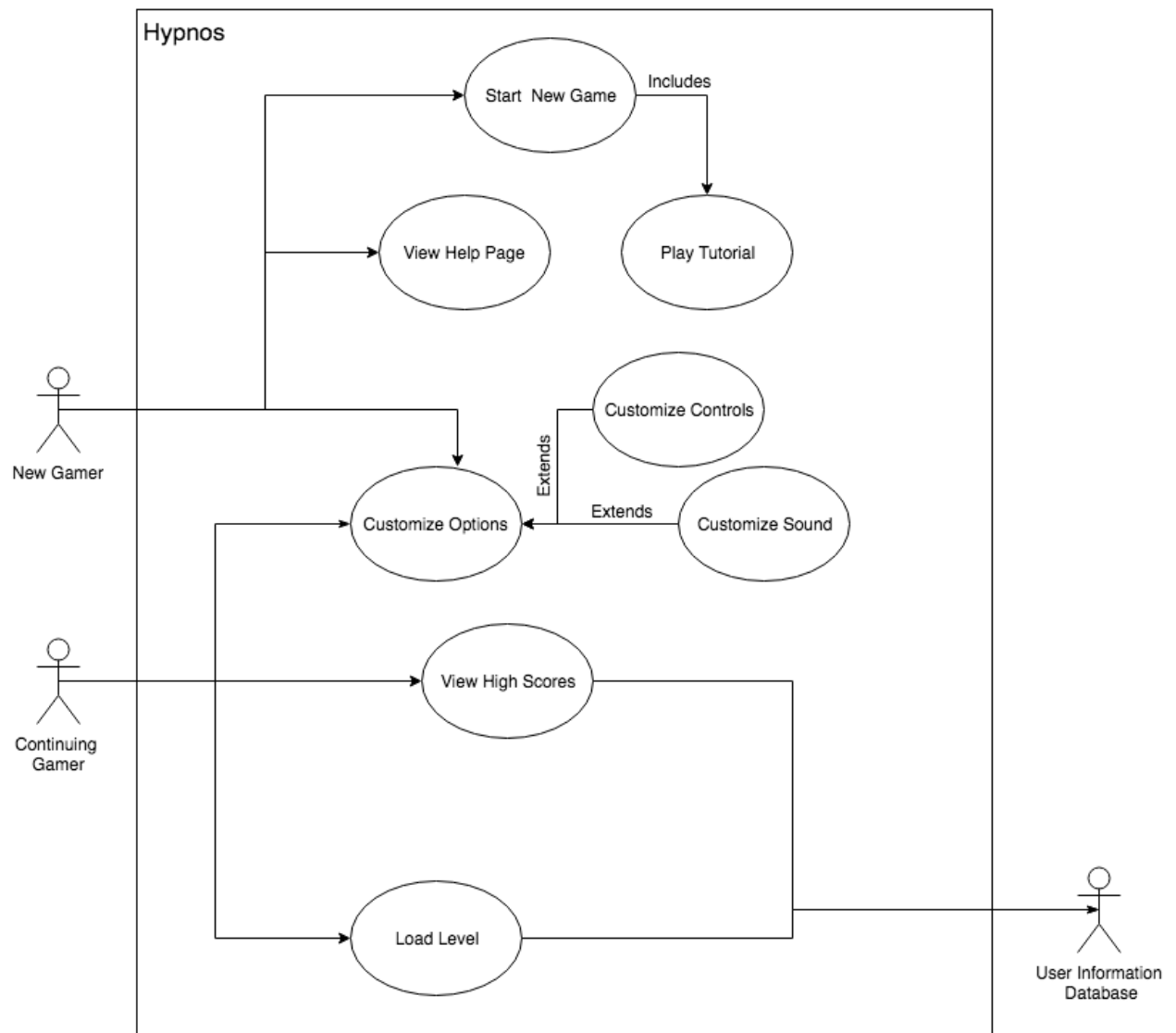
## **4. Non-Functional Requirements**

### **Dictionary**

- Outside of the game: The internet, in any publication, or any user that is not playing the game.
- 4.1. The system shall operate on Windows 8 and newer and OS X Yosemite and newer.
  - 4.2. The system shall require a keyboard and mouse.
  - 4.3. The system shall comply with the Creative Commons license.
  - 4.4. The system shall respond to user input within one second.
  - 4.5. The system shall comply with intellectual property rights and copyright policies defined by the Digital Millennium Copyright Act of 1998.
  - 4.6. The system shall use at most 1Gb of RAM.
  - 4.7. The system shall not automatically publish or share the user’s game information outside of the game.
  - 4.8. The system shall take no more than 10 minutes for the general user to learn how to play the game.
  - 4.9. The system shall use royalty-free music.
  - 4.10. The system shall store the high score in minutes and seconds.
  - 4.11. The system shall take up to one day to update any changes in the code.
  - 4.12. The system shall have a mean time before failure of 1 week.
  - 4.13. The system shall handle exceptions for incorrect user input.
  - 4.14. The system shall take no longer than 1 second to transition to a different screen.
  - 4.15. The system shall freeze at most once every hour.
  - 4.16. The system shall take between one and three seconds to refresh the high scores table.
  - 4.17. The system shall require that the user have an account to play the game.
  - 4.18. The system shall have a database that will fail at most once every week.

## **5. Use Cases**

### **5.1. Overview Diagram**



## 5.2. Internal Steps

### 5.2.1. **Name:** Customize Sound Settings

1. The player requests to customize options.
2. The system shows the a slider for Sound Effects volume and a slider for Music volume.
3. The player moves sliders to desired volume levels.
4. The system applies changes by adjusting volume.
5. The player requests to return to the main menu or the current game.

#### **Extensions:**

2a. *The player requests to return to main menu:* System shows the player the main menu and the use case is terminated.

2b. *Customizable sliders are not responding*: System notifies the player to try again later and returns the player to the main menu.

5.2.2. **Name:** Customize Controls

1. The player requests to customize options.
2. The system displays the current settings.
3. The player selects the “Controls” option from the available settings selections.
4. For each Control, the system loads the pre-existing setting for that control.
5. The player selects the control to customize.
6. The system saves the control settings on player input.

**Extensions**

5a. *The player decides not to change any settings*: The player indicates to return to the settings menu.

6a. *The system does not save*: The system notifies the player and returns to the settings menu.

5.2.3. **Name:** View High Scores

1. The continuing gamer requests to view high scores.
2. The system displays high scores.
3. The system fills in the high score table with at most 10 high scores.

**Extensions**

3a. *No high scores are available*: The system will display the blank high score table and will have text indicating there are no available high scores.

5.2.4. **Name:** Load Level

1. The continuing gamer requests to start game.
2. The system displays the level select screen.
3. The continuing gamer selects a level.
4. The system loads the selected level.

**Extensions**

3a. *The continuing gamer selects a locked level*: The system notifies the continuing gamer that they cannot access the level because they have not yet unlocked it.

4a. *The system fails to retrieve and load the continuing gamer's game data*: The system notifies the continuing gamer and asks them if they want to start a new game.

5.2.5. **Name:** Start New Game

1. The new gamer requests to start a new game.
2. The system displays the tutorial for the player.

3. The new gamer completes the tutorial.
4. The system displays the first level of the game.

**Extensions**

2a. *Incompletion of tutorial*: If the new gamer is unable to complete tutorial in a certain time, the system will display additional messages to assist the new gamer.

5.2.6. **Name:** View Help Page

1. The new gamer requests to view the help page.
2. The system displays back story and example companions.
3. The new gamer requests to return to the main menu.

**Extensions:**

2a. *The new gamer hovers mouse over companion icon*: The system displays more information about the companion.

## 6. Bugs

- 6.1. **BEFORE:** As a new gamer, I want to learn rules through a tutorial level, so that I know how to play it.  
**AFTER:** As a new gamer, I want a tutorial level, so that I can learn the rules.
- 6.2. **BEFORE:** The system shall store the high scores up to seconds.  
**AFTER:** The system shall store the high scores in minutes and seconds.
- 6.3. **BEFORE:** As a player, I want to avoid obstacles, so that I can have a better reaction time.  
**AFTER:** As a player, I want to avoid obstacles, so that I can have a better reaction.
- 6.4. **BEFORE:** The system shall display success between 3 to 10 seconds of the user defeating the final boss level.  
**AFTER:** The system shall display success within 10 seconds of the user defeating the final boss level.
- 6.5. **BEFORE:** The system shall indicate numerically how many lives a user has during gameplay.  
**AFTER:** The system shall indicate numerically the user's lives during gameplay.
- 6.6. **BEFORE:** The system shall display the time during gameplay from when the game starts until they die.  
**AFTER:** The system shall display the time during gameplay from when the game starts until the player dies.
- 6.7. **BEFORE:** The system shall create a new user account between one to five seconds of the user submitting their account information.  
**AFTER:** The system shall create a new user account between one to five seconds of the user submitting their account information via the user sign-up page.
- 6.8. **BEFORE:** The system shall display companions following the main character while the user completes a level.

- AFTER:** The system shall display companions following the main character once the user collects it.
- 6.9. **BEFORE:** The system shall reset the user's current score to zero between one and five seconds after the score is compared with the user's high score.  
**AFTER:** The system shall set the user's current score to zero within one second of the user starting a new game.
- 6.10. **BEFORE:** The system shall show the player's final score when the player dies at any point in the game.  
**AFTER:** The system shall show the player's final score when the player dies.
- 6.11. **BEFORE:** The system shall display a prompt to start the game within 10 ms after the program has started.  
**AFTER:** The system shall display the main menu within 10 ms after the program has started.
- 6.12. **BEFORE:** The database shall fail at most once every week.  
**AFTER:** The system shall have a database that will fail at most once every week.
- 6.13. **BEFORE:** The system shall not violate any licenses or the user's privacy of information.  
**AFTER:** The system shall comply with the Creative Commons license.
- 6.14. **BEFORE:** The system shall use relatively low system resources allowing it to run on an average device regardless of processing power.  
**AFTER:** The system shall use at most 1GB of RAM.
- 6.15. **BEFORE:** The system shall handle all exceptions from incorrect user input.  
**AFTER:** The system shall handle exceptions for incorrect user input.
- 6.16. **BEFORE:** The system shall freeze at most every hour.  
**AFTER:** The system shall freeze at most once every hour.
- 6.17. **BEFORE:** The system shall operate on Windows 8 and up and mac OS.  
**AFTER:** The system shall not violate any licenses or the user's privacy of information.
- 6.18. **BEFORE:** The system shall provide instructions so that a general user spends no more than 10 minutes to know how to play the game.  
**AFTER:** The system shall take no more than 10 minutes for the general user to learn how to play the game.

## 2 Storyboards

URL: <http://users.csc.calpoly.edu/~achan65/308Storyboards/>

## SVN Link

svn checkout file:///home/aly16/cpe308/Hypnos/