The Little Plumber

Project – Release 2

CIS 350

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**Project Description**

This project represents our interpretation of the original Mario Bros gam released in 1983. A spin off the original Mario Bros., was created by Nintendo for each major platform release. The Super Mario games are typically set in the fictional world of mushrooms with Mario as the character in play. This project utilized the Mario concept with the player in control of a screen character that advances through a map facing challenges that can assist or hinder the play.

**Features Implemented**

* Basic level layout
* Creation of additional levels
* Further refine level design and layout
* Multiple levels linked together in secession
* Ability to control characters movement (forward, back and up)
* Create special abilities for main character (grow, shoot fire ball)
* Abilities based upon the environment of the level
* Loss abilities based on player actions
* Have unique attack talents against opponents
* Create coins that can be collected by the player that effects score
* Flag at the end of game that ends game and displays final score
* Action resulting in characters death will display end screen with final score
* A visual representation of player’s score during gameplay

**Sample Screenshots**

**Movement Right**

Timeline

Description automatically generated with medium confidence

**Movement Left**

Timeline

Description automatically generated with low confidence

**Movement Up**

Timeline

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**Collision**

Timeline

Description automatically generated with medium confidence

**Collision**

Timeline

Description automatically generated with medium confidence

**Pipe Collision**

A picture containing graphical user interface

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**Mushroom collision**

Timeline

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**Coin collison**

Timeline

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**Loss of abilities**

Timeline

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**Use Case Diagram**

Diagram

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**Use Case Descriptions**

|  |  |
| --- | --- |
| **Name** | Movement |
| **ID** | UC2 |
| **Brief Description** | Allow the player to direct the character |
| **Actors (primary and supporting/secondary)** | Current Player interacts assuming the role of the character |
| **Triggers** | The player uses the appropriate arrow keys (Left – Right) to direct the character movement left or right. The space bar is used to direct the character to jump. |
| **Preconditions** | The game must be started and in play |
| **Primary Flow** | 1. Left arrow is pressed causing the character to move left.  2. Right arrow is pressed causing the character to move right  3. Up key is pressed causing the character to jump. |
| **Alternate Flows** | The player doesn’t press action keys and stays stationary   1. Possible collision with evil mushroom causing a loss in end of game. 2. Player remains in stationary |
| **Minimal Guarantees** | Player will have successfully moved in a given direction of their choosing |
| **Success Guarantees** | Playing will successfully navigate level |

|  |  |
| --- | --- |
| **Name** | Collision |
| **ID** | UC3 |
| **Brief Description** | Allows player to interact with level objects |
| **Actors (primary and supporting/secondary)** | Current player that is in control of the character. |
| **Triggers** | The player either runs into or is otherwise involved in a collision |
| **Preconditions** | The game level must first be started |
| **Primary Flow** | 1. The player collides on top on of an enemy which results in the elimination of the enemy.  2. The player collides with a “pipe” whereby causing a change in level  3. The player collides with a “coin” that part of the player’s score.  4. The player collides with a mushroom causing players character to powerup. |
| **Alternate Flows** | The player is involved in a collision however the collision was not invoked by the player   1. Enemy collides with the player causing a loss in power up. Player’s character can lower from larger to medium or medium to small. 2. An enemy collides with the player without any power ups causing end of game. |
| **Minimal Guarantees** | Player will have a collision that results in the end of game |
| **Success Guarantees** | Player will initiate a collision resulting in the elimination of an enemy or the change in a level. |

|  |  |
| --- | --- |
| **Name** | Create Game |
| **ID** | UC1 |
| **Brief Description** | Allows player to interact with level objects |
| **Actors (primary and supporting/secondary)** | Current player controlling the character |
| **Triggers** | The player either runs into or is ran into |
| **Preconditions** | The game must be started |
| **Primary Flow** | Welcome screen – game start, single player |
| **Alternate Flows** | Player ends game – game fails to start |
| **Minimal Guarantees** | Game start |
| **Success Guarantees** | Game starts player has character movement, collision involving enemy players and transitional pipe |

|  |  |
| --- | --- |
| **Name** | Network |
| **ID** | UC4 |
| **Brief Description** | Allows connection to remote service that user can access web application from |
| **Actors (primary and supporting/secondary)** | Server |
| **Triggers** | The user starts game |
| **Preconditions** | The game must be available for play |
| **Primary Flow** | Player has network availability to the game |
| **Alternate Flows** | Player must use a static or local copy of the game |
| **Minimal Guarantees** | Remote access available for start of game |
| **Success Guarantees** | Player has full control of game |

|  |  |
| --- | --- |
| **Name** | Abilities |
| **ID** | UC5 |
| **Brief Description** | Allows players the use of powerups |
| **Actors (primary and supporting/secondary)** | Current player controlling the character |
| **Triggers** | The player either runs into or is ran into |
| **Preconditions** | The game must be started |
| **Primary Flow** | The player gains power up by colliding with mushrooms.   1. When player collects two additional powerup consecutively, the character gains the ability to shoot fire balls. 2. Fireball has the ability to destroy enemies when fire at and collides with them. |
| **Alternate Flows** | Player remains stationary allowing for collision by enemies causing a loss in power which in turn a loss in the ability to use fireball |
| **Minimal Guarantees** | Player will have a collision that will results in the end of game and final score displayed. |
| **Success Guarantees** | Player will initiate a collision with a mushroom resulting in an powerup. |

**UML Diagram**

Diagram

Description automatically generated

**Coding Standards Report/ Static Code Analyzer (Both generated using Eslint)**

The warnings “const”, and “arrow” that appear are not due to the code having errors. Instead, they just represent coding constraints with respect to what version of JavaScript is being utilized. I committed out the exceeding 80 lines of length warning since this helps with coding and the readably.

Text

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**Code coverage (Google V8)**

Code coverage was only 98.2% usage due to not fully utilizing the implemented library.

User generated code was fully utilized.

A picture containing text

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**GitHub Repository**

<https://github.com/DirtyWhiskers/CPS350.git>

**Roles and Responsibilities**

Product owner: Michael Gairson

Scrum Master: Quinn Gairson

Development team: Quinn, Michael Gairson

Quinn: Responsible for setting up the server and creating collision among the player and environment. Set up the code required for players character to grow with power ups and shrink when hit by enemies. Also worked on Eslint for code analyzer and google V8 for code coverage.

Michael: Responsible for creating environment and character movement. Worked on creating the fireball and required code for use and coin creation and collection. Also worked on Eslint for code analyzer.

**Self-reflection**

Quinn: This was the first time that I’ve made a game using JavaScript. This project required a lot of trial and error since I not very familiar with this particular programming language. The use of the kaboom library was a great aid in creating levels, character design and key mapping, but also presented its fair share of problems. Due to the how new the kaboom library is there is very little documentation or examples available for reference. Finding a static code analyzer that was easy to use and did not require multiple plugins was also a challenge. On the second revision there was less of a learning curve with the tools and more time was able to be spent of coding and level development. Overall, this was a great learning experience that built upon many different areas of software design.

Michael: A more difficult assignment than it appeared on the surface. I’m still very new to JavaScript and have only used it a handful of times, the new library added some additional challenges. The library was recently created, so there was not a lot of examples or information available online. Also, this is the first time I created this type of game and used any type of design process to make a finished project. In the end I gained some good insight and knowledge with this project, and I am looking forward to adding on to the project.