|  |
| --- |
| University of Canberra |
| Assignment 2 - Technical Design Document |
| Advanced Game Programming - 9746 |

|  |
| --- |
| Unit Convener: Dr Reza Ryan |
| Mitchell Phillips – u3202396  4-21-2020 |

# Table of Contents

[Table of Contents 2](#_Toc38373289)

[Table of Figures and Tables 3](#_Toc38373290)

[Game Analysis 4](#_Toc38373291)

[Prototype Game Requirements 4](#_Toc38373292)

[Use Case Diagrams 5](#_Toc38373293)

[Game Design 6](#_Toc38373294)

[Architectural Design 6](#_Toc38373295)

[Design Document 6](#_Toc38373296)

[Data Structure Design 6](#_Toc38373297)

[Entity-Relationship Diagrams 6](#_Toc38373298)

[Algorithm Design (Pseudocode) 6](#_Toc38373299)

[Game Implementation 7](#_Toc38373300)

[Code with Comments 7](#_Toc38373301)

[Testing and Verification 8](#_Toc38373302)

[Test Plan 8](#_Toc38373303)

[Error Report 8](#_Toc38373304)

[Improvement Report 8](#_Toc38373305)

[Bibliography 9](#_Toc38373306)

# Table of Figures and Tables

[Figure 1: Priority Backlog List 4](#_Toc38373307)

# Game Analysis

## Prototype Game Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | User Story (as a player of this game) | Tasks | Time Estimation (Hours) | Priority  1 = Very High  2 = High  3 = Medium  4 = Medium to Low  5 = Low |
| 1 | I want to be able to enjoy unique and interesting levels. | Create 1-5 tiles that will become the base environment for the game.  One tile will be empty for later use. | .16  10 Minutes | 1 |
| Create Zones with openings in the:  Left-Right  Left-Right-Top  Left-Right-Bottom  Top-Bottom  Top-Bottom-Left  Top-Bottom-Right  Left-Right-Top-Bottom  By placing empty game objects in 10x10 grid. | .5  30 Minutes | 1 |
| Attach an object spawning script to the empty game objects.  This will randomize which non-empty tile will spawn at these locations. | .16  10 Minutes | 1 |
| Create an Empty game object at positioned at 0,0,0 that will become the level generator. Rename it to LevelGenerator | .1  5 Minutes | 2 |
| Create 4 empty game objects,  Rename to Pose 1-4,  Place them equally apart. | .1  5 Minutes | 2 |
| On the LevelGenerator object, create a Script that finds one of 4 starting positions randomly.  Continue with creating an array of game objects that are to be filled with our zones.  Next add variables, for level generation including limits, a stop generation bool and a layer mask.  Finalise by writing the methods of controlling the generation. | 4 Hours | 1 |
| 2 | I expect that the level will be filled out even if the pathway is completed. | In Unity add 12 more Pose game objects named Pose 5-16 located correctly.  On the Pose objects create a script that will check if there is a room on top of it.  If there is, do nothing.  Otherwise spawn a random room, then destroy this game object. | 2 Hours | 2 |
| 3 | I expect that after the level is filled that If a room spawns on an outside area of the level that if it is open to open space. | Create a border around the level area that will restrict the player to the level. | .16  10 Minutes | 3 |
| 4 | I expect that I will be able to play as a character. | Create an empty game object,  Rename to Player,  Add an empty game object as a child rename to sprite,  Add a sprite renderer component to the Sprite game object. | .16  10 Minutes | 3 |
| 5 | I expect that the character that I will play will be able to traverse through the level using control for the platform of the game. | Create a character movement script that will use Unity’s Horizontal and Vertical Input system (the Arrow keys or WASD)  I will also add the space as a jump so that up and down can be used if I choose to have vines or ladders in the game. | 2 Hours | 2 |
| Create an empty game object,  Rename it ground check and move it to be a child of the player.  Move its position to be at the bottom of the player’s sprite.  This will be used to check if we are standing on the ground, and if we are, we have the option to jump, this makes it so that when we jump it will not just keep jumping through the roof.  Modify the character movement script to check if the ground check is touching the ground. | 1 Hour | 2 |
| Add components to the player Game objects.  RigidBody2D,  2 Colliders, a box for the top half of the character, a circle for the legs and feet, this allows for smoothness should I add diagonal tiles.  Modify the character movement script to use these components.  Freeze the rotation on the rigidbody2D component.  Create a Physics Material, make sure the material has no friction or bounciness, this will stop the player from sticking to walls mid-air. Add this to the collider components. | 1 Hour | 2 |
|  |  |  |  |  |

Figure 1: Priority Backlog List

# Use Case Diagrams

# Game Design

* Architectural Design
  + Component Design
  + Interface Design
* Data Structure Design
* Algorithm Design (Pseudocode)

## Architectural Design

## Design Document

## Data Structure Design

## Entity-Relationship Diagrams

## Algorithm Design (Pseudocode)

# Game Implementation

## Code with Comments

# Testing and Verification

## Test Plan

## Error Report

* Device Tested
* Test Results
  + List of Functionalities Tested
* List of Bugs

## Improvement Report

# Bibliography