A picture containing text

Description automatically generated

Interactive Digital Art and Design

Project Report

Year III

Sara Kosciuczuk

C00251415

28.04.2023

**Text, table

Description automatically generated**

Contents

[Acknowledgements 3](#_Toc133523223)

[Project Abstract 4](#_Toc133523224)

[Project Introduction 5](#_Toc133523225)

[Background 6](#_Toc133523226)

[Feasibility Study 7](#_Toc133523227)

[Requirements Analysis 8](#_Toc133523228)

[Project Milestones 9](#_Toc133523229)

[Research 10](#_Toc133523230)

[Project Description 11](#_Toc133523231)

[Conclusions 13](#_Toc133523232)

# Acknowledgements

I would like to thank the following people who assisted in completing this project including:

I would like to thank Ben Williamson for helping me out with some of my coding errors.

I would also like to thank Phil for helping me out to set up my project on the showcase day.

# Project Abstract

There were a lot of coding errors that I ran into. Simple things like not including a semicolon (“ ; “) or putting something in the wrong order (“ =< “), also capitalising some words and knowing the difference between GameObject and gameObject was confusing at first, which “GameObject” is for a class name, category or type of object, while the lather gameObject refers to the GameObject the current script is attached to.

Near the end of the project I had different issues, for example, duplication of different sprites of the character and of enemies. I found out later that the animator had created animation scripts for random scripts/objects in my game which didn’t exist before. This issue was fixed when those animators where deleted and no weird duplications occurred.

There is an issue with the player colliding with the second enemy. The second enemy would be pushed away like a football and could fly away. This was a mistake with the colliders and can be easily fixed by unticking a box called “ isTrigger “.

There is a second issue between the second and third level. The player collects the correct amount of collectables but is unable to pass through onto the last level. This issue wasn’t noticed until it was too late.

# Project Introduction

This is a 2D platformer type game created with Unity in C#. All art was created in Aseprite, which is entirely for pixel art, including pixel art animations. The player collects a certain amount of collectibles throughout the levels to continue onto the next one. There are three different levels for the player to discover. Player should avoid or shoot enemies to progress further along with avoiding stalagmites and spikes along the levels.

I chose Unity and pixel art because I wanted to learn something new, and I heard that Unity is a great place to begin or start with when it comes to creating games. Pixel art seemed to be more suited for tile maps that I wanted to go for and overall turned out great. I was interested in created some type of platformer at the start of deciding what type of game to create.

The target market could be anyone who is new to games or likes to play platformer games. Any company that sells to younger audiences or even adult audiences.

# Background

The previous project idea was mainly about concept art and a website to present everything on. I changed the whole idea because it wasn’t suited for the amount of time allocated. An introduction to a new idea was made about a game. At first it was an isometric game, top down but after some considerations, it ended up being a 2D platformer game created in Unity, along with pixel art being created in Aseprite.

The introduction of a new idea and change in project direction had an impact as the resources and time allocated to the previous idea have been wasted. However, the decision to pivot towards a game lead to new opportunities. If this was a business proposal such opportunities would be for revenue generation and potential collaborations in the gaming industry.

While it was a massive change of direction with the project, I do think the game was a better idea overall with the time allocated.

# Feasibility Study

The game could be launched on different platforms such as Steam and Epic games and on different operating systems such as Windows and Linux. For target audience, as mentioned above, younger audiences would be the main target or anyone who likes platformers including adults.

Further research would have to go into the age gap the game could be sold for, any potential legal or regulatory issues, each platform’s user base, technical requirements or restrictions that could be considered. Any potential costs and benefits associated with launching the game through different platforms and OS. This also includes how much revenue could be generated on average through each platform along with fees or any other additional costs.

Through extensive analysis, the project could be possible for income generation with effective strategies and decision making when launching the game on different platforms.

# Requirements Analysis

Before beginning the project, it had to be discussed with your assigned supervisor and had to be approved by them. Further research was made into the approved idea on how it will be created and what programs would be used.

The basic requirement for creating the project is knowledge of Unity, C# for game mechanics and implementation of all game features and functionalities and knowledge of Aseprite for pixel art.

The game is a 2D platformer which sets the player basic movement as left, right and jumping including shooting. Left movement is set to the key “ A “, right movement is set to the key “ D “, and jumping is set to the key “ Spacebar “. The shooting key is set to “ left-click “.

Going into detail, the player can jump, move left and right, shoot and collect collectibles. Shooting creates bullets, if the bullets collide with an enemy, it takes away their health. Player can collect collectables upon colliding with them and the player can die from the enemy in which a game over screen will open.

The enemy moves left and right, if it collides with the player, the player loses health. There are two different enemies, both are dinosaurs.

There are three different collectables in the game. A crystal, a mushroom and a seashell. The player must collect five crystals on the first level to pass onto the next. The next level requires 10 mushrooms and the last level does not have any requirements.

All sprites and animations were created with pixel art, 64x64. The background, ground and other in-game assets were used in a tile map inside Unity which then it can be organised to the user’s want.

# Project Milestones

Milestone I – Approval

The first milestone of the whole project and the most important one, was to get the project approved. Researching different project ideas, coming up with requirements and how this project would’ve been made.

Milestone II – Research

Creating the 2D game and setting up the environment for the game was the next big step. This mainly included testing of different environments the user would go through in-game. Researching different biomes, different characters and enemies and game design. Pixel art was also researched. Basic tile maps were created for the environment.

Milestone III – Basics

Creating the player after the environment with basic movement to left and right with jumping. The player was able to run and jump in both directions. The camera following the player was also set up. A basic enemy was implemented into the game.

Milestone IV – Collectibles and Enemies

After the player was finished, basic enemies were being implemented into the game with left and right movement. Collectibles were also implemented with a simple UI when picked up.

Milestone V – Collisions and Sprites

Proper collisions were implemented for the player, enemies and collectibles. The ground collisions so that the player could move around was implemented before the player. Sprites for all the enemies, player, collectibles and others, were created.

Milestone VI – Animations

Animations were implemented for the player and enemies. Idle, walking and jumping animations were created in aseprite.

Milestone VII – Fixes

After all the major implementations were made, code fixes and sprite fixes were implemented.

Milestone VIII – Additions

Any other additions like collecting a certain amount of collectibles to pass onto the next level.

# Research

I have used mostly YouTube for researching code when I ran into issues or to see how to do something in C#. For evidence, the three main YouTubers I watched to help me are: Brackeys, Kap Koder and BMO. All three have videos about game development, unity tutorials and game design.

I have read through forums and blogs relating to game development and any coding issues I was stuck on and wasn’t able to resolve myself or through YouTube, such as unity forums and blogs, and GameDev. Stack Overflow was another website I accessed which is a website where programmers can ask questions about their code and get answers from others.

I used Pinterest and DeviantArt for inspirations on art styles, environments, biomes, characters and enemies.

A picture containing wall, different, bunch, various

Description automatically generatedA picture containing calendar

Description automatically generated

# Project Description

The finished product is a 2D platformer game created using Unity and C# for the game, and Aseprite for the pixel art. The game features three different levels that the player must progress through by collecting a certain number of collectibles on each level. The player can move left, right, jump, and shoot enemies using keyboard controls. The game also features various enemies, including two types of dinosaurs, that move left and right and can cause the player to lose health upon contact. The graphics of the game are all pixel art, with all sprites and animations created at 64x64 resolution.

A picture containing electronics

Description automatically generated

Chart

Description automatically generated

A picture containing timeline

Description automatically generated

The first proposed project is very different because the idea was to create concept art and present it on a website but this was impossible given the time constraints and was advised to create a more simpler idea of which one was a game. The supervisor approved it after reviewing it and the project had a change of direction.

Unity and Aseprite were programs that I have never used before and by choosing these platforms I was able to learn a variety of things.

Unity is a game engine, which thought me about creating game mechanics, implementing features and functionalities, working with 2D assets, and managing scenes and levels. It also uses C# as a programming language. I learnt a lot about the language throughout creating the project including but not limited to: variables, data types, operators, functions, classes and others. Unity was also a personal achievement because I got to explore a game engine that I’ve never used before and in general never used a game engine before. Creating my project in Unity made me want to explore different game engines in my personal time, for example, unreal engine.

Aseprite is a program for creating pixel art and animations. Aseprite thought me about how to create different sprites and animations including different tools to choose from. Learning this program was also a personal achievement because I explored the concepts of pixel art and how it works and it was also new to me.

By being able to work on a game project throughout the year, I was able to learn about game design such as player movement, level design, enemy behaviour, collectibles, sound effects and more. The project itself made me realise that I had to manage and set my own goals and milestones, defining requirements and priorities, and adapting to changes and challenges. Problem solving skills and project management skills were achieved as a personal goal.

# Conclusions

Replace this text with Project Conclusions.

The project was a 2D platformer game developed using Unity and Aseprite. The main objective of the game was for the player to collect items and progress through different levels while avoiding or shooting enemies. Overall, I think the project came out well.

What went right:

* The use of Unity and Aseprite allowed for the creation of a visually appealing game with smooth animations and transitions.
* The game mechanics were implemented successfully, including player movement, enemy behaviour, and item collection.

What went wrong:

* Some features had to be scaled down or removed due to time constraints, such as adding sound effects and creating additional levels.
* The testing phase could have been more thorough to identify and resolve bugs or glitches.

What is still outstanding/missing:

* The addition of more sound effects would greatly improve the overall experience of the game.
* More levels and enemy types could be added to make the game more challenging and engaging.
* Game fixes and bugs could all have been done. Due to time constraints and not enough game testing, I was unable to spot or fix any outstanding bugs.

If starting again, how would you approach this project differently:

* Allocate more time for testing and bug fixing.
* Allocate more time for animations and their implementation.
* Allocate more time for level design.
* Focus on creating a more detailed project plan with specific milestones and deadlines to ensure the timely completion of all features.

What advice would you have for someone attempting a similar project in the future:

* Plan out the project thoroughly and break it down into manageable tasks.
* Test the game frequently and gather feedback from others to identify areas for improvement.

Technology choices:

* The use of Unity and Aseprite was appropriate for the project and allowed for the creation of a visually appealing and functional game.

**References**

**Websites:**

GameDev. [Online] <https://gamedev.net/> (accessed 2023).

Unity Forums. [Online] <https://forum.unity.com/> (accessed 2023).

Unity Blogs. [Online] <https://blog.unity.com/> (accessed 2023).

Brackeys. [Online] <https://www.youtube.com/@Brackeys/videos> (accessed 2023).

Kap Koder. [Online] <https://www.youtube.com/@kapkoder4009/videos> (accessed 2023).

BMo. [Online] <https://www.youtube.com/@BMoDev/videos> (accessed 2023).

Pinterest. Research for game art. [Online] <https://www.pinterest.ie/Wolfix156/research-game-concept/> (accessed 2023).

Stack Overflow. [Online] <https://stackoverflow.com/> (accessed 2023).

DeviantArt. [Online] <https://www.deviantart.com/> (accessed 2023).