UNIVERSITY POLITEHNICA OF BUCHAREST
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MASTER THESIS

Godchosen: Wrath of the Elements
A 2D mythological platformer game

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SINOPSIS

Această teză prezintă procesul și detaliile implementării unui joc video de aventură de tip platformer 2D, dezvoltat în motorul grafic Unity, însoțit de motivația alegerii acestei teme, rezultatele obținute în urma implementării, dar și funcționalitățile ce ar putea fi adăugate ulterior pentru a îmbunătății experiența jucătorului.

Scopul principal al acestei teze este de a crea un joc video care îmbină aspecte grafice și funcționale inedite, pentru a crea o experiență unică și imersivă pentru jucător, îmbinând învățăturile dobândite pe parcursul celor 2 ani ai programului de masterat urmat.

Soluția propusă a fost dezvoltată folosind motorul grafic Unity, împreuna cu limbajul de programare C#, rezultatul fiind un joc video de aventură de tip platformer, cu o poveste bazată pe mitologia greacă și cu un stil artistic aparte. Aceste elemente susțin gameplay-ul plin de acțiune ce combină diverse mecanici de explorare pentru a simula o experiență unică, întesată de povești despre legendele Greciei Antice.

Cuvinte cheie: Unity, C#, 2D, platformer, explorare, mitologie greacă

ABSTRACT

This paper presents the process and details of the implementation of a 2D platformer adventure video game, developed in the Unity game engine, accompanied by the motivation for choosing this theme, the results obtained following the implementation, and the functionalities that could be added subsequently in order to improve the player's experience.

The main goal of this thesis is to create a video game that combines novel graphical and functional aspects, to create a unique and immersive experience for the player, combining the teachings learned during the 2 years of the followed master's program.

The proposed solution was developed using the Unity game engine, together with the C# programming language, the result being a platformer adventure video game, with a story based on Greek mythology and a distinctive artistic style. These elements support the action-packed gameplay that combines various exploration mechanics to simulate a unique experience, woven with stories about the legends of Ancient Greece.

Keywords: Unity, C#, 2D, platformer, exploration, Greek mythology

1 INTRODUCTION

This chapter aims to define the solution by highlighting its main characteristics and the video game genres it fits into, as well as to introduce the personal motivation behind choosing it as a research topic, while also emphasizing its appeal toward a certain demographic of video game players.

1.1 Solution Description

The proposed solution is a two-dimensional (2D) side-scroller video game, developed in the Unity game engine, which combines elements, not only from various platformer games, but also from other different game genres, in order to weave an epic journey into the mythological lands of Ancient Greece, both thematically and functionally.

The presented video game will feature a character controlled by the player that will be tasked with exploring multiple areas, filled with traps, various obstacles, and collectible items. The purpose of the game is for the player to recover an ancient powerful relic from a locked room, that must be first unlocked by exploring several side rooms. Each side room is based on a different element and contains an artifact that will aid the player in exploration and a powerful gem that is part of the key to opening the final room. During this adventure, the player can use the collected artifacts, each with their own unique effects (breaking walls, destroying enemy projectiles, climbing walls, illuminating dark areas, swimming and many more), to explore and reach certain areas of the game, in order to unlock the path forward.

1.2 Motivation

The gaming industry has experienced significant growth over the years and is now more widespread in popularity than ever before. With hundreds of genres and thousands of products, it serves as a source of entertainment for a substantial portion of the global population. Within this vast array of offerings, there's a game suitable for every individual, regardless of age or background.

Personally, as a student at the Graphics, Multimedia and Virtual Reality (GMRV) master program, I want to learn all there is to know about video games and the industry, as it has been an important part of my life since an early age. Making video games, more than playing them, has become the one thing I would like to pursue as a future career and I that i see myself doing for the rest of my life.

My diploma project consisted of a little game that combined platforming and tower defense elements to deliver a personal take on a classic exploration game. As much as I enjoyed working on that project, there was so much more I could have done to deliver a more complex and immersive experience. As a result, I have taken this opportunity to reiterate on the idea of my previous project and breathe new life into my first attempt at making a video game. With a new vision and expanded knowledge, I wish to develop a more polished, engaging and unique experience by drawing inspiration from some of my favorite games, with the aim of blending various aspects in order to create an original product that mirrors my deep passion and commitment regarding this craft.

From a thematic and functional standpoint, I consider that the Greek Mythology platformers space is not very well developed and, as a personal favorite, I wish to expand upon it by delivering an individual take on this barely explored combination of genres, in order to share the beauty of Ancient Greece's legends and the rewarding experience of a platformer game.

2 STATE OF THE ART

This chapter describes the proposed solution from a thematic and functional standpoint, by presenting all the main categories and genres that the game is a part of, while also highlighting video games that represent the main inspiration for the development of the solution, and how each of these has impacted different aspects of the final product.

2.1 Categories

The game can be classified into several categories based on different core aspects. These categories are: Unity (game engine used for development), Ancient Greece (thematic), 2D Side-scroller (video game perspective) and Platformer (video game genre). Each of these categories has their own unique elements that the project incorporates together in order to create a unique experience for the player.

Game Engine - Unity

Unity[0] is a game engine developed by Unity Technologies and released in 2005. It is mainly used to create 2D and 3D video games written in the C# or JavaScript programming languages. Being one of the most popular game engines in the industry, it is also a very beginner friendly one, allowing developers to create games from scratch while also offering various tools to innovate.

Despite being very popular, it is mostly used for 2D games, such as platformers, and UI intensive games, such as card games. While the option to develop 3D games exists, the biggest games in the industry are made with other game engines that have more functionalities and allow for easier and faster development, while also offering better results.

Theme and Visuals - Ancient Greece

Thematically, the game is set in the mythological era of **Ancient Greece**, where the gods ruled over the world from the top of Mount Olympus, while dangerous creatures roamed the Earth, causing chaos and panic wherever they went. In this age, certain gifted humans, some even being the illegitimate children of the ruling gods and having special abilities gifted to them by their parents, would protect the weak from the wrath of the monsters. These protectors became heroes of legend and are remembered to this day for their mighty feats.

In the game industry, there have been a number of games, covering various genres, that feature the lands of Ancient Greece as their main setting. Most of these games portray the main character as one of these powerful heroes that are trying to save the world from destruction by the hands of a perilous threat to humankind, while being aided by the benevolent gods with different unique skills and powerful relics.

Such a setting can be quite appealing to a certain demographic because it allows them to become one of the heroes they have only read about in books about ancient myths and face the legendary creatures that have supposedly plagued the world thousands of years ago.

Perspective - 2D Side-scroller

Two-dimensional (2D) is a type of video-game perspective that uses parallel projection to depict 3D objects within a two-dimensional space from a specific viewpoint. 2D video games are praised for their graphical simplicity which allows them to deliver remarkable gameplay and intricate worldbuilding. This approach facilitates the design of models and animations by offering more room for exploration, while also allowing the developers to focus their attention on other complex areas of the game, such as mechanics and storytelling.

While being simple in their design, 2D video games are sometimes more fitting for a specific genre than a 3D counterpart. For example, 2D platformers are preferred over 3D ones due to their level design, which offers more visibility over the whole game space, while also allowing the developers to focus on more intricate mechanics and exploration patterns.

The **Side-scrolling** perspective is a particular 2D video game perspective which situates the camera alongside the game space, offering players a horizontal outlook of the scene. This viewpoint is employed to establish horizontal layers, providing the game with a perceived sense of height. It is mostly utilized in 2D platformers and shooter games.

This perspective is the most suitable for platformer video games because it allows the player to see the most out of the game space and plan their exploration accordingly.

Gameplay and Mechanics - Platformer

The **Platformer** sub-genre belongs to the action game category, focusing on guiding the playable character across various platforms, engaging in combat or evading enemies, while gathering resources or items that aim to aid the player in their playthrough. Usually presented in a 2D side-scrolling perspective, this design enhances the visibility and interaction with movement and combat elements in the game.

2.2 Inspiration

To craft a logical narrative and deliver a distinct gaming experience, the game takes inspiration from a diverse array of products ranging across various genres, spanning the entire video games history. This includes classics from the 80s to present day innovations.

Each of the main categories presented has its own representatives in the video game industry, different games with unique approach to certain game elements and mechanics. As such, drawing inspiration from other well established releases and combining the best parts of these games in unusual ways can lead to something an entirely new and immersive gameplay experience.

2.2.1 Theme and Visuals - Ancient Greece

Hades

Hades[1], a roguelike game released in 2020 by Supergiant Games, unfolds in the Underworld, the realm of the dead in ancient Greece. The narrative centers around Zagreus, the son of the eponymous main antagonist, as he tries to break free from hell and reach the mortal realm to reunite with his mother. As a roguelike, the game is focused on the protagonist's persistent efforts to escape the Underworld, with each failure resulting in a fresh start from the beginning. However, after each attempt, the player becomes stronger and more capable of escaping, while also unlocking new chapters of the game's story by interacting with different characters. The game presents a unique playstyle, by allowing the player to choose one of many weapons, with different playstyles, at the start of the current playthrough, to help them finish their mission. Each weapon has different effects, abilities and upgrades that ensure novelty and replayability with each attempt to finish the game.

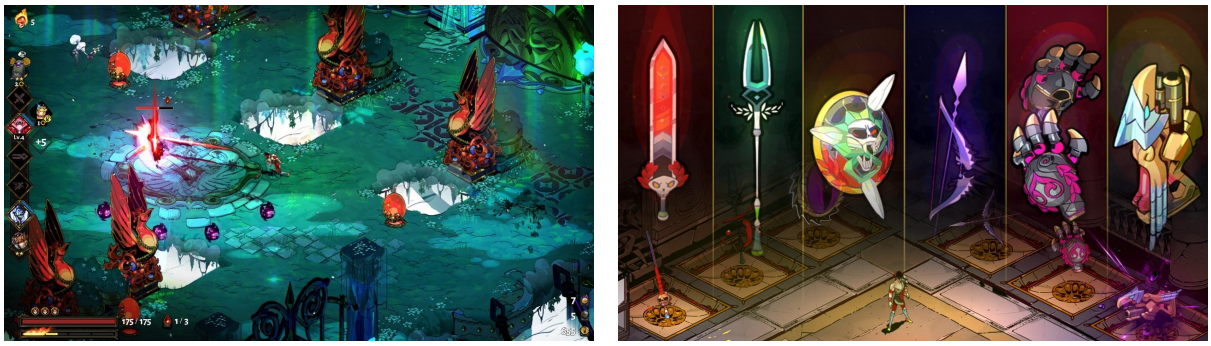

Figure 1: Hades Gameplay Scenes

Fenyx Rising

Immortal Fenyx Rising[2] is a 2020 3D third-person action adventure game developed by Ubisoft Quebec. The game is set in ancient Greece and follows the eponymous protagonist, Fenyx, as he tries to save the world from destruction by battling mythological creatures, such as the gorgons, the Minotaur, the Lernaean Hydra and, finally, the titan Typhon, while being aided by a number of Greek gods, who lend him their powers. The game features a unique artstyle and depiction of the gods and monsters that are part of the Greek pantheon, while also integrating unique combat and exploration mechanics, such as parrying, dodging, flying, gliding and other various movement abilities that the player can combine to solve challenging puzzles.

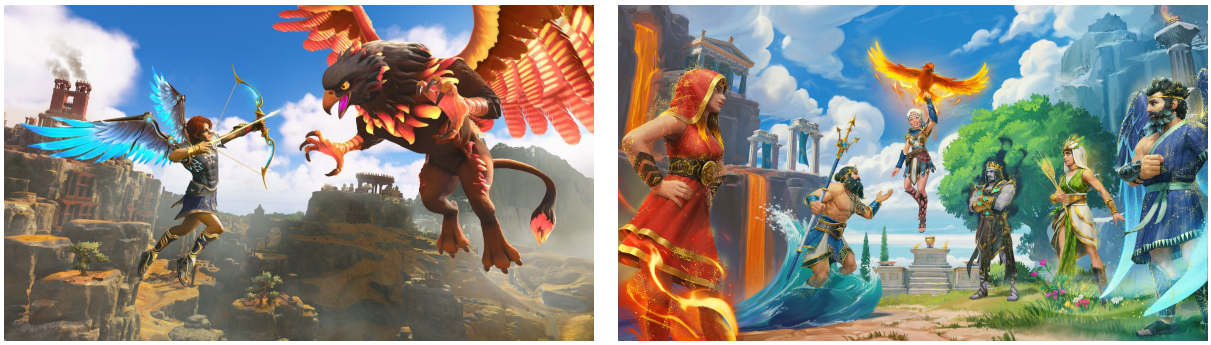

Figure 2: Immortals Fenyx Rising Visual Scenes

Main Influences

Both games are set in Ancient Greece, serving as significant influences on the primary setting, as they contribute inspiration to the main character, adversaries, and the overall environment. Moreover, the game introduces a distinctive weapon-swapping mechanic, which enables the player to switch between various weapons to interact with the environment in specific ways. This mechanic is a variation of Hades' initial weapon-picking system. This mechanic also borrows from Immortal Fenyx Rising's exploration system, by allowing the player to use different weapons with unique abilities to interact with certain parts of the world in order to solve mini puzzles and reach new areas of the game.

Therefore, the player can alternate between various weapons, in order to offer a deeper exploration and combat experience while playing. Thematically, each weapon is infused with the power of a god, conveying the feeling that the player is channeling their power and is getting aided in their adventure by higher forces.

2.2.2 Perspective - 2D Side-scroller

Cuphead

Cuphead[3] is a 2017 2D run-and-gun game developed by Studio MDHR. Published by the same studio, the game allows players to assume control of either the titular character or his brother, Mugman. The objective of the game is to defeat a number of distinct bosses, while gathering their souls to break free from the devil's clutches. Playable in both solo and 2-player modes, the game seamlessly blends platforming and shooting elements, while offering the players unique and engaging encounters. All of this is enhanced by the vibrant retro-style graphics and music that characterize the game.

Figure 3: Cuphead Gameplay Scenes

Hollow Knight

Hollow Knight[4], a side-scrolling game released in 2017 by Team Cherry, places players in control of an insectoid protagonist known as the Knight. The game revolves around the Knight's quest to eradicate a plague afflicting their kingdom. The gameplay involves exploring the realm, battling infected foes, and ultimately confronting the source of the plague. Offering distinctive boss encounters, intricate exploration, and nuanced combat, Hollow Knight has gathered widespread acclaim as one of the most treasured side-scrolling games of all time.

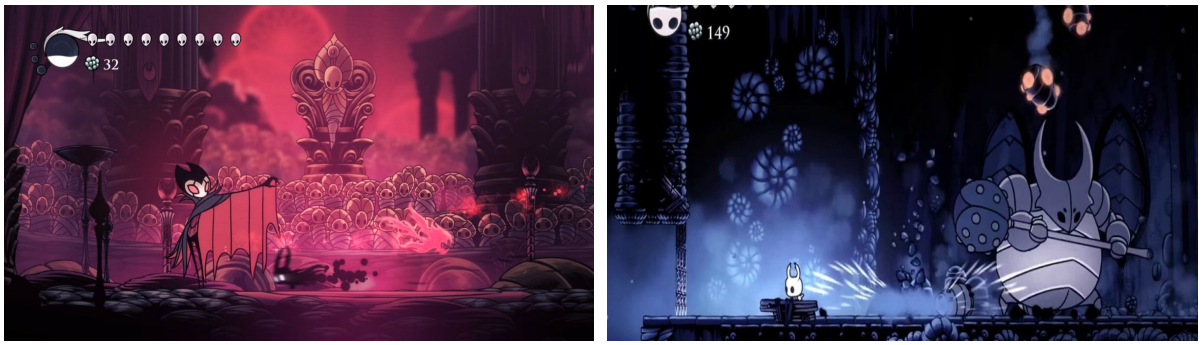

Figure 4: Hollow Knight Gameplay Scenes

2.2.3 Gameplay and Mechanics - Platformer

Spelunky

Spelunky[5], a 2008 2D platformer developed by Mossmouth, LLC, takes substantial inspiration from the Spelunker cult classic, but elevates its gameplay in terms of visuals and mechanics. It expands on the original concept by introducing a variety of environments, enemies, traps, and collectibles. The game goes beyond mere quantity, introducing numerous new interactions between various elements of the game, resulting in a fresh and distinctive gaming experience with each playthrough.

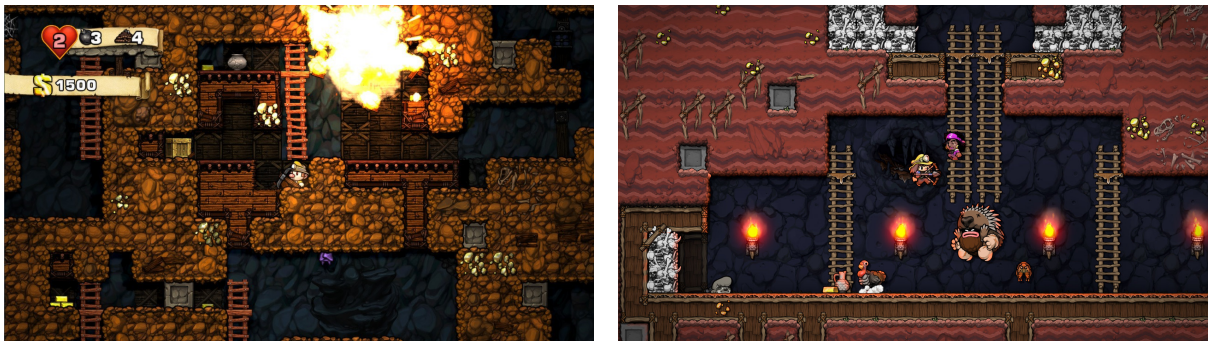

Figure 5: Spelunky Gameplay Scenes

9 Years Of Shadows

9 Years Of Shadows[6] is a 2023 side-scrolling platformer developed by Halberd Studios and published by Freedom Games. The game follows Europa, a brave warrior who wants to save the world from eternal darkness, as she journeys through the depths of Talos, a mechanical fortress that spreads corruption throughout the land. A pixel art colorful journey, 9 Years of Shadows presents unique environment traversal mechanics with the use of different armors that offer the players new ways to explore and fight.

Figure 6: 9 Years of Shadows Gameplay Scenes

Ori and the Will of the Wisps

Ori and the Will of the Wisps[7] is the sequel to the highly acclaimed side-scrolling platformer Ori and the Blind Forest. Developed by Moon Studios GmbH and published in 2020 by Xbox Game Studios, the game takes the player in a cursed land haunted by corrupted creatures as they control a little creature called Ori in an attempt to reunite with their family and heal the lands that have been plagued for years and years. Combining platforming elements with elaborate puzzles and epic boss fights, Ori and the Will of the Wisps features an incredible level design, by presenting different environments with their own exploration mechanics, such as underwater breathing, sand burrowing and running from pitch black darkness.

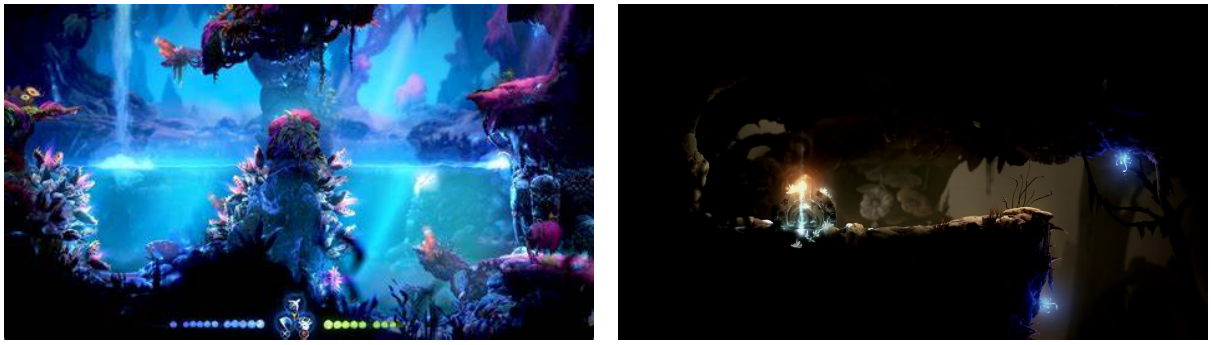

Figure 7: Ori and the Will of the Wisps Gameplay Scenes

Trine

Trine[8] is a 2009 action puzzle platformer game, developed and published by Frozenbyte, which allows up to three players to embark on a journey in a fantasy world in order to save their kingdom from evil. The game presents three unique characters, a wizard that can create and move objects to solve puzzles and create new ways to overcome obstacles, a thief that can quickly traverse the environment and surprise enemies and a knight that can block projectiles and unleash destructive attacks against foes. Each of these characters has a special role in the game's exploration and the players must use all their abilities in order to advance.

Figure 8: Trine Gameplay Scenes

Main Influences

The proposed solution aims to create a special experience, by combining diverse exploration elements and complex combat mechanics. The main mechanic of the game is represented by an array of weapons and artifacts that can be used in both exploration and combat, combined with various exploration elements, in order to help the player advance in their journey.

The existence of a mechanic that allows the player to gain different effects that can be used in specific scenarios, as presented by both 9 Years of Shadows (elemental armor) and Trine (multiple characters), offers gameplay depth and variety, allowing the player to use their creativity to overcome different obstacles that they face during their playthrough.

While exploration is an important part of any platformer type game, the level design is also a crucial factor. The environment must feel alive and appealing, by offering new experiences between different levels and parts of the playthrough. Ori and the Will of the Wisps excels in this regard by integrating unique mechanics for each of its zones, while also offering different level layouts that the player must understand and explore in order to push forward.

Another important element that the solution will display is the interaction between the player weapon's abilities and various elements from the game space. Spelunky does a great job at presenting such interactions as the player can create and destroy objects and use them in ways that allow them to explore the environment in exciting ways.

2.3 Related Work Conclusions

Each of the games mentioned above distinguishes itself within its respective genre, whether through a distinctive setting, a captivating narrative, an innovative integration of mechanics, or by introducing genre-defining elements. These games have become critical sources of inspiration for subsequent releases in the gaming industry.

The proposed solution fuses various game genres, thematic styles, and mechanics to carve an original and engaging experience. With a fun and easily comprehensible story, the game unfolds across unique levels, providing players with a rewarding playtime and a gratifying sense of achievement upon completing the adventure.

3 SOLUTION DESCRIPTION

This chapter describes the solution as a whole product, encompassing its **narrative**, **architectural** and **functional** aspects, while offering insight on the demographic of people that the game may appeal to.

3.1 Description

The proposed solution is a 2D side-scrolling platformer video game that offers a narrative-rich experience set in the mythological realm of Ancient Greece. The central objective of the game revolves around the retrieval of an ancient relic within hidden deep inside a treacherous temple. Players must navigate through the perilous environment consisting of multiple side room, to retrieve pieces of the key to the final room, while encountering dangerous traps. To aid in this quest, players have access to god-infused artifacts, each with distinct utilities in exploration, enhancing the depth and strategic aspects of the gameplay.

3.2 Target Audience

This game is aimed at the community of platformer video games enjoyers that also have an affinity for Ancient Greece and its plethora of mythological legends, as this thematic and gameplay combination is underrepresented in the video game industry.

3.3 Narrative

The player embarks on a divine mission assigned by the gods to retrieve a potent relic concealed within the treacherous depths of an ancient temple. As they traverse the temple, encountering lethal traps, they discover a large door with five empty sockets. The Chamber of the Elements can only be unlocked by retrieving the five elemental gems by entering the adjacent doors, each one leading to a different elemental plane: Earth, Nature, Fire, Water and Air. But the player is not alone, as the gods have their eye on their chosen hero at all times, offering them special artifacts infused with their godly powers, to traverse the elemental planes and retrieve the keys to the Chamber. Behind the final door, the elements are unleashed, and the player has to use the experience gained from each plane to navigate the deadly passages and retrieve the ancient relic, the Lightning Bolt of Zeus, and then escape the collapsing temple and deliver the prize to king of the gods himself.

3.4 Artstyle

The art style used will combine black silhouettes with a monochromatic background to evoke the feeling of ancient Greek amphorae:

Figure 9: Ancient Greek Amphorae

3.5 Architecture

The game is composed of multiple scenes that are represented by menus and levels. The general game flow and the transitions between these scenes is done using screens and buttons. The existing scenes and the connections between them are presented in the following figure:

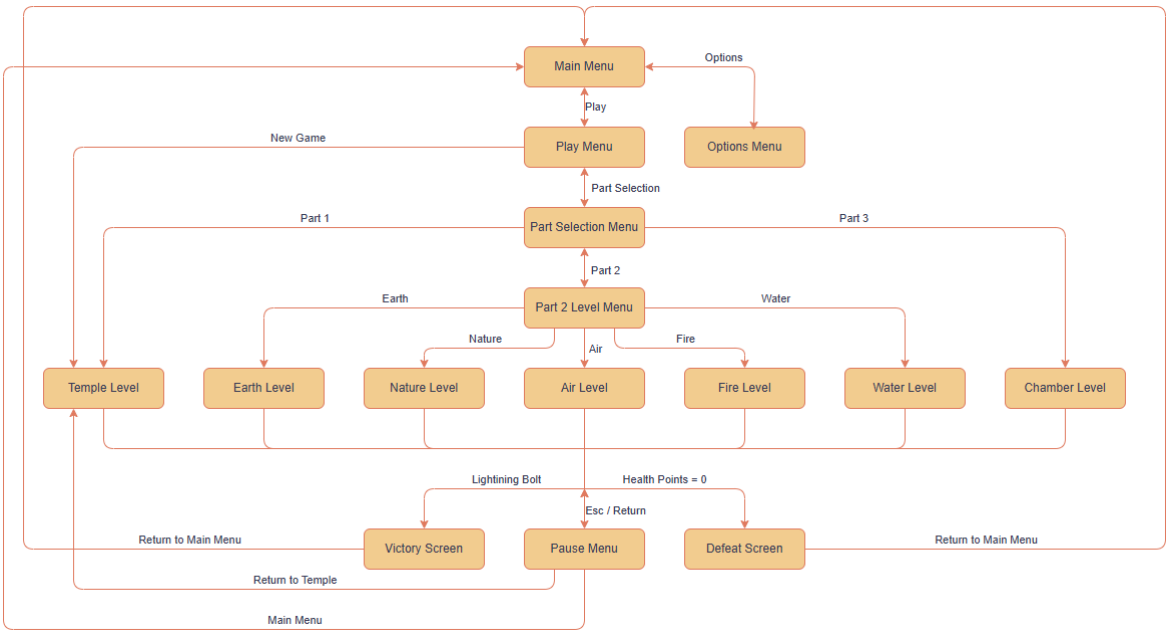

Figure 10: Game Flow Diagram

3.5.1 Game Menus and Screens

The game has several menus and screens that allow the players to navigate through the game and its levels, while having access to sound options, as well as pausing or restarting the current game session.

Main Menu - Allows the player to play or quit the game, as well as access to the Options Menu.

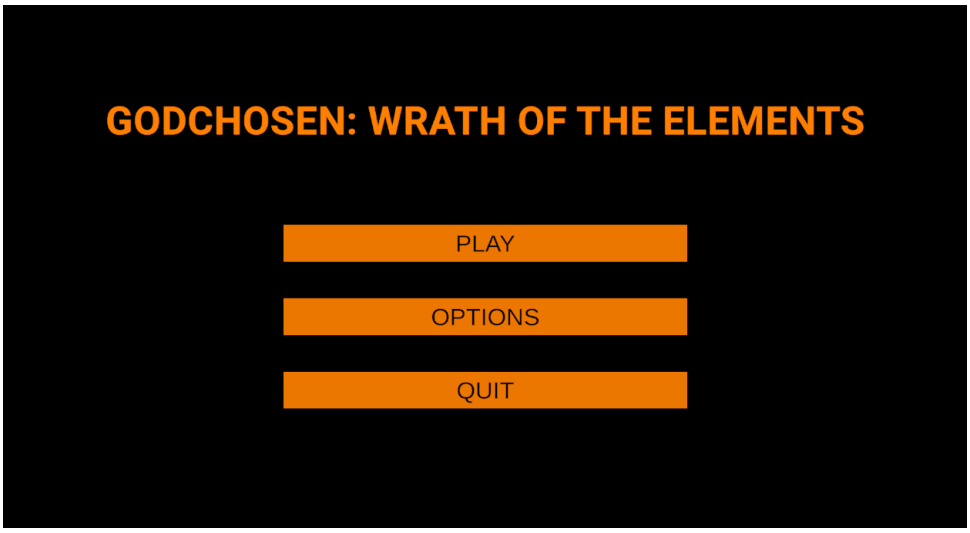

Figure 11: Main Menu

Options Menu - Allows the player to change the game's difficulty, modify the volume or return to the Main Menu.

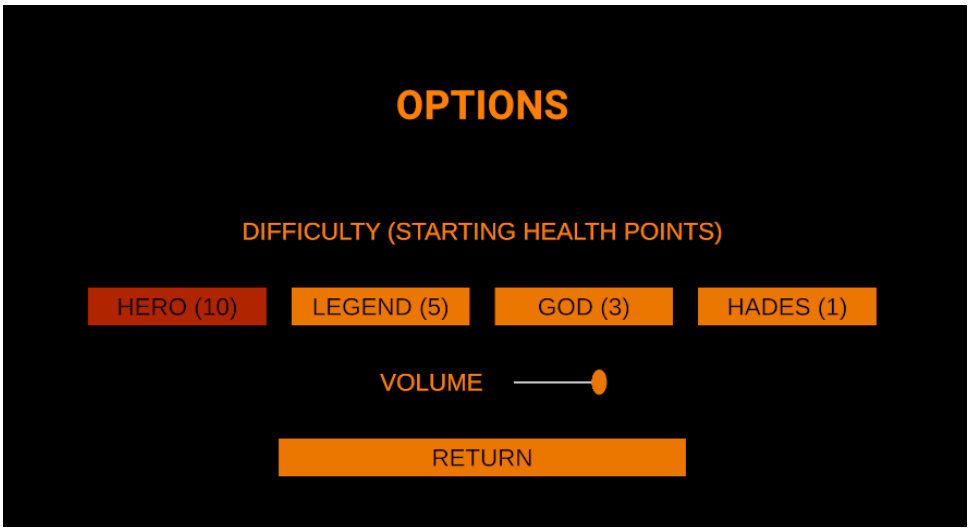

Figure 12: Options Menu

Play Menu - Allows the player to continue the already started playthrough, start a new one, access the Part Selection Menu or return to the Main Menu.

Figure 13: Play Menu

Part Selection Menu - Allows the player to select the part they want to play or return to the Play Menu.

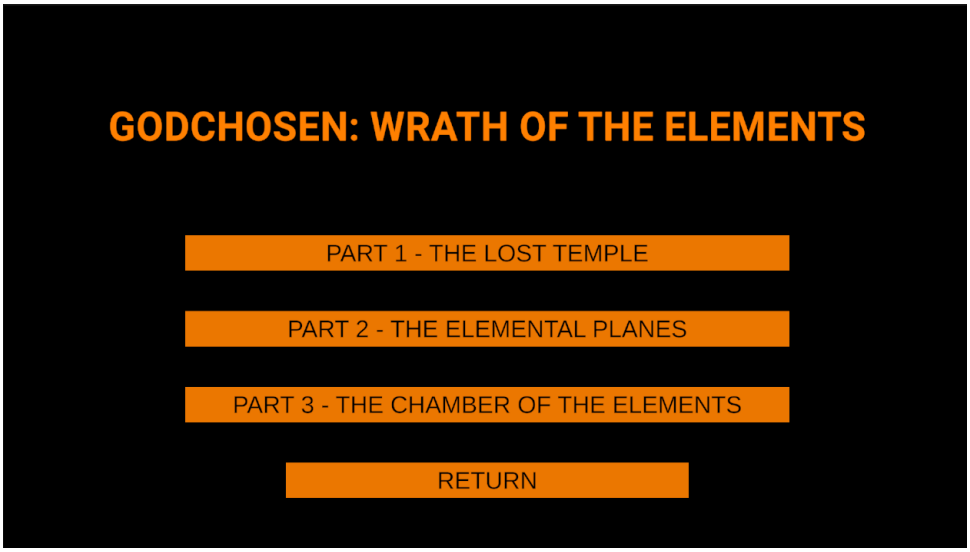

Figure 14: Part Selection Menu

Part 2 Level Menu - Allows the player to select one of the 5 levels in the second part of the game or return to the Part Selection Menu.

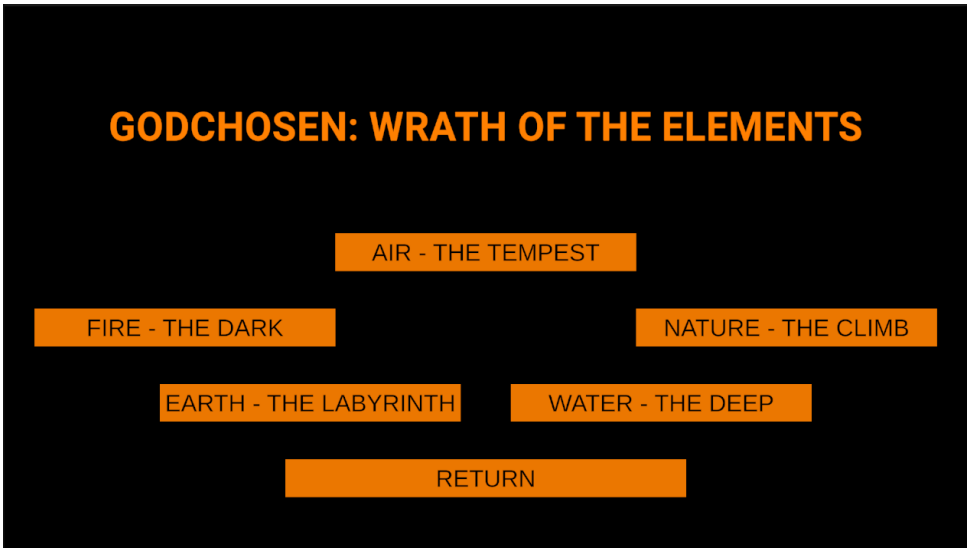

Figure 15: Part 2 Level Menu

Pause Menu - Pauses the game, allowing the player to return to the Temple level, modify the volume, return to the Main Menu or unpause the game.

Figure 16: Pause Menu

Victory Screen - Activates when the player finishes the final part of the game, allowing the player to return to the Main Menu.

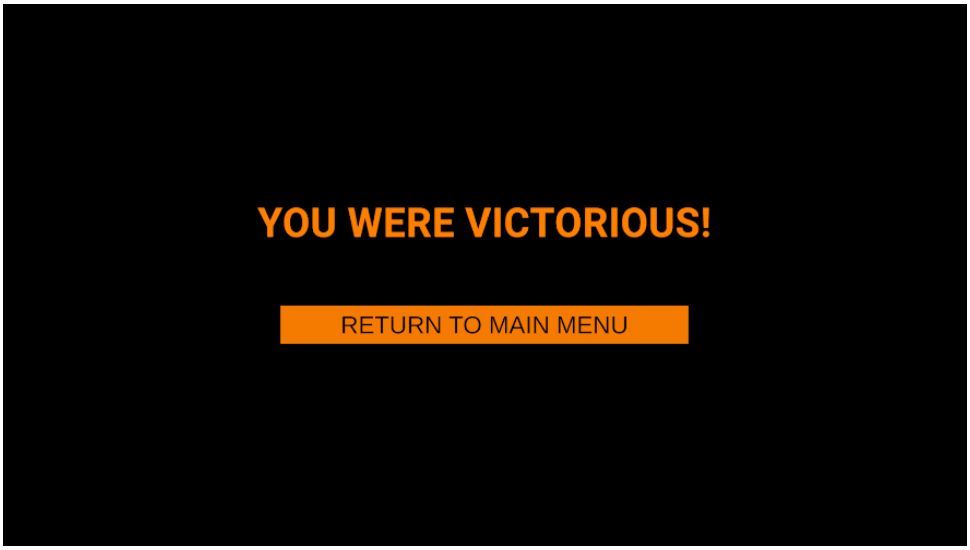

Figure 17: Victory Screen

Defeat Screen - Activates when the player loses all their lives, allowing the player to return to the Main Menu.

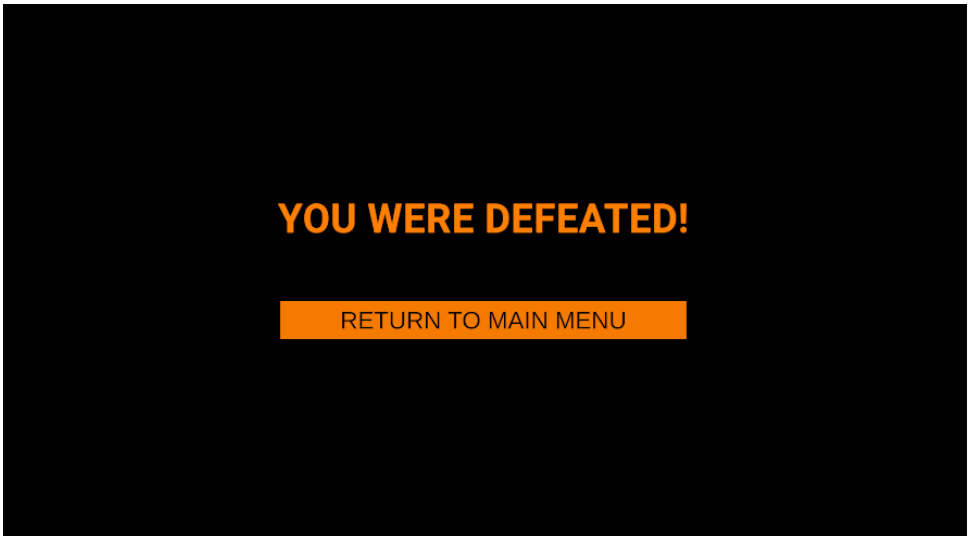

Figure 18: Defeat Screen

3.5.2 Game Parts

The game is split into **three** parts, each with their own story segments, mechanics and visuals.

3.5.3 Part I - The Temple

The first part represents the start of the game, as the player is given the quest that needs to be fulfilled and is explained the mechanics of the game via Monologue Prompts with different gods, while navigating the first room of the temple in order to reach the locked door of the Chamber of the Elements.

The Temple (Tutorial) - The first level of the game has a simple platformer layout and explains the base movement and exploration mechanics of the game: Moving, Jumping, Double Jumping, Dashing and Climbing; familiarizes the player with the game's different types of interactable objects: Tutorials, Checkpoints, Traps, Projectiles, Potions, Lore Pieces and Collectibles; and introduces the gods that will be aiding the player throughout their journey.

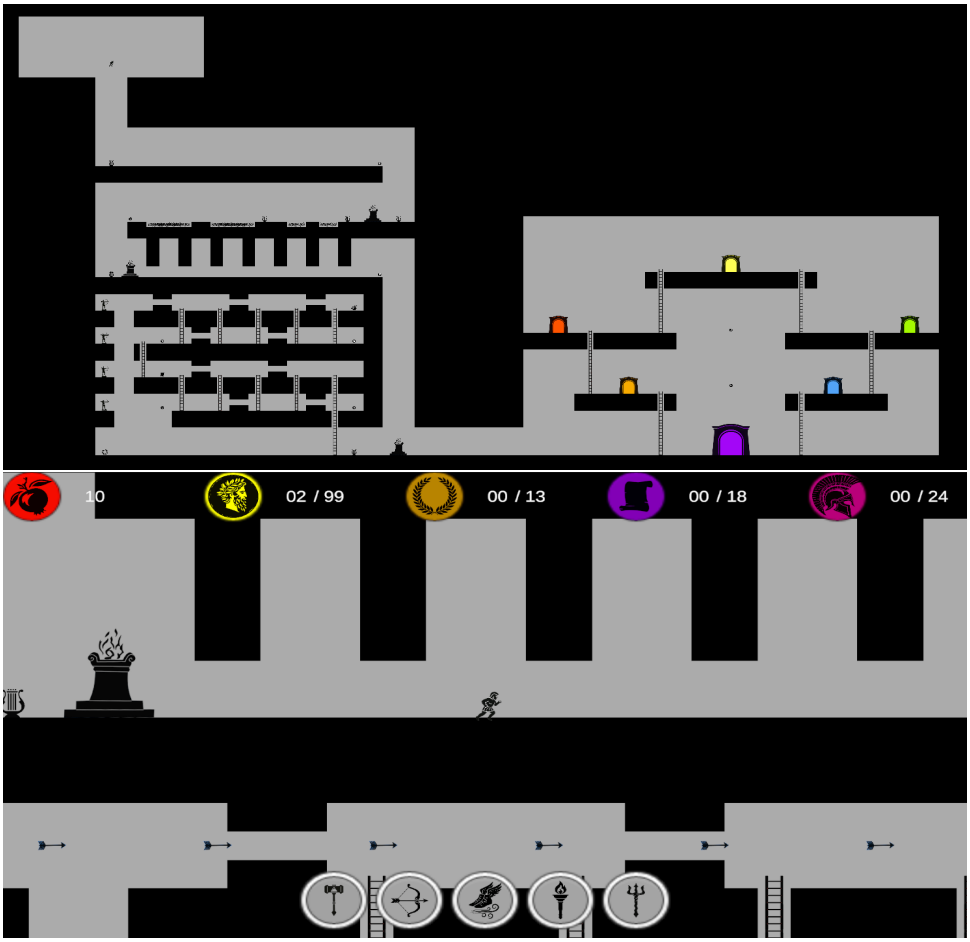

Figure 19: The Temple

3.5.4 Part II - The Elemental Planes

The second part consists of the 5 levels, each corresponding to an elemental plane, that the player must conquer in order to reach the final Chamber and finish their adventure. The levels can be completed in any order, as they don't have overlapping mechanics that require multiple artifacts to be used.

The Labyrinth (Earth) - The Labyrinth is the plane of the Earth element and is structured as a claustrophobic maze with multiple corridors and hidden passages. This level introduces the Hammer of Hephaestus artifact, that will allow the player to destroy certain marked walls and resist strong wind gusts in order to reach the Earth Gem.

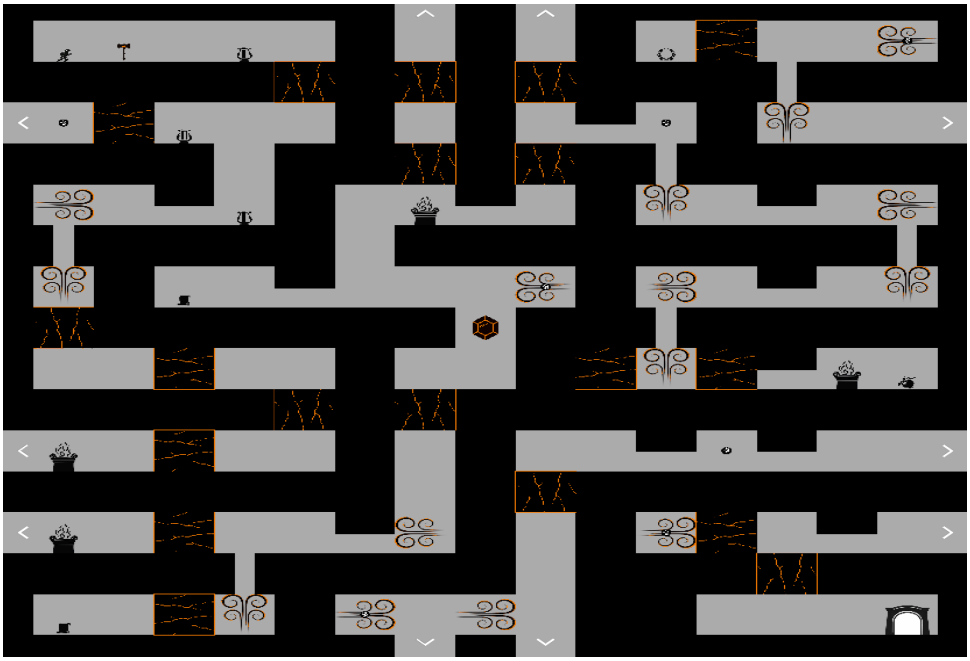

Figure 20: The Labyrinth Layout

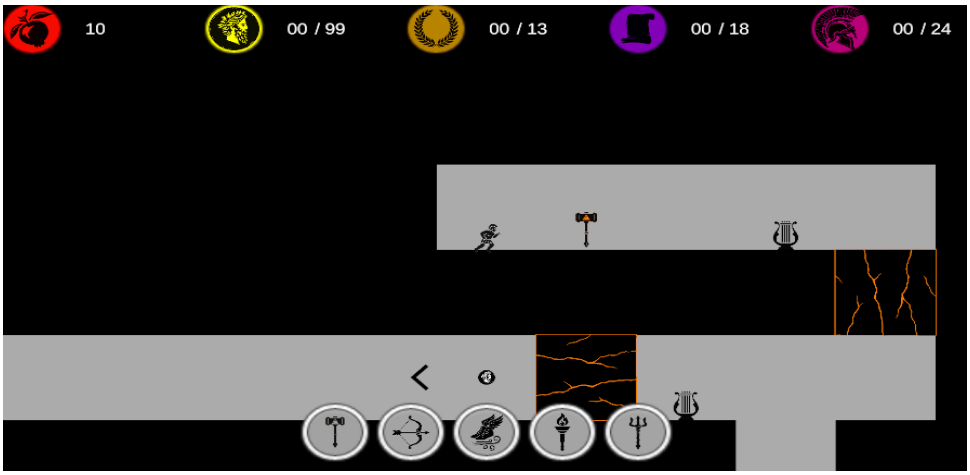

Figure 21: The Labyrinth Start

The Climb (Nature) - The Climb is the plane of the Nature element and is structured as a vertical ascension filled with climbable walls and grappling points. This level introduces the Bow of Artemis artifact, that will allow the player to shoot arrows, climb vine walls and grapple to fixed points in order to reach the Nature Gem.

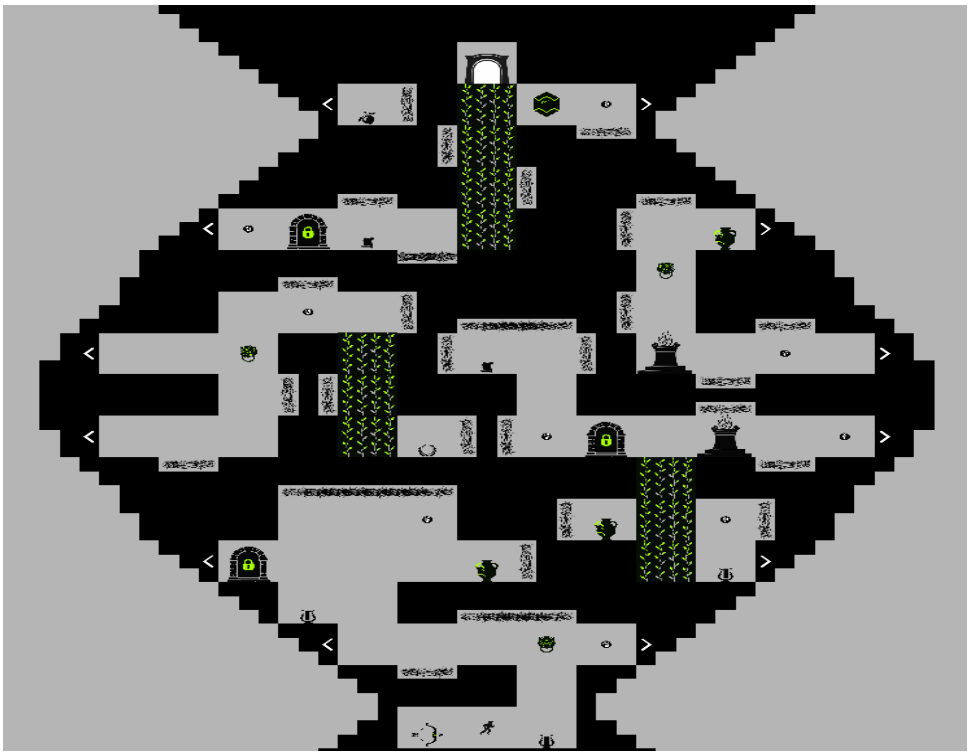

Figure 22: The Climb Layout

Figure 23: The Climb Start

The Tempest (Air) - The Tempest is the plane of the Air element and is structured as a series of platforms that are constantly affected by strong winds that the player must use to their advantage. This level introduces the Wings of Hermes artifact, that will allow the player to dash while in the air, launch themselves upwards using air currents and switch water Handles on and off to unlock secret paths in order to reach the Air Gem.

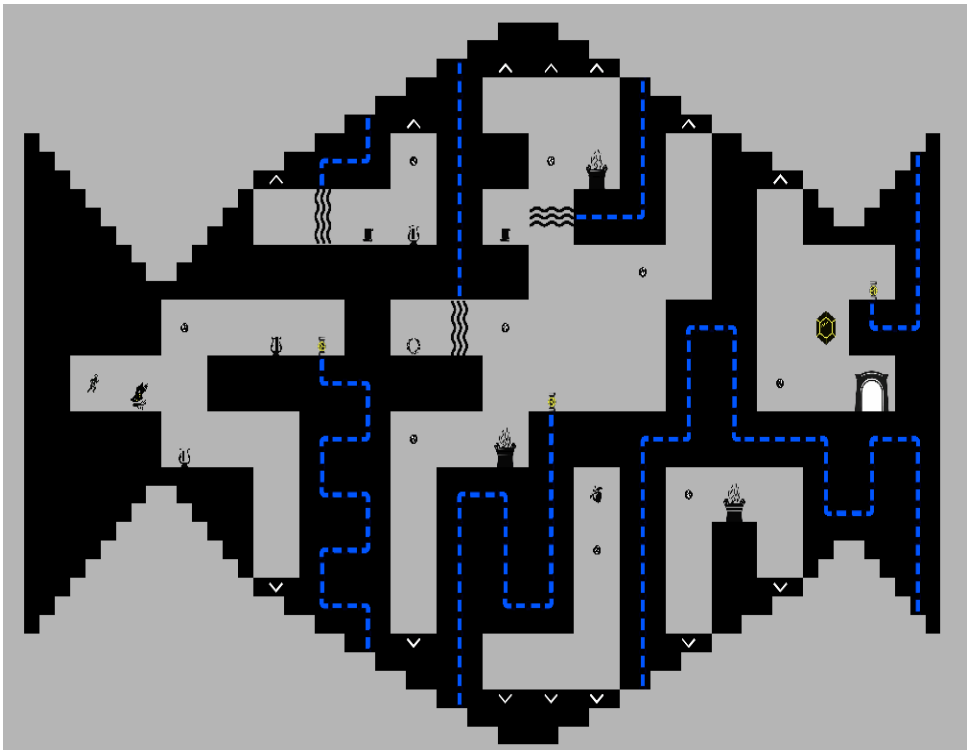

Figure 24: The Tempest Layout

Figure 25: The Tempest Start

The Dark (Fire) - The Dark is the plane of the Fire element and is structured as a lightless area where any wrong step could lead to getting lost in the eternal darkness. This level introduces the Torch of Hestia artifact, that will allow the player to see in a small area around themselves, light braziers that can illuminate bigger areas and burn spider webs that are blocking the way in order to reach the Fire Gem.

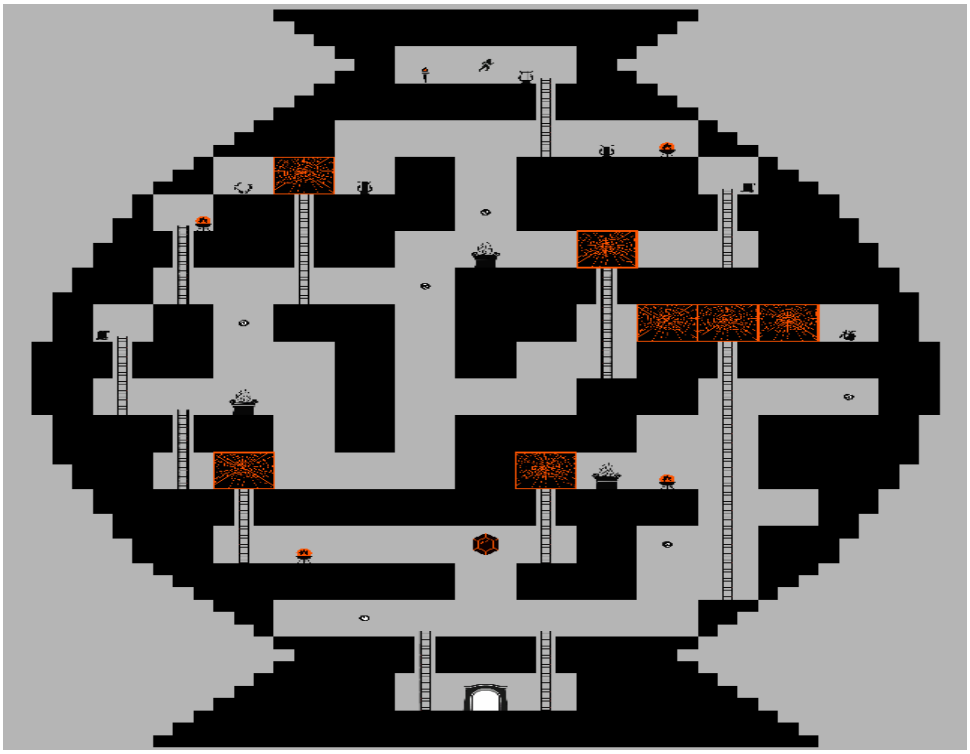

Figure 26: The Dark Layout

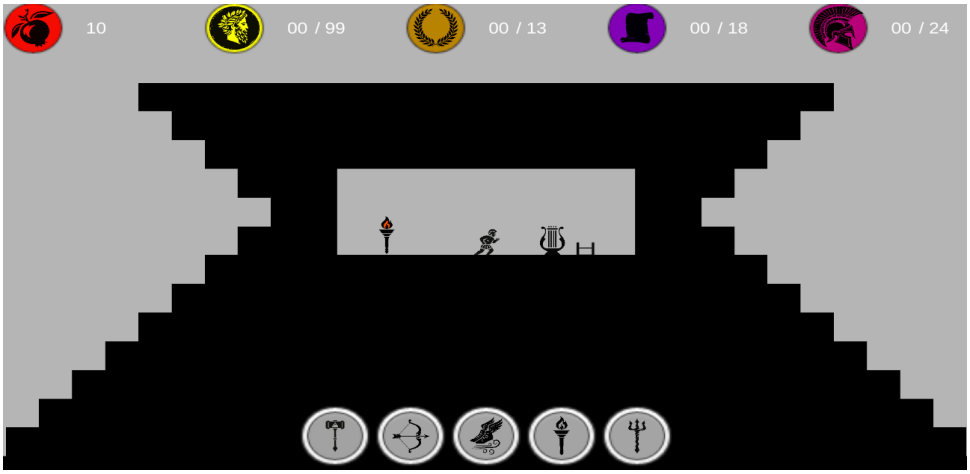

Figure 27: The Dark Start

The Deep (Water) - The Deep is the plane of the Water element and is structured as an underwater domain with several caves filled with deadly flames. This level introduces the Trident of Poseidon artifact, that will allow the player to swim underwater, destroy projectiles and extinguish flames that block the path in order to reach the Water Gem.

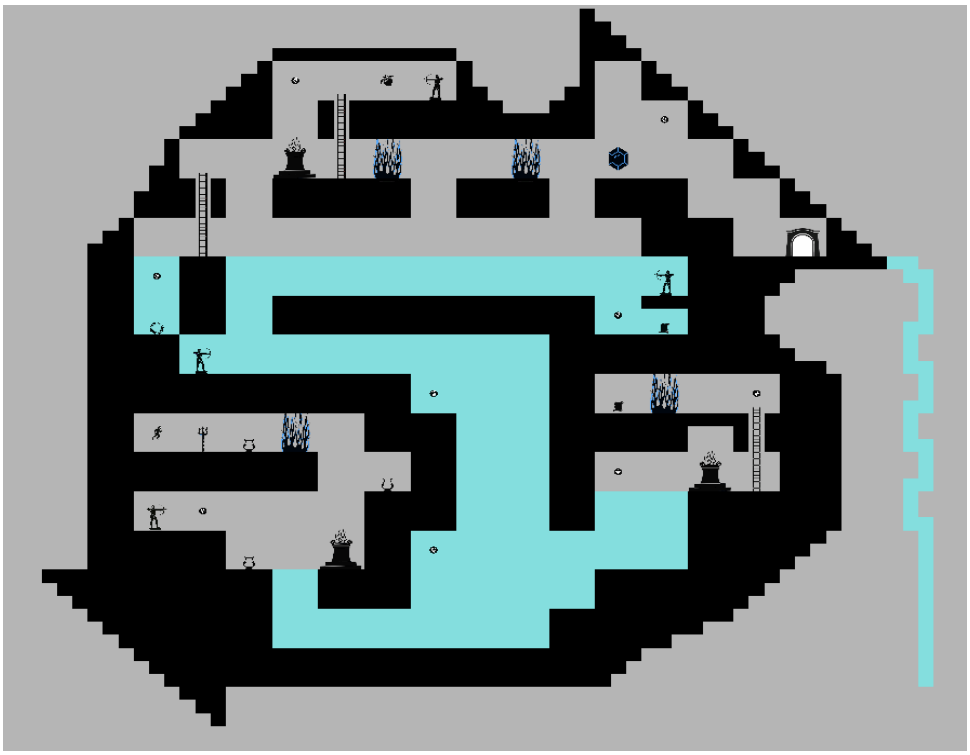

Figure 28: The Deep Layout

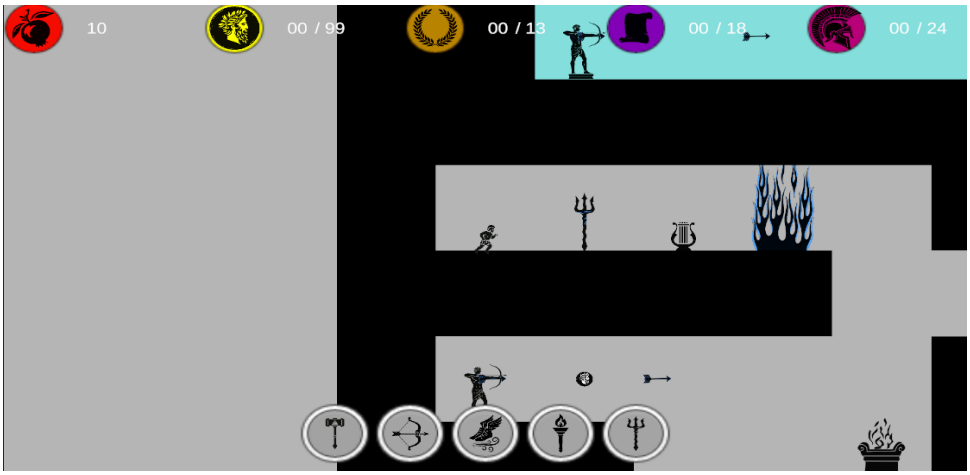

Figure 29: The Deep Start

3.5.5 Part III - The Chamber of the Elements

The third and final part consists of one final level that can only be unlocked by completing the previous five planes and retrieving the gems that will unlock the door to the Chamber of the Elements.

The Chamber of the Elements - The only level of the third part, the Chamber of the Elements is a combination of all the previous levels, featuring all the elements and requiring the player to use all the artifacts in order to reach the end and retrieve the Lightning Bolt of Zeus.

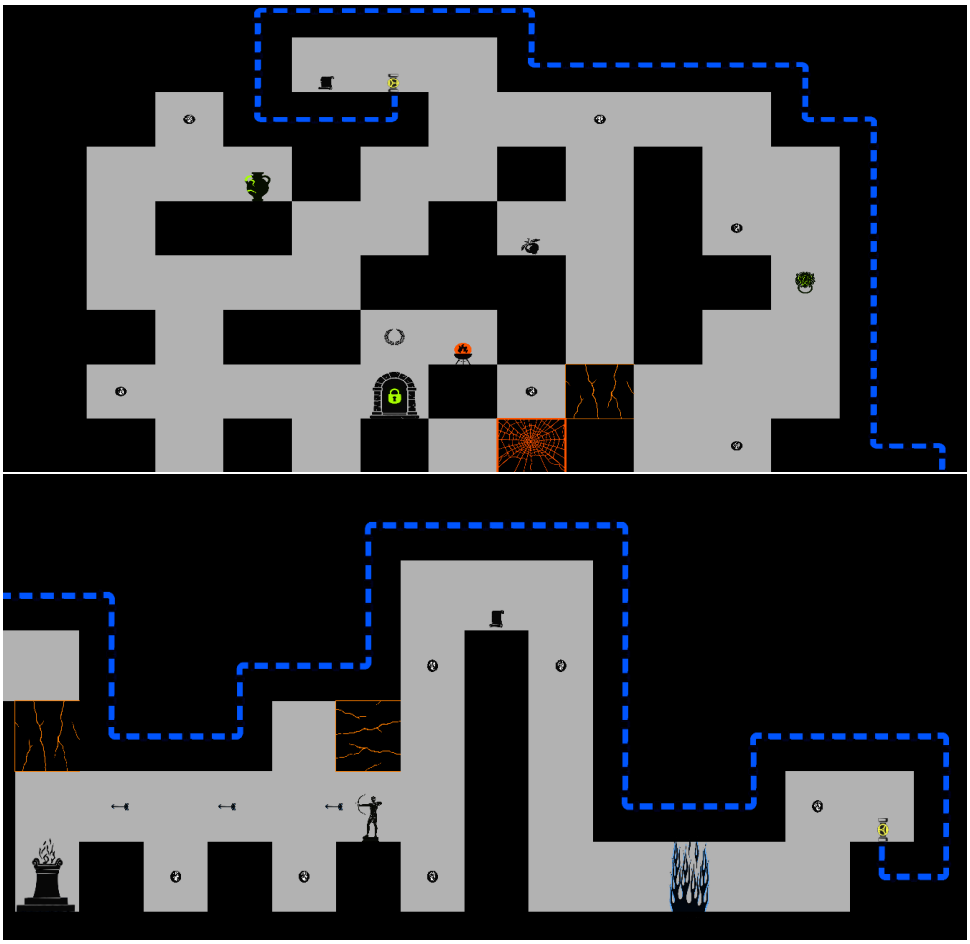

Figure 30: The Chamber of the Elements

3.6 Player

The player controls a character from a third-person point of view. The player has access to a set of movement abilities, some unlocked from the beginning, while others unlocked by using different artifacts:

Running (A/D) - Standard movement across the horizontal axis

Jumping (SPACE) - Short vertical jump

Double Jumping (2 x SPACE) - One more short vertical jump

Climbing (W/S) - Standard movement across the vertical axis, using ladders and climbable walls

Dashing (SHIFT) - Short horizontal dash in the direction the player is facing, while touching the ground

3.7 Interactable Objects

The game contains different objects that the player can interact with: helpers that aid the player in their journey, traps that can damage the player, and specials that can only be interacted with using certain artifacts and are either helping the player, blocking the path or damaging them.

3.7.1 Helpers

Tutorials are helpers that teach the player the game's mechanics.

Checkpoints are helpers that allow the player to return to their location if they are hit by a trap during their adventure.

Lore Fragments are helpers that teach the player information about the gods that are aiding them in their adventure.

Mementos are helpers that teach the player myths and legends about the Greek mythology.

Potions are helpers that restore lives to the player.

Ladders are helpers that the player can climb.

Artifacts are helpers that unlock the corresponding artifact.

Elemental Gems are helpers that mark the completion of the corresponding level.

Portals are helpers that allow the player to move freely between the levels.

3.7.2 Traps

Terrain Spikes are stationary traps that cover certain areas that the player must avoid using their movement abilities.

Crushing Walls are moving traps that can crush the player if they don't dash fast enough.

Archer Statues are shooting traps that periodically launch arrows towards a fixed direction, that the player must avoid.

3.7.3 Specials

Wind Currents are blocking specials that the player can ignore using the Hammer.

Breakable Walls are blocking specials that the player can break using the Hammer.

Vine Walls are friendly specials that the player can climb using the Bow.

Grapple Points are friendly specials that the player can grapple to traverse terrain using the Bow.

Containers are specials that hold Stone Keys and can be destroyed using the Bow.

Stone Keys are friendly specials that open Stone Doors and can be obtained from Containers.

Stone Doors are blocking specials that the player can open using Stone Keys.

Unlit Braziers are friendly specials that the player can light up to permanently illuminate the adjacent area using the Torch.

Spider Webs are damaging blocking specials that the player can melt using the Torch.

Flame Walls are damaging blocking specials that the player can extinguish using the Trident.

Water Streams are blocking specials that the player can stop using the Water Handles.

Water Handles are friendly specials that the player can use to stop Water Streams using the Wings.

3.8 Artifacts

Throughout the game, the player will acquire artifacts with unique abilities that will allow the player to explore locations that otherwise would not be reachable in each level. When equipping an artifact, the background color and the layout of the level will change, allowing the player to interact with different objects throughout the level, based on the equipped artifact's abilities. Each artifact will have a passive ability and two active abilities with different purposes in exploration.

3.8.1 Hammer of Hephaestus

The **Hammer of Hephaestus** is an artifact that is unlocked in the Labyrinth and can also be used the Chamber of the Elements to break walls and resist air currents.

Wind Resist (Passive) - Allows the player to resist strong **Wind Currents**.

Wall Break (RMB) - Break the **Breakable Wall** in the direction the player is facing.

Wall Stomp (Z) - Stomp the **Breakable Wall** beneath the player.

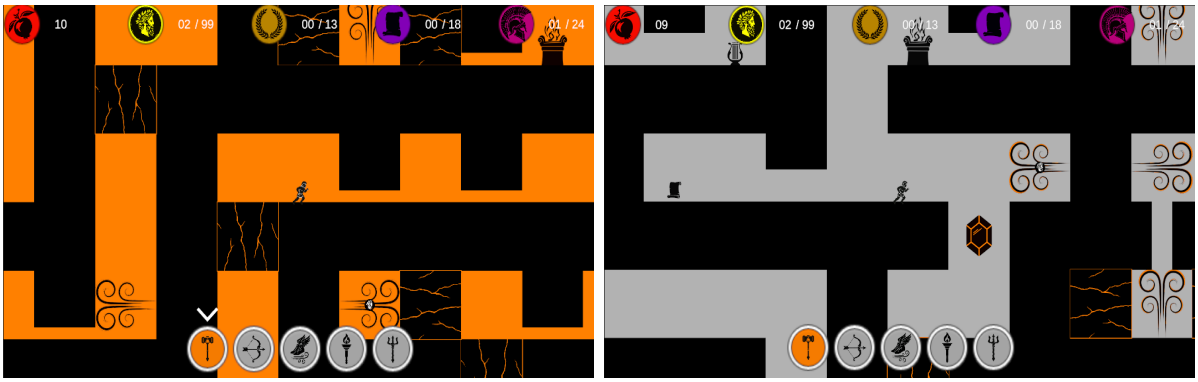

Figure 31: Hammer of Hephaestus Abilities

3.8.2 Bow of Artemis

The **Bow of Artemis** is an artifact that is unlocked in the Climb and can also be used the Chamber of the Elements to shoot arrows, climb vine walls and grapple.

Wall Climb (Passive) - Allows the player to climb **Vine Walls**.

Arrow Shoot (RMB) - Shoot an arrow to destroy a **Container** that holds a **Stone Key**.

Branch Grapple (Z) - Attach to **Grapple Points** to ascend.

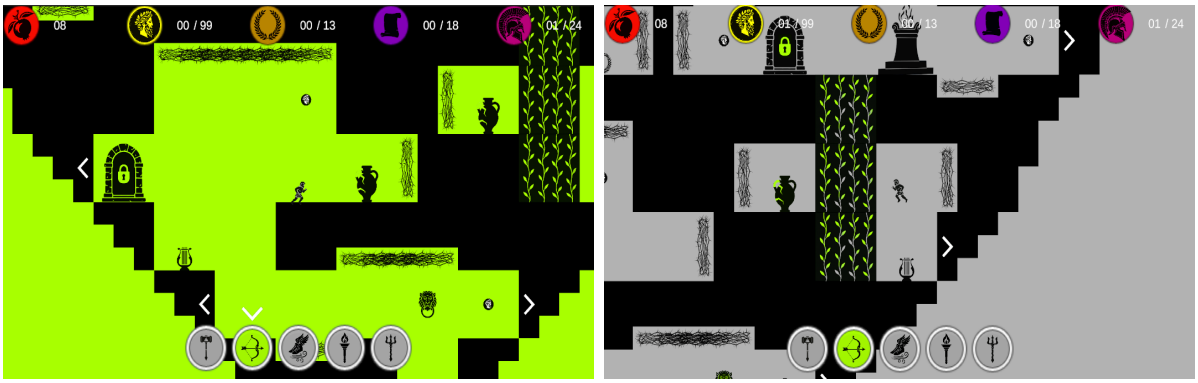

Figure 32: Bow of Artemis Abilities

3.8.3 Wings of Hermes

The **Wings of Hermes** is an artifact that is unlocked in the Tempest and can also be used the Chamber of the Elements to air dash, switch Handles and launch the player upwards.

Air Dash (Passive) - Allows the player to dash while in the air.

Upward Launch (RMB) - Launches the player upwards using an air current.

Water Switch (Z) - Switch the state of the **Water Handle** to start/stop the **Water Stream**.

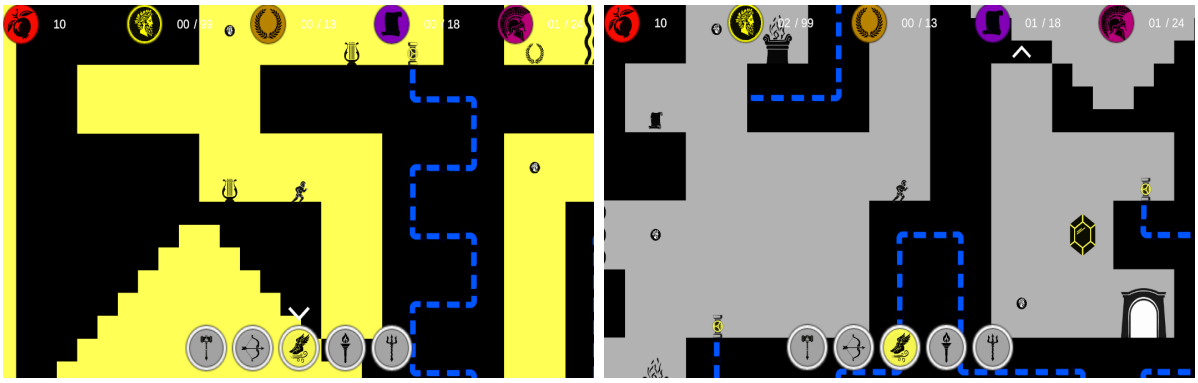

Figure 33: Wings of Hermes Abilities

3.8.4 Torch of Hestia

The **Torch of Hestia** is an artifact that is unlocked in the Dark and can also be used the Chamber of the Elements to light the surrounding area, light up braziers and melt spider webs.

Light Aura (Passive) - Allows the player to see in a small dark area around themselves.

Moss Melt (RMB) - Melt a **Spider Web** to unlock the path.

Brazier Ignite (Z) - Ignite an **Unlit Brazier** to permanently illuminate a large area.

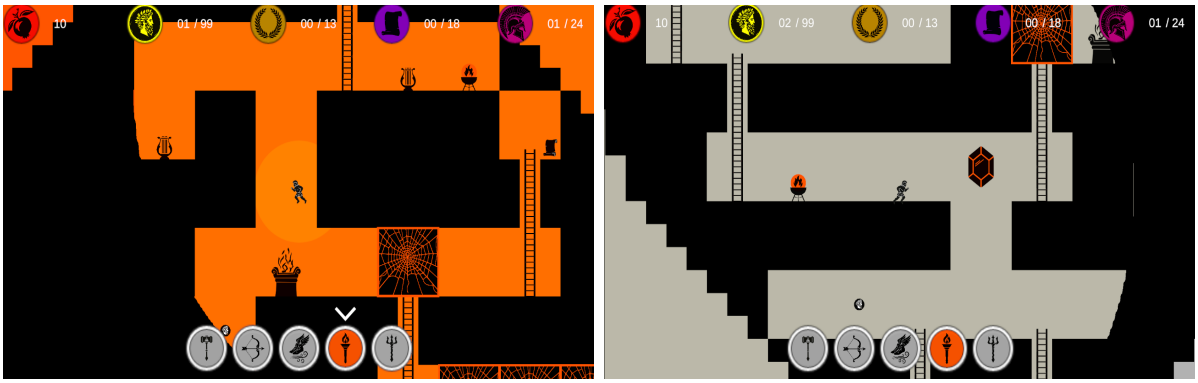

Figure 34: Torch of Hestia Abilities

3.8.5 Trident of Poseidon

The **Trident of Poseidon** is an artifact that is unlocked in the Deep and can also be used the Chamber of the Elements to swin underwater, destroy projectiles and extinguish flames.

Underwater Breathing (Passive) - Allows the player to swin underwater.

Projectile Destroy (RMB) - Conjure a **Water Bubble** around the player to destroy projectiles.

Flame Extinguish (Z) - Conjure a water wave to extinguish a **Flame Wall**.

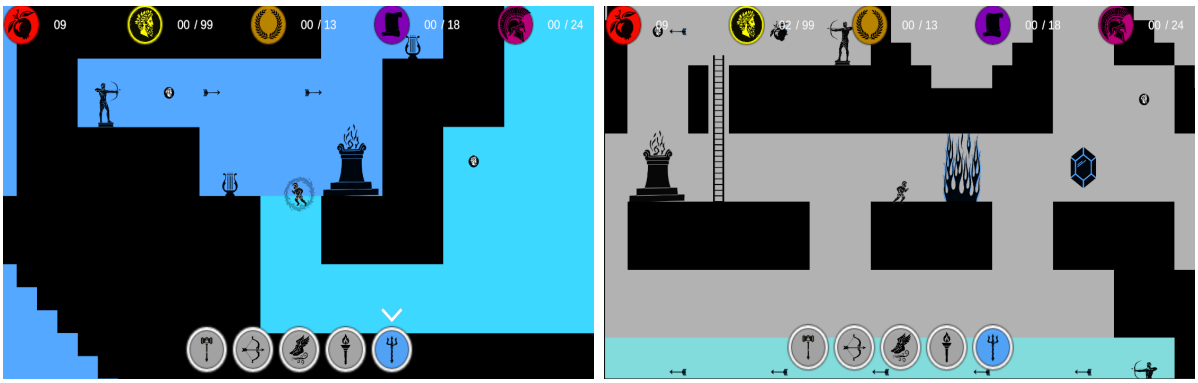

Figure 35: Trident of Poseidon Abilities

3.9 User Interface

The game's **User Interface (UI)** will consist of several menus the player can use to navigate the game, the player's health, the current equipped weapon, and monologue prompts that are used to teach the player the game's mechanics and the offer information about different topics, such as the gods, the artifacts and a handful of legends from the Greek mythology.

3.9.1 Health Points

The player has **10/5/3/1** maximum **Health Points**, depending on the chosen difficulty: **Hades/God/Legend/Hero**.

The player's current **Health Points** are permanently displayed on the screen.

Being hit by a any damaging object causes the player to lose **one Health Point** and be teleported to the last **Checkpoint** unlocked.

If the player reaches **0 Health Points**, the game ends immediately.

3.9.2 Current Equipped Artifact

The currently equipped **Artifact** is displayed on screen at all times, informing the player about the objects they can interact with.

Figure 36: Currently Equipped Artifact

3.9.3 Monologue Prompts

When interacting with different objects or in key moments of the game, **Monologue Prompts** will appear to provide the player with additional information about their quest.

Zeus, the king of the gods, narrates the story with **Monologue Prompts** that trigger in key moments of the game.

Encounters with a **Tutorial** will trigger a **Monologue Prompt** in which **Apollo**, the god of guidance, guides the player through the games' mechanics.

The first encounter with a **Checkpoint** or losing a **Health Point** will trigger a **Monologue Prompt** in which **Hera**, the goddess of protection, explains the concept of cheating Death.

Encounters with a **Lore Fragment** will trigger a **Monologue Prompt** in which **Athena**, the goddess of wisdom, explains the role of each god.

Encounters with a **Memento** will trigger a **Monologue Prompt** in which **Demeter**, the goddess of abundance, retells different myths and legends.

Encounters with a **Potion** will trigger a **Monologue Prompt** in which **Aphrodite**, the goddess of love, offers healing to the player.

Unlocking **Achievements** will trigger a **Monologue Prompt** in which **Ares**, the god of war, congratulates the player.

Using a portal to enter a new level, picking up an **Artifact** or an **Elemental Gem** will trigger a **Monologue Prompt** with the corresponding god: **Hephaestus**, the god of the forge; **Artemis**, the goddess of the hunt; **Hestia**, the goddess of the hearth; **Poseidon**, the god of the sea; or **Hermes**, the god of the trade.

Dying will trigger a special **Monologue Prompt** with **Hades**, the god of death.

Figure 37: Death Dialogue

4 IMPLEMENTATION

This chapter describes the implementation details of the game's components, offering detailed descriptions of the assets, mechanics and interactions present throughout the game.

4.1 Game Assets

The game was developed using the **Unity [0]** game engine and programmed in **C#**. Unity offers a variety of tools ideal for creating 2D games, including a physics engine, sprite animation support, and audio playback features. The game utilizes a range of assets, from visual elements (such as sprites, tiles, and animations) to logic components (like scenes, game objects, and scripts). These elements work together to define the game's mechanics, object interactions, and visual effects, ultimately delivering a cohesive and functional gameplay experience.

4.1.1 Scenes

Scenes[9] serve as distinct segments of the game, each with a specific purpose, such as menus or levels. They are typically interconnected via buttons or in-game conditions. Each scene comprises multiple game objects, each containing various components that define their behavior and role.

4.1.2 Game Objects and Components

Game Objects[10] are the foundational units in Unity, used to represent characters, interactable items, and environmental elements. Each game object comprises of multiple **Components**, each ensuring a certain functionality.

For instance, a playable character would typically require:

A **Transform** component to define its position, rotation, and scale

A **Sprite Renderer** to visually display the character

A **Physical Body** to enable interaction with other objects

A **Player Input** component to receive user commands

One or more **Scripts** to control character behavior

4.1.3 Scripts

Scripts define the logic and behavior of game elements. Written in **C#**, they control how objects respond to player input, interact with each other, and transition between scenes. Common functionalities implemented through scripts include character movement, object interaction, and menu and scene navigation.

4.1.4 Sprites

Sprites[11] are 2D graphical assets used to depict game elements such as characters, objects, terrain, and backgrounds. All sprites used in the game were trade-mark free or AI generated and edited using diverse applications to get the desired result that fits the game's theme.

4.1.5 Animations

Animations[12] bring visual dynamism to the game by simulating motion. In Unity, an **Animation** consists of a sequence of **Sprites** assigned to a game object. When triggered, the engine cycles through these sprites to create the illusion of movement. Common animations include running, jumping, climbing, and dashing.

4.1.6 Audio Clips

Audio plays a crucial role in enhancing immersion. Background music sets the tone, while sound effects amplify key moments — such as collecting or destroying items, taking damage, or dying. In Unity, **Audio Clips** can be linked to game objects, allowing them to emit specific sounds during gameplay events.

4.2 Scenes

The game is composed of 8 scenes, one menu and 7 levels. Transitions between these scenes are handled using menu buttons and interaction with certain game objects.

4.2.1 Menu Scenes

The game contains one **Menu Scene**, which is also the starting scene of the game. This scene contains all the different menus that the player can navigate outside of the **Levels scenes** such as the **Options Menu**, the **Play Menu** and the **Part Selection Menu**.

Main Menu Scene

Main Menu is the first menu of the **Main Menu Scene** and has the following functionalities:

Play button - loads the **Play Menu**

Options button - loads the **Options Menu**

Quit button - exits the game

Options Menu is the second menu of the **Main Menu Scene** and has the following functionalities:

Hero button - sets the player's starting **Health Points** at **10** (default)

Legend button - sets the player's starting **Health Points** at **5**

God button - sets the player's starting **Health Points** at **3**

Hades button - sets the player's starting **Health Points** at **1**

Volume slider - modifies the volume of the entire game

Return button - loads the **Main Menu**

Play Menu is the third menu of the **Main Menu Scene** and has the following functionalities:

Continue button - loads the last visited scene, remembering the state of the game

New Game button - loads the **Temple** scene, resetting the state of the game

Part Selection button - loads the **Part Selection Menu**

Return button - loads the **Main Menu**

Part Selection Menu is the fourth menu of the **Main Menu Scene** and has the following functionalities:

Part I - The Lost Temple button - loads the **Temple** scene

Part II - The Elemental Planes button - loads the **Part 2 Level Menu**

Part III - The Chamber of the Elements button - loads the **Chamber** scene

Return button - loads the **Play Menu**

Part 2 Level Menu is the last menu of the **Main Menu Scene** and has the following functionalities:

Earth - The Labyrinth button - loads the **Earth** scene

Nature - The Climb button - loads the **Nature** scene

Air - The Tempest button - loads the **Air** scene

Fire - The Dark button - loads the **Fire** scene

Water - The Deep button - loads the **Water** scene

Return button - loads the **Part Selection Menu**

4.2.2 Level Scenes

The game contains 7 **Level Scenes**, grouped into 3 parts, with each part containing at least one level.

Part 1 - The Lost Temple

This part consists of one level which aims to introduce the different general mechanics of the game, such as running, jumping, dashing, checkpoints, collectibles, traps, using tutorials and dialogues. This level grants access to all the other levels, both in the second and the third part, allowing the player to return to the main room at any point during the game.

The **Temple** scene features the following special game objects:

Tutorials - walking, running, jumping, double jumping, dashing, and climbing

Checkpoints - respawn points after losing a **Health Point**

Coins - increase the coin counter

Lore Entries - tell the player information about different gods

Mementos - tell the player different stories

Potions - restore **one Health Point** to the player

Ladders - can be climbed by the player

Traps - **Terrain Spikes**, **Crushing Walls** and **Archer Statues** that damage the player

Earth Portal - loads the **Earth** scene

Nature Portal - loads the **Nature** scene

Air Portal - loads the **Air** scene

Fire Portal - loads the **Fire** scene

Water Portal - loads the **Water** scene

Chamber Portal - loads the **Chamber** scene

When the player presses the **Esc** Key, the game will be paused, loading the **Pause Menu**

Continue button - unpauses the game and closes the **Pause Menu**

Return to the Temple button - loads the **Temple** scene

Main Menu button - loads the **Main Menu** scene

Part 2 - The Elemental Planes

This part consists of 5 levels, one for each element. Each level introduces a new Artifact, its corresponding abilities, and special game objects that only the respective Artifact can interact with. Each level can be accessed from the **Part2 Level Menu** and the **Temple** level. Finishing a level requires the player to collect the corresponding **Elemental Gem** and interact with the portal at the end to return to the main chamber of the **Temple**.

The **Earth** scene features the following special game objects:

Artifact - the **Hammer of Hephaestus**

Tutorials - the Hammer's abilities

Traps - only **Crushing Walls**

Breakable Walls - walls that can be destroyed using **Z/Right Mouse Button**

Wind Currents - currents that push the player, if the **Hammer** is not equipped

Earth Gem - progress towards unlocking the **Chamber** door

The **Nature** scene features the following special game objects:

Artifact - the **Bow of Artemis**

Tutorials - the **Bow**'s abilities

Traps - only **Terrain Spikes**

Vine Walls - walls that can be climbed using the **Bow**

Grapple Points - fixed points that the player can grapple towards

Containers - containers that can be destroyed using the **Bow**

Stone Keys - keys that unlock **Stone Doors** locked in **Containers**

Stone Doors - doors that can only be opened using **Stone Keys**

Nature Gem - progress towards unlocking the **Chamber** door

The **Air** scene features the following special game objects:

Artifact - the **Wings of Hermes**

Tutorials - the **Wings**' abilities

Water Handles - can be switched to start/stop **Water Streams** using the **Wings**

Water Streams - objects that block the player's path

Air Gem - progress towards unlocking the **Chamber** door

The **Fire** scene features the following special game objects:

Artifact - the **Torch of Hestia**

Tutorials - the **Torch**'s abilities

Dark - a black layer that hinders vision

Light Aura - light the area around the player while using the **Torch**

Unlit Braziers - can be activated illuminate the surrounding area using the **Torch**

Fire Gem - progress towards unlocking the **Chamber** door

The **Water** scene features the following special game objects:

Artifact - the **Trident of Poseidon**

Tutorials - the **Trident**'s abilities

Water - a layer that the player can traverse using the **Trident**

Traps - only **Archer Statues**

Flame Walls - walls that can be destroyed using the **Trident**

Water Bubble - destroy all incoming projectiles

Water Gem - progress towards unlocking the **Chamber** door

Part 3 - The Chamber of the Elements

This part consists of one level which combines all the games mechanics from the 5 levels of the second part, requiring deep understanding of the artifacts' mechanics and how to combine them to get the optimal result. This level can only be accessed after all the **Elemental Gems** have been unlocked. Collecting the **Lightning Bolt** means the completion of the game.

4.3 Game Objects

In addition to the already mentioned game objects that are layered throughout each level, there are special game objects that are not visible in the game scene and only act in ensuring the functionality of the game.

4.3.1 Game Manager

The **Game Manager** is a special object that is never destroyed when a new scene is loaded, as opposed to the regular game objects. This object, along with any attached script, can be used to save the state of certain objects and be reset once a new game is created.

The **Game Manager** keeps track of the following:

Health Points - Ensures the player's **Health Points** remain the same throughout the levels.

Difficulty - Ensures the player's maximum **Health Points** remain the same throughout the levels.

Last Game Scene - Ensures the correct scene is loaded when reloading.

Last Checkpoint Position - Ensures the correct player is loaded at the correct position when reloading.

Collectibles - Ensures they don't reappear when the scene is changed.

Collectible Counters - Ensures the counter doesn't reset when the scene is changed.

Unlocked Artifacts/Gems - Ensures the player can use previously unlocked artifacts in other scenes.

User Interface - Ensures the information UI elements and the game menus remain consistent throughout the game.

4.3.2 Tilemap Grid

Tiles[13] are a special type of sprites that are used in repeated patterns to generate **Tilemaps**, usually used for background, terrain, or any layer that has the same specific behavior in any situation.

Tilemaps[14] are grouped into a **Tilemap Grid**, which is used to manage each individual **Tilemap**, including visuals and functionality.

The **Tilemap Grid** contains the following Tilemaps:

Background Tilemap - The background layer serves as the visual backdrop of the game world, representing the furthermost layer from the camera.

Terrain Tilemap - The terrain layer on which the player moves freely throughout the game world. It has a Collider component which prevents the player and all dynamic objects from falling through.

Ladder Tilemap - A layer that the player uses to move between different part of the game scene using vertical ladders which have a Collider which allow the player to move up and down, without gravity.

Climbable Terrain Tilemap - A layer that functions similar to the Ladder Tilemap, expect it can be used only when the Bow Artifact is equipped.

Spike Traps Tilemap - A static trap layer that uses a Collider to damage the player on contact, resulting in a life loss.

Crushing Walls Tilemap - A dynamic trap layer that uses a Script to move the walls vertically, and a Collider to damage the player on contact, resulting in a life loss.

Dark Tilemap - A dark layer that blocks all vision unless a light source intersects with its area, representing the closest layer from the camera.

Water Tilemap - A water layer that is active only when the Trident Artifact is equipped, allowing the player to move freely in all directions, without gravity.

4.3.3 Player

The **Player** object is used to represent the playable character controlled by the player during their playthrough.

The **Player** consists of multiple components whose functions combine to guarantee the expected behavior:

Transform - Specifies the player's position, rotation, and scale within the game world.

Sprite Renderer - Renders the sprite and controls its appearance in the game world.

Rigidbody 2D - Activates Unity's physics system, enabling properties like mass, gravity, and friction.

Capsule Collider 2D - Defines the player's physical body for detecting collisions with walls, enemies, projectiles, and interactive objects.

Box Collider 2D - Represents the player's feet, handling collisions with the ground and ladders and being essential for jumping and climbing.

Player Input - Allows the creation and assignment of input actions to specific keys or buttons.

Player Movement Script - Handles the player's inputs, and movement behaviors.

Player Take Damage - Handles the collisions that result in the player taking damage.

Light Aura Child - Renders a sprite mask that nullifies the **Dark Tilemap** around the player.

Water Bubble Child - Renders a sprite that destroys all projectiles that it collides with.

4.4 Scripts

4.4.1 Player Scripts

The player has two scripts with different functionalities based on the equipped **Artifact**, each allowing the player to use different abilities and interact with other game objects in unique ways.

Movement Inputs

The player has different movement inputs that change their position in the game world:

OnMove (W/A/S/D) - The player's movement input is stored in a variable, which is then used by various methods to control the character's movement within the game world.

OnJump (Space) - The player's position on the **Y axis** is increased for a short period of time, allowing the player to jump for a short distance. The player can jump up to 2 consecutive times before needing to touch **Terrain** to reset.

OnDash (Shift) - The player's position on the **X axis** is greatly increased for a short period of time, allowing the player to dash in the chosen direction. The players is required to wait for a period of time before dashing again.

States

Every input command behaves differently based on the state the player is currently in. Each state is dictated by the player's interaction with different objects:

Idle - The default state of the player, when no input is provided.

Run - The state in which the player is moving on the **X axis (left-right)**, as a result of the **OnMove** input.

Climb - The state in which the player, while on **Ladders** and **Vine Walls**, is moving on the **Y axis (up-down)**, as a result of the **OnMove** input.

Swim - The state in which the player, while in the **Water**, is moving on both the **X axis (left-right)** and **Y axis (up-down)**, as a result of the **OnMove** input.

Abilities Inputs

OnRightClickSkill - Right Mouse Button - Based on the currently equipped artifact, does one of the following:

Earth - Breaks a **Breakable Wall** on the side of the player.

Nature - shoots an **Arrow** that can destroy a Container.

Air - Launches the player upwards.

Fire - Melts a **Spider Web**.

Water - Create a **Water Bubble** around the player that destroys projectiles.

OnZSkill - Z - Based on the currently equipped artifact, does one of the following:

Earth - Breaks a **Breakable Wall** below the player.

Nature - Move towards to a **Grapple Point**.

Air - Switch a **Water Handle**.

Fire - Light an **Unlit Brazier**.

Water - Extinguish a **Flame Wall**.

4.4.2 Interactable Scripts

These are scripts that are attached to **Interactable Objects** and dictate what happens when the player interacts with certain objects.

Collect - The script attached to the collectible objects to remember if the object was collected or not.

Portal - The script attached to the portals that dictate the scene and the position where the player will be teleported.

Edge Transitions - The script attached to the invisible objects that mark the edges of the map, allowing the player to move from one side of the map to the other.

4.5 Sprites and Animations

Sprites and animations are the components that imbue life to any game and are the first things that one notices when looking at a video game for the first time. If the functionalities are the body of the game, then the sprites and animations are the soul.

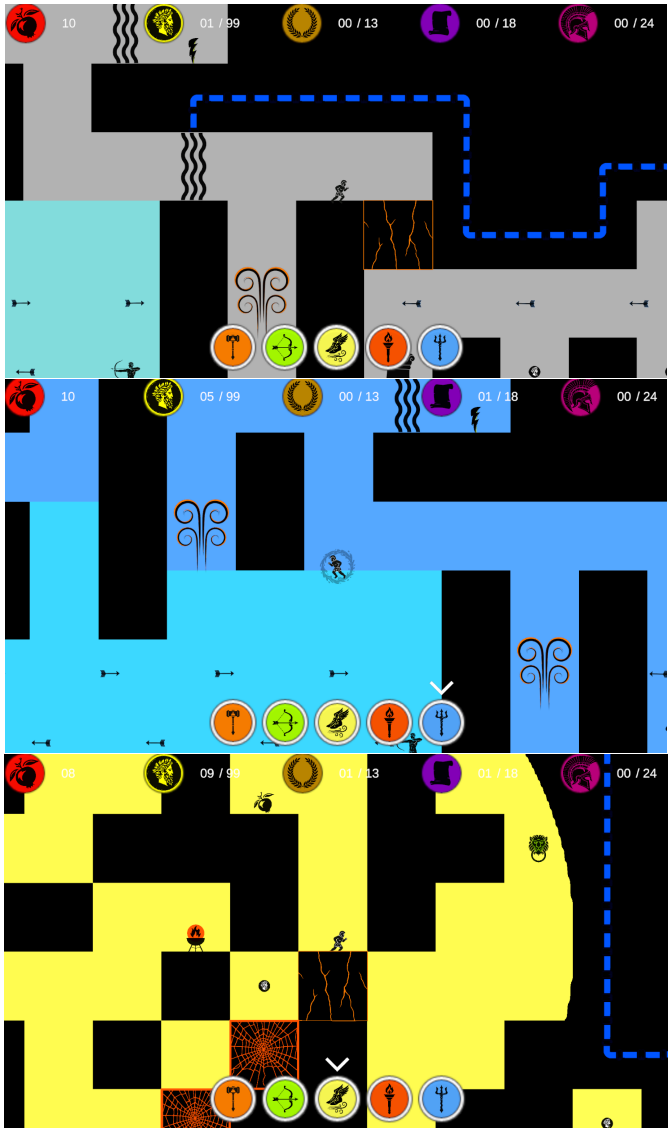

Figure 38: User Interface and Game Object Sprites

5 TESTING AND EVALUATION

This chapter presents the results of the testing and evaluation of all the game's mechanics by myself and a group of people with different gaming experiences. This allowed for an evaluation of the game's mechanics based on how they function and how certain individuals interpret them (if the mechanics are explained well, if the controls are responsive, if the result of an action matches their expectations). Two rounds of testing and evaluation were conducted, with different versions of the application.

5.1 External Testing - First Round

5.1.1 Build Features

The group of testers was offered an intermediate version of the application for testing:

Movement Mechanics - fully implemented

Artifact Mechanics - fully implemented

Playable Levels - part 1 and part 2 fully implemented (no Final Level)

Game Menus - fully implemented

User Interface - fully implemented

Sprites and Animations - placeholder sprites, no animations

Sound Design - no audio

5.1.2 Evaluation Criterias

The testing session was aimed at evaluating the functionality of the game and how intuitive the game's mechanics feel for a group of people with different backgrounds and gaming experiences:

Background - age, gaming experience, platformer experience

Game Mechanics - explanation, bugs, and possible improvements

Character Control - general feeling, bugs, and possible improvements

Artifact Switch - implementation, bugs, and possible improvements

Artifact Abilities - understanding, usage, bugs, and possible improvements

Menu Navigation - general feeling, bugs, and possible improvements

User Interface - information accuracy, bugs, and possible improvements

Other Feedback - good parts, bad parts, and general possible improvements

5.1.3 Results

Background

There were 7 testers, the majority being aged between 25 and 35 and more than half of them being daily gamers.

Their overall gaming experience included multiple genres, such as Puzzle Games, Soulslike Games, Shooter Games, Survival Games, Role Playing Games, Story-Driven Games, Hack and Slash Games, Platformer Games and Multiplayer Online Battle Arena Games.

All of the testers played and enjoyed Platformer Games before, which isn't surprising as it is a popular genre and easy to pick up by beginners.

Game Mechanics

Average rating: 4/5

Most common received feedback:

Tutorials aren't explicit enough in describing the artifact mechanics and how the player should overcome them.

Character Control

Average rating: 3.71/5

Most common received feedback:

Jump mechanic movement doesn't feel impactful and sometimes the input command doesn't work.

Double Jump mechanic doesn't feel consistent between uses.

Dash mechanic feels unresponsive at times.

Traps feel too hard to get past.

Traps don't deal damage to the player / get the player stuck in the terrain. After returning to the **Temple** room, the damage is updated in the **Health Points UI**, leading to negative values.

Transitions from one side of the level to the other provoke confusion due to the lack of visual clarity.

Artifact Switch

Average rating: 3.86/5

Most common received feedback:

Unequipping the **Artifacts** should be possible.

All **Artifacts** should be visible in the **UI**, not only the equipped one.

Artifact Abilities

Average rating: 4.14/5

Most common received feedback:

Indicate which **Artifacts** interact with which objects.

Better explanation of each **Artifact's Abilities** (pause menu/pop-up photos/videos).

Menu Navigation

Average rating: 4.86/5

Most common received feedback:

The **Menu Buttons** don't have visual feedback attached to them.

There should be a button that **returns** the player to the **Temple** room (helps with unstucking or if the player entered an already cleared level by mistake).

User Interface

Average rating: 3.71/5

Most common received feedback:

Collectible counters don't always update.

All **Artifacts** should be visible in the **UI**, not only the equipped one.

Dialogue is too intrusive. Some dialogues could be shown as an in-game **pop-up** instead of pausing the game.

Positive/Negative Feedback

What the testers liked : diversity of **Artifacts** and game mechanics; **dialogue**; **menu navigation**

What the testers didn't like : hard to remember which **Artifact** corresponds to which number key, or what objects each **Artifact** can interact with; using the **Enter** key to progress dialogue doesn't feel intuitive

Improvements Feedback

Character Control adjustments

Better **Tutorials** for mechanics explanation

Changing the **Enter** key with one closer to the hand that is on the keyboard (E/F)

More **Artifacts** and levels

5.1.4 Feedback Implementation

Based on the feedback received from the group of testers, the following improvements were made:

Jump mechanic was improved to feel more powerful and impactful as opposed to being too floaty.

Double Jump mechanic was improved to feel more consistent between uses, by making the second jump have independent parameters instead of depending on the first one.

Dash mechanic was improved to feed more responsive, although there are more improvements that can be made.

Traps were made easier to avoid by adjusting the size and speed parameters, making the experience less frustrating for the player.

Transitions Indicators were added in the game scene to better communicate to the player when a transition should be happening.

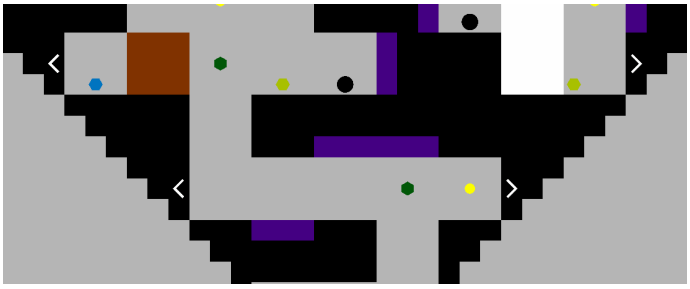

Figure 39: Transition Indicators

Added **Highlights** to the items that each **Artifact** can interact with.

Added visual feedback to the **Menu Buttons** to better communicate when a button is pressed.

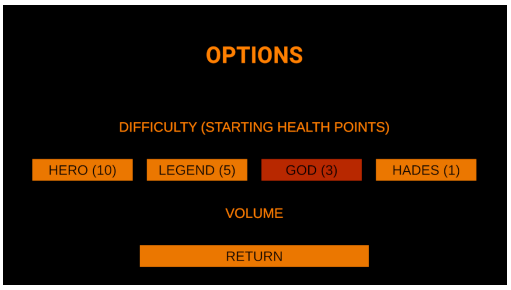

Figure 40: Button Press

Added a button in the **Pause Menu** that returns the player to the **Temple**.

5.2 External Testing - Second Round

5.2.1 Build Features

The group of testers was offered an improved version of the application for testing, with a part of the feedback received in the first round being implemented:

Movement Mechanics - fully implemented

Artifact Mechanics - fully implemented

Playable Levels - part 1 and part 2 fully implemented (no Final Level)

Game Menus - fully implemented

User Interface - fully implemented

Sprites and Animations - final sprites, no animations

Sound Design - no audio

5.2.2 Evaluation Criterias

The testing session was aimed at evaluating how the implementation of certain improvements and the addition visual part affected the player experience, allowing the testers to focus on other areas that needed improvement, on top of the already mentioned ones. The structure of the questions was slightly different, all feedback being moved at the end of the form instead of a feedback field for each criteria:

Background - gaming experience, platformer experience

Character Control - general feeling

Game Mechanics - explanation

Artifact Switch - implementation

Artifact Abilities - understanding and usage, bugs

Menu Navigation - general feeling

Game Graphics - theme and aesthetic

User Interface - information accuracy

General Feedback - positive, negative and improvements feedback.

5.2.3 Results

Background

There were 7 testers, with a more varied frequency of playing video games.

Their overall gaming experience included multiple genres, such as Puzzle Games, Shooter Games, Action Games, Sport Games and Survival Games.

Character Control

Average rating: 4/5

Game Mechanics

Average rating: 4.57/5

Artifact Switch

Average rating: 4.29/5

Artifact Abilities

Average rating: 4.14/5

Menu Navigation

Average rating: 4.86/5

Game Graphics

Average rating: 4.43/5

User Interface

Average rating: 4.29/5

Positive/Negative Feedback

What the testers liked : **theme**, **UI**, **level design**, **story/lore**

What the testers didn't like : pressing the **Enter** key to progress dialogue

Improvements Feedback

More **Artifacts**, with new abilities and new gods

Health Points UI gets updated only at the end of the level and leads to negative values

Right Mouse Button breaking abilities work only while jumping

Crushing Walls traps behavior can be improved

Portal interaction can be improved

Tutorials should be replayable

All **Artifacts** should be shown in the **UI**, with an indicator for the equipped one

5.2.4 Feedback Implementation

Based on the feedback received from the group of testers, the following improvements were made:

Fixed a major bug that only affected the build, making the **Health Points UI** component not get updated properly. This issue lead to traps not dealing damage and forcing the player to get stuck in certain parts of the game, while also showing negative **Health Points** once the counter was updated.

Added all the **Artifacts** to the **UI**, having different visuals for being locked, unlocked and equipped.

Added the possibility to unequip an **Artifact**, allowing the player to better identify the obstacles in the game scene by their colored highlights.

Changed the dialogue progression key from **Enter** to **F**.

Form1

How often do you play video games?	What is your favorite type of games? (platformer, shooter, puzzle, RPG, MOBA, etc.)	Do you like platformer games?	Have you played this type of games before?	How did the character control feel?	How could character control be improved?	How well were the game mechanics explained?	How could the explanation of game mechanics be improved?	How well was the concept of changing artifacts implemented?	How could artifact swapping be improved?	How easy are the artifact abilities to understand and use?	How could artifact abilities be improved to be easier to understand and use?	How intuitive was to navigate through the game's menus?	How could the navigation through the game menus be improved?	How complete was the information provided by the in-game GUI?	How could the way certain information is provided to the player be improved?	What did you like the most?	What didn't you like?	What could be improved?	Would you play an improved version of this game? (including visuals, audio, functionality improvements)
Sometimes (~1/week)	platformer, puzzle, moba	Yes	Yes	4	Mecanica de agatare ar putea fi imbunatatita	4		4		4		5		3	Overlay sus fara a opri miscarea jucatorului, doar sa apara finut si sa se simta ca o optiune nu o obligatie	Dialogul		Exista un bug, daca ti apasat stanga sau dreapta, apeti shift pentru dash si imediat dai drumul la buton caracterul merge singur in fata	Yes
Daily	Soulslikes	Yes	Yes	3	Probleme: -prezenta unui fel de autorun dupa dash -controlul characterului dupa folosirea grapple-ului	5		4	Schimbarea artefactelor este ok, dar prezenta unui buton pentru deceschipsarea artefactelor ar fi de apreciat.	5		5		3	Probleme: -numarul vietilor scade dupa completarea unor temple -nu se updateaza mereu tracker-ele pentru collectibles	Templele de foc si de apa, datorita implementarii artefactelor ca le gasesti in zonele respective.	Nu a fost ceva care mi-a displacut in mod special.	Controlul characterului este prima chestie care imi vine in cap, care cricum nu are probleme majore ci doar il trebuieso niste ajustari.	Yes
Daily	Survival, Open World, RPG, Puzzle, Horror, Platformer	Yes	Yes	3	Uneori dash-ul devine incontrolabil si caracterul alunneca in proiectile.	4	Tutorial in meniul principal si in meniul de pauza.	3	Ar ajuta daca ai putea sa vezi toate artefactele in acelasi timp si numerele alocate lor in partea de jos a ecranului.	4	Descriere in meniu de pauza a abilitatilor fiecarui artefact.	5		5		Diversitatea obstacolelor si a abilitatilor	Apasarea 1-5 uneori haotic pentru a schimba artefactele pentru ca am uitat care este alocat fiecareui numar. Folosirea tastei "ENTER" pentru a trece peste dialoguri este usor peste mana.	Adaugarea unor iconite care sa indice artefactul activ si abilitatile pe care le are acesta. Schimbarea tastei "ENTER" pentru a inainta in dialog cu "E" sau "F".	Yes
Rarely (~1/month)	Puzzle	Yes	Yes	4	Nu	3	Definirea mai buna a cum ar trebui sa treci peste diverse obstacole	4		3	Sa pui in paranteza si culorile obstacolelor	5		5		Merge usor, comenzile functioneaza			Yes
Daily	Shooter	Yes	Yes	5		3	Instructiuni de tip how to play mai explicite	3		4		5		4		Navigarea usoara	Interfata	Modul de explicare a cum functioneaza	Yes
Daily	Hack and Slash	Yes	Yes	3	There is a bug where dashing transitions into an auto-run. The player character seems to be able to change direction while in mid dash.	5	Everything was explained pretty well.	4	Have the artifacts present at all times on screen with their respective key-binds or have a wheel or some sort of menu where you can see all of them in one place.	5	Putting a cooldown on the water shield that destroys projectiles.	4	As a QoL update it would be nice to be able to click the pop-ups with the mouse as well instead of only pressing Enter.	3	In this genre I'd say a map/mini-map would be a really nice to have feature. Have the artifacts present at all times on screen with their respective key binds...	Most likely the fact that the game seems story driven.	The game doesn't feel rewarding due to the absence of the last level which the player works towards for the entire time.	The one thing I'd look forward to is having a map/mini-map present and of course seeing a version of the game where the actual assets are present and some music as well.	Yes
Often (multiple times per week)	Action-Story	Yes	Yes	4	Ar putea fi facut mai exact, uneori pare ca nu face ce ar trebui sa faca(ex:pare ca ar trebui sa sara, dar nu sare)	4	Ar putea fi adaugate tutoriale vizuale, ca se vadia exact contextul in care le folosesti si sa nu fie poate toate existente de la inceputsa se deblocheze odata ce asare explicatia)	5	Poate adaugare optiunea de a le schimba din rotiile(mand cont ca oricum trebuie sa folosesti si mouse ul)	4	Adaugarea unui video explicativ pentru fiecare mecanica	5	-	3	Exista unele bug uri legate de afisarea vietii sau a altor obiecte, valorile nu sunt afisate corespunzator(fie ajung sa fie negative, fie devin extrem de mari deodata)	Schimbatul artefactelor	Intrarul in nivelele pentru artefact ar putea fi facut mai interactiv, sa nu intri decat daca apesi enter in dreptul intrarii.	Adaugarea mai multor artefacte, create de combo-uri intre artefacte, adaugarea mai multor nivele	Yes

Figure 41: First Testing Form Results

Form2

How often do you play video games?	What is your favorite type of games? (platformer, shooter, puzzle, RPG, MOBA, etc.)	Do you like platformer games?	Have you played this type of games before?	How did the character control feel?	How well were the game mechanics explained?	How well was the concept of changing artifacts implemented?	How easy are the artifact abilities to understand and use?	How intuitive was to navigate through the game's menus?	How much you enjoyed the graphical part of the game?	How complete was the information provided by the in-game GUI?	What did you like the most?	What didn't you like?	What could be improved?	Would you play an improved version of this game? (including visuals, audio, functionality improvements)
Daily	shooter	Yes	Yes	3	5	5	5	5	4	5	-The theme and art style are pretty cool -The lore offered by collectibles is a nice touch -The bow, boots and torch levels I particularly enjoyed		bugs: -broken hp -breaking stuff with right click only works if i jump -with the hammer if i spam z at some point i will fall through the floor -the gem in the green bow level had only the outline visible notes: -the crushing traps shouldn't kill you if you touch them, only if they crush you -the crushing traps should go up normally and slowly like when they go down, not reset to default position instantly -there should be an option if i want to receive the guide from a lyre i already walked by or not -there should be a button to interact with the gates or make the gates smaller to jump over them	Yes
Rarely (~1/month)	puzzle	Yes	Yes	5	5	5	5	5	5	5	UI-ul foarte dragut, mecanici usor de inteles, tematica foarte interesanta	Nimic de adaugat	Nu am intalnit bug-uri, mi-ar placea sa vad versiunea care include si animatii	Yes
Daily	Simulare Sport	Yes	Yes	4	4	4	4	5	3	4	Tematica			Yes
Often (multiple times per week)	Action-Story	Yes	Yes	5	4	5	4	5	5	4	Mecanica de schimbare a artefactelor		Adaugarea mai multor artefacte, mai multi zei cu care sa interactioneze), modificare abilitati artefacte, combinare abilitati intre artefacte	Yes
Never	-	Yes	Yes	3	5	4	3	5	5	4				Yes
Daily	Action	Yes	Yes	4	5	3	5	4	4	4	Combinatia de story-driven gameplay alaturi de faptul ca playerul dispune de o multitudine de abilitati.		Ar fi interesant sa se implementeze un ability wheel sau ceva apropiat de asta pentru a avea o experienta mai placuta, in felul aceesta avand acces mai usor la toate abilitatile si la key-bind-urile ce tin de acestea. Exemple de buguri intalnite: Uneori playerul poate fi impins in pamant in loc sa fie omorat de pereti si restul de capcane nu au efect. Apasand butonul de dash o data va face caracterul sa se miste singur automat dupa ce se incheie animatia de dash.	Yes
Daily	Survival, horror, RPG, puzzle, detective, platformer	Yes	Yes	4	4	4	3	5	5	4	Diversitatea nivelelor	Tasta Enter	Bara cu itemele echipate in partea de jos a ecranului cu numerele aferente	Yes

Figure 42: Second Testing Form Results

6 FUTURE DEVELOPMENT

This final chapter presents ideas of further improvements that can be brought to the game but, due to their complexity and time constraints, didn't make it into this version of the game.

Although all the proposed game mechanics have been implemented and the game is in a playable state at the moment, there are improvements that can be made, based on the feedback received. These improvements are related to: encountered bugs, functionalities and mechanics that can be updated to enhance the player experience, and new functionalities and mechanics that can create evolve the gameplay.

Game Component	**Improvement Description**
Character Control	Improve **Dash** mechanic by making it more responsive and fix a bug that allows the player to dash indefinitely.
Character Control	Change input commands to make movement and using abilities combine more seamlessly.
Artifact Abilities	Better explanation of **Abilities** by offering visual examples of how they work along with in-scene pop-ups that don't pause the game.
User Interface	Improve visuals for the **Menus**, **Screens**, in-game **UI** and **Dialogues**
User Interface	Replace **Tutorial** dialogues with replayable in-scene pop-ups
User Interface	Add a minimap/map of the current level to have more visibility of the level layout and where each object is located.
Game Graphics	Improve graphical elements.
Gameplay	Include more levels and artifacts that the player can use, with more unique mechanics.

Table 1: Future Improvements

7 CONCLUSIONS

The development of the 2D ancient Greek-style platformer game presented in this thesis represents a fusion of technical game development skills with creative storytelling and historical aesthetics. This project aimed to recreate the visual and mythological atmosphere of ancient Greece through amphora style graphics, myth-inspired gameplay mechanics, and ancient legends of the Greek mythology.

The development process involved several key stages, including concept ideation, art and asset creation, level design, programming core mechanics, such as running, jumping, dashing and object behavior, artifacts mechanics, such as swimming, lighting, air dashing, breaking objects or grappling to certain objects, testing, evaluation and implementing improvements based on the received feedback. One of the primary focuses was on achieving a cohesive visual style reminiscent of ancient Greek amphorae, by using a combination of black silhouettes and mono-chromatic details, each color representing an element or a god.

The final product successfully delivered a playable demo featuring 7 levels, with a basic storyline based on Greek mythology, enforced by collectibles that introduced the certain myths, improving the player's immersion into the game world. The platforming mechanics were implemented to a satisfactory standard, including player-object interactions, traps, and collectible items such as ancient coins or lore entries. The project met the initial objectives by showcasing not only a technically functional game but also a stylistic representation of a culturally rich historical period.

User feedback was collected through playtesting sessions with peers, faculty members, and casual gamers. Overall, the game was positively received for its unique artistic style and thematic elements that immersed the player in a story-driven dive into the myths of Ancient Greece. Testers appreciated the visual consistency and the way Greek mythology was subtly woven into the gameplay, from the graphical aspects to the gameplay mechanics and level design. However, some areas for improvement were identified: unresponsive control mechanics in some areas, some of which were improved during the development of the game; lack of a better tutorial system for the game's mechanics, and limited replay value due to the number and scale of the implemented levels.

In conclusion, this project not only strengthened my technical and creative skills in game development but also allowed me to fully explore my passion for mythology and classical themes. The experience has laid a solid foundation for future projects that aim to push the boundaries of indie game design through stylized aesthetics, immersive storytelling, and engaging mechanics inspired by ancient myths.

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