

Polytechnic University of Catalonia

BARCELONA SCHOOL OF INFORMATICS

VIDEOGAMES ORBITAL BULLET

Videogames 3D Practical Work

Caballero Castro, Joan
Comino Raigón, Jeremy

Professors:
Chica Calaf, Antonio
Alonso Alonso, Jesus

January 07, 2024

Contents

1 Orbital Bullet	1
1.1 Game Context	1
1.2 Sales and Downloads	1
1.3 Game Studio	1
1.4 Awards	1
1.5 Game Development	2
1.6 References	2
2 Project Description	4
2.1 Objective and Characteristics	4
2.2 How to Play	5
3 Description of Game Objects	18
3.1 Player	18
3.2 Weapons	19
3.3 Enemies	20
3.3.1 Enemy 1	20
3.3.2 Enemy 2	21
3.3.3 Enemy 3	22
3.3.4 Boss	23
3.4 Dynamic Objects	24
3.4.1 Ground Spells	24
3.4.2 Chests	25
3.4.3 Traps	26
3.5 Map	27
3.6 Obstacles	31
4 Flow Chart	34
5 Methodology	35
5.1 Organization	35
5.2 Sprints	36
5.3 Meetings	37
5.4 Gantt Diagram	39
6 Conclusions	40
References	41

1 Orbital Bullet

1.1 Game Context

Orbital Bullet is a fast-paced, 360-degree action-platformer with rogue-lite elements, developed by the indie game studio SmokeStab, based in Heidelberg, Germany. The game was initially released in Early Access in April 2021 and had its worldwide release on March 21, 2022. It expanded its availability to other platforms including Nintendo Switch on November 2022, and PlayStation 4 and Xbox One on summer 2023.

Published by *Assemble Entertainment*, in collaboration with *WhisperGames* and *Mayflower Entertainment*, Orbital Bullet targets fans of indie games, action, and challenging gameplay. It features a unique circular pattern gameplay that attracts players looking for innovative and immersive experiences [12] [4] [11] [9] [10].

1.2 Sales and Downloads

Although specific sales and download figures for Orbital Bullet are not readily available, its presence across multiple platforms and positive reception suggest a reasonable commercial performance. The game has received predominantly positive reviews, with an 83% positive rating on Steam, indicating a favorable acceptance by players [12].

1.3 Game Studio

SmokeStab, despite its indie label, brings a rich history of video game development to the table. With titles like *Heroes of Row*, an auto-row-shooter, *Fleet Commander*, a text-based sci-fi adventure, and *Rogue Galaxies*, a 3D space exploration simulator under their belt, the studio's expertise is evident. This array of games showcases their versatility and creative prowess in the gaming world.

In line with their established history, Orbital Bullet has been diligently updated post-release, with over five versions that have fine-tuned gameplay and introduced new features to enhance the player experience.

1.4 Awards

From the Steam page of the game, we can discern a collection of distinguished honors that the game has achieved. Among these, it has been showcased as an Official Selection at the Indie MEGABOOTH during PAX East 2020, a venue celebrated for spotlighting breakthrough indie titles. It was also praised as a finalist for the Best Student Game at the prestigious Independent Games Festival in 2020, underscoring its exceptional quality among educational game projects.

Further, the game was recognized as the second-place winner for Best Newcomer at the German Videogame Awards in 2019, marking its promising debut in the gaming market. Moreover, it claimed the title for Best Concept with Prototype at the German Dev Days Awards in 2019, signifying its innovative design and potential in the early stages of development. These awards reflect the game’s creative ingenuity and emerging impact within the gaming community. [12].



Figure 1: Orbital Bullet Awards

1.5 Game Development

The development timeline of Orbital Bullet is not precisely known, but the period between its Early Access and final launch suggests a development cycle of approximately one year. SmokeStab, being a small studio with 1-10 employees, implies a relatively compact development team for the game. The specific technologies used in the game’s development are not detailed, but the game’s graphic style, playability, and mechanics suggest the use of modern technologies suitable for action and platform games [7] [14].

Crucial to the game’s creation was the utilization of Unity and C#, industry-standard tools that enabled the crafting of its intricate, circular gameplay. Unity’s robust engine paired with the versatility of C# has evidently allowed SmokeStab to sculpt Orbital Bullet into the acclaimed title it is today.

1.6 References

For more information on Orbital Bullet, including trailers and gameplay videos, the official game page on Steam and the SmokeStab website are recommended. These platforms provide various promotional and gameplay videos that showcase the game’s features and style. You can visit the official Steam page for Orbital Bullet here, along with its user community and the official Orbital Bullet website.

In addition, here is a list of videos to explore and gain a deeper understanding of the game:

- <https://www.youtube.com/watch?v=TY1vT0qD7e0> Official release trailer.
- <https://www.youtube.com/watch?v=IjOmBTvLaYA> Gameplay with no comments made by *BGL Team*.

2 Project Description

2.1 Objective and Characteristics

In Orbital Bullet, the main objective for the player is to progress through various levels in order to reach the final stage, where a decisive battle with the final boss takes place. The player will need to fight the final boss and defeat him to win the game.

The game is set in a cylindrical platform, where everything, including the player, enemies and bullets, follow a cylindrical movement around an axis, which is the center of the platform. To get to the next level, the player will need to use a magical spell casted on the ground which is necessary to advance. However, the player will need to defeat all enemies on the level in order to unlock this teleportation spell.

The player is equipped with two types of weapons for combat. The first is a long-range bow, capable of shooting arrows that travel the entire circumference of the cylinder. The second is a short range-bow, more powerful but with arrows that dissipate quickly after a limited distance. This combination of weapons offers the player varied tactical approaches to engage with enemies in the game's distinctive cylindrical setting.

In this game, the player must stay constantly alert, as both traps and enemies pose constant threats. Damage inflicted by these hazards can deplete the player's health, and if it reaches zero, the game ends.

Moreover, the game challenges the player with limited ammunition for weapons, requiring a wisely use of their ammunition to prevent running out. Nevertheless, ammunition can be replenished by discovering chests scattered across the map or by defeating enemies.

This aspect of gameplay demands strategic resource management and tactical foresight from the player. Successfully navigating through the game's levels to the final stage requires not just combat proficiency but also intelligent planning and resource allocation. The ultimate goal is to reach the final level, where the player must employ all their skills and strategies to overcome the final boss and achieve victory in the game.

2.2 How to Play

To enhance the gaming experience and make the game more enjoyable and funny, we have decided to creatively integrate elements from popular games that players will be able to recognize through their gameplay, allowing them to recall their previous gaming experiences. This with the objective of our players to be able to spend a more enjoyable time with our game.

The game begins with a start menu that is inspired by Elden Ring, featuring its iconic start screen design and title music. Not only the start screen but sound effects, musics and game designs are also inspired by Elden Ring.



Figure 2: Title Screen

In this menu, players can access the Controls screen [Fig. 3] by pressing in the CONTROLS button, displaying all available movements and key settings, and the Credits screen [Fig. 4] by pressing the CREDITS button, which acknowledges the game's developers. If the player wants to exit the game, they can do so by pressing the EXIT button.



Figure 3: Controls Screen

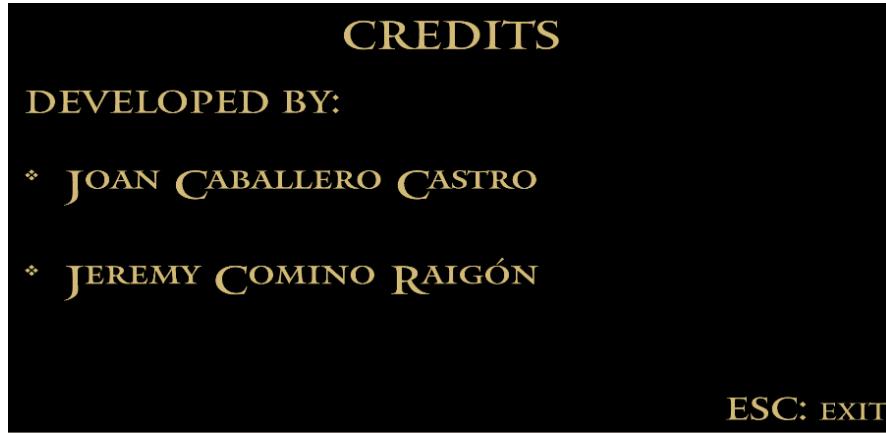


Figure 4: Credits Screen

Upon starting the game, the player is presented with an image where the character is positioned in the center of a cylindrical platform, with a rock behind blocking the path, forcing the player to move forward [Fig. 5]. In the scene, we can observe various elements such as a chest, some enemies, obstacles, traps, and a portal, which all will be explained later.

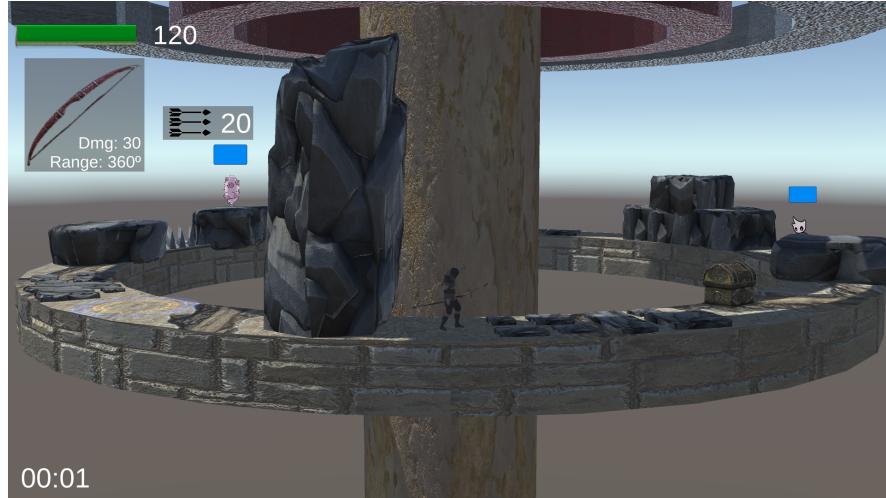


Figure 5: First Screen

The game's interface is also displayed in the scene. It features a health bar that changes color to quickly indicate the player's health status, transitioning from green at full health [Fig. 6] to red at low health [Fig. 7]. Additionally, the HUD also highlights the weapon currently equipped by the player, along with the remaining ammunition and the damage and range descriptions for the current weapon.

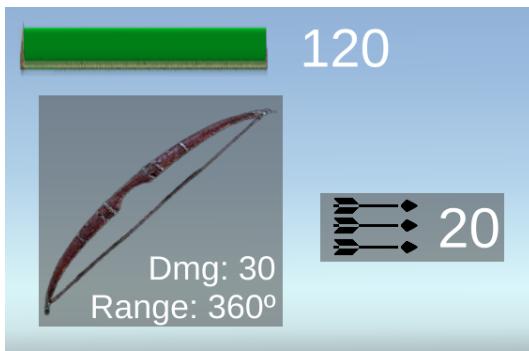


Figure 6: HUD with Full Health and Large-Range Bow

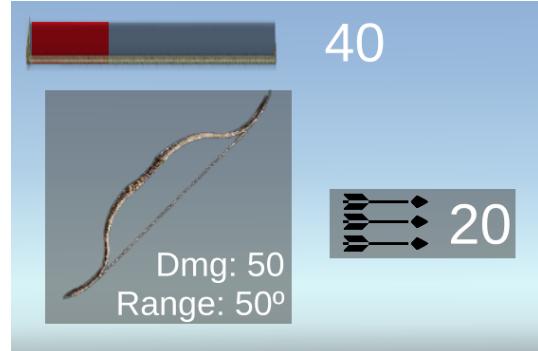


Figure 7: HUD with Low Health and Short-Range Bow

Sometimes the player will be invulnerable to any damage, using the invulnerability cheat with the G key or while performing a somersault. This will be displayed as the health bar turning blue and showing the text "INVULNERABLE" to let the player know that they are in an invincible state [Fig. 8].

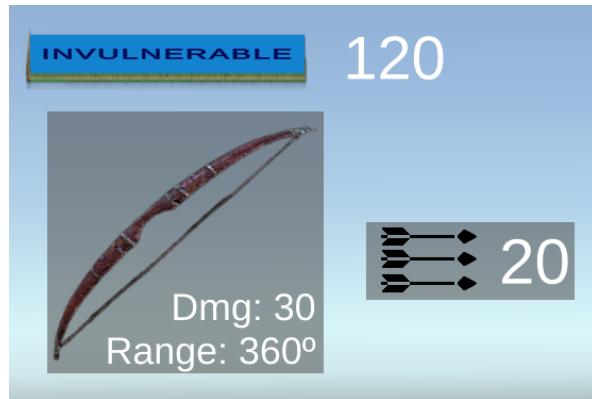


Figure 8: HUD with Invulnerable Health

The player is able to move forward and backward, and jump over obstacles to explore the map. They can also perform a dash [Fig. 9], which involves a fast somersault movement forward, making him invulnerable for the duration of the dash. This enables dodging enemies' attacks without taking damage.

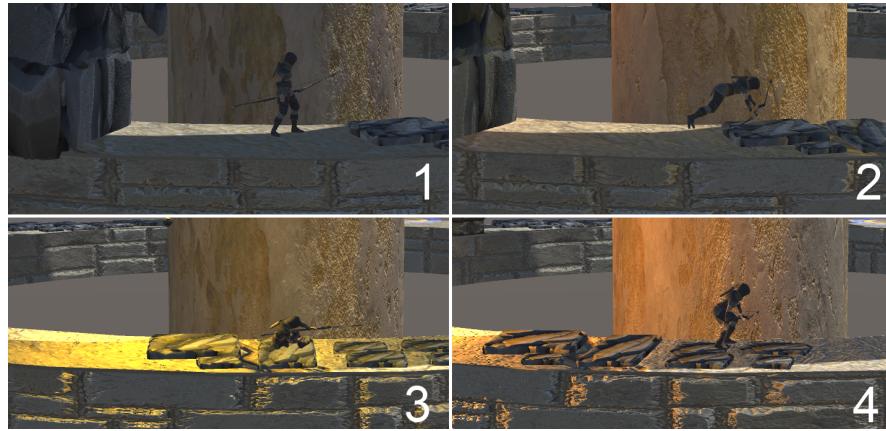


Figure 9: Dash

To make the game easier for the player, throughout the gameplay there will be chests that give helpful objects, such as new weapons, more ammo, and health. The first object the player will encounter in this level is a chest [Fig. 10]. This chest provides the character with a short-range weapon and a supplementary stock of ammunition.

The player must get closer to the chest and press the E key to open it, then a large amount of coins will emerge from the chest along with a new short-range bow and arrows to use as ammunition. The player will need to approach these drops and press the E key to acquire them [Fig. 11].

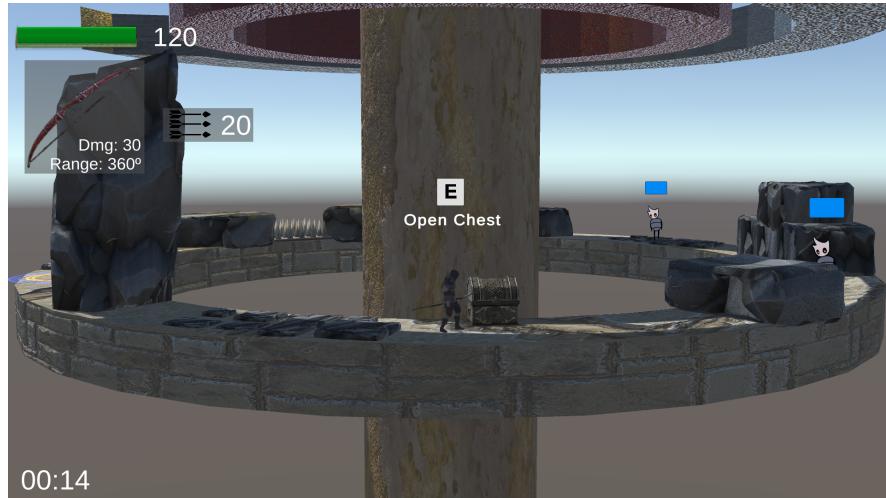


Figure 10: Closed Chest

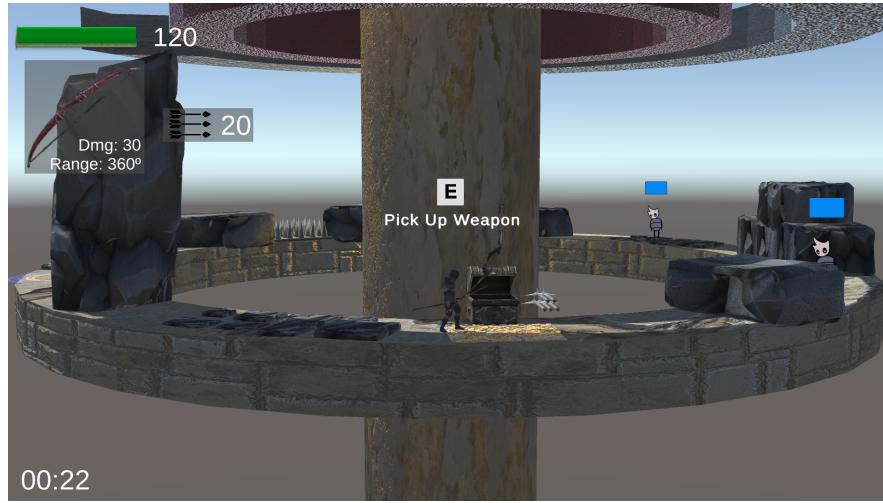


Figure 11: Opened Chest

Later on, the player will confront their first adversary: a dynamic and peaceful enemy capable of jumping high and trapping the player if it collides when the enemy is falling [Fig. 12]. The player will need to defeat this foe in order to advance in their adventure.



Figure 12: First Enemy

The next challenge ahead is a set of traps that the player will need to avoid if they don't want to lose health [Fig. 13]. Every time the player loses health, the screen will turn reddish, and the player will scream in pain, alerting the player that they need to react quickly to get out of danger [Fig. 14].

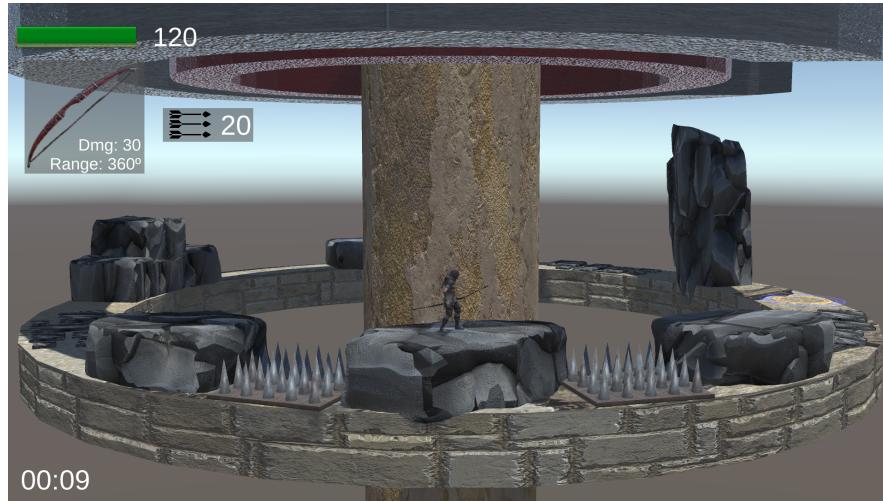


Figure 13: Traps in the First Level



Figure 14: Player hit by a Trap

However, traps are not the final challenge of this level. In the middle of the traps is located the second type of enemy, a dynamic and aggressive adversary capable of launching bullets at the player [Fig. 15]. This poses a challenge because the player will need to stay alert to both the traps and this enemy to reach the end of the level.



Figure 15: Second Type of Enemy

The final destination of the first level is the teleportation spell cast at the end of the road [Fig. 16]. If the player has defeated all the enemies, the spell will display a white text saying "Jump to the next level", and the player will be able to access the next level by pressing the interact key.



Figure 16: Teleport Spell Unlocked

However, if the player hasn't defeated all the enemies, a red text displaying "Defeat all enemies to access the next level!" will appear [Fig. 17].



Figure 17: Teleport Spell Locked

If the player has followed all these instructions, they would have overcome the first level without difficulties and should be on the second level.

While advancing to new levels and playing the game, the player may need to pause the game to rest. We have developed a pause screen that can be accessed using the Esc key. This menu offers players the flexibility to either resume their current game, navigate back to the main menu, or exit the game.

Our design for the pause menu draws inspiration from the acclaimed game *Hades*. Similar to *Hades*, where players traverse through levels to ultimately face Zagreus's father, Hades, the god of the dead and the king of the underworld; our game's structure also revolves around progressing through levels with the aim of confronting a final challenge.

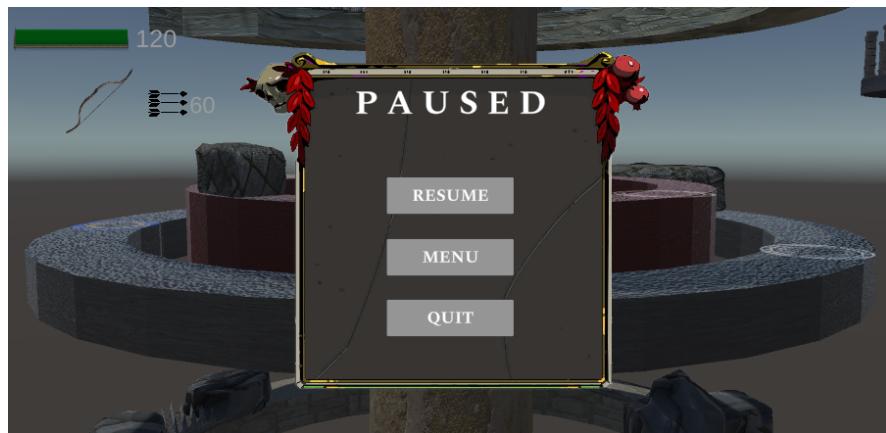


Figure 18: Pause Screen

This second level has two cylindrical rings, one external and one internal [Fig. 19]. At the start, the player is situated in the exterior ring, and if the player wants to access the interior ring, they would need to do so using a white magic spell cast on the ground that will teleport the player to the other ring, enabling the player to alternate between the interior and exterior rings.

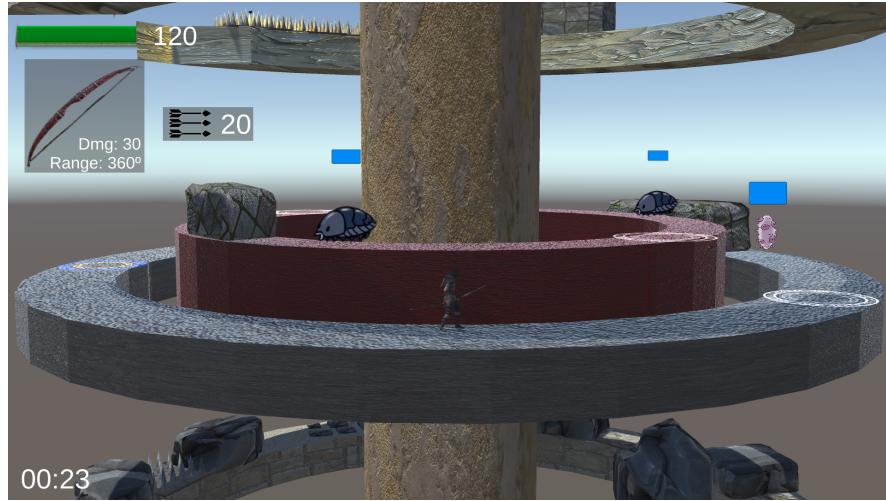


Figure 19: Second Level

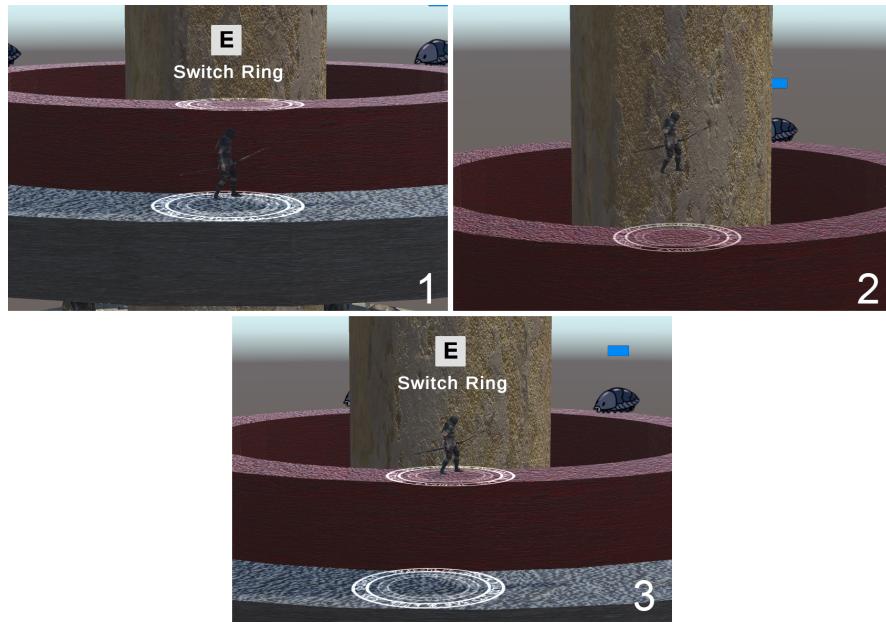


Figure 20: Ring Change

Another new implementation in this second level is the third type of enemy [Fig. 21]. A dynamic enemy that does not shoot at the player, but instead will make the player lose

health upon contact. This enemy possesses a substantial amount of shield and health, so the player will need to patiently decrease its health bar in order to defeat it.

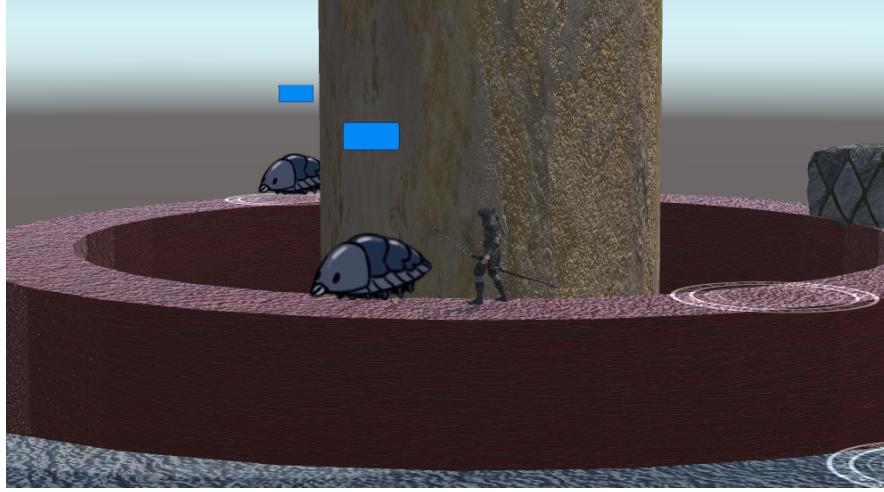


Figure 21: Third Type of Enemy

After successfully advancing to the third level, we find traps, two enemies, and some obstacles [Fig. 22]. When the player defeats both enemies, they will need to approach the ground spell that will teleport the player to another cylindrical platform.

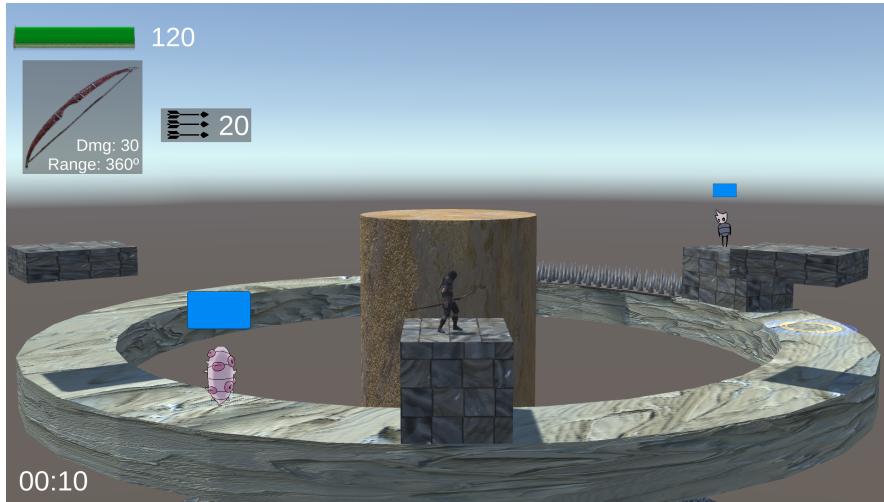


Figure 22: Level 3

The fourth level is set in a castle with columns, lamps, and a giant brick door [Fig. 23]. To reach the next level, the player will need to climb stairs [Fig. 46].

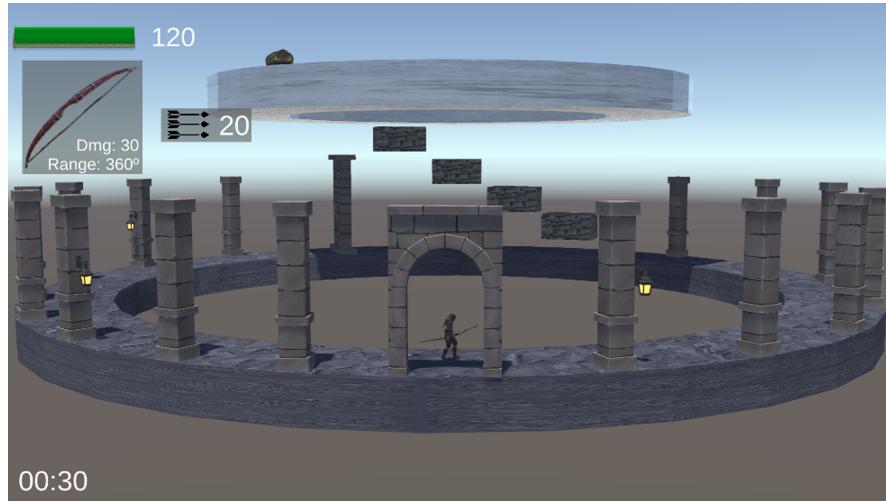


Figure 23: Level 4



Figure 24: Stairs to the Fifth Level

We are approaching the boss fight. In this level, the player has a chest that will provide more ammo and recover health to be well-equipped for the final boss fight. When the player is ready, they will need to use the last ground spell to access the boss level.

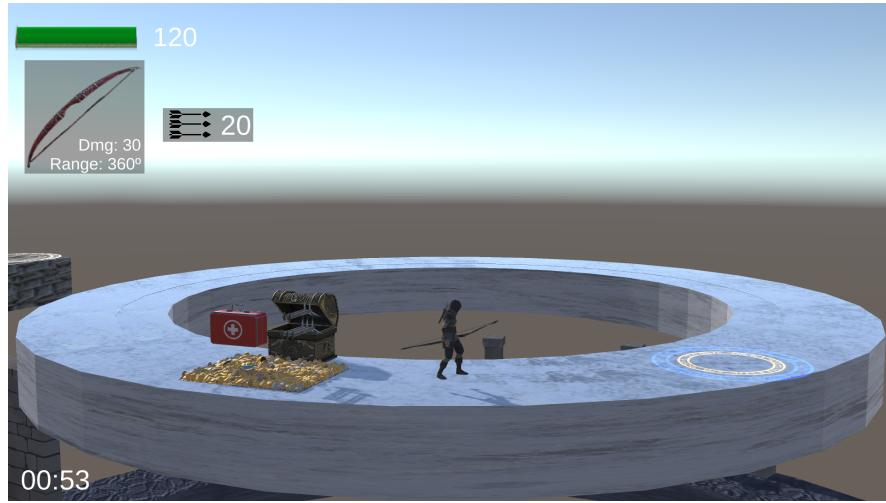


Figure 25: Fifth Level

In this last level, the player will fight *Brambleheart, the Thorned Overgrowth*, situated at the highest level of the game. The player must have overcome all previous levels to confront this last challenge.

Brambleheart is a ferocious enemy that charges at the player with great speed, significantly decreasing the player's health. The player will need to keep a distance and use the long-range weapon to defeat it without unforeseen events.



Figure 26: Boss Fight

If the player successfully defeats the boss, they will encounter the win screen and have beaten the game.



Figure 27: Win Screen

However, if the player's health reaches zero during gameplay, a game over screen will appear. Here, the game offers options to either retry the run, return to the main menu, or exit the game.



Figure 28: Game Over Screen

If the gameplay proves too difficult for the player, we have implemented two cheats. Pressing the M key will recharge all ammo, useful when the player has run out of arrows and can no longer shoot to defeat the enemies.

Additionally, players have the option to activate an invulnerable state at any time by pressing the G key. This feature, as mentioned earlier, grants temporary immunity from all damage, providing a strategic advantage in difficult situations.

3 Description of Game Objects

3.1 Player

The player [Fig. 29] can move horizontally, jump, and dash. Additionally, it has a life points feature, starting with 120 life points that can decrease due to enemy attacks.

At the game's beginning, the player is equipped with a long bow for attacking enemies. Below are the player's statistics:

- **Statistics**

- Life: 120 units
- Speed: $70^{\circ}/s$
- Jump Speed: 8.5 units
- Gravity: 25 units
- Dashing Speed: $15.625^{\circ}/s$
- Max Ammo: 30 units
- Initial Ammo: 10 units



Figure 29: Player

3.2 Weapons

In the game, players have access to two distinct weapons: a long-range bow available from the start and a short-range bow that can be obtained from the first chest.



Figure 30: Bow



Figure 31: Arrow

Each weapon is designed with unique characteristics to offer more strategic versatility to the player, including differences in damage output, arrow speed, and the maximum distance each arrow can travel.

The statistics for the long-range bow are as follows:

- **Statistics**

- Damage: 30 units
- Speed: $120^{\circ}/s$
- Max distance: 360°

The statistics for the short-range bow are:

- **Statistics**

- Damage: 50 units
- Speed: $70^{\circ}/s$
- Max Distance: 50°

These varied stats enable players to choose the right weapon for different situations, whether they need the higher damage of the short-range bow or the greater reach of the long-range bow.

3.3 Enemies

Throughout the game, the player will encounter three different types of enemies, adding variety to the game and requiring the player to use different mechanics to handle each one.

All three enemies have a shield that the player will need to deplete first in order to decrease their health. The shield of the enemies is marked with a blue color, as opposed to the red color that indicates the health of enemies.

If players are familiar with various video games, they may recognize that all the enemies in our game are inspired by the Metroidvania game "Hollow Knight," a title both of us as creators are particularly fond of.

3.3.1 Enemy 1

This enemy, modeled after a cockroach, attacks the player through contact. The attack, however, is not constantly available, as it necessitates a recharge time between uses. As this enemy is cockroach-inspired, it is always on the move, altering its direction upon encountering an obstacle.

It is important to note that, similar to other enemies, this one possesses a dual system of life and shield points. When the player attacks, the shield points diminish first. Once the shield is depleted, the enemy's life points start to decrease.

Below are its statistics for reference:

- **Statistics**
 - Shield: 100 units
 - Health: 100 units
 - Speed: $25^{\circ}/s$
 - Damage: 10 units
 - Recharge Time: 3 seconds



Figure 32: Enemy Type 1

3.3.2 Enemy 2

This enemy, resembling a cocoon, remains stationary and alternates between attacking and staying still. If it chooses to stay still, there will be a delay before its next action. Conversely, if it decides to attack, it launches light balls that can harm the player.

Below are its detailed statistics:

- **Statistics**

- Shield: 50 units
- Health: 20 units
- Light Ball Speed: $25^{\circ}/\text{s}$
- Light Ball Damage: 10 units
- Decision Time: 5 seconds
- Number of Light Balls: 3 units

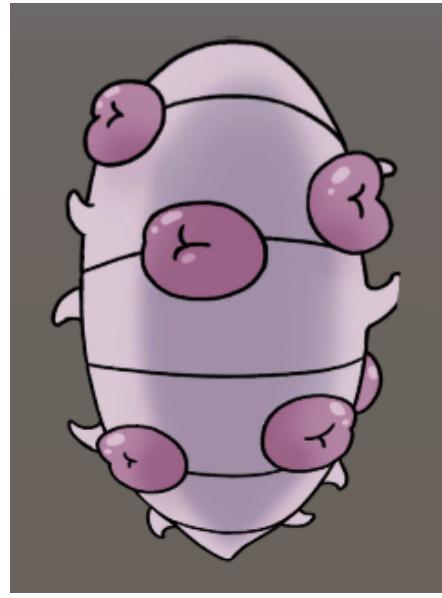


Figure 33: Enemy Type 2

3.3.3 Enemy 3

This enemy is inspired by a grasshopper, jumping intermittently but potentially damaging the player if caught during its jump. The enemy will not release the player until its next jump. Similar to Enemy 1, this enemy does not attack constantly and requires time to recharge.

Below are its detailed statistics:

- **Statistics**
 - Shield: 50 units
 - Health: 70 units
 - Damage: 20 units
 - Time between jumps: 4 seconds
 - Jump Speed: 16 units
 - Gravity: 25 units
 - Recharge Time: 6 seconds



Figure 34: Enemy Type 3

3.3.4 Boss

The ultimate adversary in the game is *Brambleheart, the Thorned Overgrowth*, serving as the final challenge for the player. This formidable enemy moves dynamically around the level, aggressively charging towards and sweeping over the player.

Below are its detailed statistics:

- **Statistics**
 - Shield: 100 units
 - Health: 200 units
 - Damage Normal: 20 units
 - Damage Charge: 40 units
 - Time of Idle State: 5 seconds
 - Time of Charging State: 4.5 seconds
 - Time Between attacks: 4 seconds

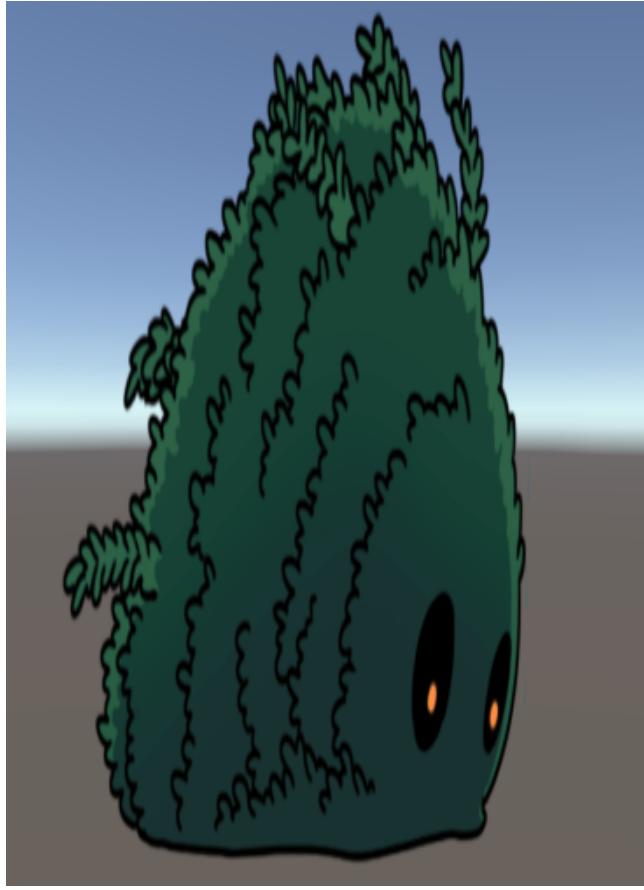


Figure 35: Boss

3.4 Dynamic Objects

Throughout the game, players will encounter various interactive objects. Here, we detail each type and its function:

3.4.1 Ground Spells

There are two kinds of spells that facilitate movement across rings and platforms. The white spell allows movement between external and internal rings, while the blue spell enables jumping between different levels.

White spells are always accessible. However, to utilize blue spells, players must first defeat all enemies on the level to unlock the spell.

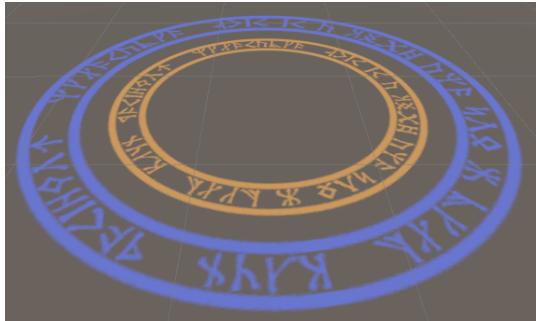


Figure 36: Blue Spell



Figure 37: White Spell

3.4.2 Chests

Chests are beneficial objects aiding the player's journey to defeat the boss. They provide new weapons, additional ammunition, and health recovery.

There are two chests in the game: the first is located in the first level, granting the player a short-range weapon and extra ammunition to ease upcoming challenges; the second is in the fifth level, positioned strategically before the boss fight to assist the player in the upcoming major battle.



Figure 38: Chest Closed

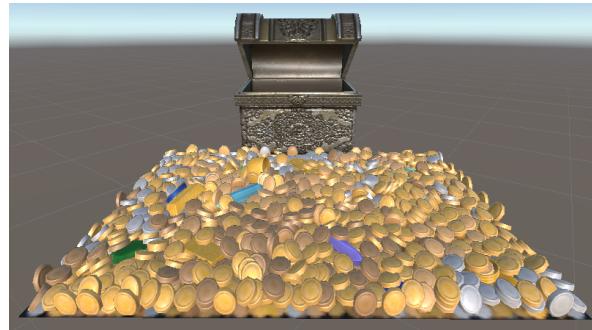


Figure 39: Chest Opened

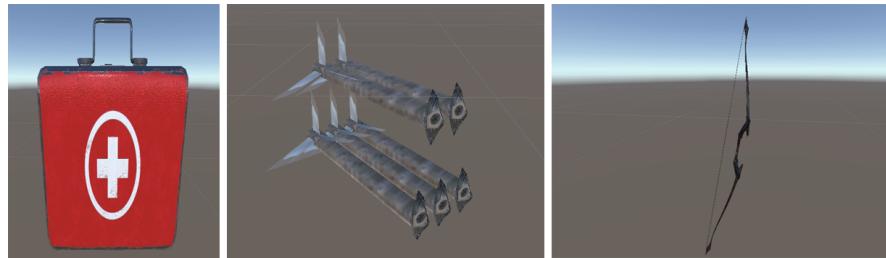


Figure 40: Chest Loot

3.4.3 Traps

Traps are ground-based objects that, upon contact, rapidly deplete the player's health. Below are the detailed statistics for traps:

- **Statistics**
 - Damage: 10 units
 - Damage Interval: 0.5 seconds

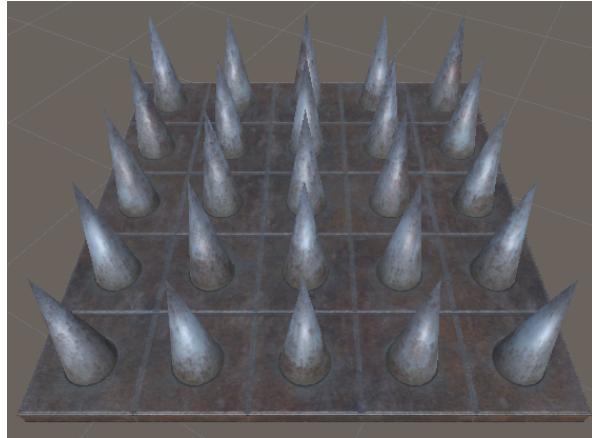


Figure 41: Trap

3.5 Map

We designed the game map to include a total of six distinct levels. Our approach was to maintain simplicity in the level design while ensuring each level differed from the others to avoid repetitive gameplay. Each level offers a unique playing experience, characterized by diverse elements that set them apart.

We will now delve into the specifics of each of these six levels:

Level 1

The first level serves as an introductory stage, showcasing the game's core functionalities to familiarize players with what they will encounter in subsequent levels. Here, players will interact with a chest, engage with two of the three enemy types, navigate around traps, and utilize the ground spell.

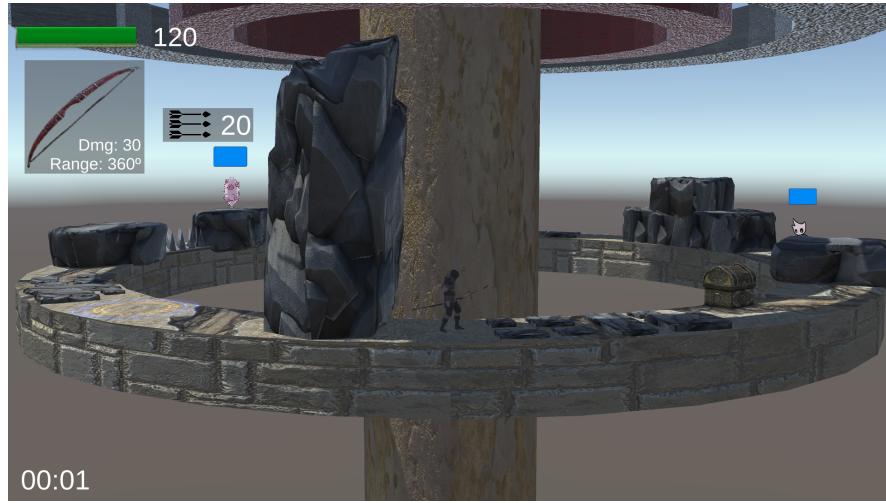


Figure 42: Level 1

Level 2

The second level introduces the mechanic of changing rings using the white spell and presents the third type of enemy. This addition adds complexity and challenges the player's adaptability and strategic thinking.

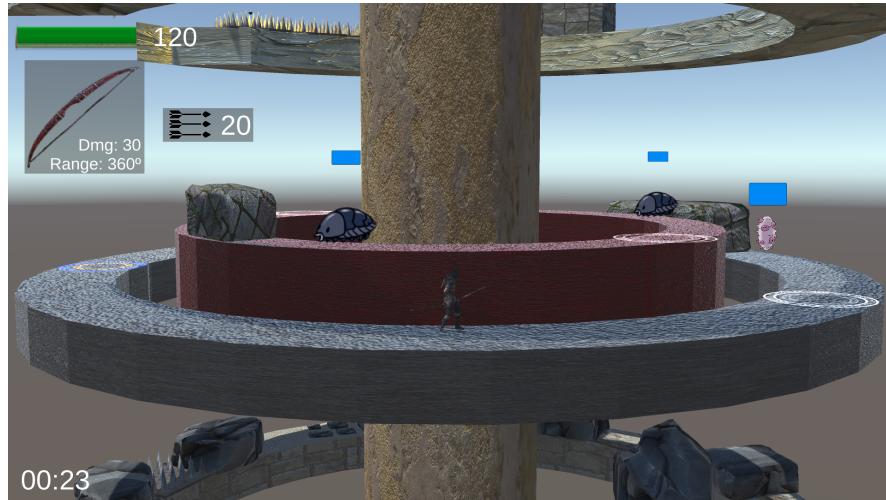


Figure 43: Level 2

Level 3

In the third level, we incorporated traps that block one path, forcing the player to choose an alternate route to avoid health loss. This level combines enemies and traps with additional obstacles, enhancing the player's need for tactical movement and decision-making.



Figure 44: Level 3

Level 4

To enter the fourth level, players perform a long-distance teleport from the third level to a new cylinder, designed with a castle theme, complete with columns, lamps, and a large brick door. This enemy-free level creates an atmosphere of calm before the storm, signaling the approach of the final boss fight.

A new mechanic is introduced here: stairs that the player must climb to access the ground spell leading to the fifth level.

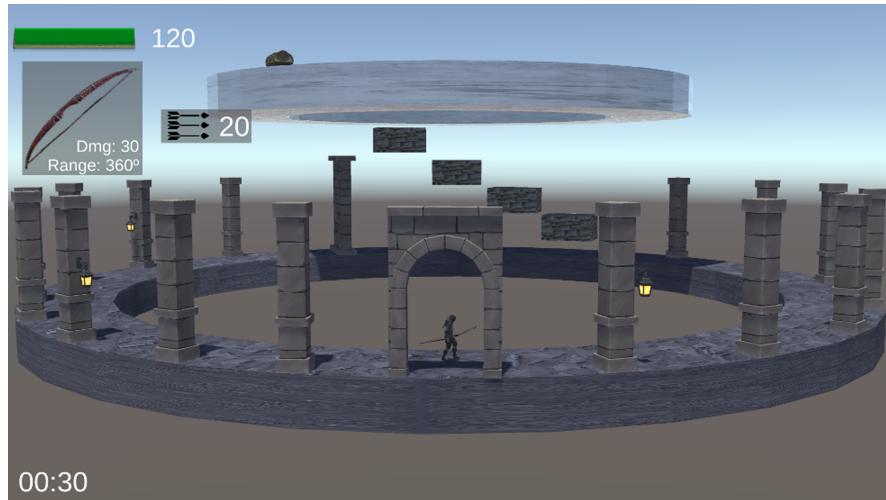


Figure 45: Level 4

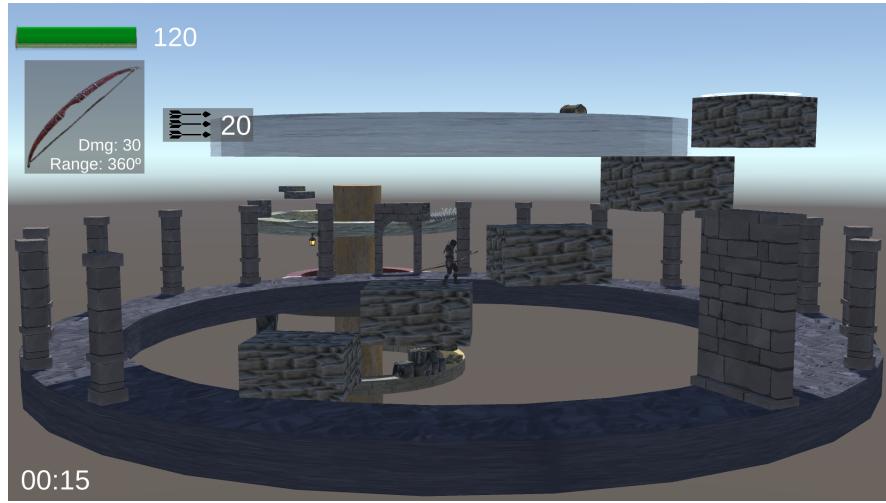


Figure 46: Level 4 Stairs

Level 5

The fifth level serves as the final preparatory stage before the boss fight. It acts as a rest area where players can equip themselves for the ultimate challenge. This level features a chest providing additional ammunition and health recovery. The final blue ground spell in this level teleports the player to the game's climactic boss battle.

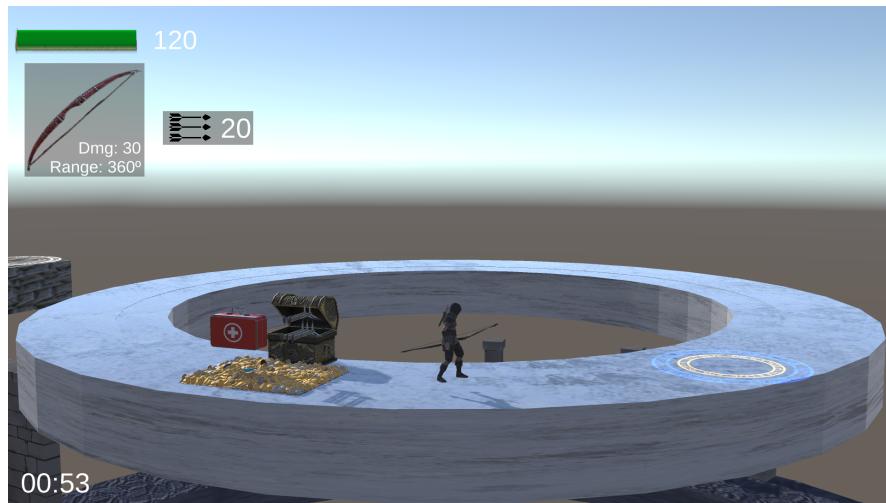


Figure 47: Level 5

Boss Level

The final and most elevated level in the game is the boss level, where players confront the long-anticipated boss, *Brambleheart, the Thorned Overgrowth*. This level features a rotating map and the ruins' gate, adding to the complexity and intensity of the battle.

Central to this level is an area of lava, which enhances the boss environment, creating a more intimidating and climactic setting for this ultimate challenge.



Figure 48: Boss Level

3.6 Obstacles

Throughout the various levels, players will encounter a range of obstacles, each uniquely themed to match the environment of the level. These obstacles enrich the gameplay by offering strategic options, allowing players to use them in various ways, such as taking cover from enemy fire, evading enemies, and more.

Below, we detail the different obstacles and some decorations implemented in the game:

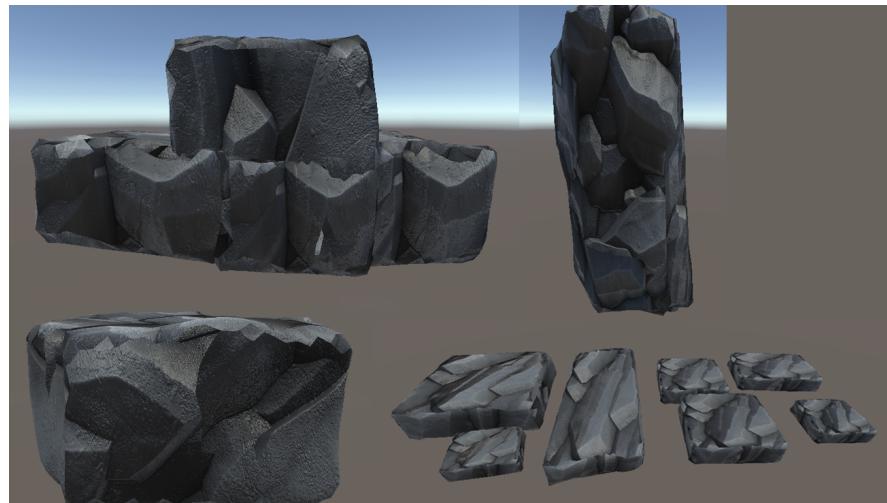


Figure 49: Obstacles and Decoration Level 1

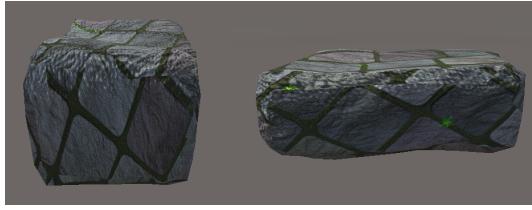


Figure 50: Obstacles Level 2

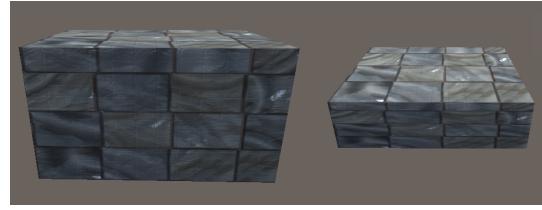


Figure 51: Obstacles Level 3

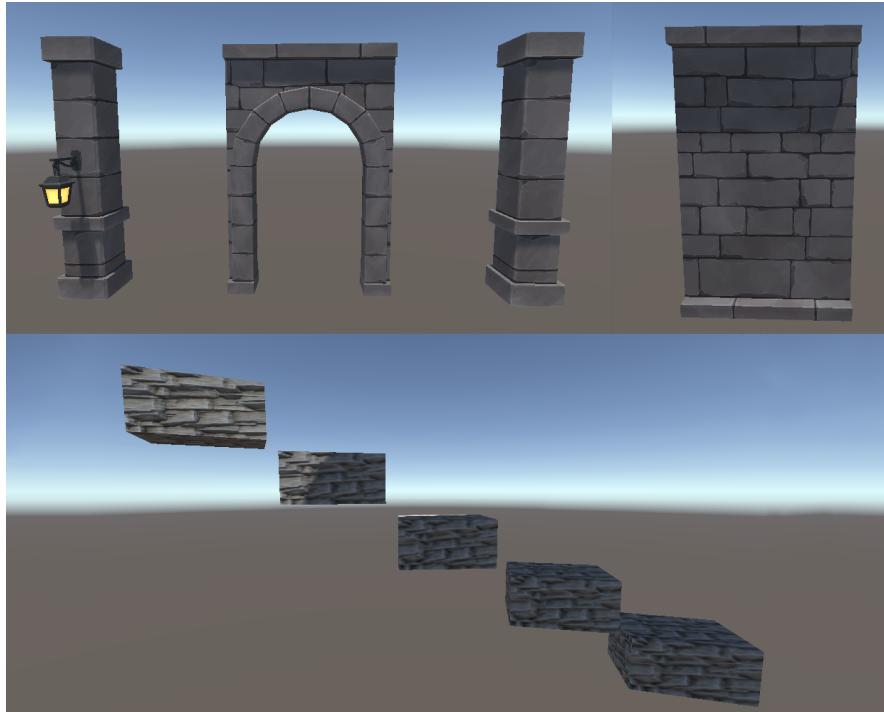


Figure 52: Obstacles and Decoration Level 4

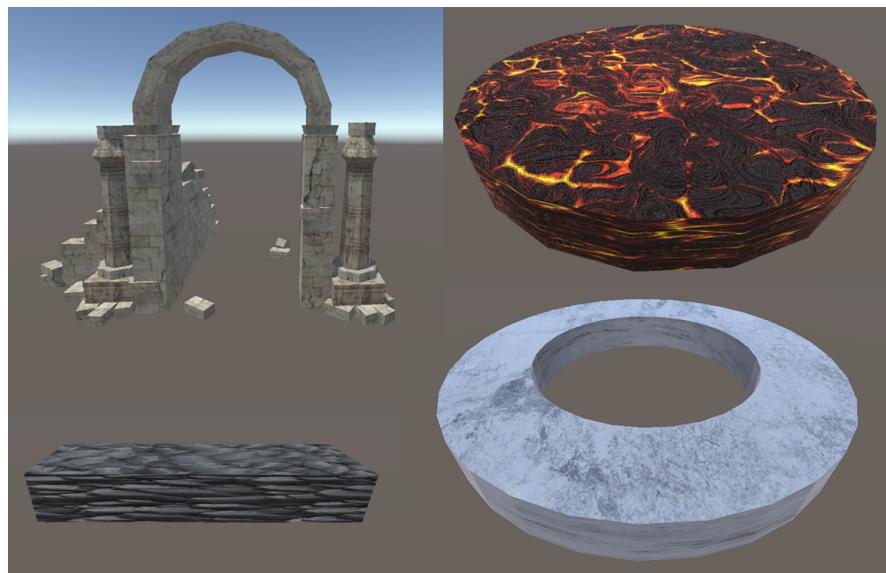


Figure 53: Obstacles and Decoration Level 6

4 Flow Chart

The following image [Fig. 54] is a presentation of the navigation flow through the various windows of the game.

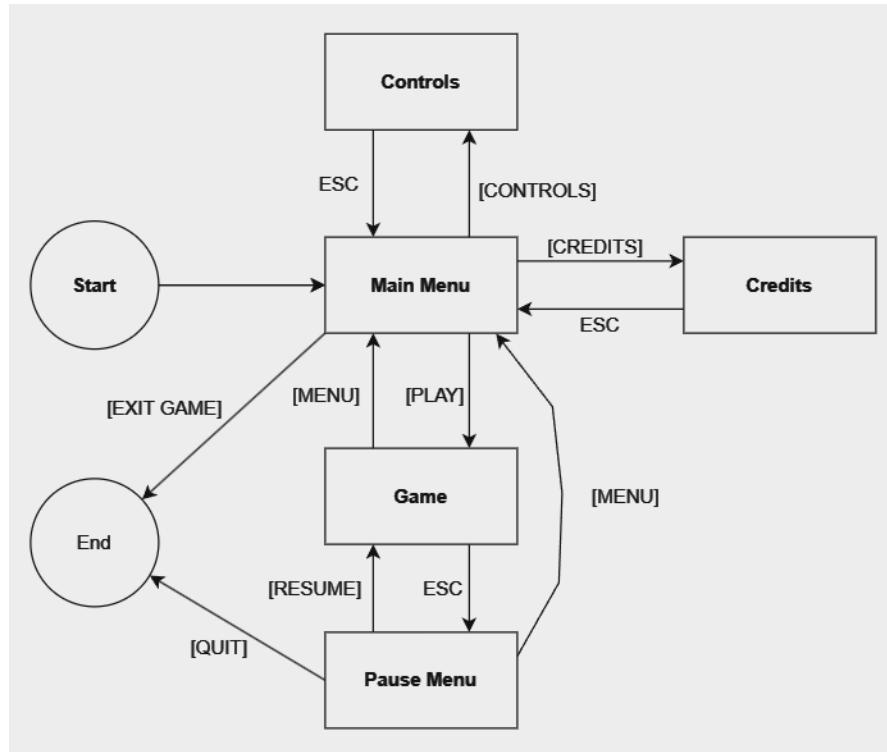


Figure 54: Flow Chart

5 Methodology

5.1 Organization

As with our previous project, we utilize GitHub for version control. For communication, we use WhatsApp and Discord, both offering text communication systems, with Discord also providing a screen-sharing feature for visual information sharing.

In the project's first week, our focus was on learning how to use Unity and assigning tasks. To maintain a steady project pace and timely completion, we adopted a week-based work methodology [Fig. 55].

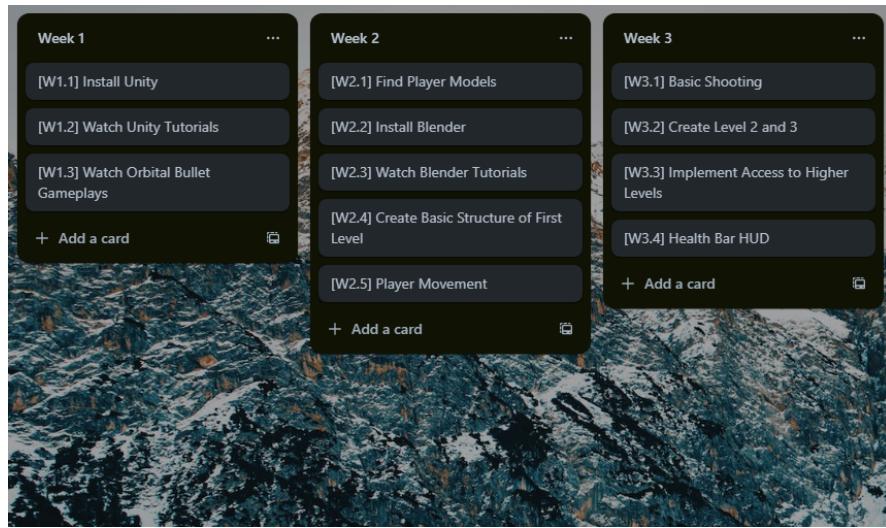


Figure 55: Capture of Trello during 3rd Week

With this methodology we could work concurrently and respecting the rhythm of each person involved in the project, but also respecting the sprints and the objectives provided each week. To ensure this last thing, we used the hour before of each lab of this subject and talked about the current state of the Game, the objectives to next week, things that we are struggling and in case we need to postpone some of the tasks, we discussed what would be the new date to achieve that task. During holidays, we couldn't get to meet face to face but as I mentioned before we use WhatsApp to notify the state of the task. In cases of *Bugs* we used Discord to notify what happens and talk using video-call about what could be the problem and possible solutions to the problem. If we didn't have any personal events, we try to solve these bugs in the video-call and showing the results of the solutions proposed with the screen sharing feature.

5.2 Sprints

Here you can see the Sprints and all the objectives proposed to each week.

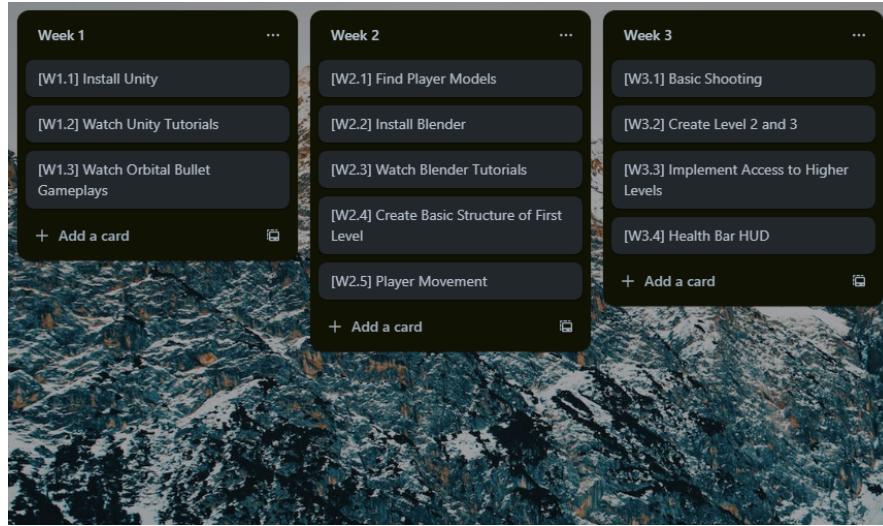


Figure 56: Sprints proposed to the 1st-3rd week

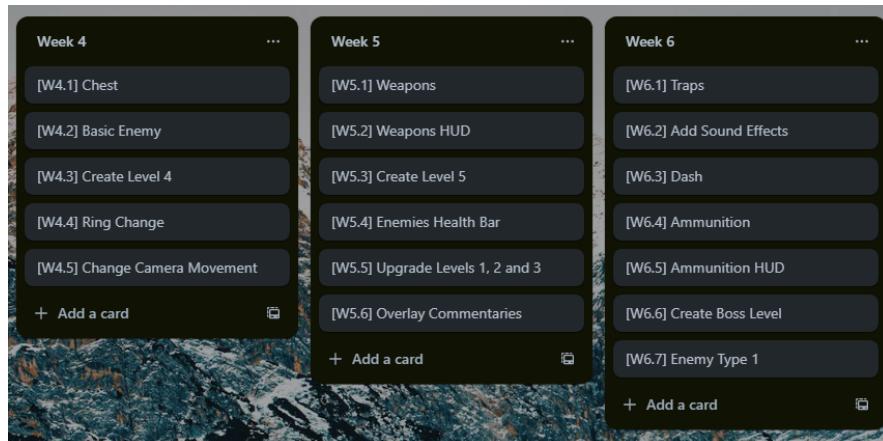


Figure 57: Sprints proposed to the 4th-6th week

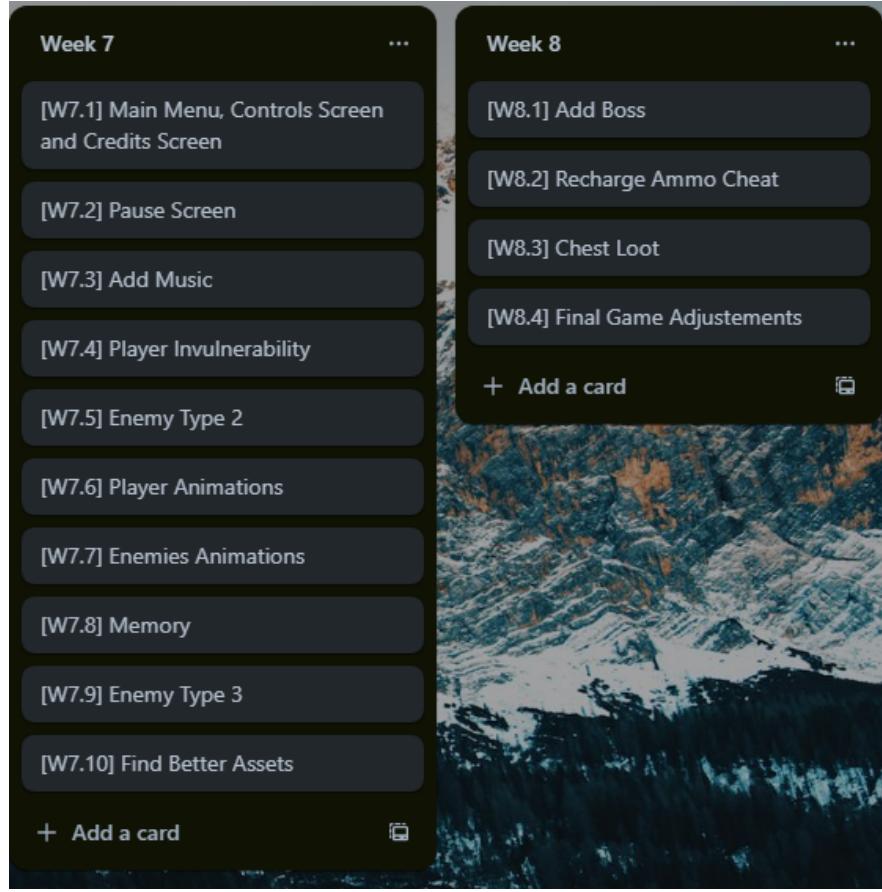


Figure 58: Sprints proposed to the 7th and 8th week

5.3 Meetings

Week 1

13/11/2023

Today we setup all the unity environment. We also take a look in how it works Orbital Bullet. We also searched for Unity Tutorials that could be helping in our Project [15] [3].

Week 2

20/11/2023

We discussed that it could be good to start if we take a look to 3D models and we start with to setup a theme to the game. Also during the lab class, Antonio Chica advice us that if we want to make our levels more professionally, we could use Blender, so we also added Blender related tasks.

To finalize the Meeting, with the base code provided by the coordinator. We assign the tasks of player movement to Jeremy and start with the first level to Joan.

Week 3

27/11/2023

We took a look if all the objectives of the last sprint were completed and with that done with assign shooting feature to Jeremy since it's related to the player and also searching different ways on how to make HealthBar for the HUD[5]. Also Joan started with the level changing section.

Week 4

4/12/2023

During that day, Jeremy finished the basic shooting proposed on the 3rd week. Also, guided by Antonio Chica we started with the design of enemies (assigned to Jeremy). And also Joan since he finished the creation of Level 2 and 3 we discussed with Antonio how many levels should the game has. We end up agreeing on adding one more level (by Joan) and starting with the chest feature (starting by searching 3d models of chests) [1] [6] [13] [2].

7/12/2013 Joan through WhatsApp notified Jeremy that the main camera has some minor problems in the movement while doing the transitions of each level. Joan proposed a date limit to solve this issue (10/12/2023) since he noticed where in the code could be the problem and also he add the changing between inner and outer ring task to Trello [W4.4].

Week 5

11/12/2023

Jeremy continued with the Enemies implementation and assigned to him the task of Weapons implementations (with it's HUD implementation). Joan continued working in improving how the levels look.

Week 6

18/12/2023

Since it's the last week before holidays, we start assigning all task that we will be doing this holidays. Joan would be doing effects and sound, the menu and improving the game in order to get more game feeling. Jeremy, on the other side, would finish enemies (boss included) implementation and adding animations to that he had done. Also would do the dash feature since it's related to the player.

Week 7

27/12/2023

Joan notifies Jeremy the difficulty of searching of 3D models for enemies. Therefore, both of reach to the conclusion that Enemies would be like the original game and have 2D sprites. Jeremy on the other hand would use 3d models and animations provided by Mixamo [8] (website originally proposed by Antonio Chica). We also discussed the current state of the game and how the other is doing with tasks assigned to both of us.

Week 8

3/1/2024

We reported minor bugs that later that week we would be solving. Also Jeremy implemented the final boss fight and the Ammo Cheat. Also we both started by doing the memory.

5.4 Gantt Diagram

Here below you can see the Gantt Diagram of the project.

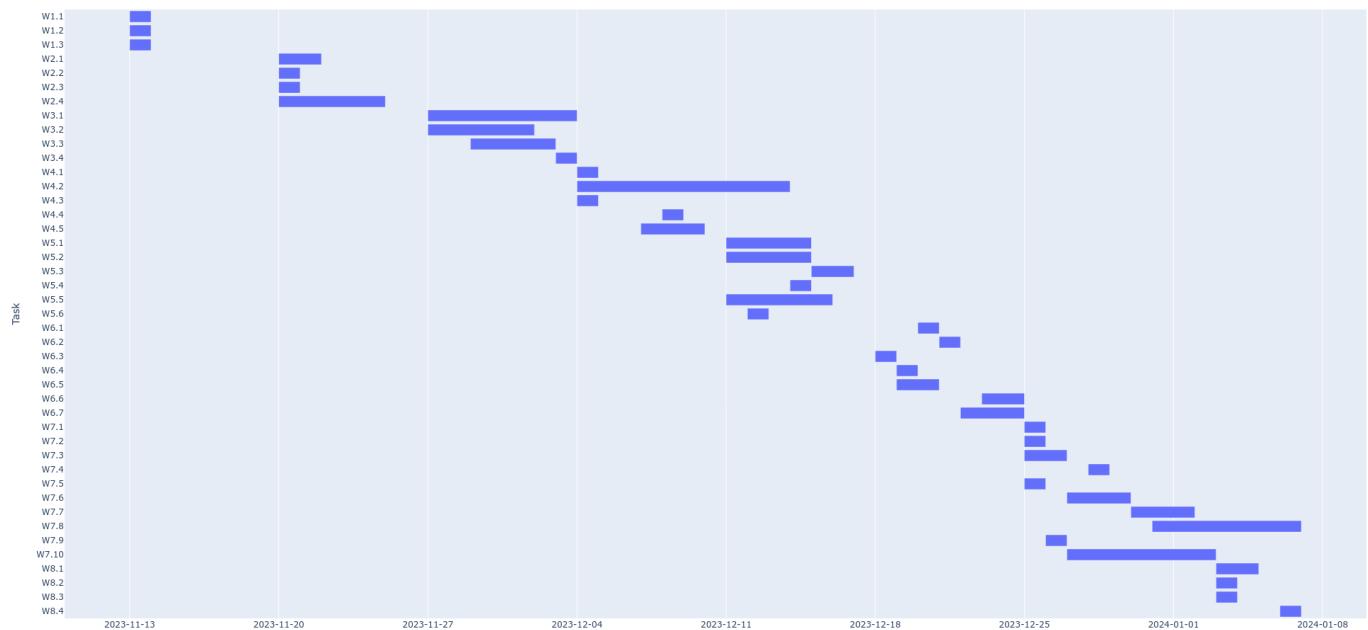


Figure 59: Gantt diagram of the project

6 Conclusions

This project has been incredibly comprehensive, offering us profound insights into the extensive effort and dedication required to create a video game. Our previous experience was primarily with 2D games, where we were familiar with the basics of OpenGL and could effortlessly implement game mechanics. However, venturing into the realm of 3D gaming was a new and challenging endeavor for us, especially in mastering the Unity engine. We began with little to no knowledge in this area, relying heavily on studying and watching tutorials to execute complex tasks within Unity.

Now, with the game complete and ready for play, we feel a sense of accomplishment in having learned how to use the Unity engine and grasp the fundamental mechanics of game development. While we may not pursue game creation in the future, the hard work and knowledge we've acquired through this process will resonate with us. As we play other video games, we'll be reminded of our own development journey, understanding and appreciating the intricate mechanics and the efforts developers put into creating engaging gaming experiences. This journey is akin to taking art classes, which deepen one's appreciation of paintings by revealing nuances and details that might otherwise go unnoticed.

References

- [1] *3D Models for Free - Free3D.com* — free3d.com. [Accessed 07-01-2024]
Website that provided some of our 3d models, for example obstacles. URL: <https://free3d.com/>.
- [2] *3D Models for Professionals :: TurboSquid* — [turbosquid.com](https://www.turbosquid.com). [Accessed 07-01-2024]
Website that provided some of our 3d models. URL: <https://www.turbosquid.com/>.
- [3] *Build Your First 3D Game in Unity — Unity Beginner Tutorial*. [Accessed 17-11-2024]
List of videos that we watch to understand 3d in unity. URL: <https://shorturl.at/mpADX>.
- [4] *Home — SmokeStab* — smokestab.com. [Accessed 03-01-2024]
Website that shows information related to the developers of Orbital Bullet. URL: <https://www.smokestab.com/>.
- [5] *How to make a HEALTH BAR in Unity!* [Accessed 24-11-2024]
Tutorial that shows how to make a simple Health Bar. URL: https://www.youtube.com/watch?v=BLfNP4Sc_iA.
- [6] *Hundreds of 3D Texture Downloads - Free PBR Materials* — freepbr.com. [Accessed 07-01-2024]
Website that provided materials used in the game. URL: <https://freepbr.com/>.
- [7] *Jobs at SmokeStab — JOIN* — join.com. [Accessed 03-01-2024]
Website that shows how is the developers company of Orbital Bullet organized. URL: <https://join.com/companies/smokestab>.
- [8] *Mixamo* — mixamo.com. [Accessed 07-01-2024]
Website that provides the player animations and model. URL: <https://www.mixamo.com/#/>.
- [9] *Orbital Bullet - Play Station Store*. [Accessed 02-01-2024]
Website that shows information about the PlayStation version of Orbital Bullet. URL: https://store.playstation.com/es-es/product/EP5470-CUSA30568_00-1954762215070306.
- [10] *Orbital Bullet - Xbox Store*. [Accessed 02-01-2024]
Website that shows information about the Xbox version of Orbital Bullet. URL: <https://www.xbox.com/es-es/games/store/orbital-bullet/9NXFTSM1W1BV>.
- [11] *Orbital Bullet — gematsu.com*. [Accessed 03-01-2024]
Website that provides information about Orbital Bullet. URL: <https://www.gematsu.com/games/orbital-bullet>.

- [12] *Orbital Bullet – The 360° Rogue-lite on Steam* — [store.steampowered.com](https://store.steampowered.com/app/1167680/Orbital_Bullet__The_360_Roguelite/). [Accessed 03-01-2024]
Website that shows information related to the game and the developers of Orbital Bullet. URL: https://store.steampowered.com/app/1167680/Orbital_Bullet__The_360_Roguelite/.
- [13] *Sketchfab - The best 3D viewer on the web* — sketchfab.com. [Accessed 07-01-2024]
Website that provided some of our 3d models. URL: <https://sketchfab.com/>.
- [14] *SmokeStab LinkedIn*. [Accessed 02-01-2024]
Website that how is the developers company of Orbital Bullet organized. URL: <https://www.linkedin.com/company/smokestab/about/>.
- [15] *The Unity Tutorial For Complete Beginners*. [Accessed 15-11-2024]
Basic tutorial to understand how unity works. URL: <https://www.youtube.com/watch?v=XtQMyt0RBmM>.