

Game Design Document

Sentinels of Arrak: Last Stand

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1. Overview

Sentinels of Arrak is a third-person, action adventure game set in the fictional kingdom of Arrak. You are one of the Sentinels, the stalwart defenders of the kingdom, whose job is to seek out and destroy any threats that may emerge against the kingdom. You've been dispatched to the nearby Kolon Forest to thwart the plans of the lich Dralagor, who is amassing an army of undead to march on Arrak. You must breach his castle, destroy his defenses, and bring the lich down before he can enact his plans to conquer the kingdom. There is no loss condition in the game; while the player can die, death will reset them back to the last checkpoint in the game that they reached. The game is won once the player defeats Dralagor in the final boss battle.

2. Gameplay

The main focus of the game is to slay monsters and clear dungeons in order to earn XP, and explore the map to find secrets and better gear. This is important because the enemies in the later levels will be more difficult to kill, and will prove a major challenge for the player if they aren't prepared. As players earn XP, they will gain more health in the form of hearts, which lets them survive longer against tougher opponents. Extra health is only obtained from the level ups, so it gives the player incentive to stop progressing through the level and focus on killing enemies to get more health. Players also have the ability to find better swords that can have different stats from each other. These can range from fire, poison, ice, and potentially more, and this allows the players to, in a limited way, experiment with different options that they might have. The swords will only be dropped from secret chests or challenging locations, which will give players a sense of accomplishment for the effort that they put into obtaining the weapon. Players can also find health potions scattered around that will replenish some of their health when used, and are the most common drop. A rare drop is the fairy in a bottle, which is essentially a second chance item. When the player hits zero health, if they have the fairy in their inventory, they will regain half of their health back, consuming the fairy on use. This drop is not as obvious to find and is hidden behind secrets or challenges like the swords.

The game is composed of 3 levels of escalating difficulty: the tutorial level, the cave level (easy) and the lich's castle (hard). Players will need to clear the areas in that order, but can explore up to the footsteps of the castle if they feel adventurous. As the players progress through the levels, the enemies will similarly begin to pose greater challenges. Slimes will be the most common enemy for new players, which are easy to kill as they have no special gimmicks. Basic skeletons will follow after, showing simple combat capabilities against the players, being able to work together to attack the player en masse. The advanced skeletons will only appear in the lich's castle, but are deadly for players who haven't picked up on the game's mechanics; they

can block, roll, and act better than the regular skeletons, and are deadlier in hordes. Players will need to prove their skill before they tackle these tough opponents.

3. Main Character

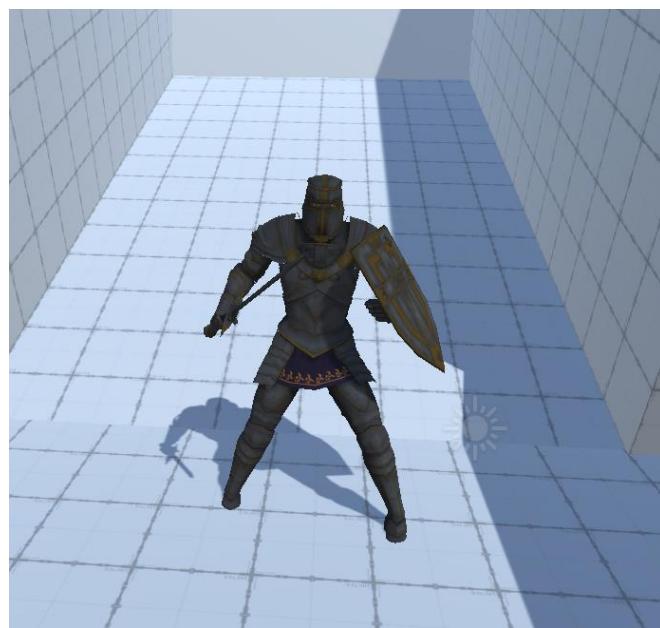
3.1 Main Character Animations and Screenshots

We are going to use the Paladin rig from Mixamo paired with the sword and shield pack from mixamo as well. For the whole sword and shield animation package, visit this [link](#).

[Paladin rig from Mixamo](#)



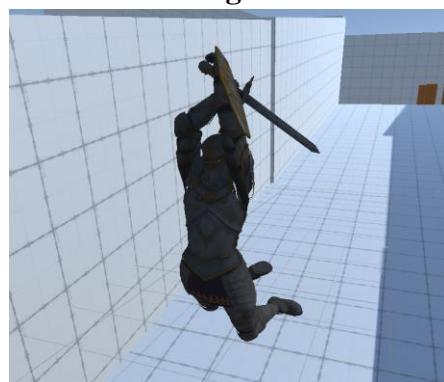
Idle stance and animation



Jump animation



Running attack



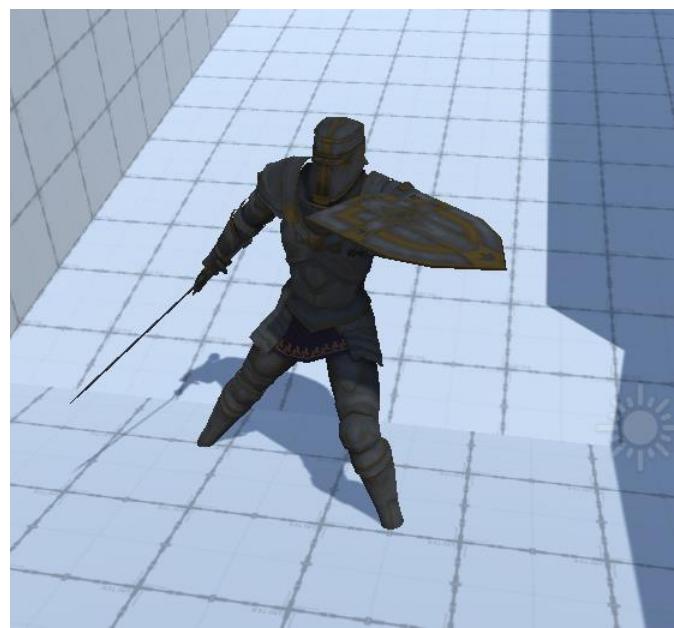
Sprint



Basic Attack



Block



Walking



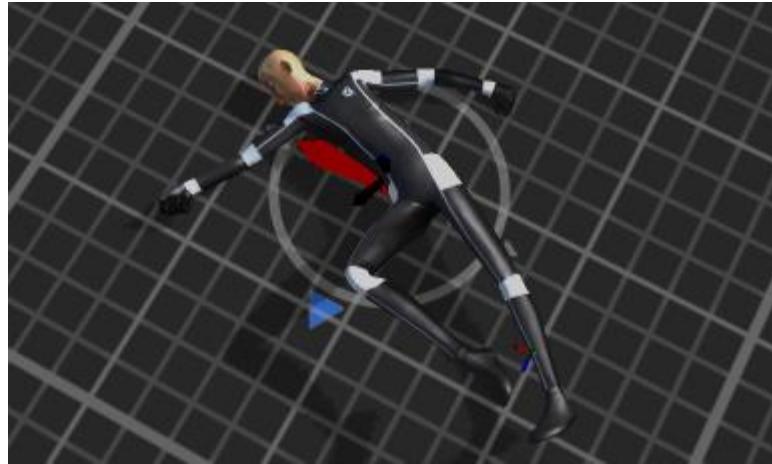
Rolling



Directional (Left+Right) Strafe



Death (Taken from inspector window)



3.2 Player Properties

Player health will be represented using a hearts system. A player will start with 3 hearts when they first start the game. The player will be able to increase their health simply by leveling up by killing monsters. The hearts can be decremented by quarter hearts. For example, a slime will deal with a quarter damage while other enemies can deal half a heart, or a full heart, etc.

The player's inventory will consist of items that the player is given or items that they have picked up from either chests or items that have dropped onto the floor. After a user picks up an item, they will only have the option to use the item. There will be no option to drop an item back onto the ground.

3.2.1 Player rewards

Potions will be able to heal the player. They won't be usable if the player is at full health. If the player tries to use a potion at full health, a text dialog box will pop up and tell the user that they are at full health. A potion will heal a fixed amount of hearts. Depending on the type of potion that the player uses, the kind number of hearts that are regenerated from a potion will vary. For example, a regular potion will only heal one heart of health as it's meant for early game.

A fairy in a bottle will be a special item that the user won't have a use option for. Instead, this item will be used on player death. If a player has this item in their inventory when their health reaches zero or a dead state, then the item will be used to give the player another life. When a player is revived from this item, the player's health will always be healed to half health.

Both the potion and fairy in a bottle can be acquired by the user from various drops around the levels in the game.

Players will be able to interact with chests that can be found in each area in the game (overworld, level 2, and level 3). These chests can have multiple items such as weapons, potions, and fairies as described above. When a player interacts with the chest object, it will open and the player will get the item that was in the chest in their inventory.

Weapons that are picked up can be used to benefit the player.

Breakable barrels are objects that can affect the player in a positive way by dropping health for the user. The player can heal themselves by picking up these hearts if the player is at any health that is below their max value.

4. Control Scheme

Player Controls and their keybinds are as follows:

Movement	KeyBind
Walk	W
Turn	W+A(left) and W+D(right)
Sprint	W+Left Shift
Directional Strafe	W+A+Left Shift(left) and W+D+Left Shift(right)
Jump	Space
Roll	Q
Attack	Left Mouse Click
Block	Right Mouse Click
Look right/Look Left	Mouse Movement(Right/Left)
Interact with Objects	E
Open Inventory	I

The player will have the ability to walk, sprint, strafe, jump, roll, attack and block as their basic movements. Chaining movements together will also occasionally produce different results. For

example if the player attacks while sprinting they will execute a jumping attack or if they roll while sprinting they will execute a jumping roll forward. When a player presses the I key, it will open an inventory screen in the UI where they will be able to interact with/equip items they have picked up. The in game camera will move based on mouse movement.

Player Perspective:



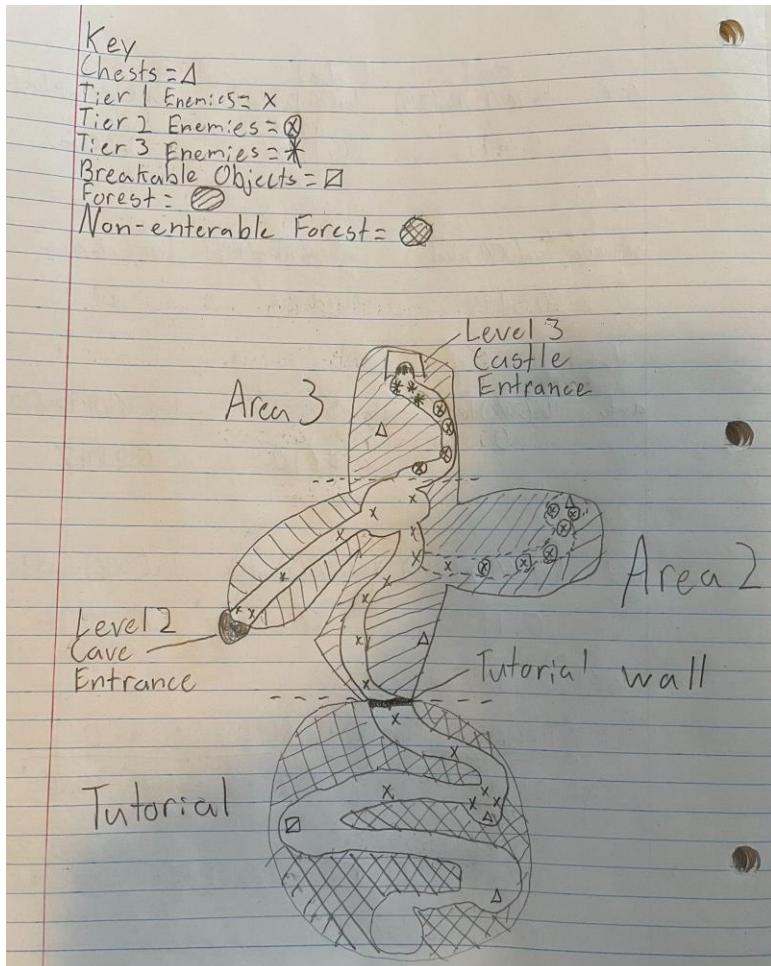
5. Level Design

The player's adventure will consist of 3 areas of the game. In summary, the player will go through the overworld section to learn the controls of the game before entering level 2. The entrance to level 3 will be blocked off until the player beats level 2. After beating level 2, the player will go back to the overworld to enter level 3.

5.1 Tutorial/Overworld

The setting of the overworld will be a forested valley surrounded by mountains on each side. It is split into 3 different areas with each having different kinds of enemy spawns, different optional chests and different amounts of optional terrain. There is a large path from Game start that leads to each important milestone within the overworld with smaller paths leading off to optional content.

Overworld Mockup:



5.1.1 Tutorial

The tutorial consists of a winding path that the player will be restricted to, leading to little clearings where concepts necessary later in the game will be introduced. Along the path are triggers so that when a player enters them instructions will be printed to the UI to explain the concepts that trigger is responsible for. The concepts that will be taught, in the order they will be introduced, are walking, running/rolling, interacting with objects (specifically chests), opening the inventory/equipping items, jumping, attacking, breaking objects, blocking, general combat, and health potions. There will be 4 clearings total with the first containing a chest where the player will find their first sword/shield. The second clearing will contain breakable objects for the player to smash along with the explanation for breaking objects.. The 3rd clearing will contain the first Tier 1 enemy along with the combat explanation. From here on there will be several Tier 1 enemies spawning along the path. The last clearing will have a chest containing a health potion that will be defended by several Tier 1 enemies. There is a wall at the end of the tutorial path that is animated to drop once a player approaches it but will only drop if the player has completed all required elements of the tutorial.

Tutorial w/ Enemies Highlighted:



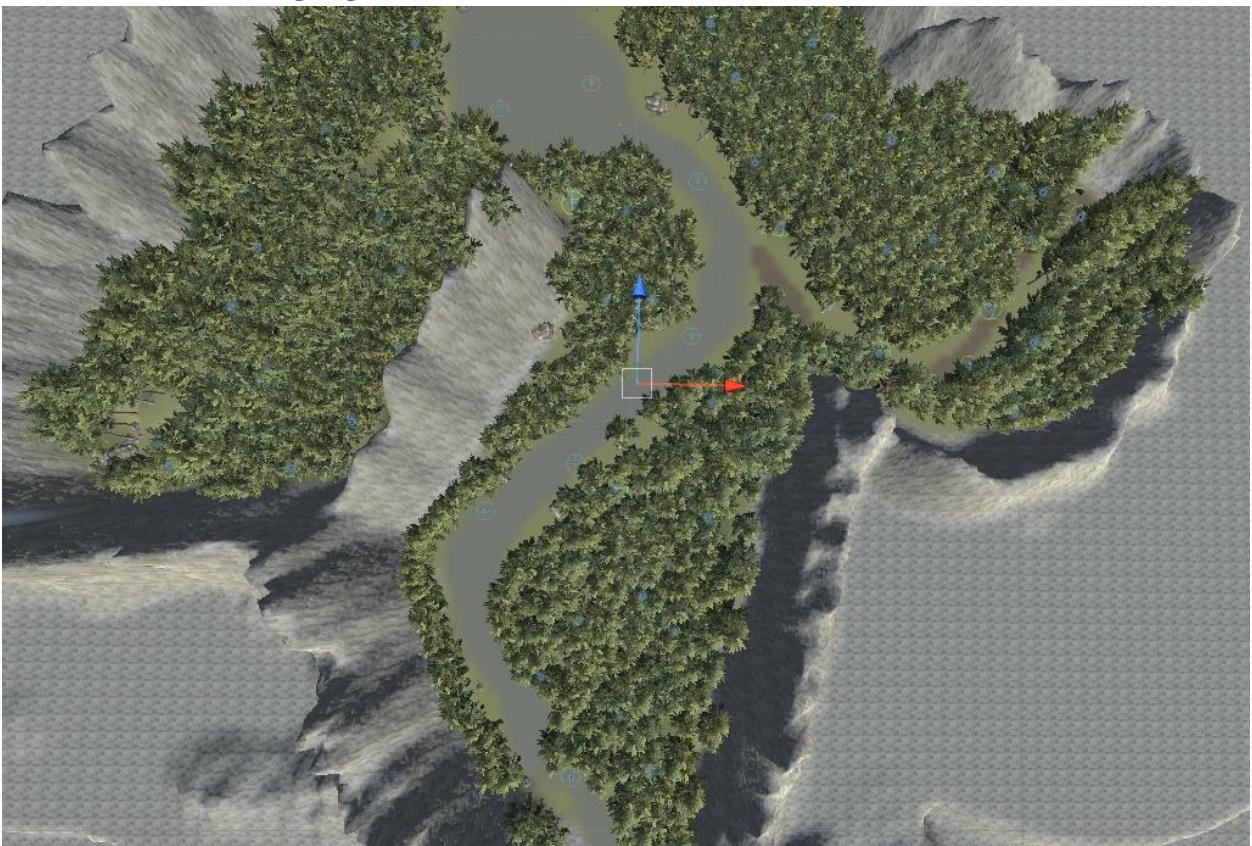
5.1.2 Overworld Area 2

This area primarily functions as the path from the tutorial area to the cave that triggers the loading of Level 2. Along the path there will pre-set enemy spawns of Tier 1 enemies. On either side of the path there will be a forest, which if it was cut through would make the time it took to get through the area much faster. Within these forests there will be Tier 2 enemies that prevent the player from just being able to sprint though and give them a chance to earn additional XP. The main path leads to a central area where the player can choose to walk towards the Level 2 cave or towards the Level 3 Castle. There will be hints in this central area implying that it's smarter for the player to attempt the Level 2 cave first but no physical barrier stopping them from heading towards Area 3. Area 2 will also have optional paths through the forest that have chests at the end of them containing either better shields and swords or items. The path will be populated with a mix of Tier 1 and 2 enemies with the end having several Tier 2 enemies protecting the chest.

Area 2:



Area 2 w/ Enemies highlighted:



Entrance to Level 2:



5.1.3 Overworld Area 3

This area primarily functions as the path from Area 2 to the castle that when entered triggers the loading of Level 3 and will begin immediately after the central area. Much like Area 2, Area 3 will exist as a main path with forests off to the sides. However the path in the direction of the Level 3 castle will have Tier 2 enemies and the adjacent forests will contain Tier 3 enemies. This area contains the castle which has a forcefield preventing players from accessing Level Three until Level 2 has been completed. If the player enters this area without having completed Level 2, the forcefield will be blocking the entrance to level 3. After completing level 2 the forcefield will disappear and 2 Tier 3 guards will be posted outside of the entrance.

Area3 w/ enemies highlighted:

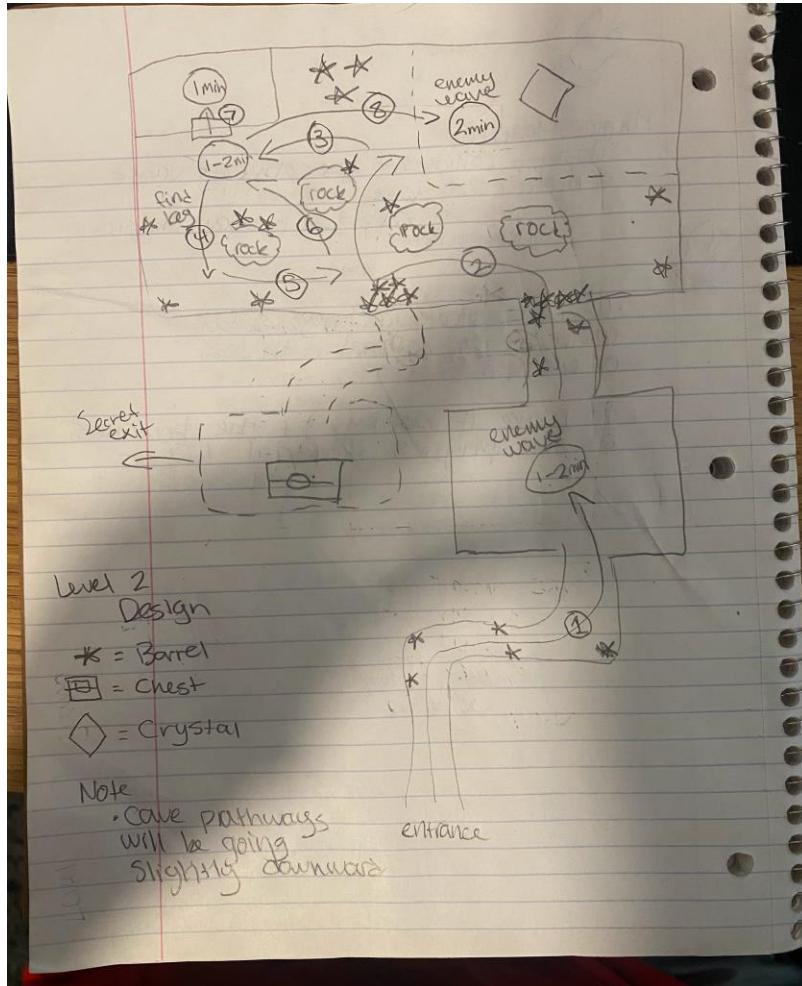


Castle w/ Guards:

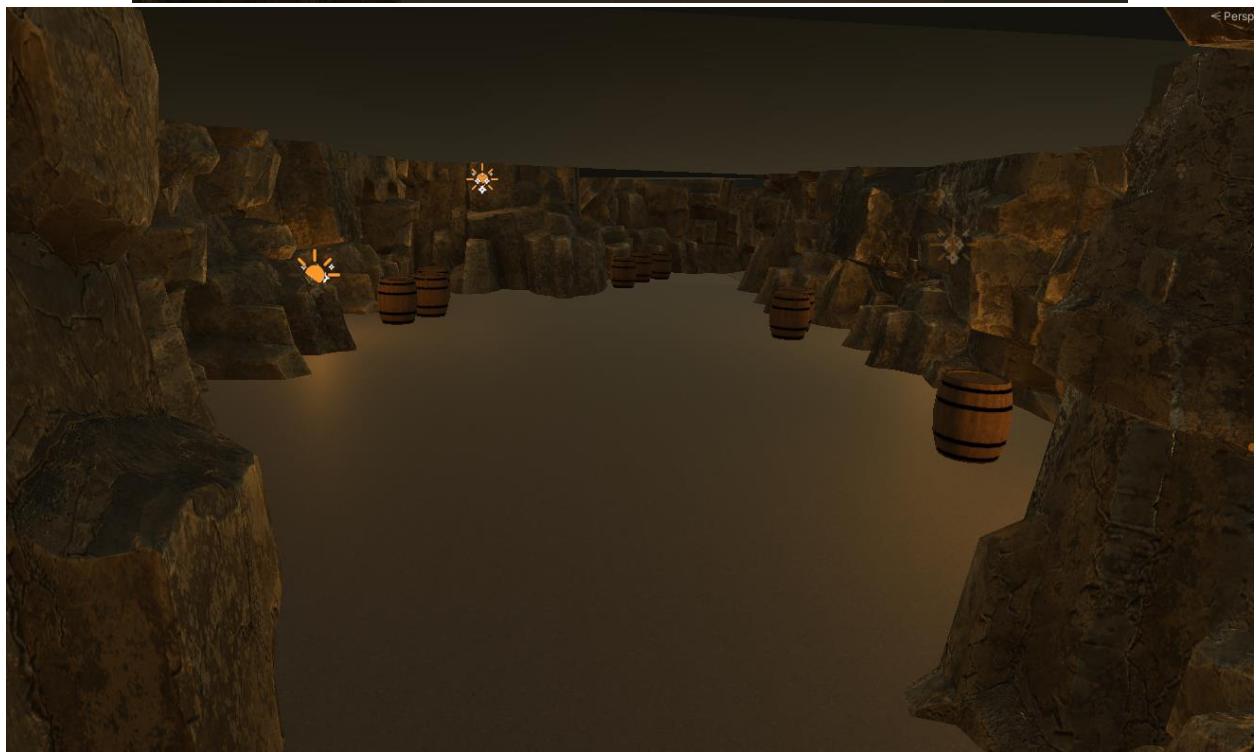


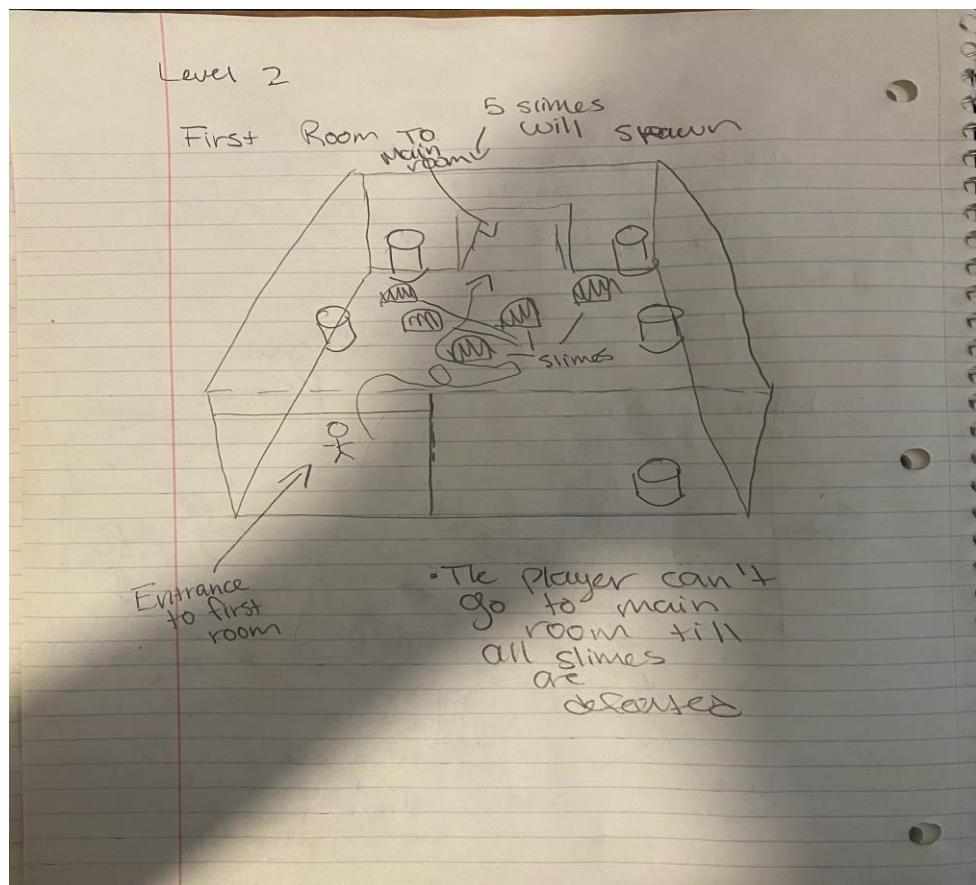
5.2 Level 2

This level will take place after the player explores the tutorial in the Overworld section of the game. The player will walk into a cave entrance in the overworld to enter this level. This level, as well as the other areas of the game will be in different scenes in Unity.



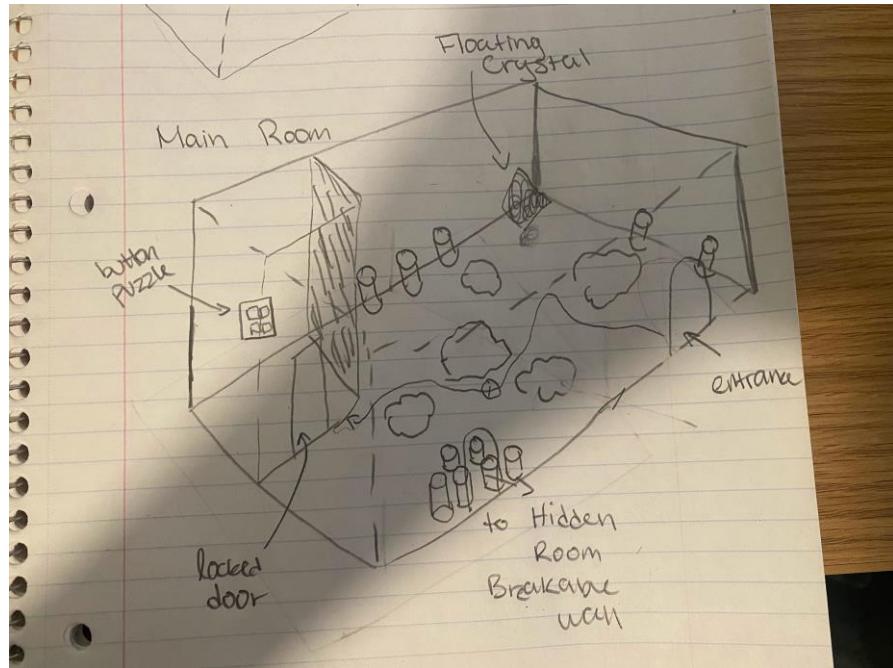
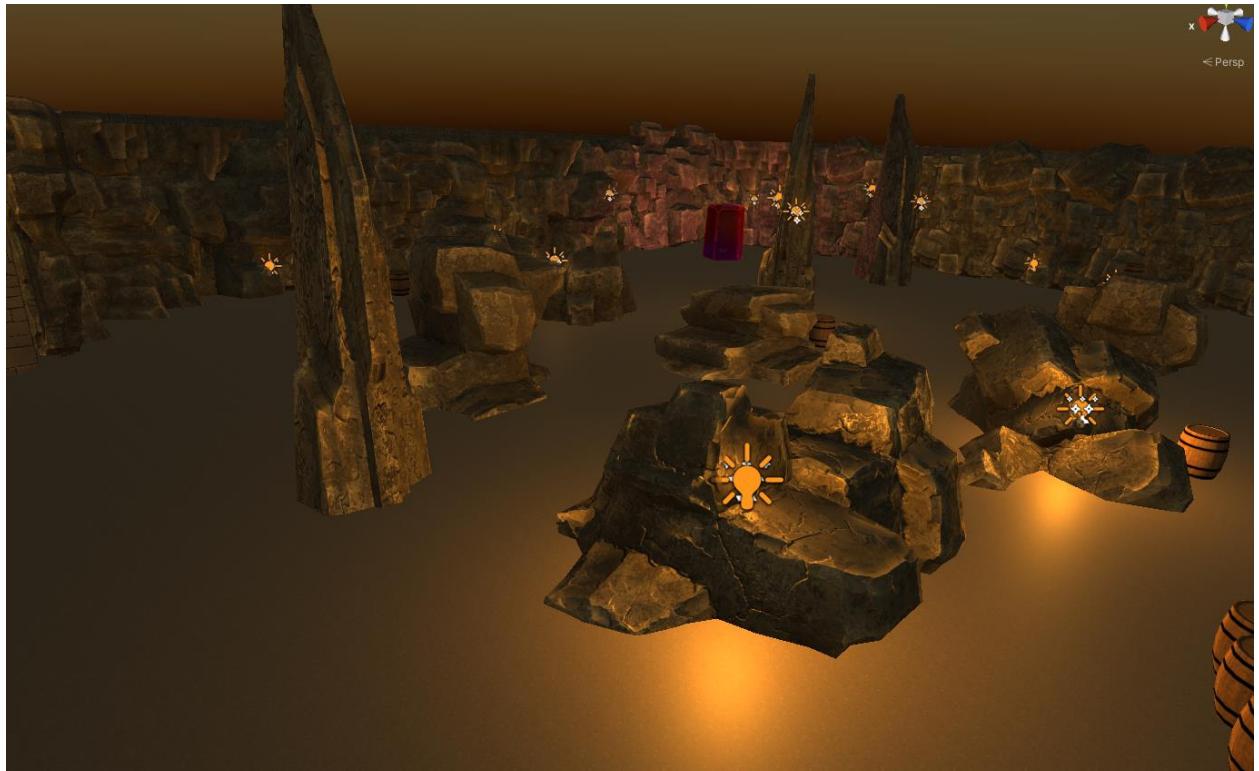
This level will consist of 3 major sections which will challenge the user. The first section of the level will consist of a small enemy wave before getting into the main room of the cave. This small enemy wave will spawn different colored slimes for the enemy to defeat. Depending on the color, the damage output and the health of the enemy will be different. When defeating this section of the level, the player will be able to move on to the main room of the level. Where the enemy wave spawns, there will be a few breakable barrels for the player to break for extra health if they need it.





The main room of the level will contain the next 2 sections of the level. This main room will have an obvious landmark which will look like a crystal. It will be iterated to the user that the crystal is important for progression. However, upon first accessing the room, the player won't be able to get close to the crystal since something is blocking it.

On the other side of the room, there will be another door which leads to an unknown area. The player will be tasked to open this door to see what's on the other side. Having the crystal area be locked behind a shield will make it obvious that this room needs to be opened.



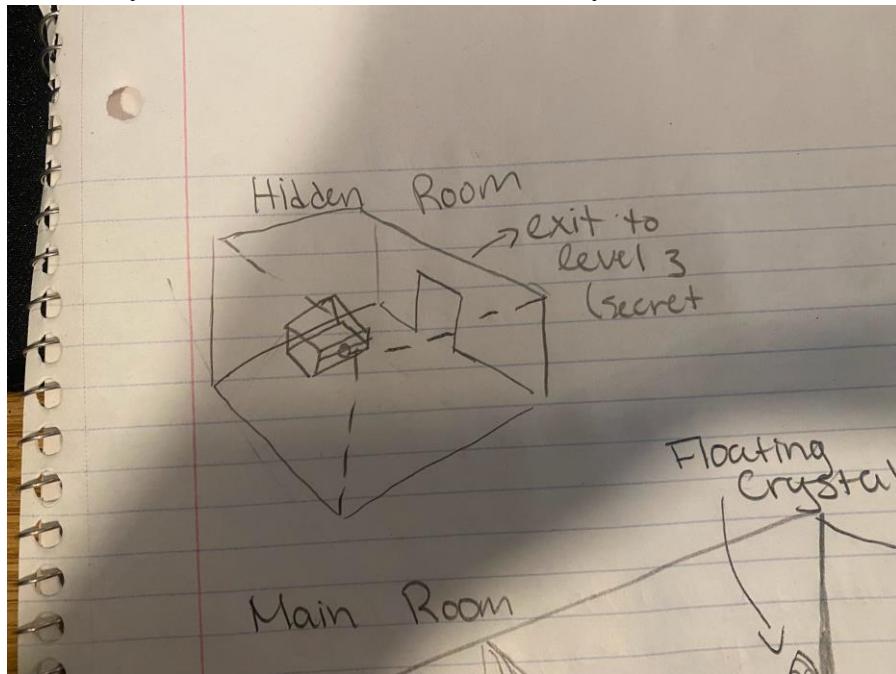
To get the door open, the player must find a key. The key can be found only in the cave area. Therefore, the key will not be able to be found in either the overworld, or level 2 sections. To find the key, the player will be able to break barrels in the cave. Through each playthrough, the barrel that has the key will change. This puts randomness to this specific part of the puzzle. On

a first average play through, this should take approximately 3 minutes. The 3 minutes will include walking around the room and exploring areas like the crystal area.

After opening up this door, the player will be greeted with a keypad where the player will have to enter a specific passcode. Entering and submitting the correct passcode will break the barrier around the crystal. There will be clues in the room with numbers “4” and “0” circled in the mess of the other numbers on the clue. Extra clues will involve the user discovering how many numbers are in the passcode. A clue will specifically say that there are 3 letters in the code. One final clue in the room will say ERROR in red letters, connecting the password to a 404 web error. The last described clue will pop up when the player has submitted the incorrect passcode 5 times.

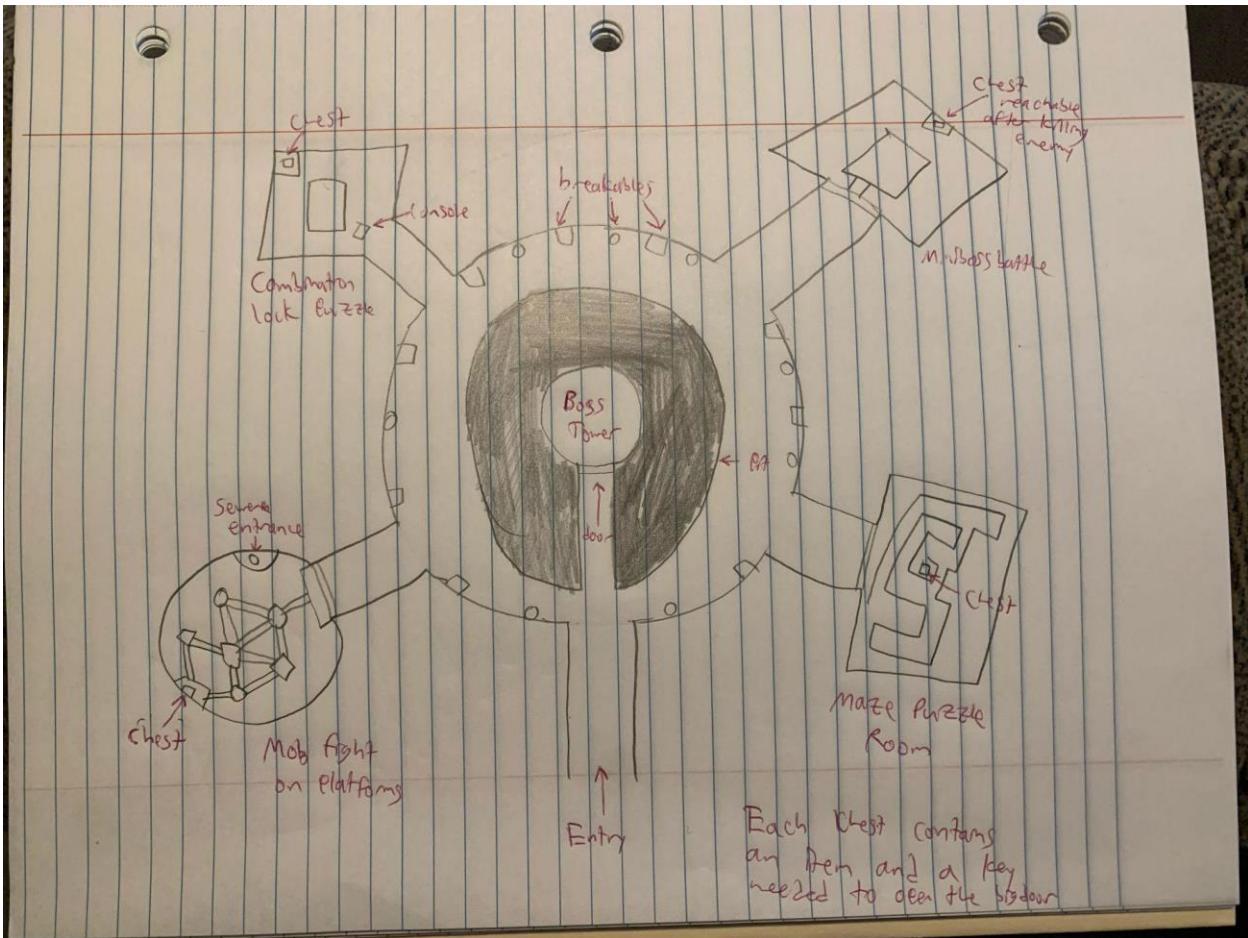
After the barrier is broken, all enemies will be despawned from the cave to prepare for the last enemy wave in the level. This enemy wave will end with a higher leveled skeleton before the user will be able to destroy the crystal.

There will also be a secret area where the user can break through to get to the next level without the need to break the crystal. This results in a lower security level in the next level.



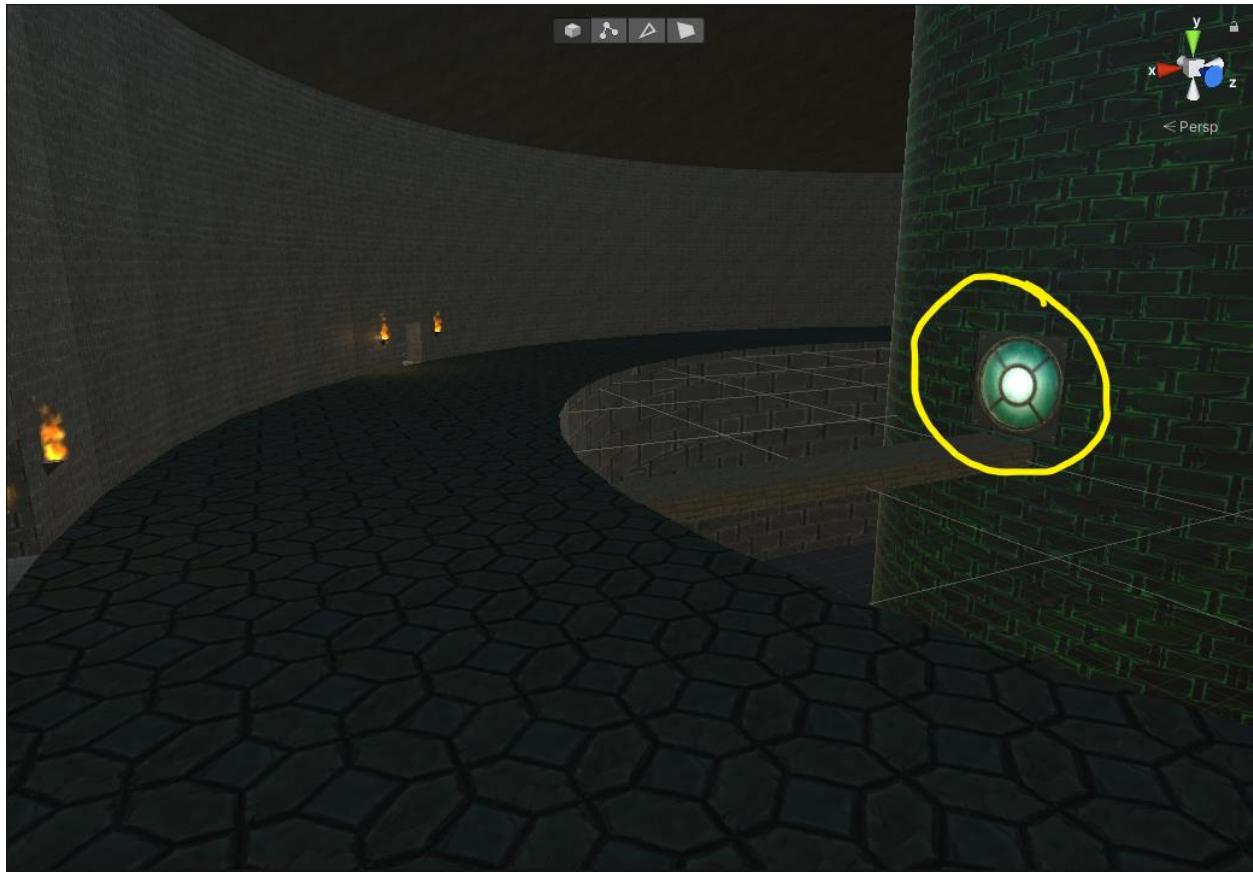
5.3 Level 3

Level 3 will be the last level that players will need to clear in order to beat the game. Like level 2, level 3 will be accessed from the castle entrance in the overworld, and be its own scene.



Level 3 is the penultimate challenge for the player. In a hub-and-spoke style, the player will need to clear all the rooms in order to advance to the final boss chamber.

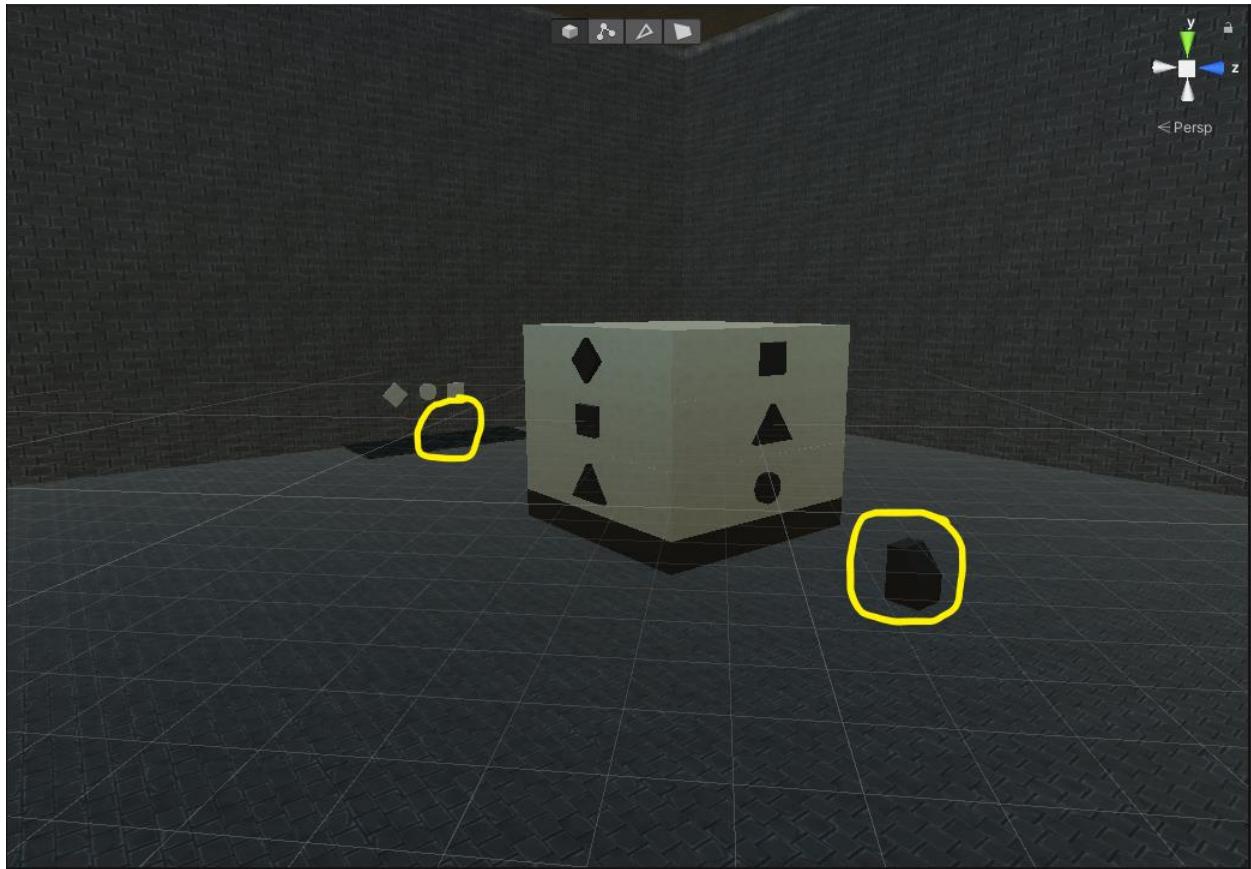
Players will enter through a simple hallway that will open up into a massive main area, with 4 rooms on the outer wall and a tower sitting in a large chasm in the center, with only a bridge connected to it. If the players run up to the door of the central tower, they will get a prompt saying that the door can only be opened with the 4 keys. They will need to get these keys from each of the 4 rooms, with each room being a test to measure the player's development to this point.



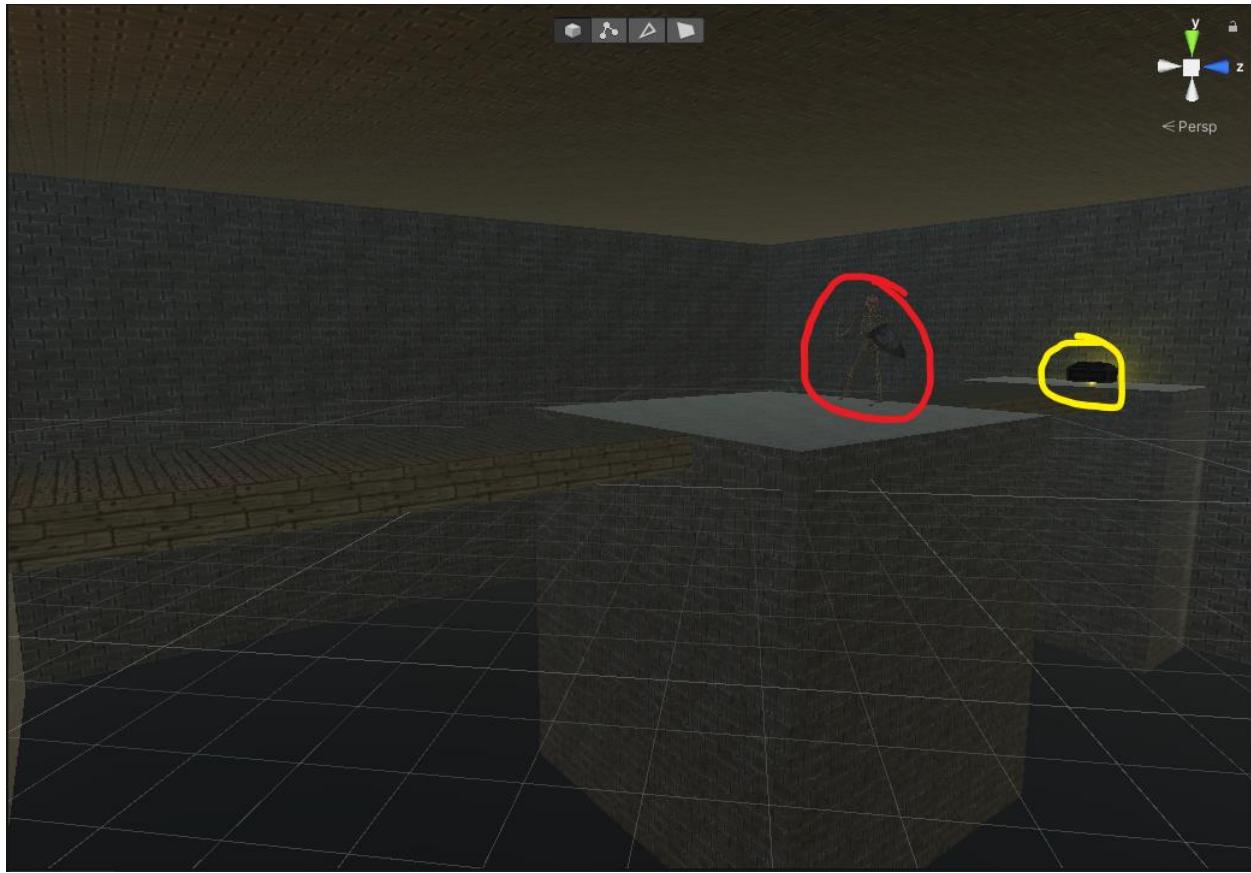
Room 1 tests the player's situational awareness. It is a room with multiple interconnected platforms over a gaping chasm. Enemies will be sitting on these platforms, and can knock the player off if they play too close to the edge. Once they reach the other side, they can open the chest containing the first key.



Room 2 tests the player's ability to problem solve by taking in their surroundings. In the center of the room is a 3-stacked cube with different symbols on each face, and a console that controls each part of the cube. Players need to get the correct combination in order to get the chest to spawn, and the combination is on the ceiling. As players haven't had to look up until this point, it might prove to be a bit of a challenge.



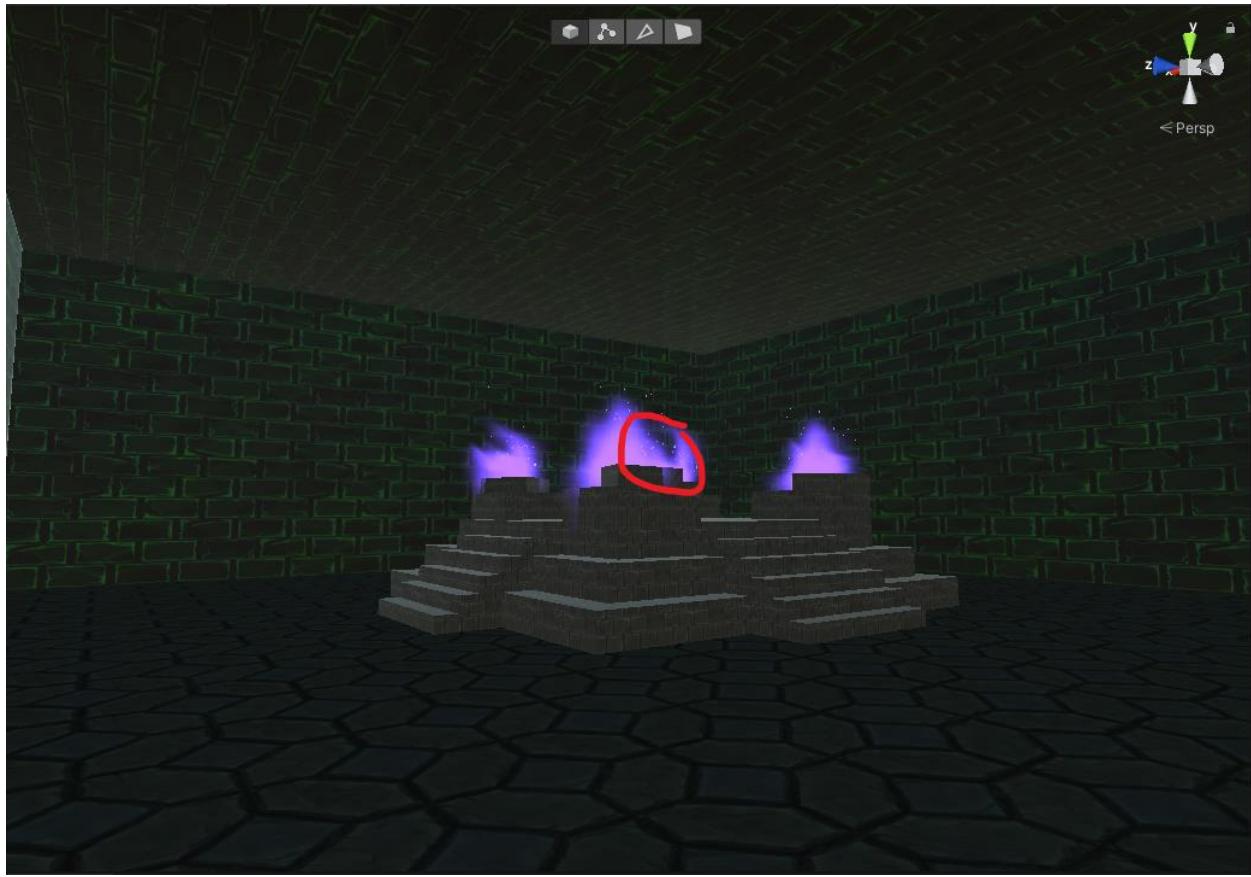
Room 3 tests the player's endurance. The room consists of 2 platforms: one that the chest rests on, and another with a miniboss on it. The players will need to fight the miniboss and kill him in order to get to the chest, and the bridges will collapse once they step on the main platform. The boss cannot be shoved off, and must be properly killed in order to pass. He will use a variety of attacks, some of which could potentially knock the player off the platform if they aren't careful.



Room 4 tests the player's perception. There is a floor of tiles that reach across to the other side where the chest is. Players must utilize the visual clues to find the safe path forward. If they step on the wrong tile, it will break and they will fall through. The tile breakage will be instantaneous in order to prevent the player from simply sprinting across the floor.



Once the player has all the keys, they can enter the lich's chamber, which will be the final boss. The lich will be in a room with an altar that he will stand on initially, but will teleport around as the player hits him. His first half will be more of a ranged style to keep the player moving, but will transition to melee once he reaches half health. Once the player kills him, they win the game.



6. Antagonistic Elements

6.1 Tiered Enemies

The most basic antagonistic element will be enemies that look and behave similarly but will have different abilities based on their tier/level. The most basic enemies being Tier 1 and the most complex being Tier 3.

6.1.1 Tier 1

Tier 1 Enemy:



Tier 1 enemies will have the most basic abilities. They will be capable of patrolling, following the player once it is detected, and attacking the player.

Walk:



Attack:



Take Damage:



Death:



6.1.2 Tier 2

Tier 2 Enemy:



Tier 2 enemies will have all the basic abilities inherent to Tier 1 Enemies and therefore inherit the animations for those abilities. In this Tier, enemies will gain the ability to block. They do so for a predetermined amount of time before attacking. Blocking and attacking is looped and doesn't change based on player interaction. They also can deal higher damage and have a higher health.

Blocking:



6.1.3 Tier 3

Tier 3 enemies will have all the basic abilities inherent to Tier 2 Enemies. Additionally, Tier 3 enemies will be capable of dodging by rolling and more complex blocking that's determined by probability based off of player actions. They deal the most damage and have the highest health. The biggest difference in the model is that Tier 3 enemies have eyes that glow red once they have spotted the player.

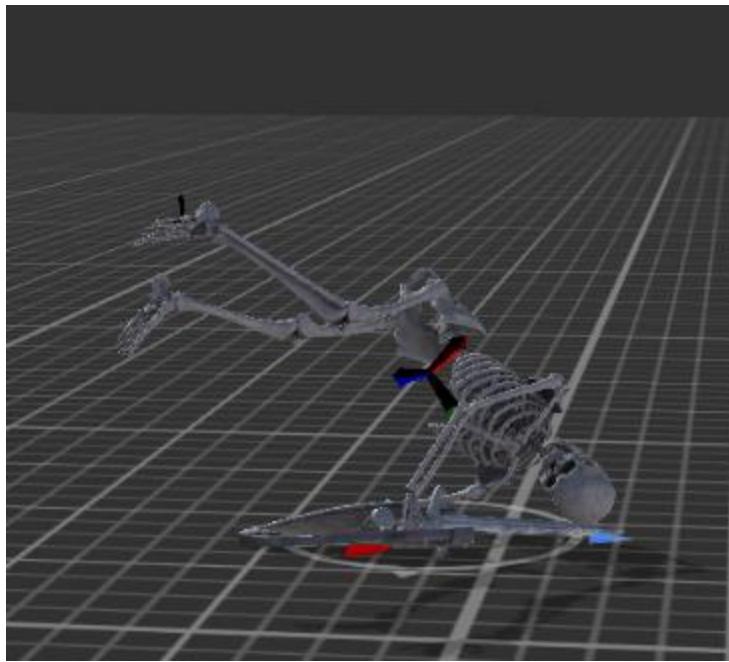
Tier 3 Enemy:



Tier 3 Enemy after spotting player:



Rolling:



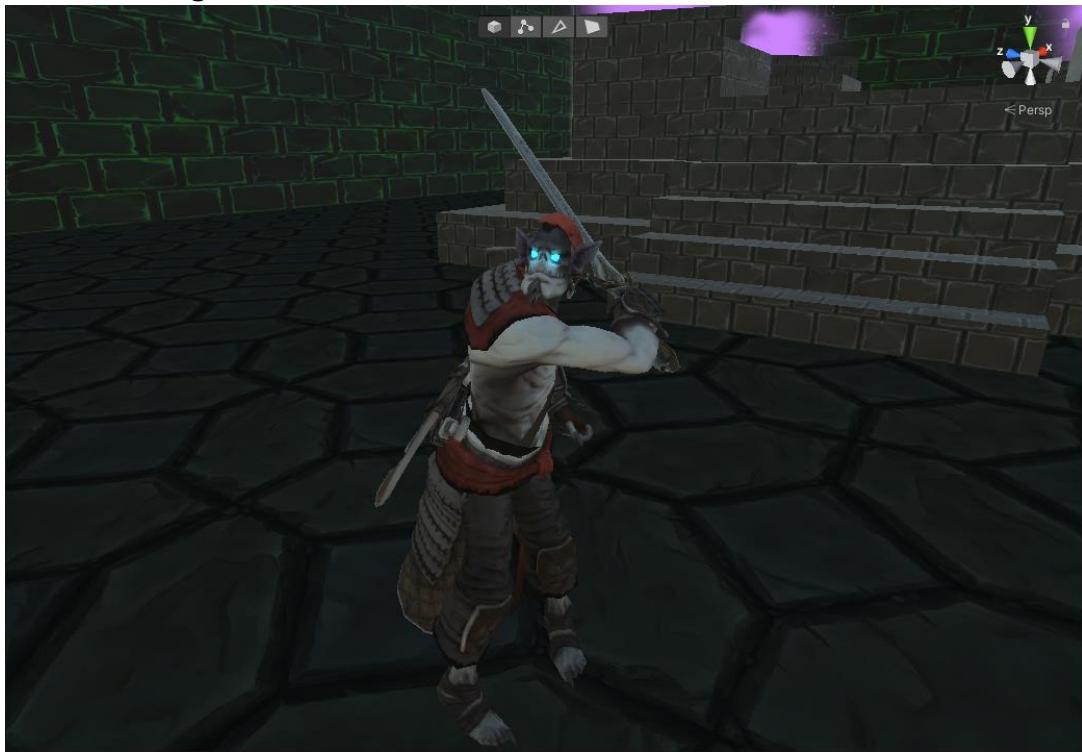
6.2 Final Boss

The final boss will behave just like a Tier 3 AI, albeit with the ability to hit harder, but he will also move much slower towards the player to give them some breathing room and recover. However, if the player gets too far away, he will teleport next to them (removed due to time constraints).

Walking



Lich Attacking



Lich Block



Lich Roll



Lich Death



6.3 Puzzles

6.3.1 Level 2 Puzzle

The level 2 puzzle consists of 2 parts. These parts are described in section 5.2 of the game design document in detail.

This puzzles first section will deal with finding a key in a barrel. Once the key is found by the player, the player will be able to open a room in the corner of the main room of level 2. Trying to open the door without the key will result in the game telling the player that the door is locked to indicate to the player that they have to find some sort of key or any other way of opening the door.

The second part of the puzzle involves typing in a code on a keypad. The room the player entered after opening the door from the first part of the puzzle will have some numbers on the wall. Correct numbers for the keypad will be indicated by abnormalities in the numbers like a circled number or colored numbers. This is important for the user to find the correct code. Other clues will come with the number of torches. These secondary clues are explained more in detail in section 5.2 of the game design document.

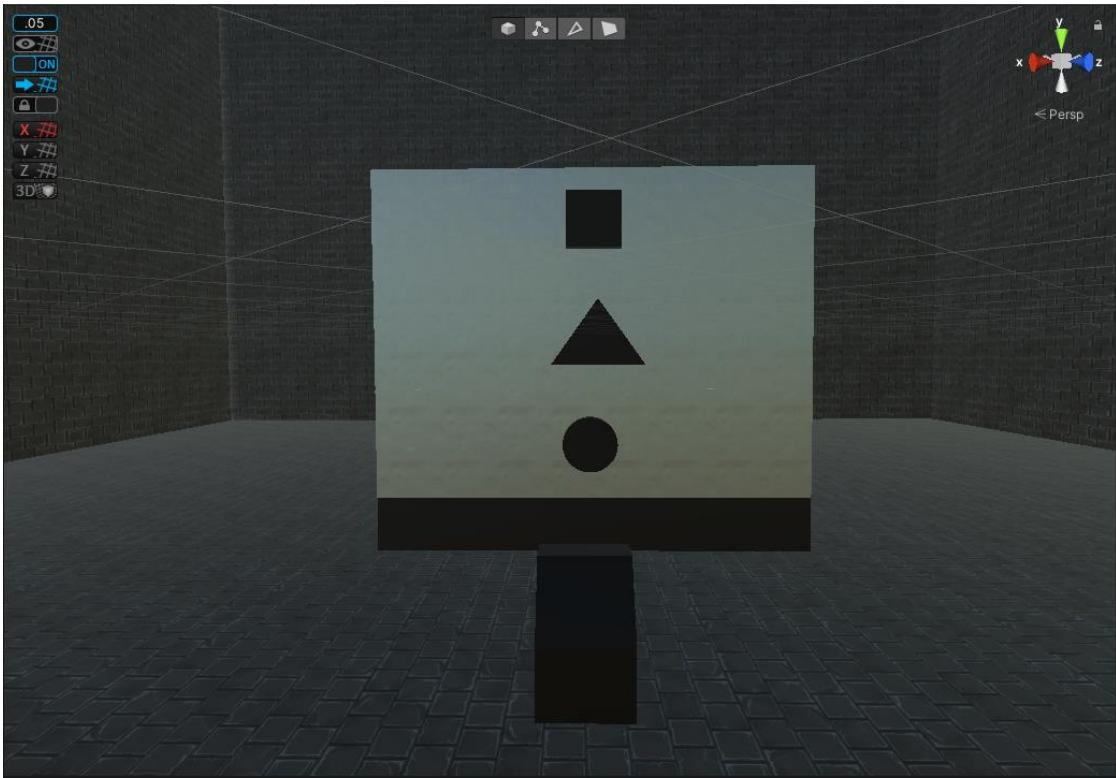




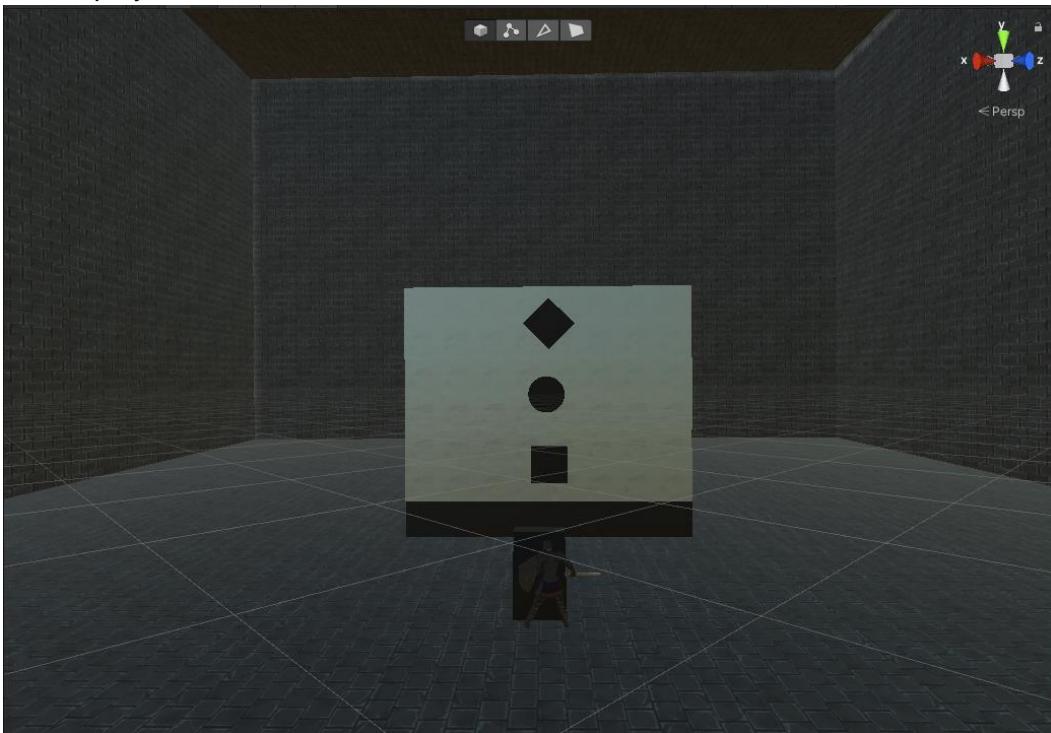
Pictured above is the UI for the keypad so that the user can input numbers. The user will have to remember what numbers they have clicked when typing in the code. If the player forgets what they typed, they can clear their entry by clicking the red button. Clicking the green button will allow the user to submit a code. Each button will make a button noise when clicked.

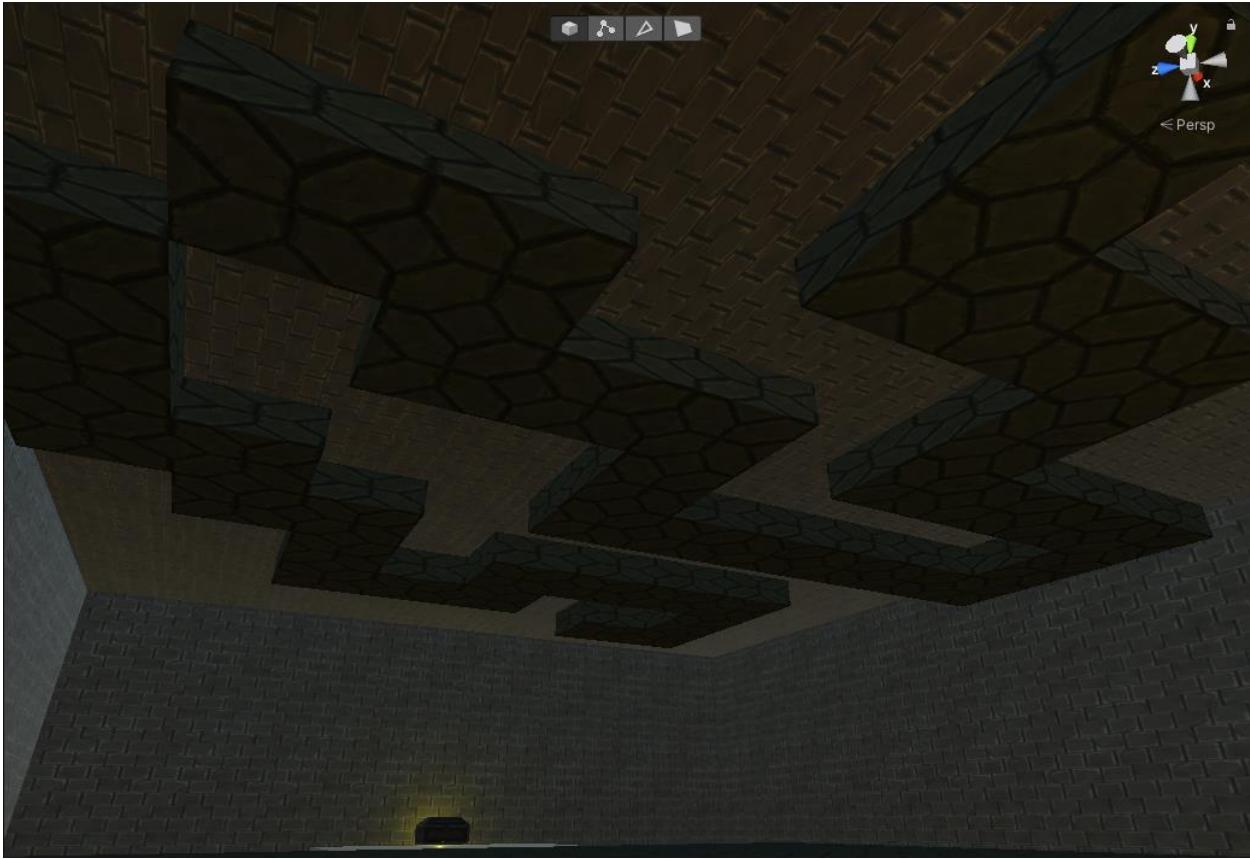
6.3.2 Level 3 Puzzle

While the door blocking the way to the boss room requires 4 keys to open, that is covered by gathering the keys in each of the 4 rooms. 2 of those rooms are puzzle based and need to be solved correctly to get their keys.



The cube puzzle has 3 layers on it, each with 4 faces on it. The player has to use the console to line up the correct faces with one another. The answer to the puzzle is on the ceiling, and will help the player quickly solve it if they look up. Once the puzzle is solved, the chest will spawn in for the player.





The 2nd puzzle room is a false floor puzzle, where there is only one safe path across the room. The tiles on the ground will all look the same, but similar to the cube puzzle, the solution is on the ceiling. If the player looks up, they'll see the path on the ceiling that they can use to help navigate the area. They will have to take that same path back in order to get back across, however.

7. Artificial Intelligence

7.1 Tiered Enemies

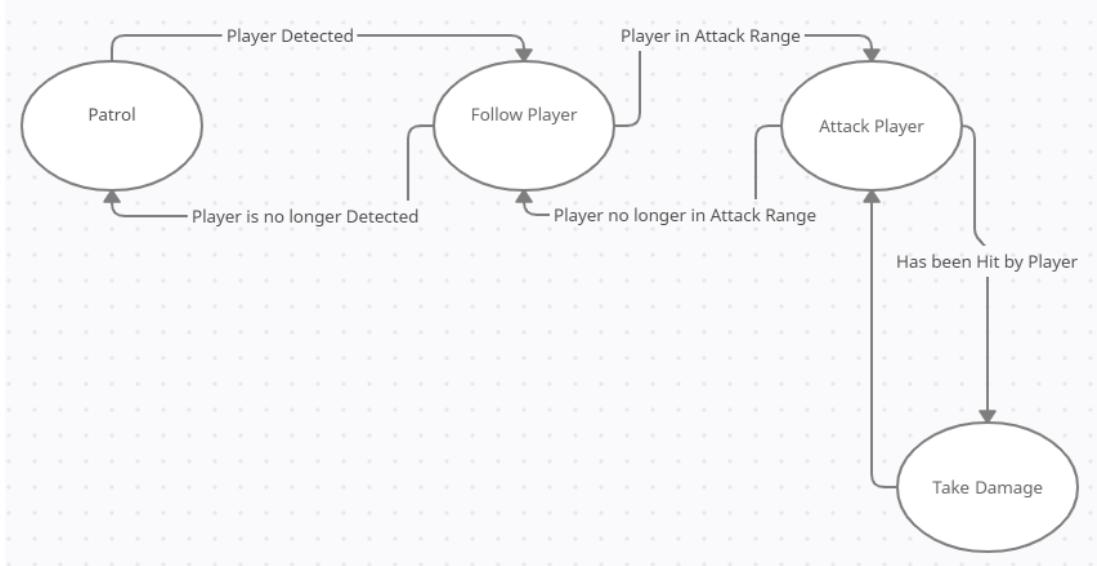
7.1.1 Tier 1

These enemies, as well as all higher tiers, will initially patrol between a set of 6 hand defined points, only deviating if the player is seen. There are two ways for the enemy to detect a player which are by sight and sound. For a player to be detected by sight they must be within the sight range and within the field of view for the enemy. For a player to be detected by sound, they will simply have to be within a predetermined “listening” distance from the enemy. If the player is detected the enemy will abandon their patrol and start to follow them until none of the

detection conditions are met. If none of the conditions are met then the enemy will return to its patrol.

If the enemy becomes close enough to the player that attacks will have an effect, the enemy will stop walking and begin to attack. During this combat, if the player strikes the enemy it will take damage or if the health drops to zero the enemy will die and despawn.

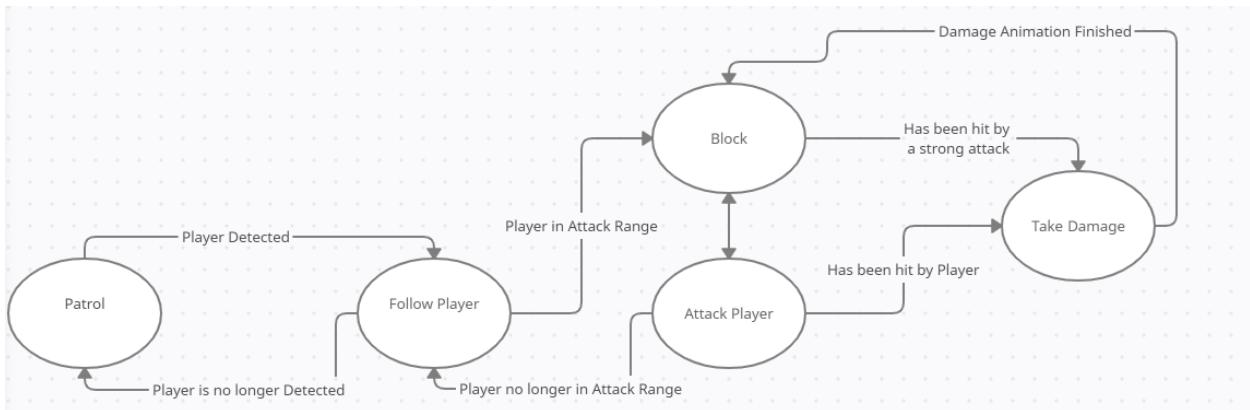
Tier 1 FSM:



7.1.2 Tier 2

Behavior of the Tier 2 enemies is almost identical to that of the Tier 1. The only difference is that when the player is within the attack range the enemy will block for a short time before beginning to attack. After attacking for a short time the enemy will begin blocking again in a preset loop.

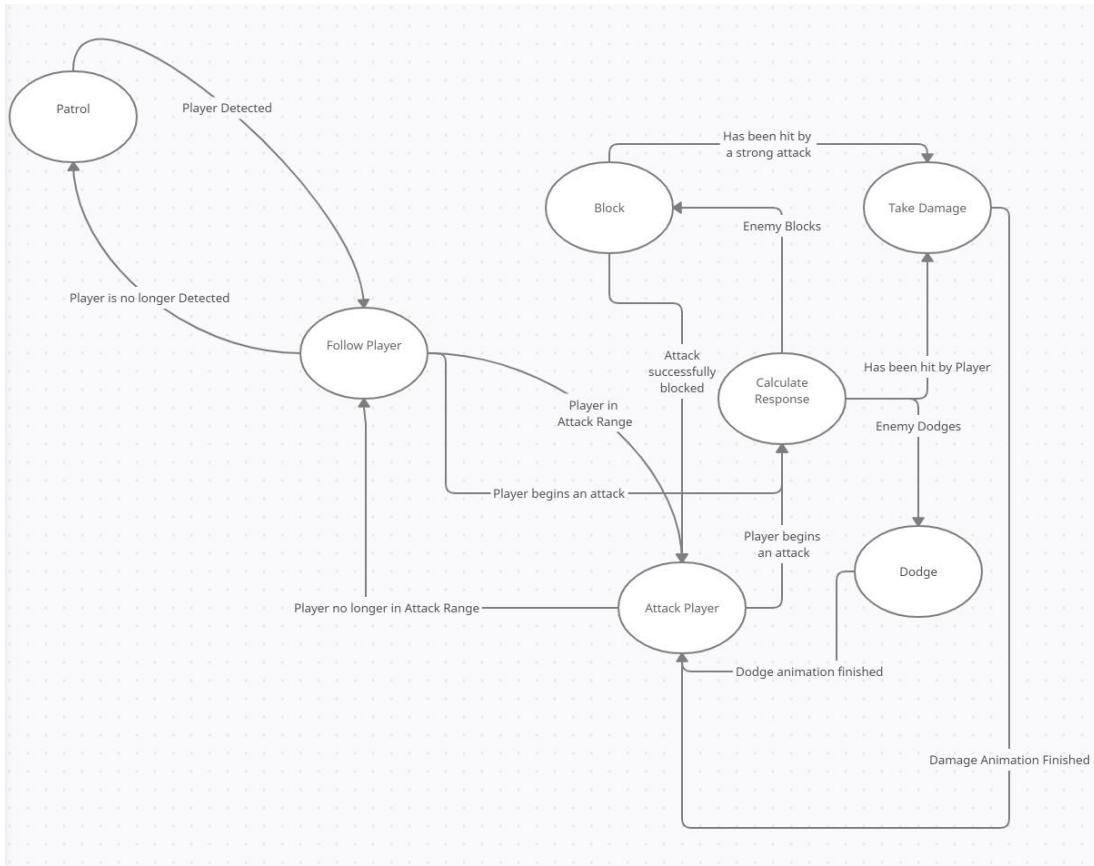
Tier 2 FSM:



7.1.3 Tier 3

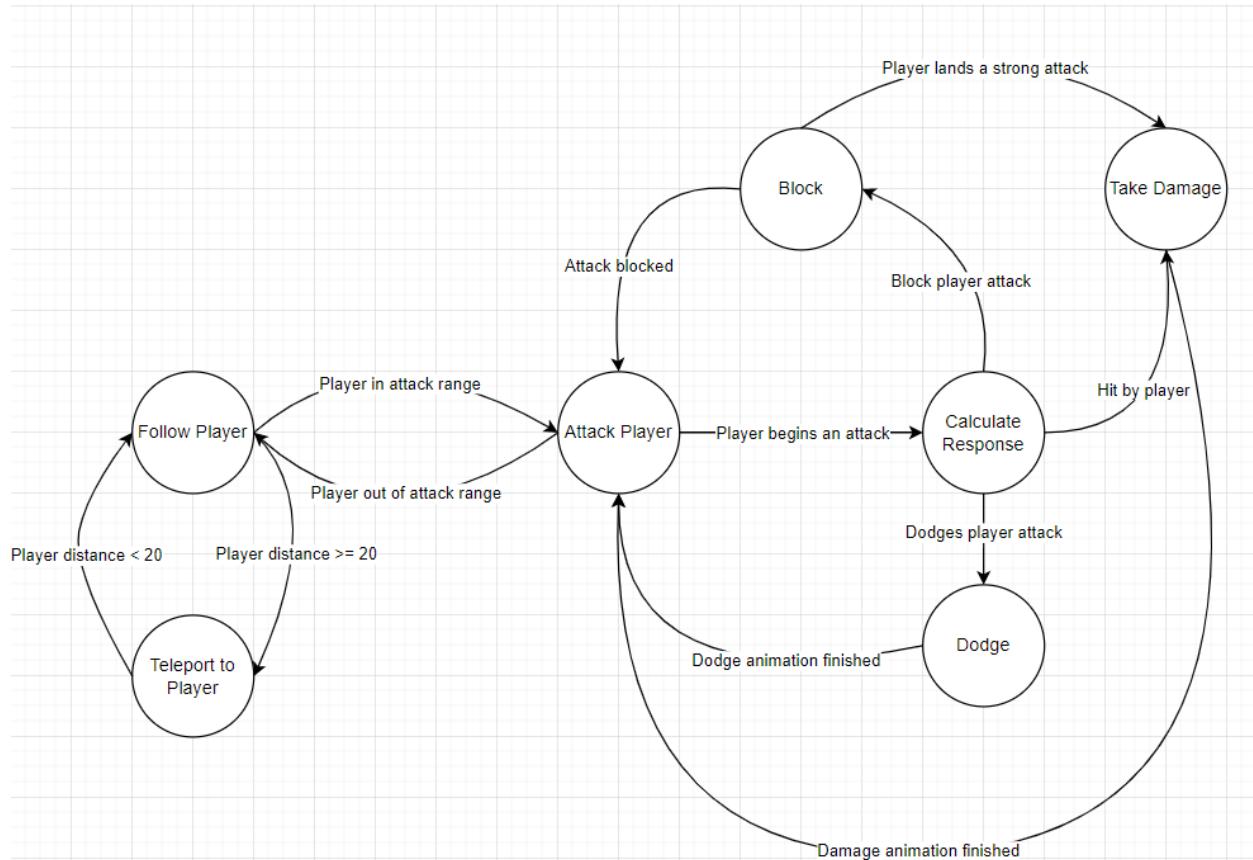
Behavior of the Tier 3 enemies is the same as that of the Tier 2 enemies with the only exceptions being the ability to dodge and that blocking is no longer on a timer but is instead a result of a probabilistic determination based on the player beginning to attack. When a player attacks the Tier 3, a probability will be calculated for whether it blocks, dodges by rolling, or is hit. Based on these probabilities, the appropriate animation will be played and if the enemy was hit, its health will reflect that.

Tier 3 FSM:



7.2 Final Boss

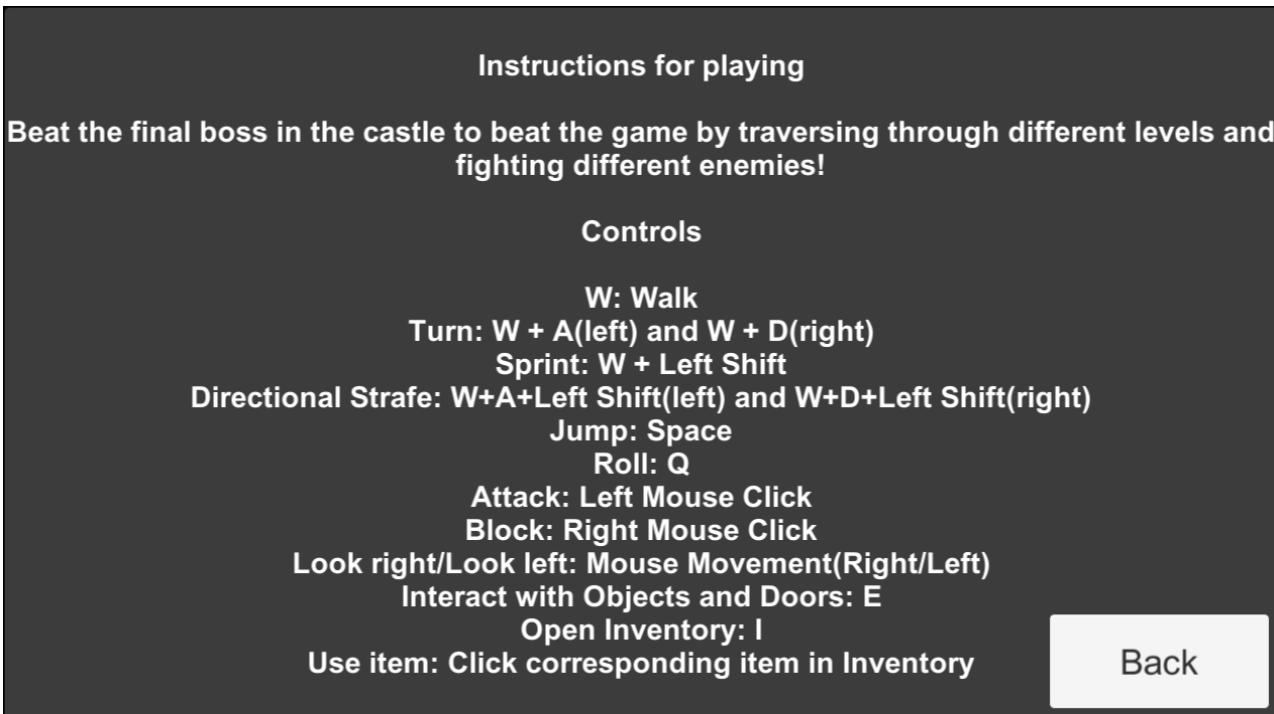
The boss behaves in the same way that the tier 3 enemies do, although he will teleport to the player if they are greater than or equal to 20 m away from the boss. His attacks are also harder hitting, and will move slower to compensate slightly for this. Since this is a boss fight, there is no way for the player to escape unless they kill him or die, so the boss will always know where the player is.



8. UI

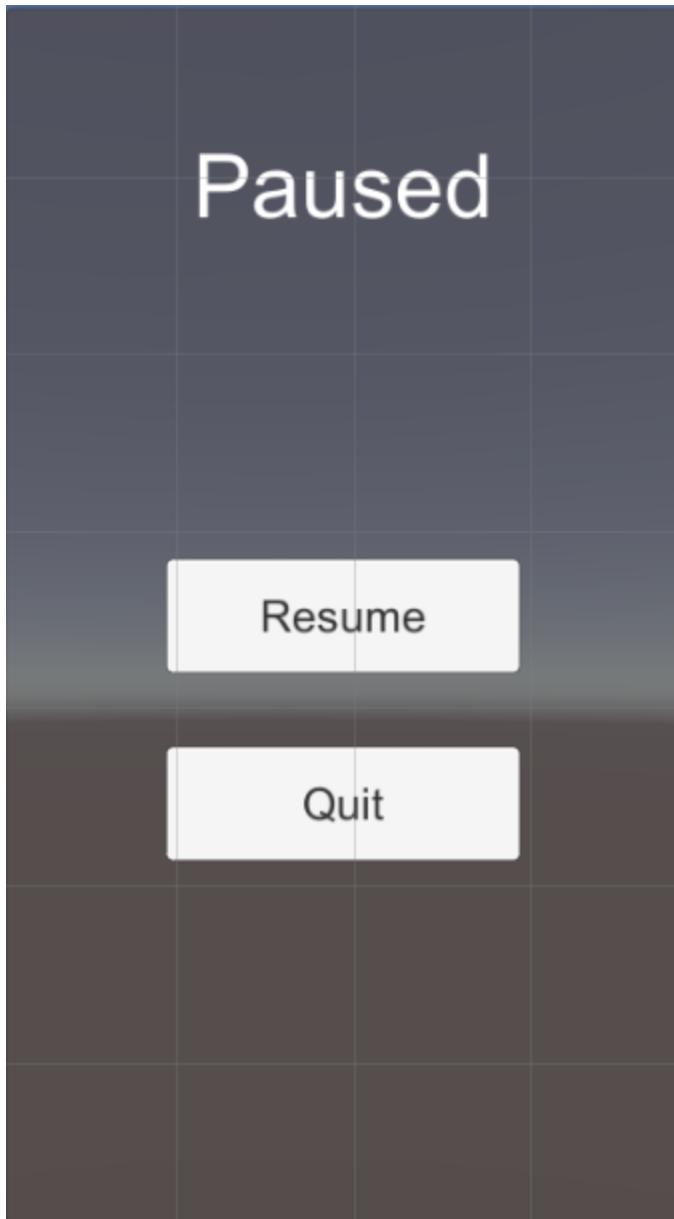
8.1 Main Menu

Self explanatory, the main menu has the buttons to start the game and quit out of it. The main menu will also have a button called “Information” which when clicked on, presents the user with an information page defining the controls of the game. Below are pictures of our main menu screen and our information screen.



8.2 Pause Screen

When the player presses the escape key, the pause menu will pop up, and the game world will freeze. The players can press the resume button or the escape button to keep playing, or the quit button to exit.



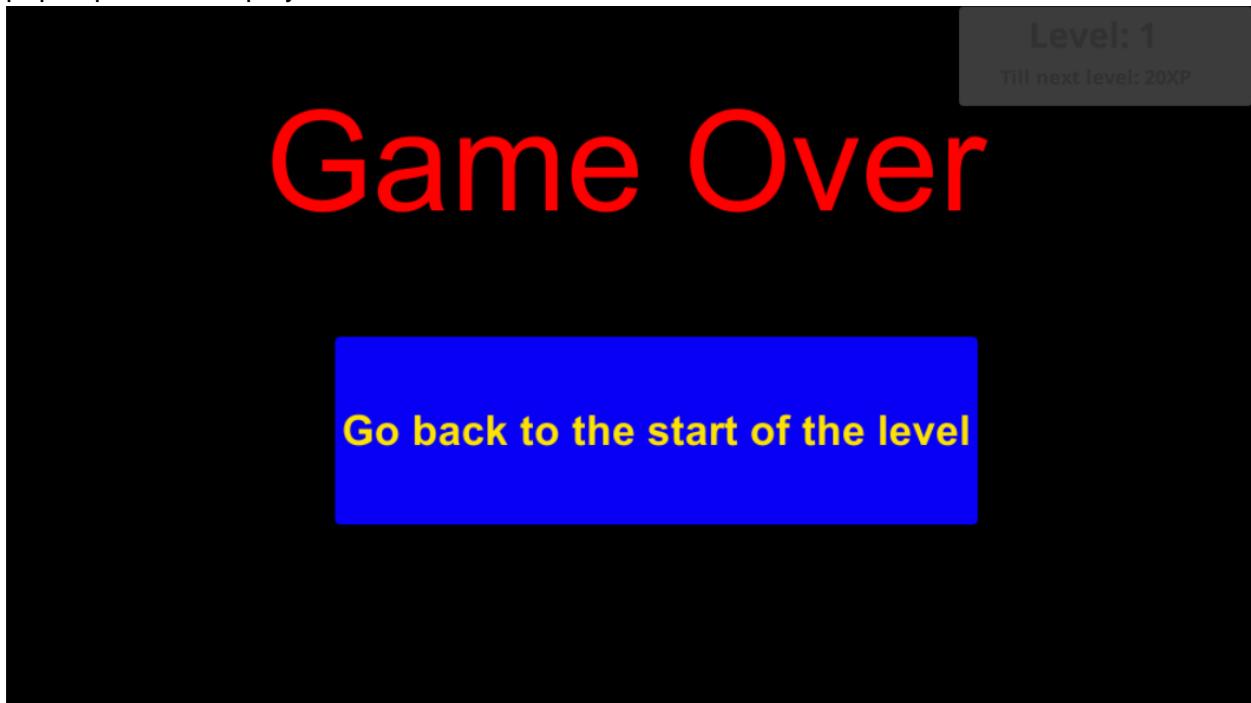
8.3 Victory Screen

When the player beats the lich, this is when the screen pops up. The players can then quit the game from here.



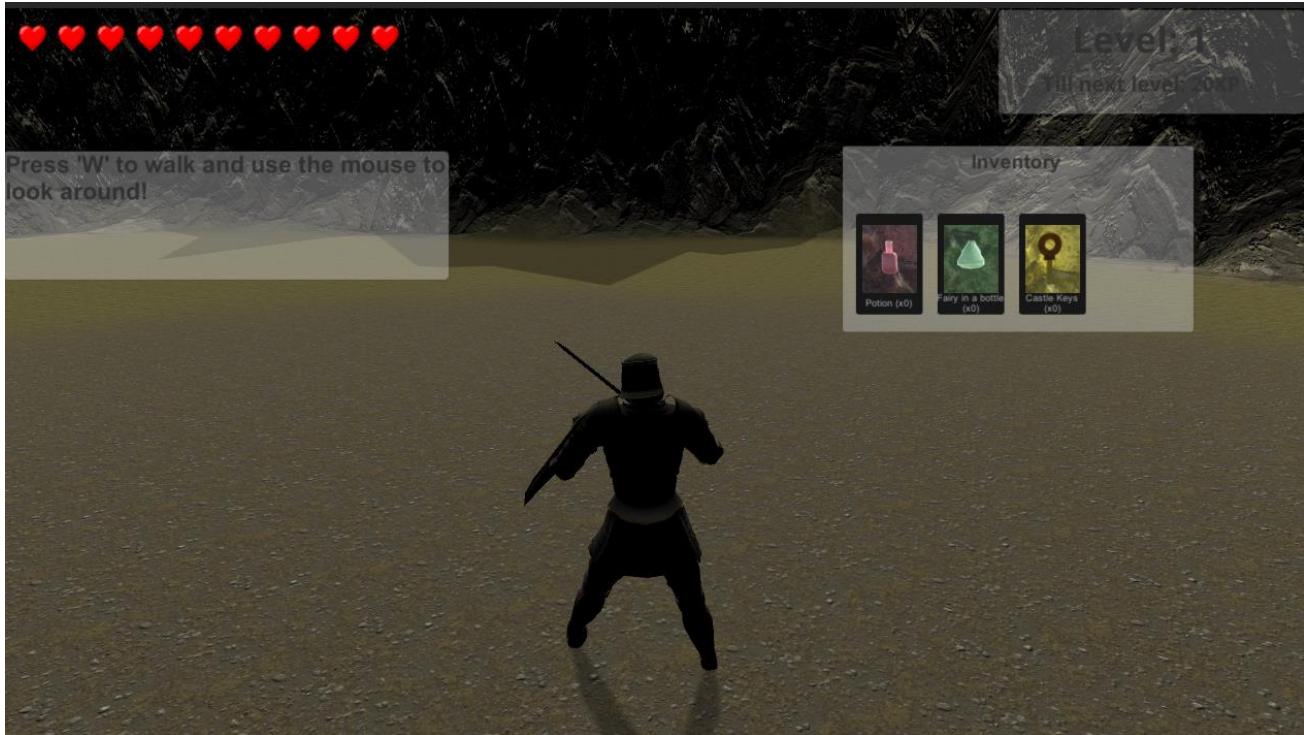
8.4 Game Over Screen

Whenever the player loses, they can restart the game by clicking on the button. This screen only pops up when the player is defeated.



8.5 Player UI

The player HUD will have 4 different sections on it. On the top left, the player will find a health section with hearts which will visualize how much health the player has. Underneath the health panel is a textbox which a player can read when a prompt comes up. This is where all of our prompts of the game will be when necessary, telling the player to do something. On the top right, the player can find their level and more information about experience points. This is to keep track of their player progression through levels. Underneath that level panel is the inventory panel consisting of Potions, Fairies, and Keys, the different items that the player can have and/or use in the game.



8.6 Keypad

The keypad will be used in the level 2 puzzle, described in section 6.3.1 in this design document.

9. Audio

9.1 Music

Main Menu music - plays when the player starts up the game

Overworld music - plays while the player is in the overworld and not in combat

Cave music - ambient music that plays while the player is not in combat

Lich's Castle music - ambient music that plays in the castle even when the player is in combat

Miniboss music - music that plays when the player fights the miniboss in the castle's third room

Boss music - music that plays at the final level when the player fights the boss

Victory music - music that plays if the player wins the game

9.2 SFX (Combat)

Sword hit - a metallic sound that plays when the player or an enemy hits an enemy (or player)

Skeleton hit - plays when a skeleton is hit by a player attack

Skeleton death - plays when a skeleton reaches 0 health

10. Player Progression

A player can gain experience by killing the enemies that are in our world. Depending on the enemy, a player will earn more experience. The player will work up to the max level of 7 in our game. Each level will become harder and harder to level up to. The experience points needed will exponentially grow since the higher tier enemies will give more experience than the lower tier enemies.

When a player levels up, the player will gain more hearts and become stronger as they progress through the different player levels. Since the enemies will become more powerful as they progress, player progression is essential to this game.

Milestone 1 Progress

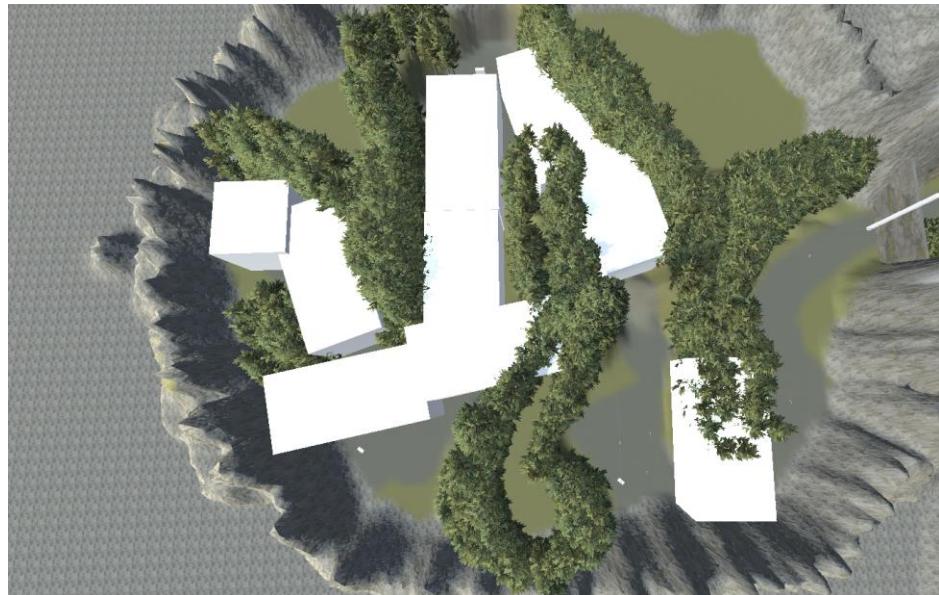
We have finished the whiteboxing for each of the three levels as described above in addition to creating a thorough animation controller for the player character.

- **OverWorld:**

Terrain design has been mostly finalized with forests being defined as well. Although this milestone was meant to be mostly whiteboxing I felt that it was important to include the forests in as close to a finished form as possible as they're possibly the most vital components of Areas 2 and 3. These forests don't have enemy placeholders as their spawning will be scripted and as random as possible.

- **Tutorial:** Triggers have been placed throughout the tutorial path as well as place holders for breakable objects, chests, and enemies.

Tutorial with Triggers shown:



Tree line has been added as it is what will be keeping the player restricted to the tutorial path. The wall at the end of the tutorial has a completed dropping animation defined and a trigger to cause the animation has been placed.

Wall Fall animation start:



Wall Fall animation end:



- **Area 2:** Traversable forests have been added in addition to the main path and central area. The cave entrance to Level 2 is white boxed as well as the path to it being defined.

Cave Entrance with Enemy guard spawns:



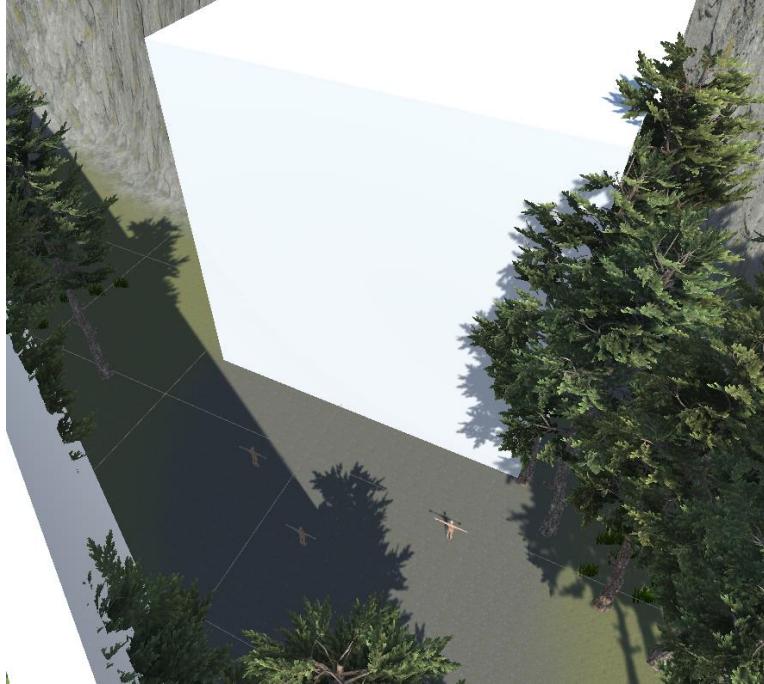
Enemy placeholders exist along the path and any other portion where there is guaranteed enemy spawns. The triggers on the edges of the forest to spawn enemies within that forest have also been defined. The optional path has enemies placed along it where guaranteed spawns will exist.

Optional Path w/ enemy spawns highlighted:



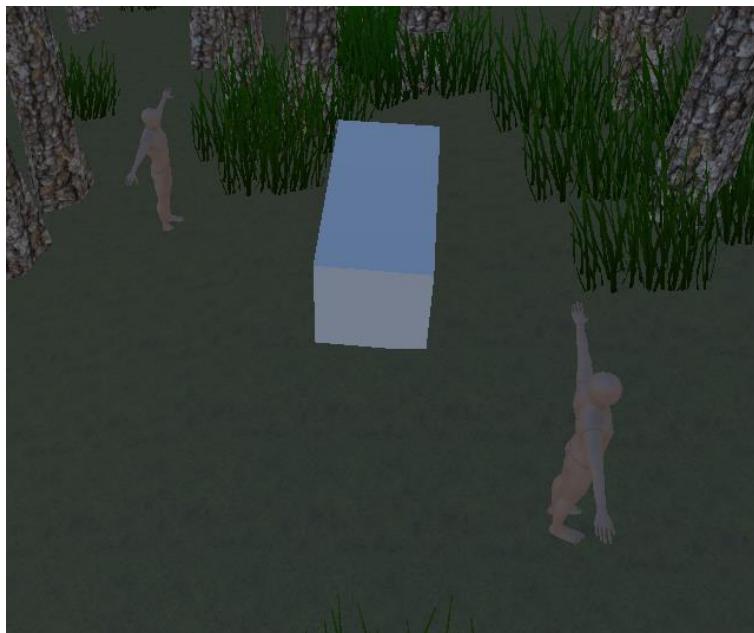
This optional path exists as a template as more paths will be added if time allows.

- **Area 3:** The forest and path has been defined in this area. The path leads to a Castle placeholder that's surrounded by a dome with its mesh removed. In later versions a texture will be applied to this dome to make it look like a force field.
Castle Placeholder w/ guards:



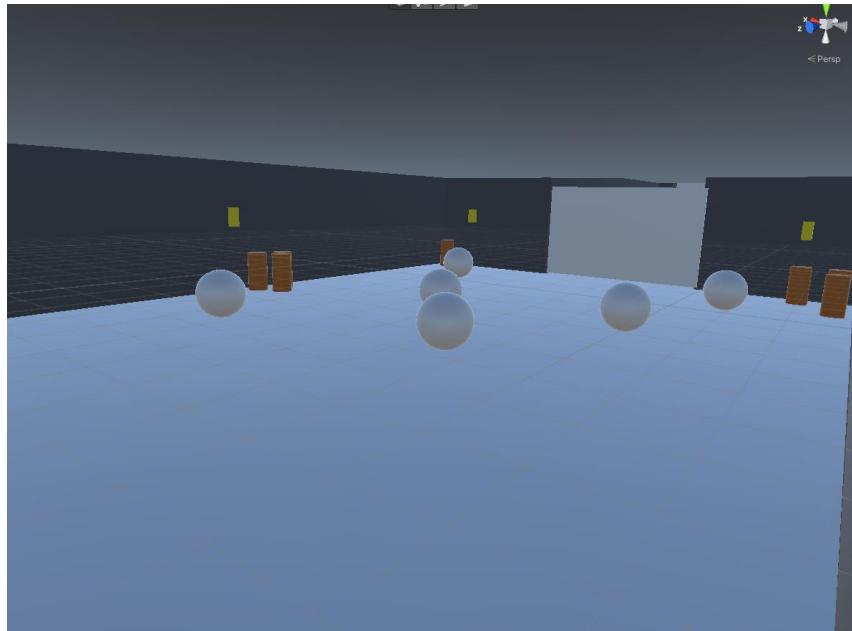
There is also a hidden chest placed in the forest with spawns for guaranteed guards.

Hidden Chest with Guards:



- **Level 2:**
 - **First Room:**

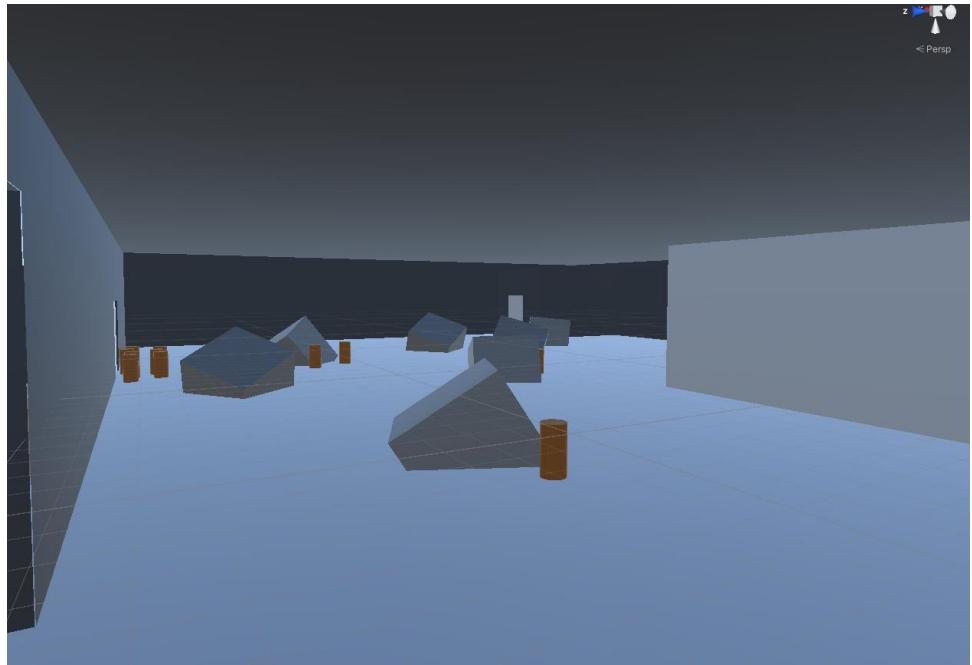
- The first room has placeholders for barrels, torches, and enemies as well as a barrier for when the player reaches this area for the first time. They can be seen in this screenshot below. The barrier will be a barrier that a player won't be able to walk through until finishing that first enemy wave in the first room.



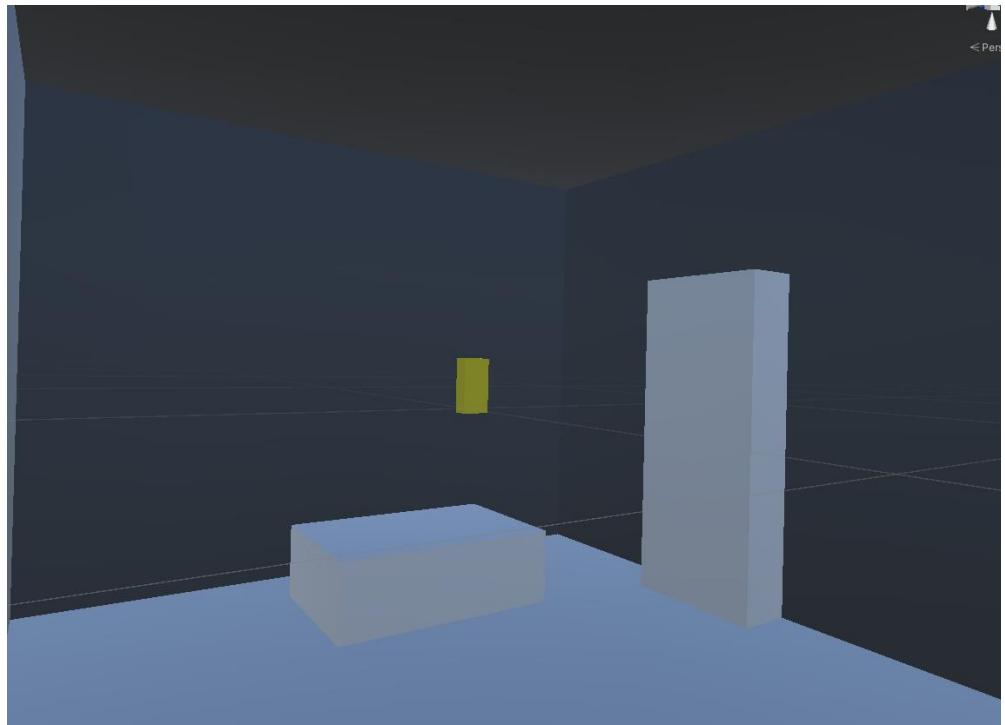
- **Main Room:**

- The main room has all of the major rooms and sections added to it. The crystal area is blocked off by barriers during the whiteboxing phase. These barriers will be invisible blockers for the player and will make sure the player can't access that area until they're done with the puzzle. The puzzle room has been added with a placeholder for the puzzle that the player will have to go through. The last room in this area that has been whiteboxed for this milestone is the hidden room, which contains a primitive for a chest that will be added onto in the next milestone, as well as a placeholder secret entrance to level 3.
- There are rocks added to the rooms as well to give it a little more life and the level will be cleaned up once more textures are added for the walls and

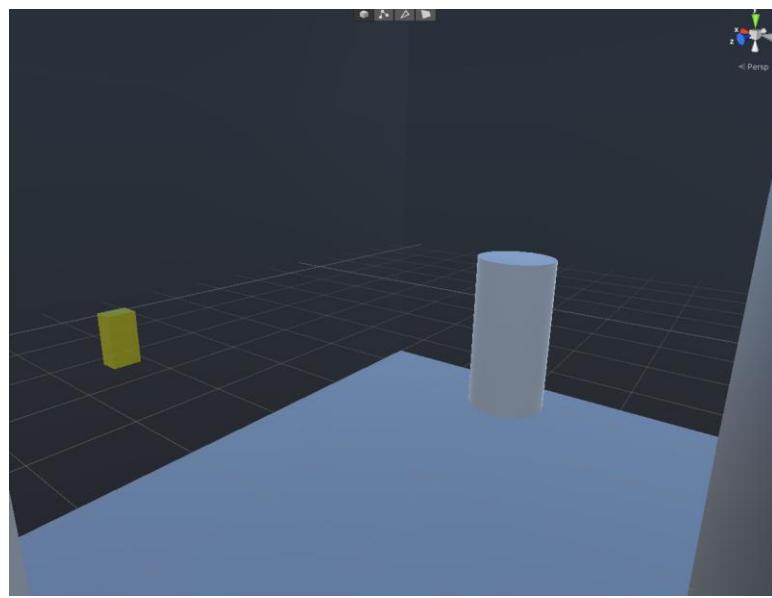
torches.



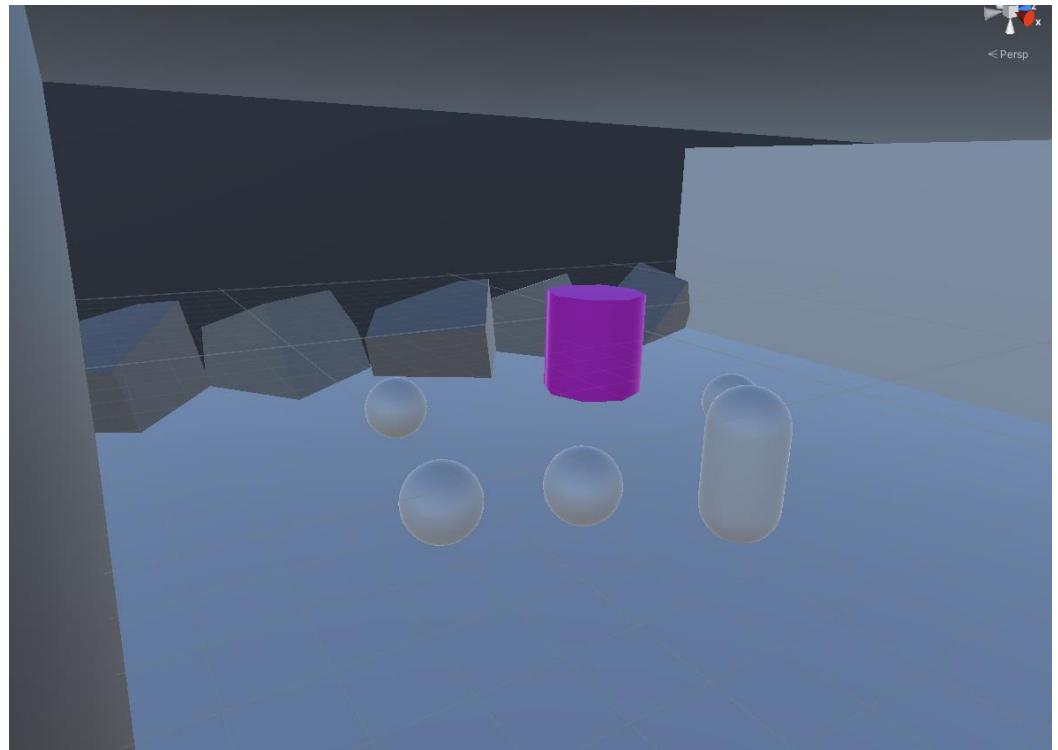
■ **Hidden Room in the Main Room**



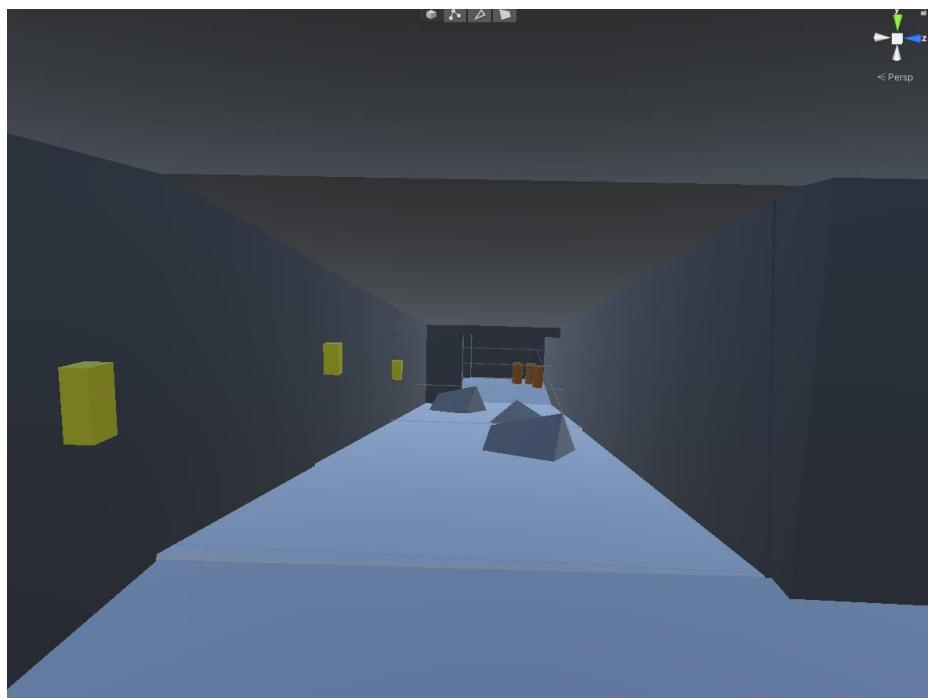
■ **Puzzle Room in the Main Room**



■ **Crystal Section with Barrier Placeholder**



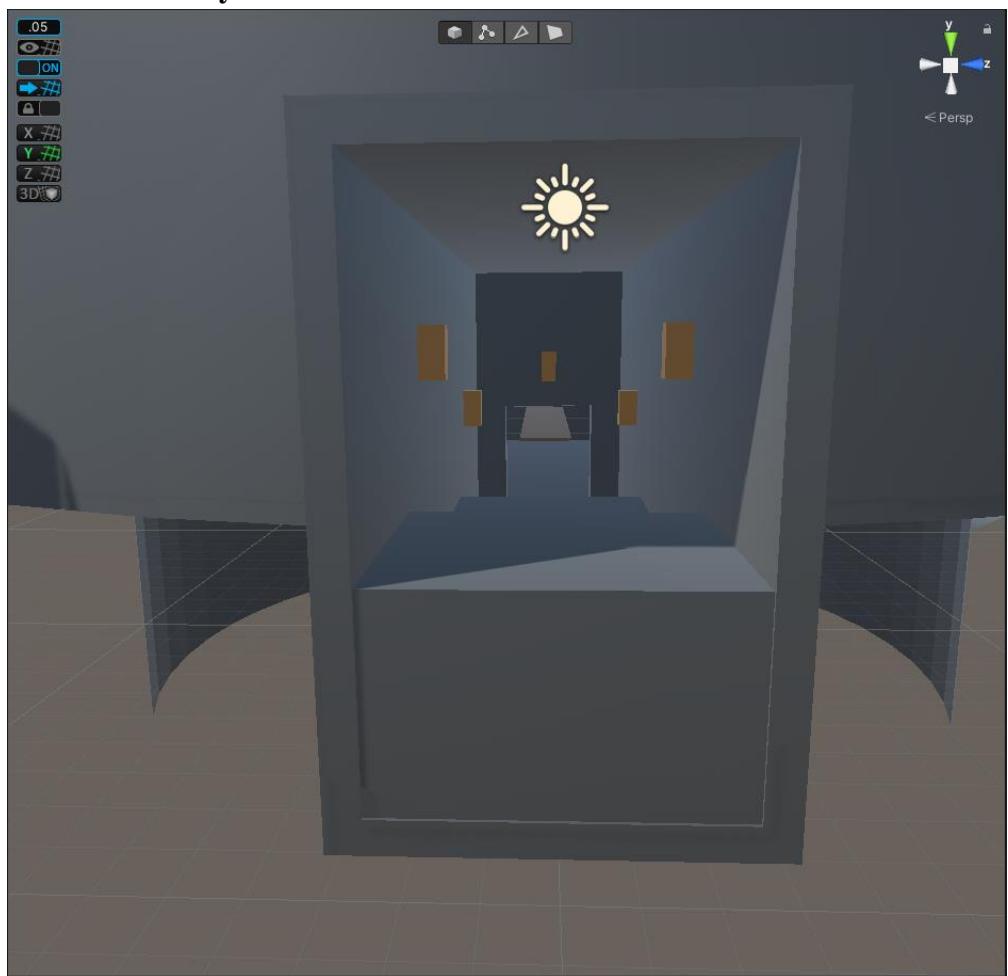
■ **Entrance to Level 2 room**



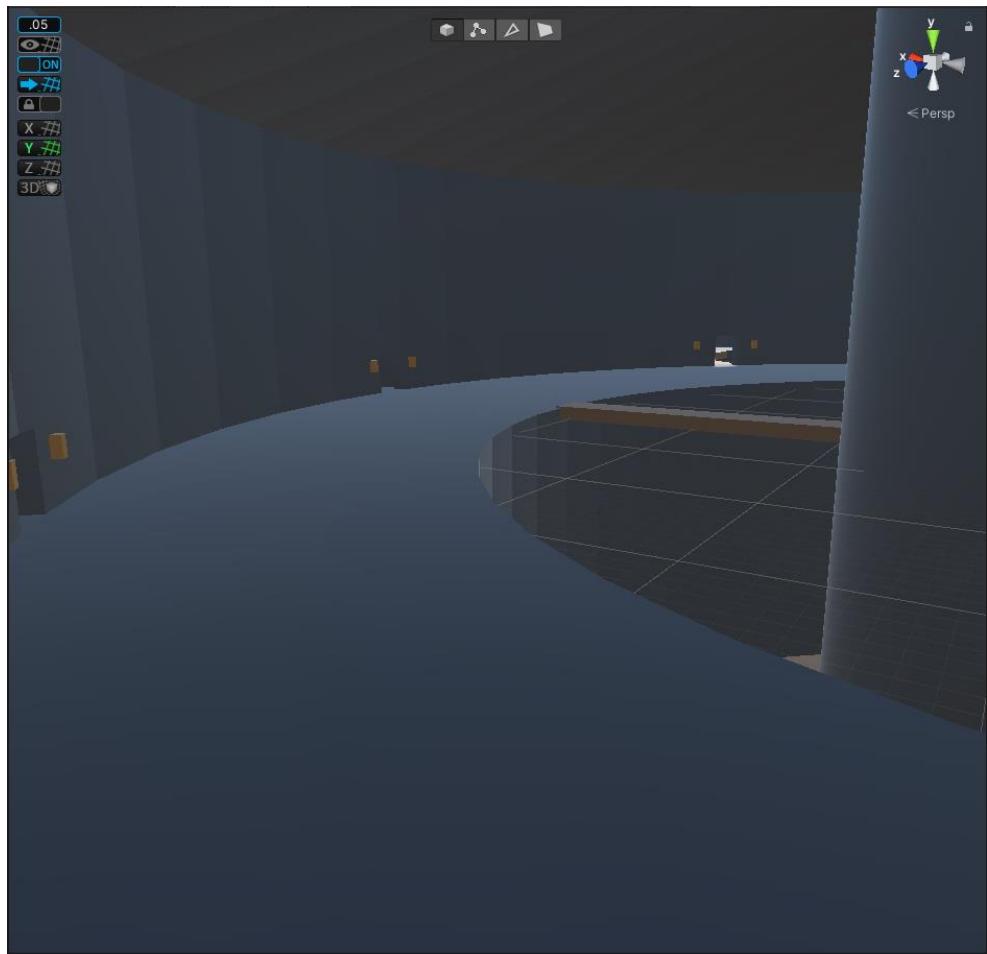
● **Level 3:**

- Note: across all the levels, I am holding off on adding things like torches in some areas until I get a better idea of how to balance a darker lighting with enough visibility so that the player can see. Enemy spawns are also not in place yet as balancing needs to be determined once movement controls are finalized.
- **Main hall and Tower**
 - I created the main hall and tower where the player enters the castle. There are some placeholder torches currently, and I will be adding more into the main room to give it a less empty feeling, but I'm still trying to decide what exactly will go into it. For now, the lich's boss tower is there, and I made the doors to all the side rooms in the level. The lich's tower will have a door that can only be interacted with if the player has all 4 keys in their inventory, and will bar passage if the condition isn't met.

■ Main Hall Entry



■ **View of the Main Castle Tower (inside)**

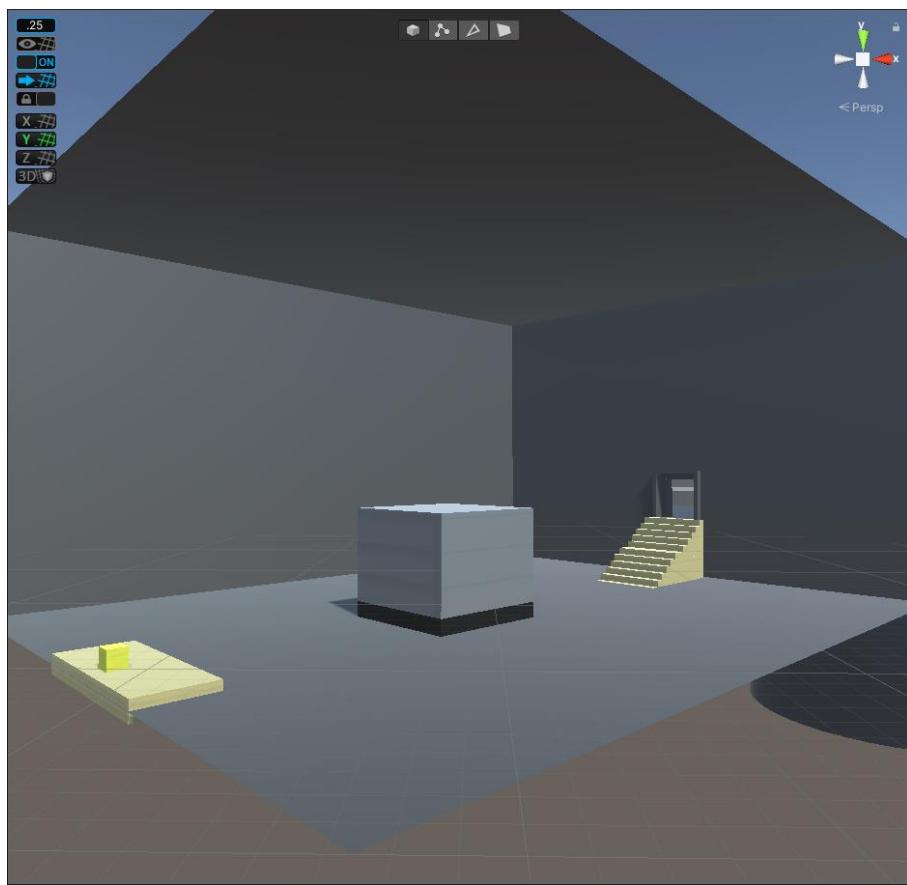


○ **Room 1: Mob Fight on Platforms**

- I created the platforms and bridges that the player will need to navigate across in order to reach the key on the opposite side. For the secret passage, the endpoint will be in this room. I have a placeholder for the key chest in the room, and will add breakables on that platform as well.

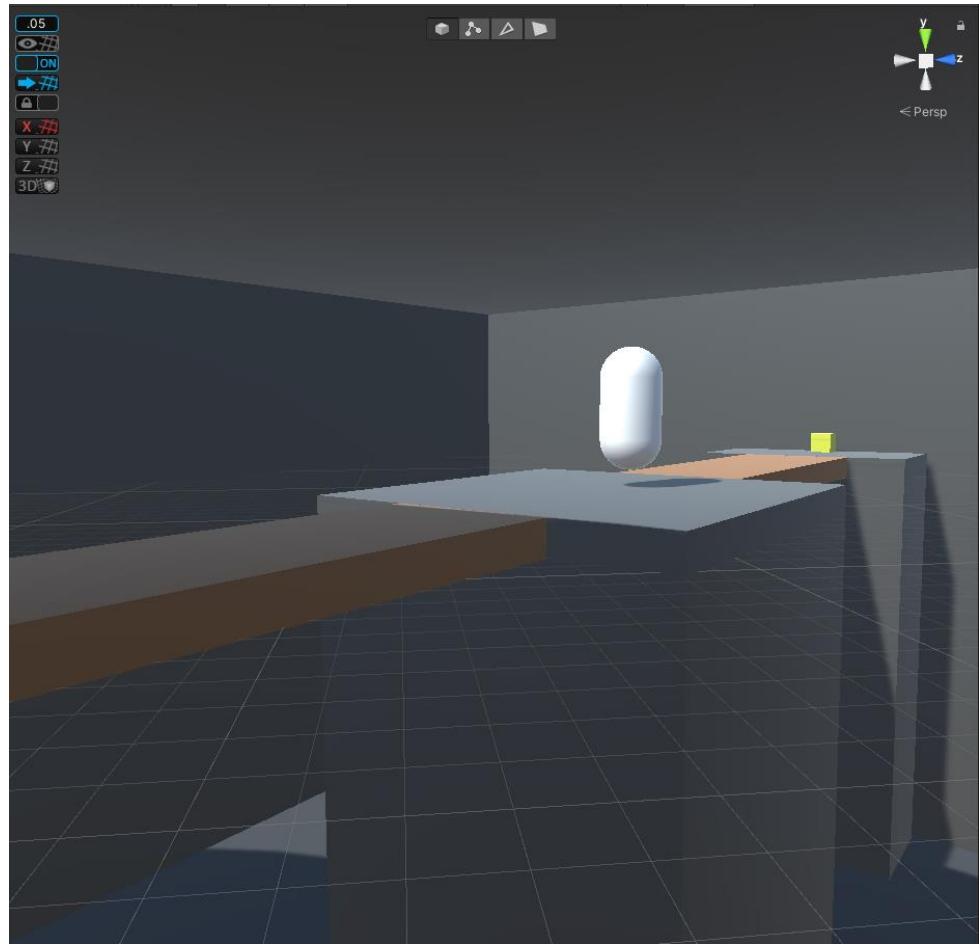


-
- **Room 2: Cube Puzzle**
 - I put in a placeholder for the chest, as well as the cube and console the player will need to interact with in order to pass it. The symbols for the correct combination will most likely be 2D pictures that will be put onto the ceiling. The cube and console will also be scripted so that interaction with the console affects the cube.

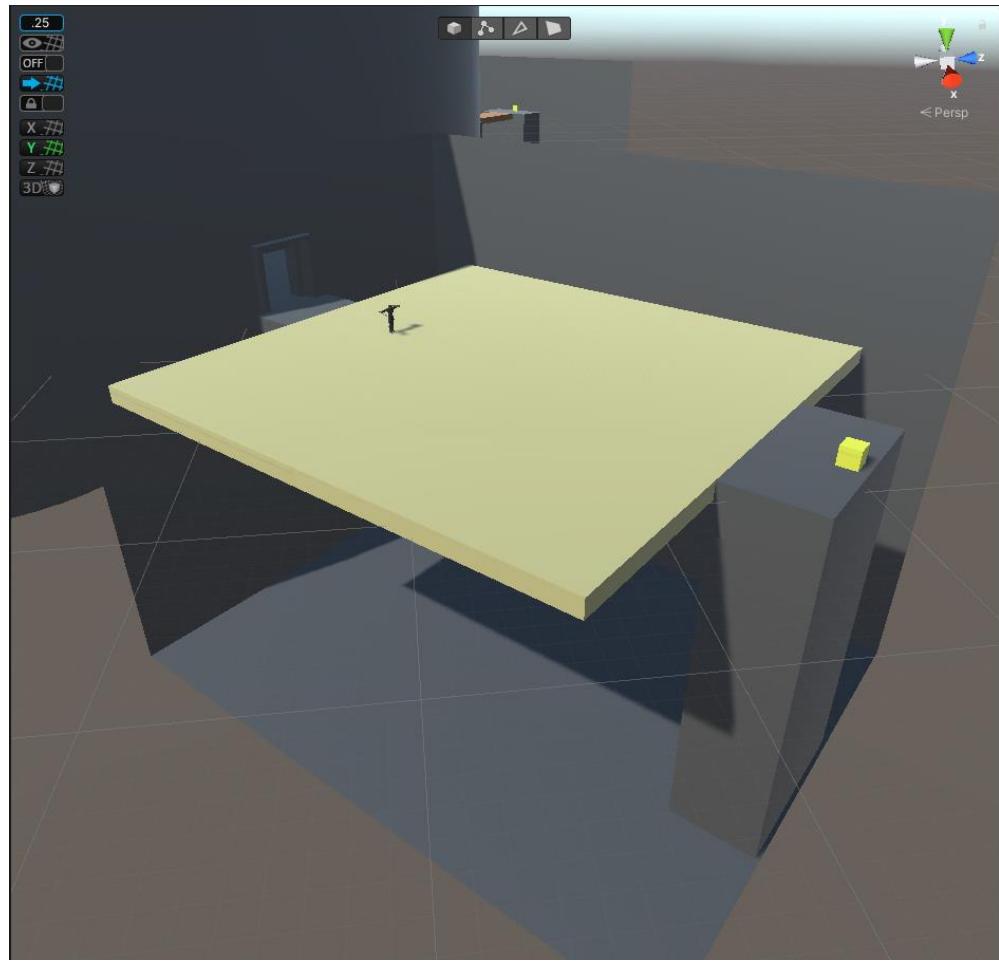


- **Room 3: Miniboss**
 - For this room, I constructed the platform that the player would be fighting the miniboss on, and added placeholders for him and the chest.



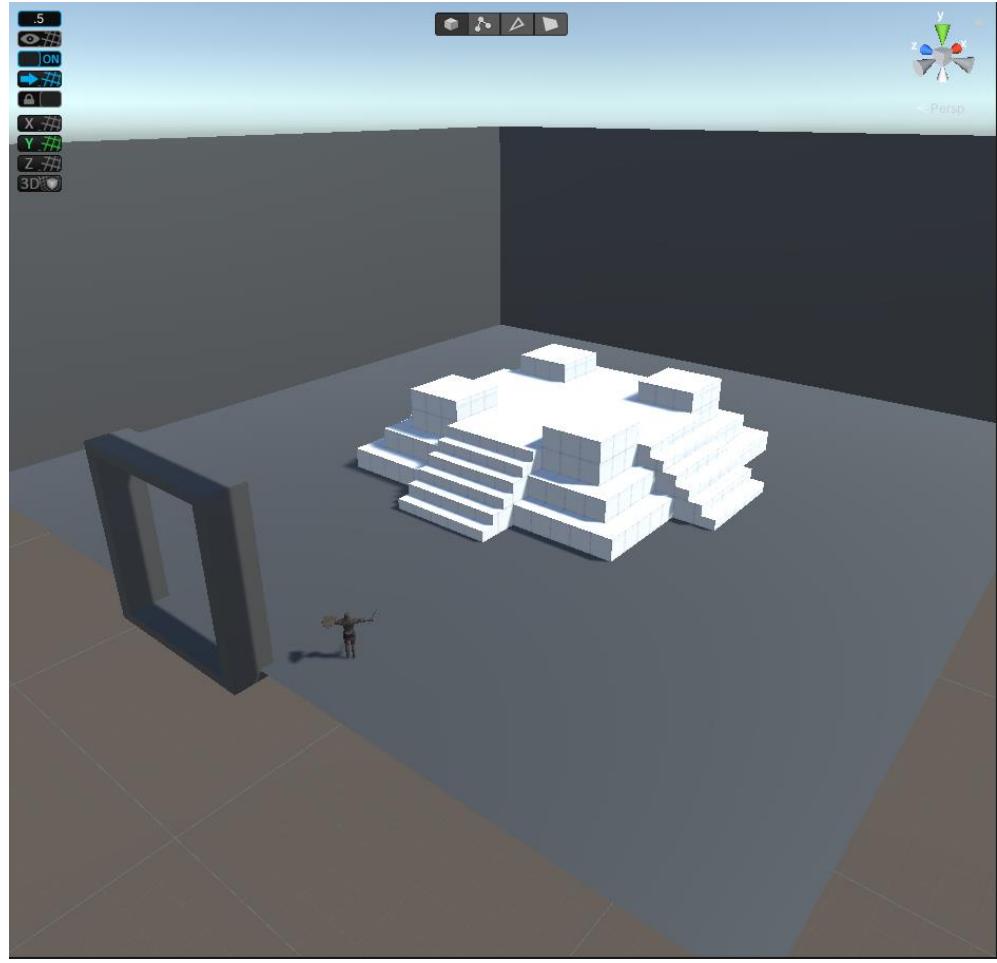


- **Room 4: Fake Tile Puzzle**
 - For this room, I created 100 (yes, 100) tiles that the player will have to navigate across, as well as the placeholder chest. I plan to script the tiles using physics to collapse if the player steps on one of the wrong tiles. I will also color them differently once I establish the safe path.

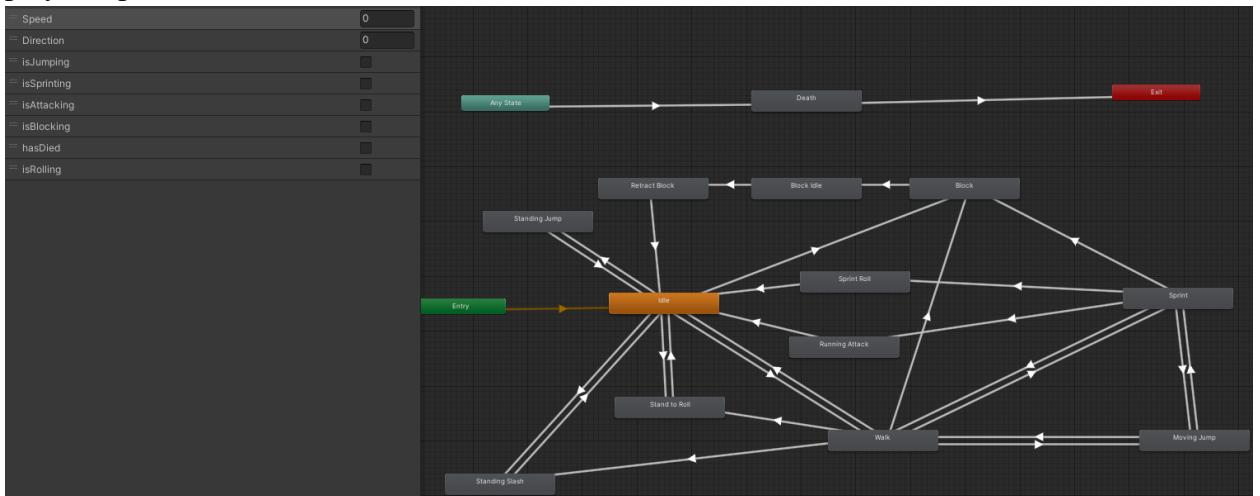


- **Final Room: Lich's Tower**

- For the final room, I added an altar in the middle, with some pedestals that I plan to add braziers onto as the main source of lighting. The boss placeholder isn't here because I plan on making an entrance animation for him. I also plan on having a door closing animation to add some suspense to the atmosphere.



- **Player Animation:** Basic state transitions involving the player animation have all been defined and a script has been written that allows for the animations to be seen based on player input.



Blend trees within some of these states have been defined but not fully fleshed out yet. Once the combat system has been designed, additional states may be required for further

combat options such as directional attacks or power attacks. The player has the ability to use left/right mouse look but no animation has been attached to this yet.

Contribution by Group Member:

- Justin Holmes: Player Animation controller, Player Animation/Mouse Look Scripts, Overworld design, and the Control scheme for the Game Design Document.
- Jared Dettwiller: Level 3 Whiteboxing, Gameplay, Overview and Level 3 sections in the GDD.
- Matthew Latanafrancia: Level 2 Whiteboxing, Main Character section and Level 2 sections in the game design document.

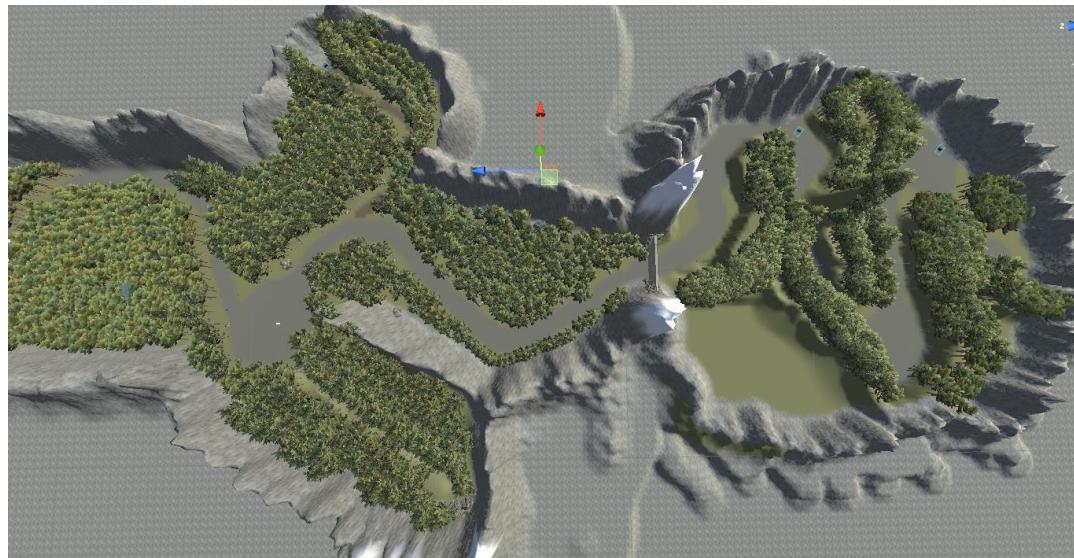
Milestone 2 Progress

Significant Progress has been made on each level throughout this milestone. As stated above, level 2 is in a near finished state but the Overworld and Level 3 are very close to completion as well.

- **Overworld:**

- Scripts have been added to forest triggers that will be set to spawn 2 out of 4 possible groups of enemies randomly.
- All Chest placements have been completed with prefab chests with full animations.

Overworld w/Chests Highlighted:



- **Tutorial:**

- The Tier 1 enemy prefabs have all been placed in their final positions.

Tutorial w/Enemies Highlighted:

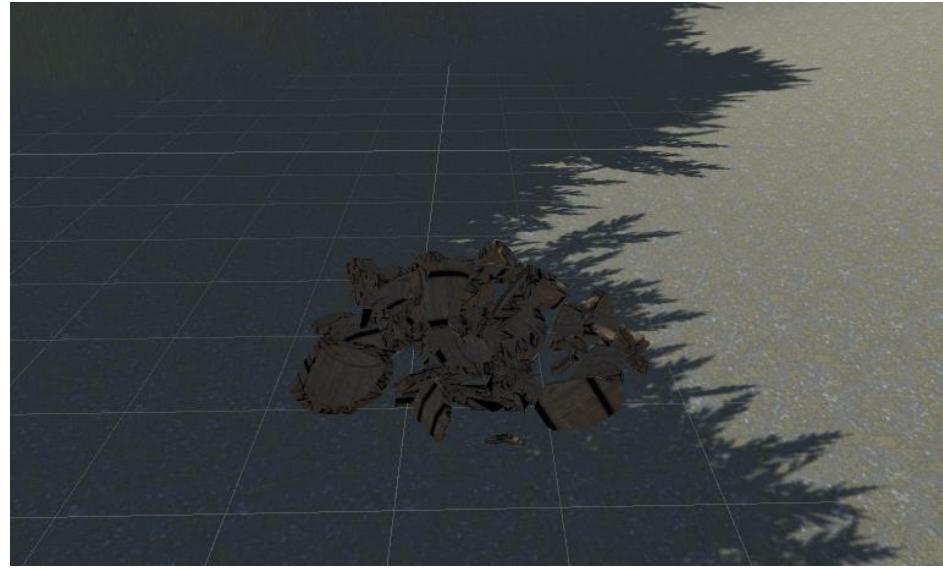


- Breakable barrel prefabs have been placed and can currently be broken by the player.

Tutorial Breakable Objects(intact):

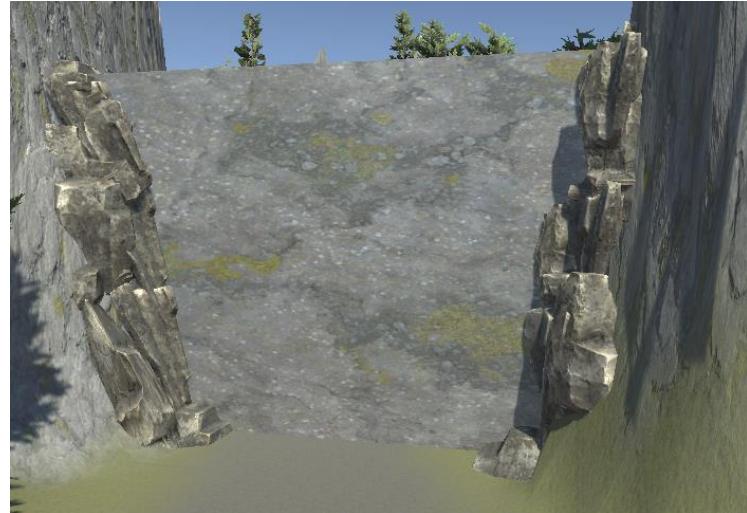


Tutorial Breakable Objects(broken):



- The tutorial wall has been scripted to fall if the player has completed all necessary tutorial tasks and some setdressing has been added to it.

Tutorial Wall:



- **Area 2:**
 - Hidden and optional chests have had their guard spawns set and are in near final state, subject to AI changes and Inventory implementation.

Hidden Chest:

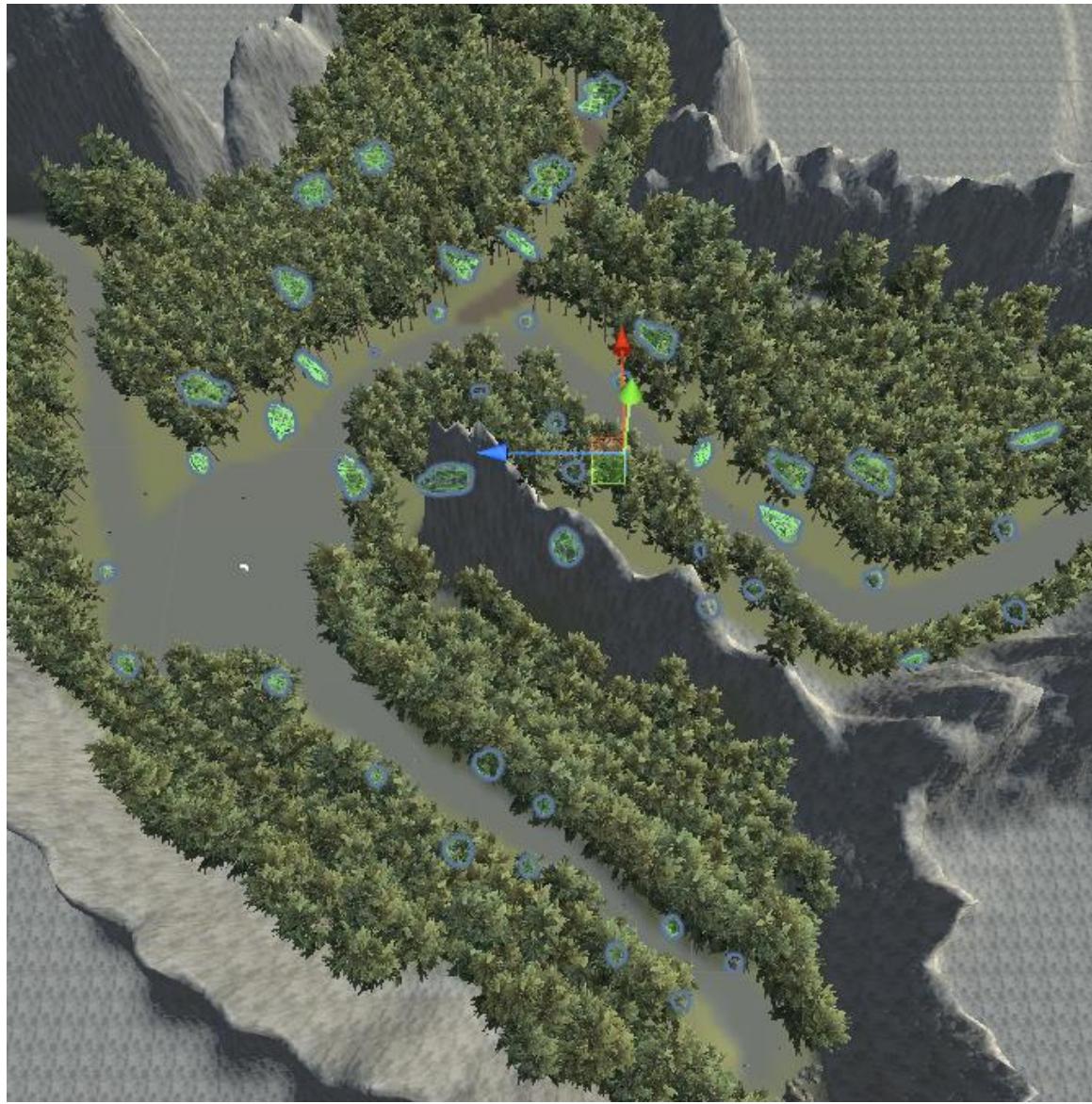


Optional Chest:



- Minor set dressing was added throughout area 2

Area 2 w/ Set Dressing Highlighted:



- All white boxed “path enemies” replaced with prefab enemies with patrol points set

Area 2 w/Path Enemies Highlighted:



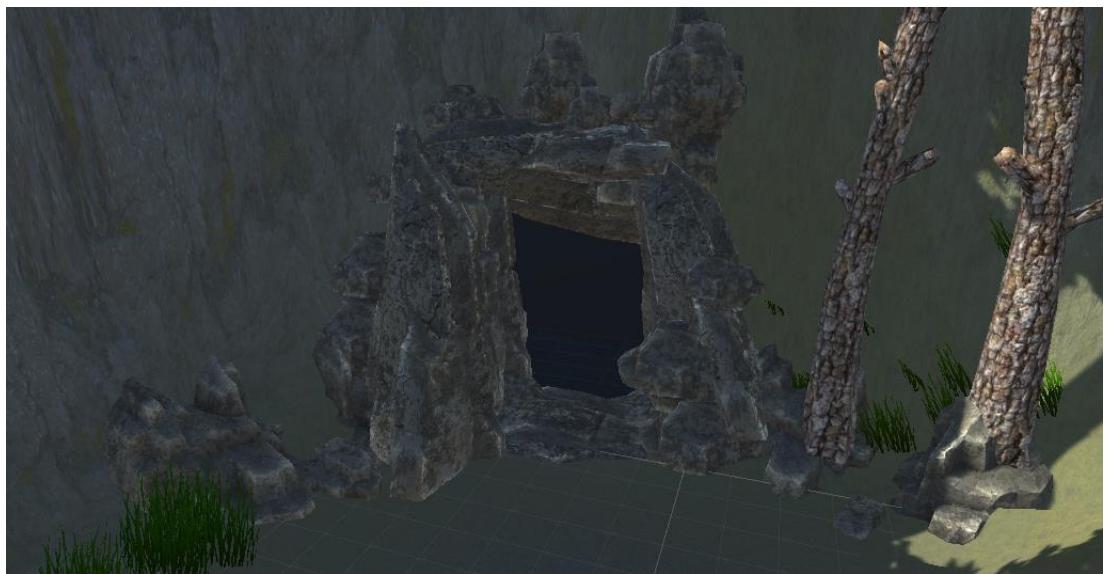
- All forest spawns are set with Tier 2 enemies placed into spawn groups that can be randomly selected to spawn by trigger script. Most enemy patrol points have been set for the forest.

Forest Spawns:



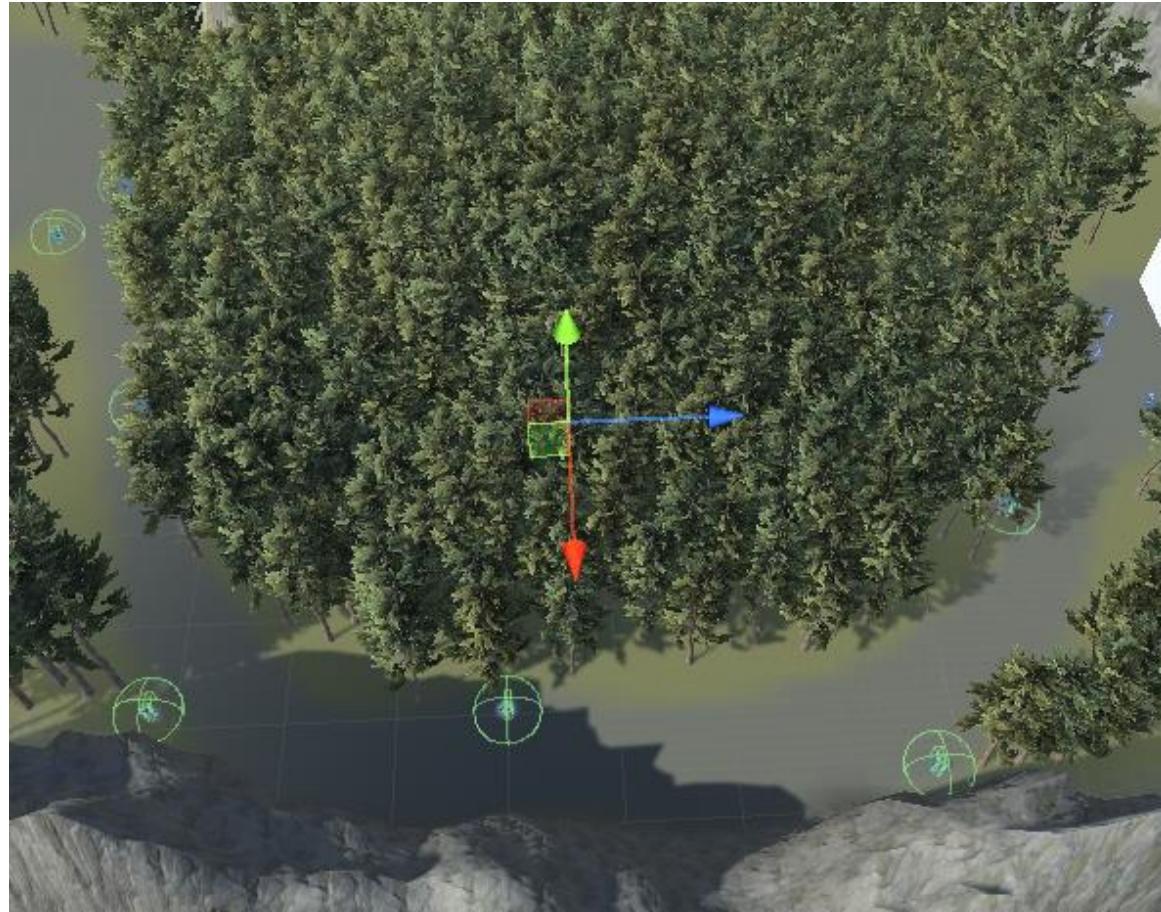
- Entrance to level 2 is now in its final state

Entrance to Level 2:



- **Area 3:**
 - Whiteboxed enemies with an available corresponding prefab have been replaced.

Area 3 w/Path Enemies Highlighted:



- **Level 2:**

- All main parts of level 2 have been finished. This includes textures, lighting, enemy waves, and the different parts of the cave puzzle. What still needs to be added as part of the final milestone is to add a material to the barrier which will make it obvious to the player that they can't enter the crystal area while the barrier is up. For now, this is just determined with a collider being either a trigger or a collider. This functionally works but will be changed in the future.



- **Enemy wave 1**

- The first enemy wave triggers when walking into the first room when walking through the cave. This enemy wave consists of 2 rounds. The first round and second round of this enemy wave will spawn 2 tier 1 enemies. After the first 2 enemies are killed by the player, the second round of enemies will spawn. The player won't be able to leave the room until they either die or kill all the enemies in this enemy wave.



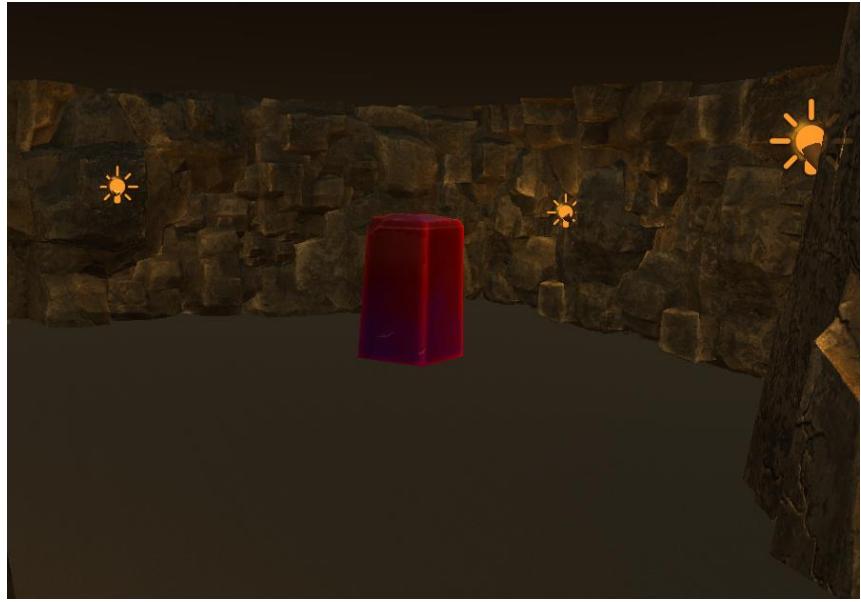
- **Enemy wave 2**

- The second enemy wave triggers when walking into the crystal area of the main room in level 2 while the barrier is broken. This enemy wave consists of 2 rounds. The level will spawn 2 tier 1 enemies to start off. After these 2 tier 1 enemies are killed, a tier 2 enemy with more health than the tier 1 enemies will spawn to act as a final wall before the player can progress. The player won't be able to leave the main room until the player dies or the enemy wave has broken. After the enemy wave is over, the player will be able to hit the crystal which will break the crystal. Breaking the crystal can be seen when the point light that illuminated the crystal is deactivated, showing that the crystal has been powered off.





- **No light crystal (destroyed crystal)**



- **Puzzle**

- **Puzzle part 1**

- The first part of the puzzle has been fully implemented. This includes the random placement of the key in barrels in the main room of level 2. The player can break barrels until they find the key. For now, picking up the key is indicated in the console when the player breaks the correct barrel. Later, it will show in the game UI when a player picks up an item so this will be changed with later changes. When a player picks up a key, they are able to open the door to the small room in the main room which allows the player access to puzzle part 2. The player isn't able to open this door unless they have the key for the door from breaking the barrels.



• ■ **Puzzle part 2**

- The functional aspects of the second part of the level 1 puzzle has been implemented. What hasn't been implemented is player aid to find the code to break the barrier. When a player submits the correct code, the barrier in the crystal area will be lifted and it will let the player know in the console (for now.). This allows the player access to enemy wave 2 and will let them break the crystal.



- **Level 3:**

- For the majority of level 3, I was able to texture and light the level, although some textures are incomplete because I want to find specific textures to fit the objects they'll be placed on. The lighting is also incomplete because I'm trying to figure out how to give the player enough light to see while also giving that dark atmosphere of the castle.

Visual aid: red markers indicate where enemy placement will be, and yellow markers indicate interactable objects.

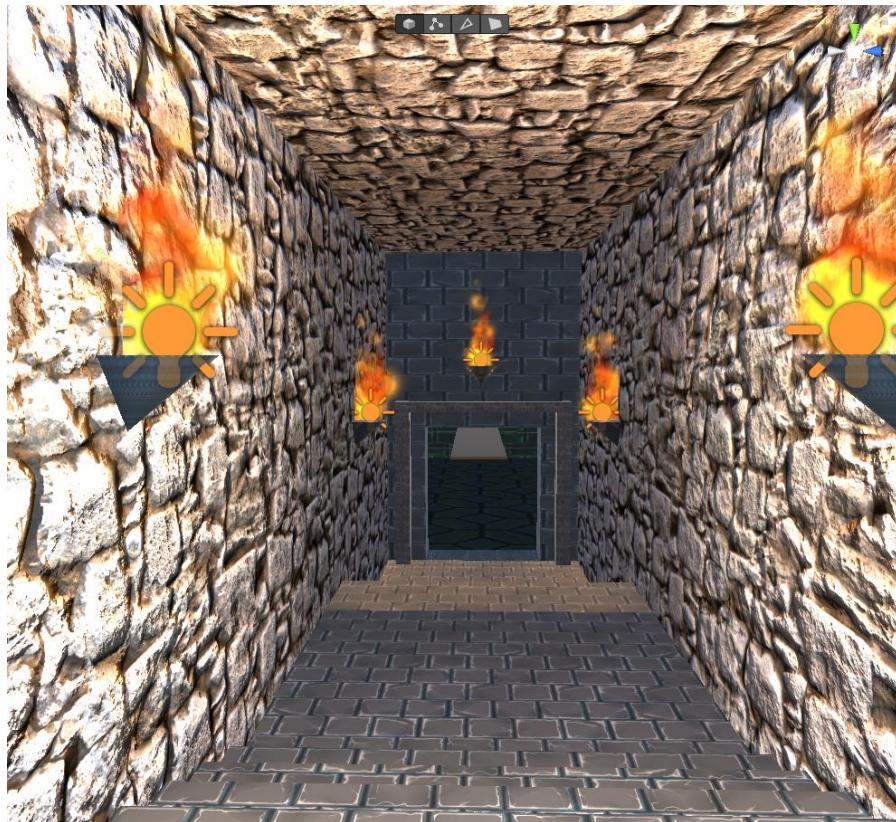
- **Main hall and Tower**

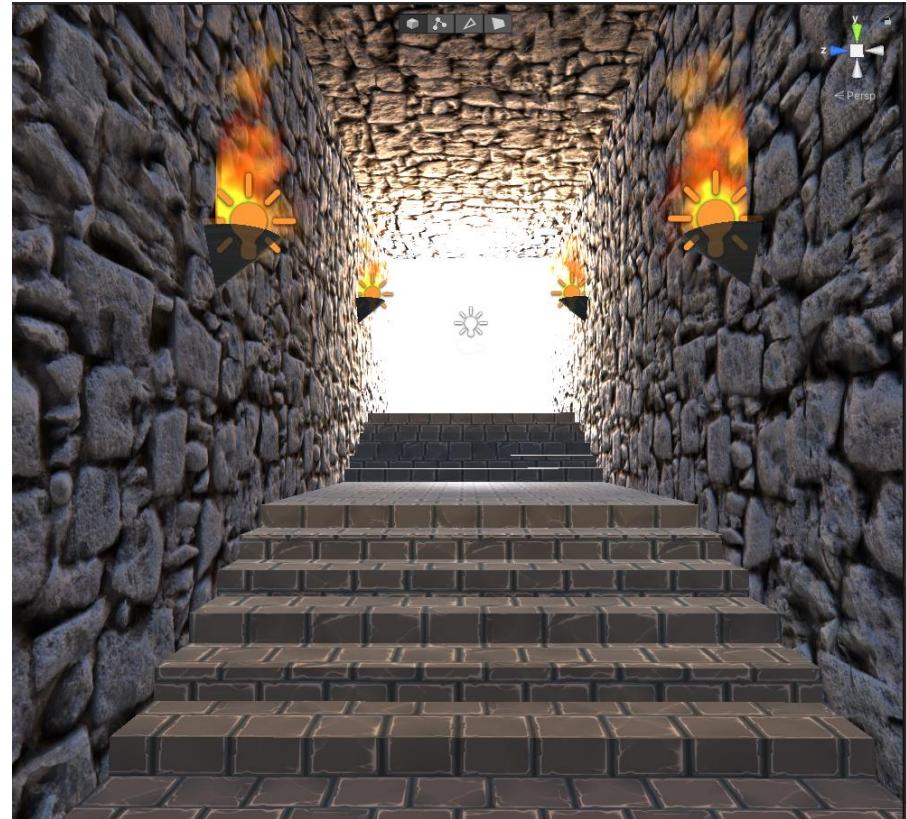
- The main hall is completely finished in terms of textures and lighting.

After some experimentation, I was able to create a panel that emitted light

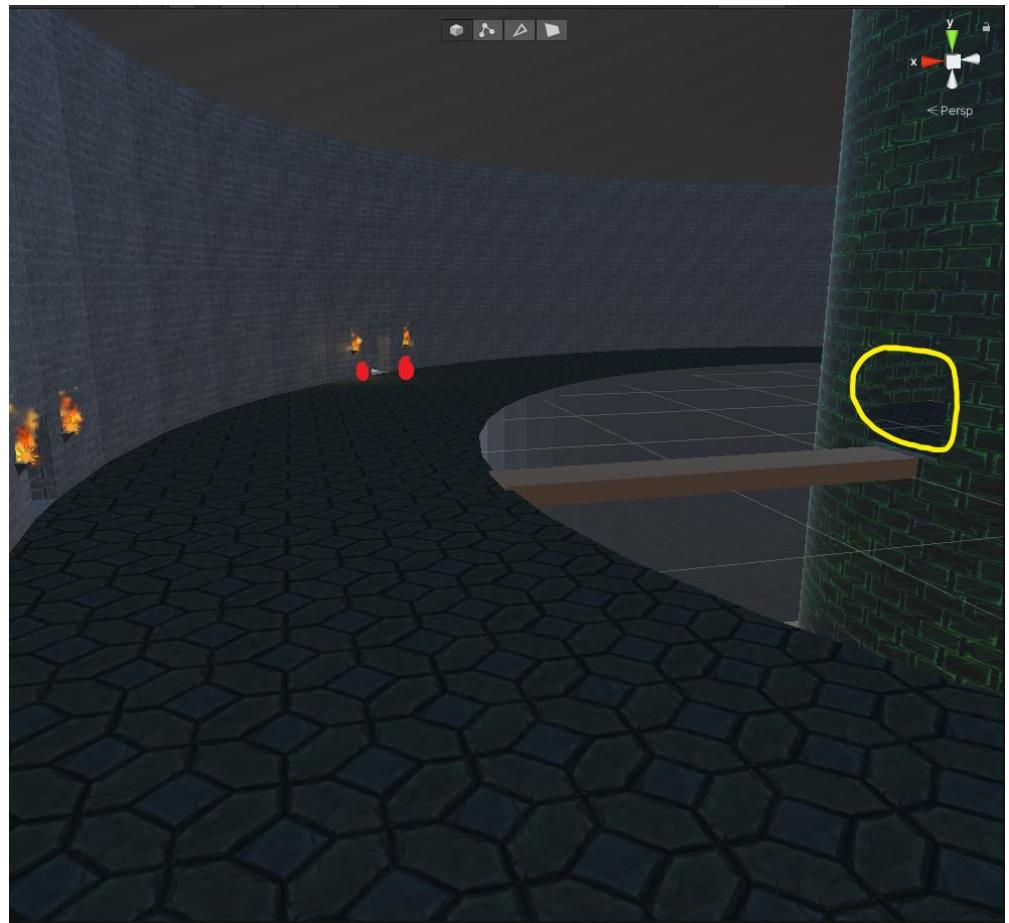
so as to show the player the entrance/exit of the castle, as to represent the outside connection to the interior. The inside of the main tower is mostly complete; the bridge and the pit still need to be worked on but I'm currently trying to find a way to create a "black light" that emits from the pit. This same idea will be applied to the other rooms as well, minus the boss room and the cube room.

■ **Main Hall Entry**





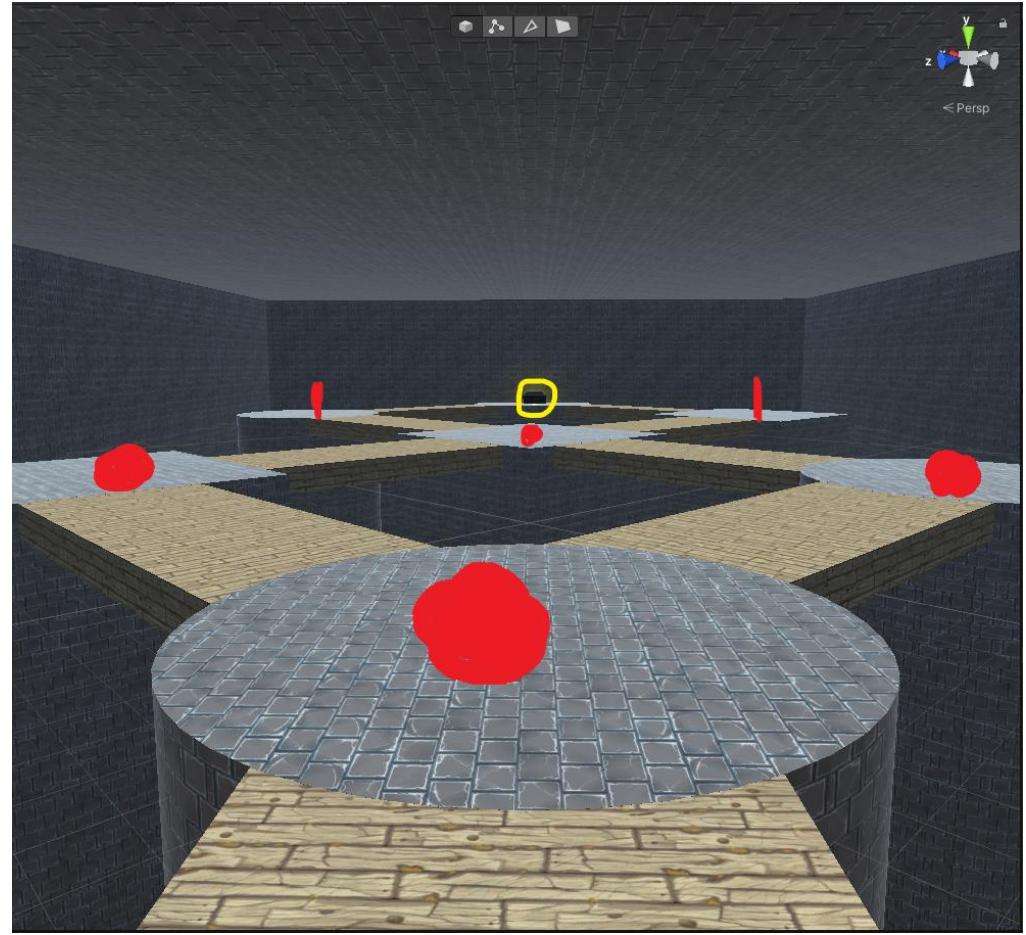
■ **View of the Main Castle Tower (inside)**

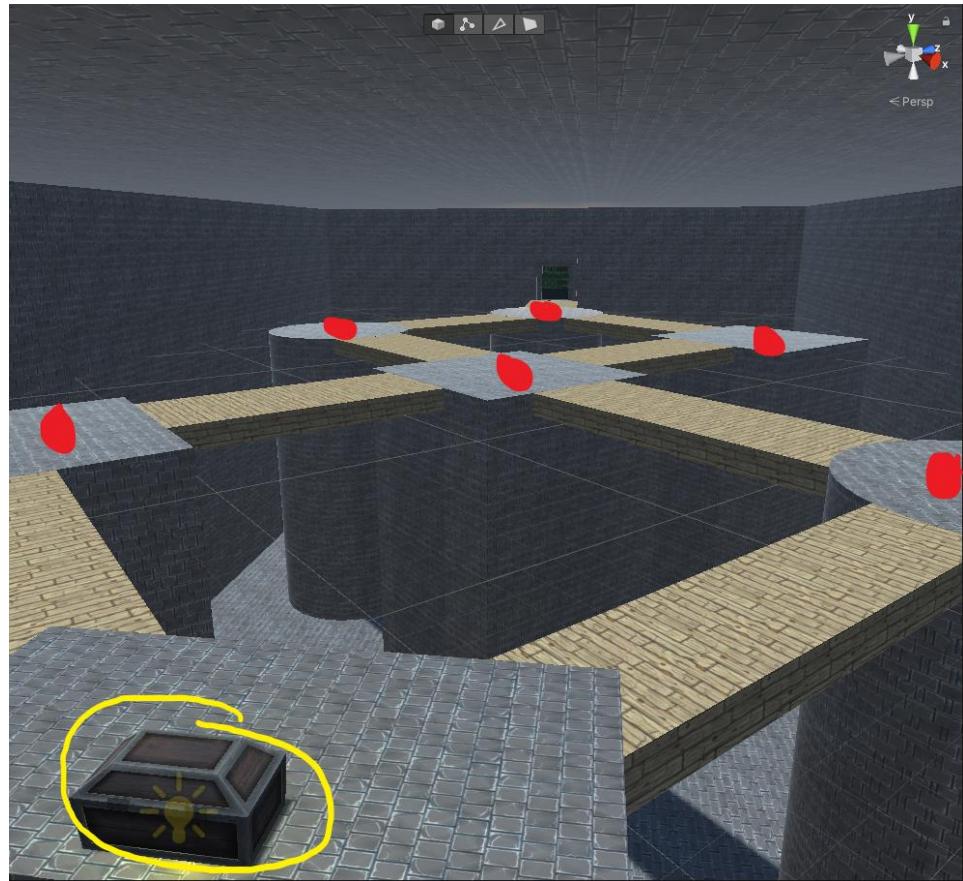


- - The door is missing in this picture, but will be added once scripts are working.
 - Guards will be posted outside of each doorway, so as to not make the main tower too boring.

- **Room 1: Mob Fight on Platforms**

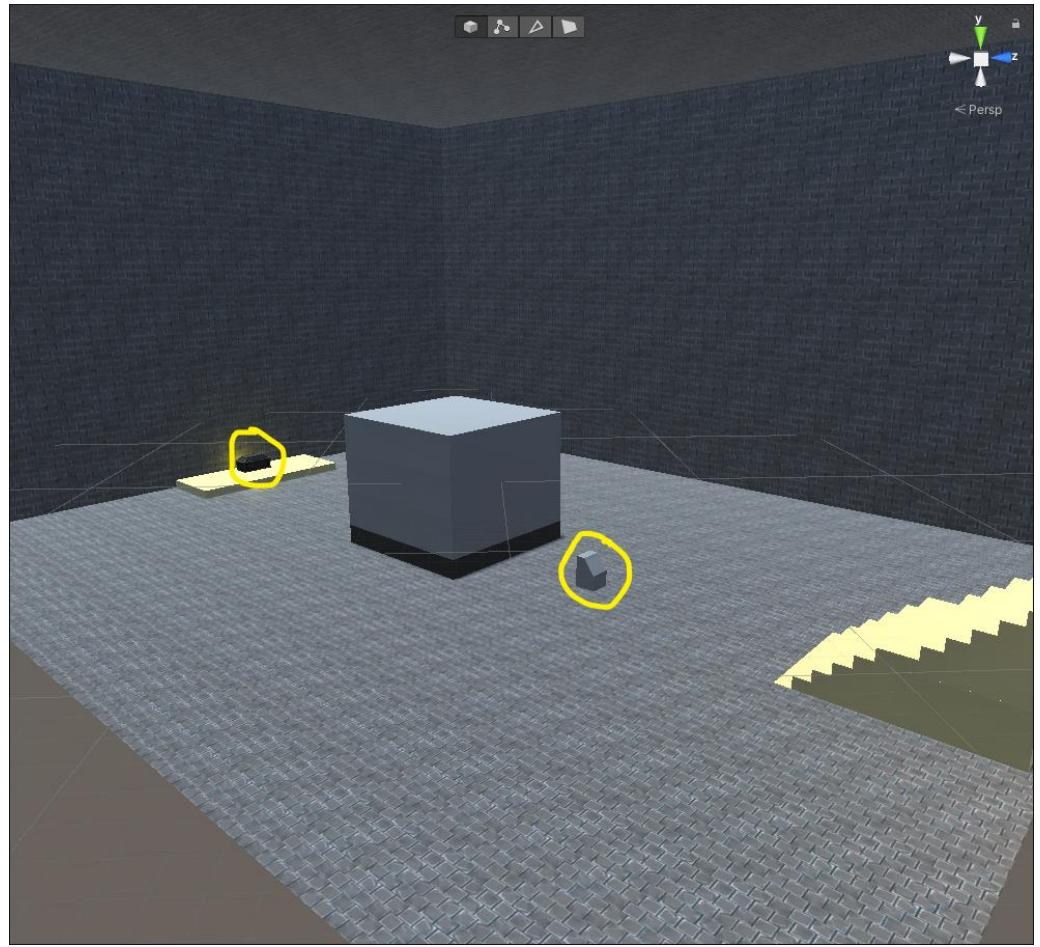
- I was able to fully texture this room, and place the chest in the room as well. Since the only requirement to get the key is to reach the chest, there won't be any scripts for spawning in the chest.



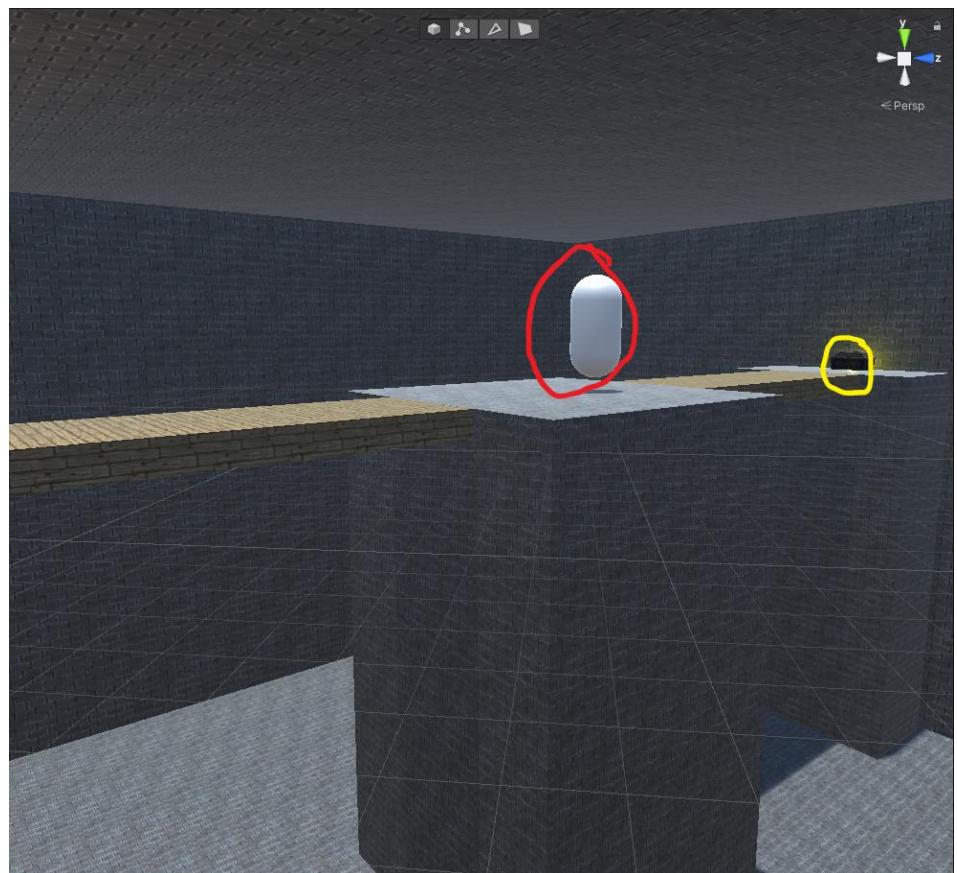


- **Room 2: Cube Puzzle**

- This is probably the least textured room out of the 5, mainly due to the fact that I need to decide whether to create custom textures for the cube faces, or simply color each of the faces. The chest in this room will spawn once the correct combination has been set, and I plan to make it so that there will be 3 specific keyboard keys that can be used to interact with each of the levels of the cube.



-
- **Room 3: Miniboss**
 - This room is fully textured, and all that's missing is the finished lighting, enemy, and scripts. The bridges will collapse once the fight starts but will reappear once the fight ends.



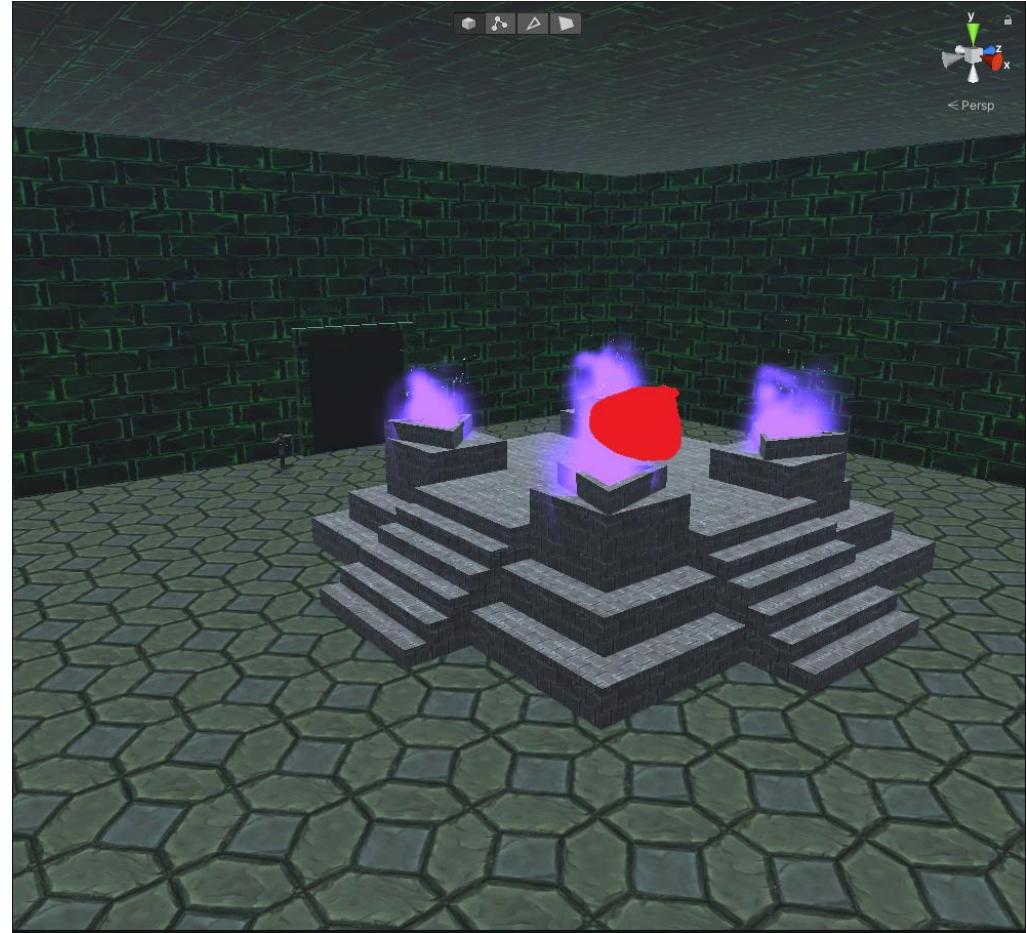
- **Room 4: Fake Tile Puzzle**

- The only textures missing in this room are for the tiles themselves. I'm looking for a sandstone texture that also definitely fits each tile so that it's clear where each tile ends and the next one begins. I plan to add the scripts that I mentioned before for the fake tiles to drop near instantly, but I also have decided that the correct tiles will be mirrored on the roof, to shoe the safe path.



- **Final Room: Lich's Tower**

- The lich's boss room is nearly complete in terms of lighting, and fully complete in textures. The hardest part for this will be writing his script, but he will spawn in the middle of the altar in the center of the room.



- **Chests:**

A universal prefab was created for the chest objects including the scripting of animation controllers. When the chest is opened through player interaction, the lid is animated to open and the item the player will be receiving is animated to float out of the chest and hang in the air before disappearing.

Closed Chest:



Chest w/ Health Potion:



Chest w/ Sword:



Chest w/ Key:



- **Different Weapons:**

All the different weapons that a player will be able to equip have been added to the player prefab object. The weapons not in use have been set to be not active. This setup was chosen so that the weapon in use will be able to be easily scripted once the inventory is implemented.

Player w/Lvl. 1 Sword:



Player w/Lvl. 2 Sword:

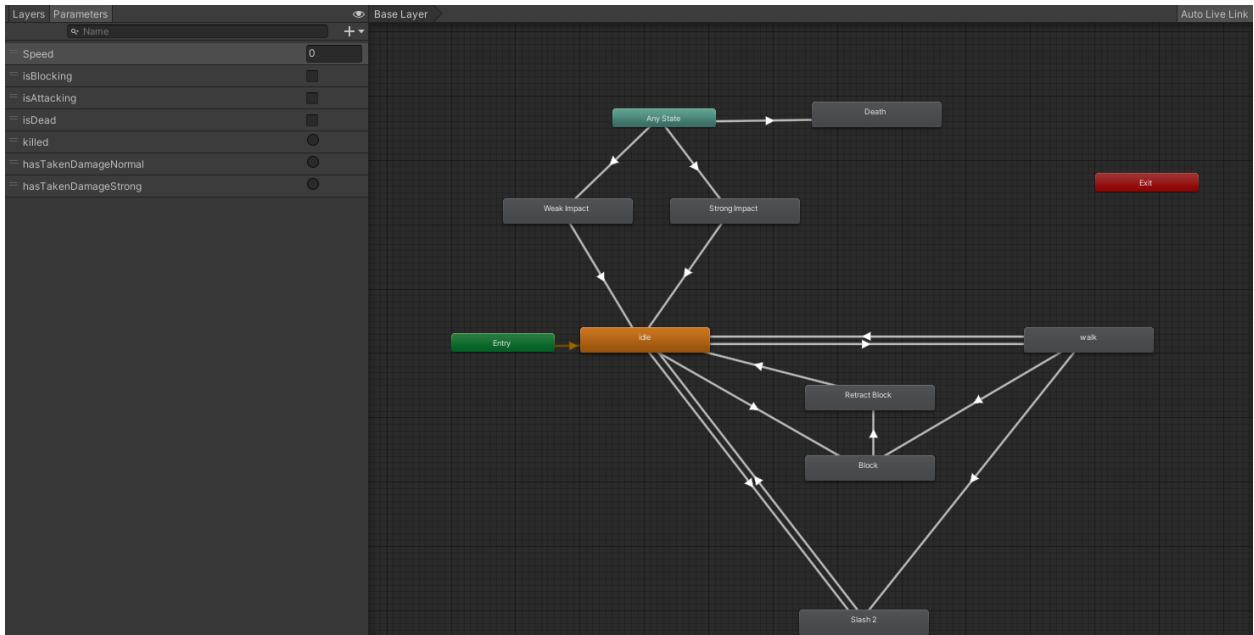


Player w/Lvl. 3 Sword:



- **Tiered Enemy Animation:**

Basic state transitions and animations have been implemented in an animation controller that is universal to the Tiered Enemies.



The transitions from state to state are controlled by the AI script of each enemy. While there are states that enemies in lower tiers are not scripted to use, their movement and attacking will be universal throughout each tier meaning that the same controller can be used and decisions on what each tier can/cannot do can be left to the AI scripts.

- **Breakable Barrels:**



- ○ Breakable barrels have been implemented to prepare for puzzles in the level 2 main room. Breakable barrels have not finished development. However, on break, functionality of dropping a key has been added. If a key is in a barrel, the key will only be picked up by the user. No actual object will be dropped, a key will just be put in the player's inventory.
 - In the future, barrels will have heart drops implemented if the player needs to heal.
 - Barrels currently only break according to the sword trigger on the sword. Our combat system will be reworked so final implementation of the barrel breaking will be done then.

Contribution by Group Member:

- Justin Holmes: Tier 1/Tier 2 enemy AI, Tiered enemy animation controller, Player and Enemy Combat, Chest Animation/Prefab Creation, Player Weapon Options, OverWorld Enemy placement/Patrol paths, Overworld Set Dressing
- Jared Dettwiller: Level 3 texturing and lighting, UI design/Implementation, Audio collection
- Matthew Latanafrancia: All work that dealt with the implementation of level 2 enemy waves, texturing, and enemies. Worked on barrels.

Final Milestone Progress

- Overworld - Tutorial
 - Tutorial:
 - All triggers for tutorial instructions have been placed and are printing

Example tutorial instruction:



- Script to ensure tutorial completion before leaving

Message printed if entirety of tutorial not completed:



- All tutorial chests now give potions

- Area 2:

- Finalized placement and patrol points for forest enemies

Area 2 w/ forest enemies:



- Changed chest for optional path to contain fairy in a bottle

Optional Path Chest:



- Area 3:

- Finalized placement and patrol points for forest enemies

Area 3 w/ forest Enemies:

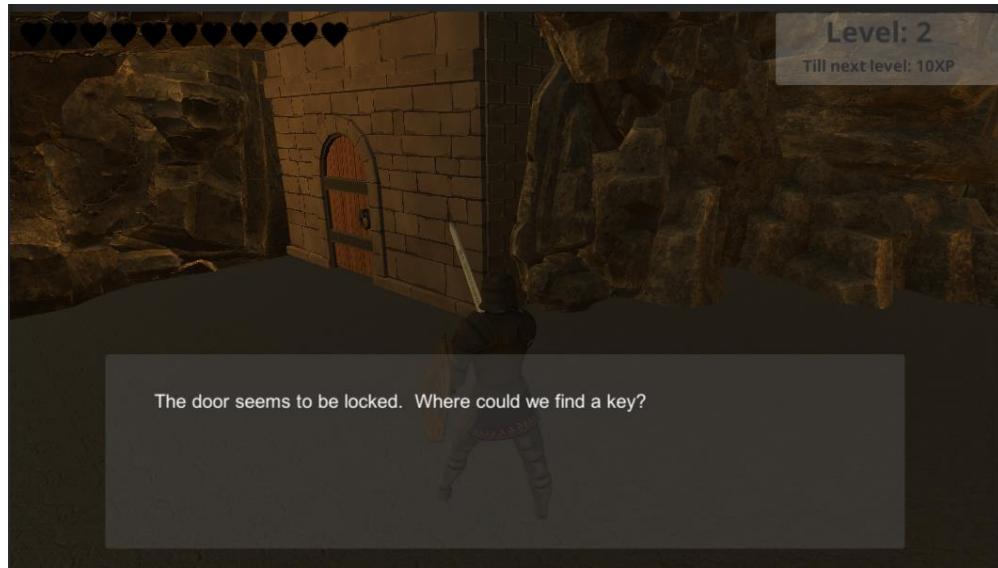


- Castle is in place and the forcefield is blocking the entrance.
Scripted to disappear and be replaced with tier 3 guards after the player completes level 2
- Hidden Chest has Tier 3 sentries protecting it and has been updated to give a fairy in a bottle

Hidden Chest w/ sentries:

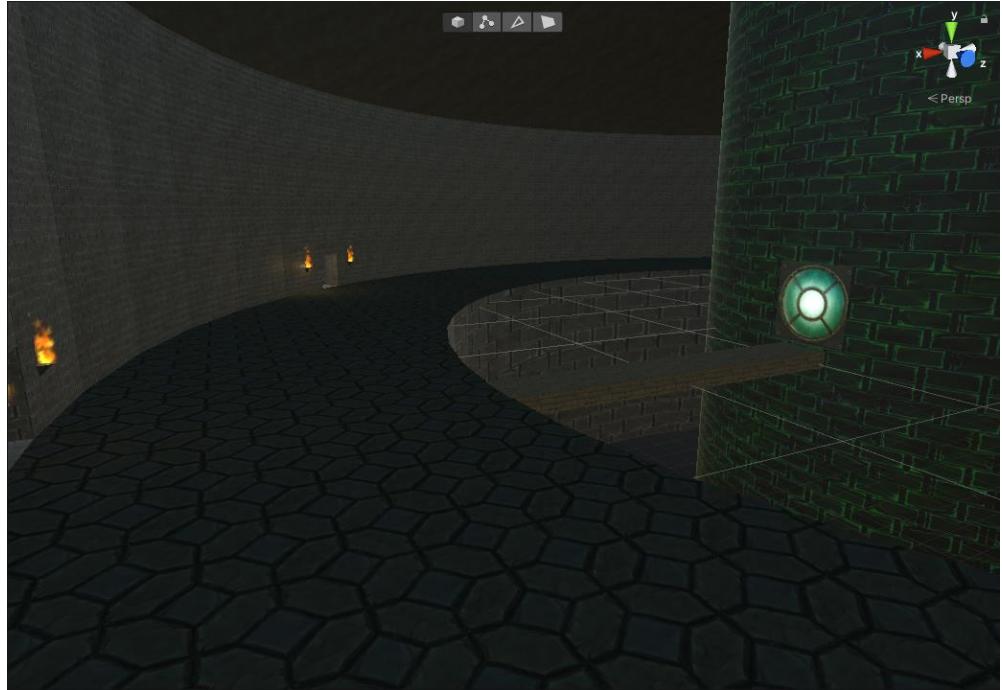


- Level 2 - Cave
 - In level 2, not many changes were made. The only changes that needed to be made were some additions to the Keypad room that is in the second part of the level. The room now has printed on the wall "ERROR 404" which signals to the user that the answer to the puzzle is 404. Furthermore, areas that needed to text boxes to inform the user of something like picking up a key when breaking a barrel.

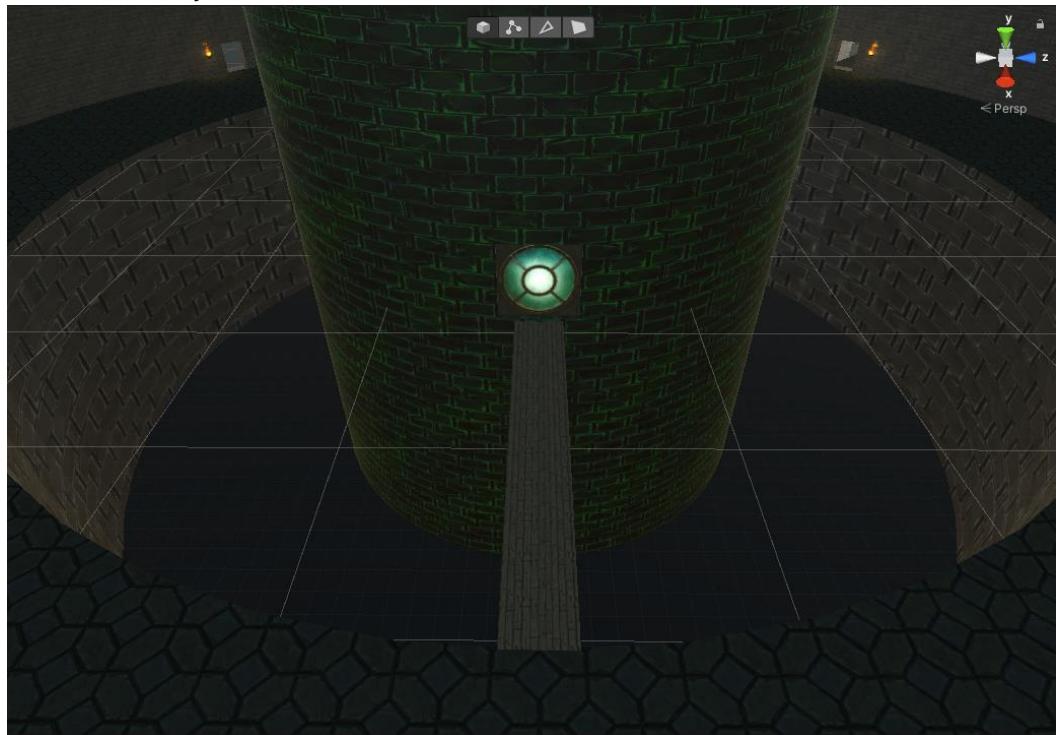


- Also, the second level has had changes to the floor texture.
- Level 3 - Castle
 - Level 3 had a fair amount of changes made to it in preparation for the final milestone.
 - **Main Tower**

- I was finally able to figure out how to keep sunlight from shining through the walls, so I was able to make the interior of the castle properly lit. I also textured the bridge, and added a functional door to the main boss tower that requires all the keys to open.



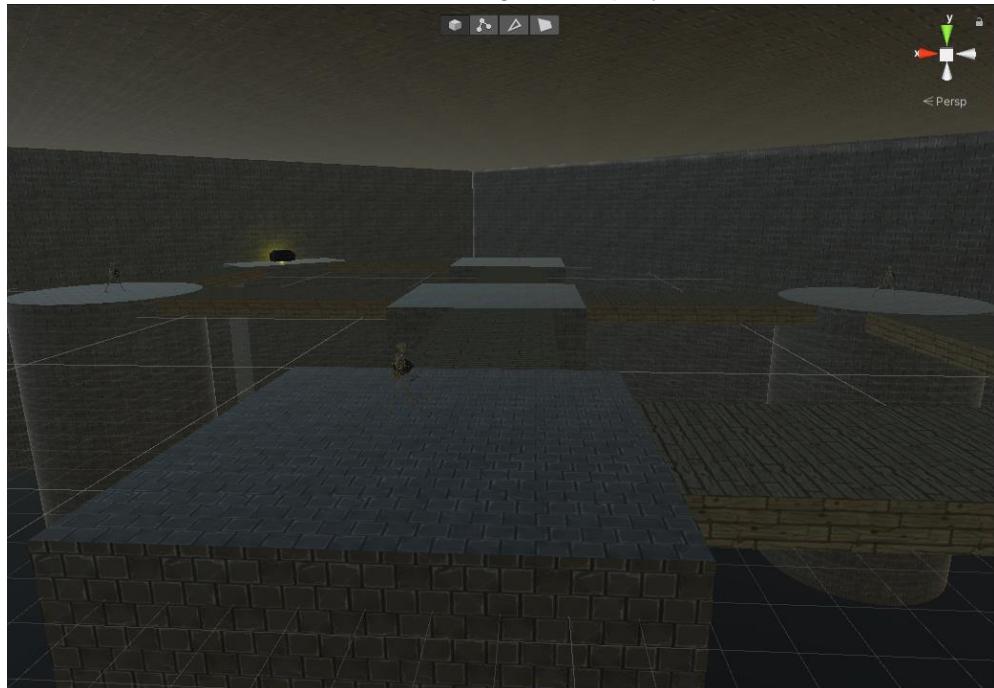
- The pit is also fully functional and will respawn players back at the entrance if they fall



- Once the door is opened, the player can step through and they'll be teleported to the final boss fight

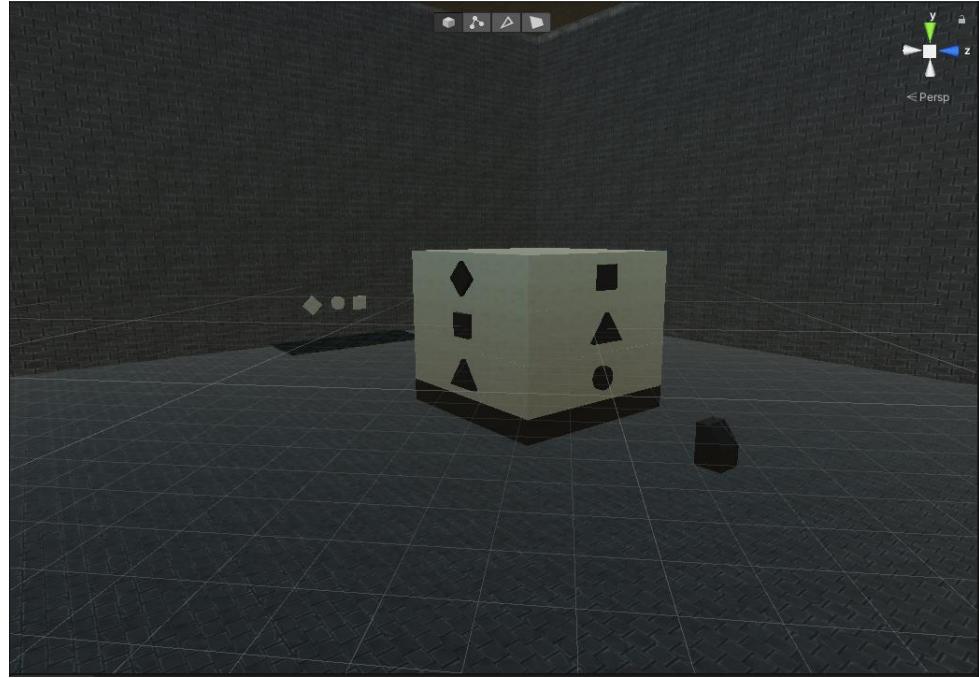


- - Room 1
 - For the mob platform fight room, I was able to add a pit into there as well, and the skeletons were placed in good spots that they felt like enough of a threat, but also not too overwhelming for the player.



- - Room 2
 - The cube room was probably the one that got the most attention on this milestone, as I fully textured and scripted the room to be able to work with

the player. By using the keys 1-3, the player can control the top, middle, or bottom parts of the cube until they're all lined up in the proper combination, causing the chest to spawn. If you spam the key though, it will break the puzzle, so do be mindful!

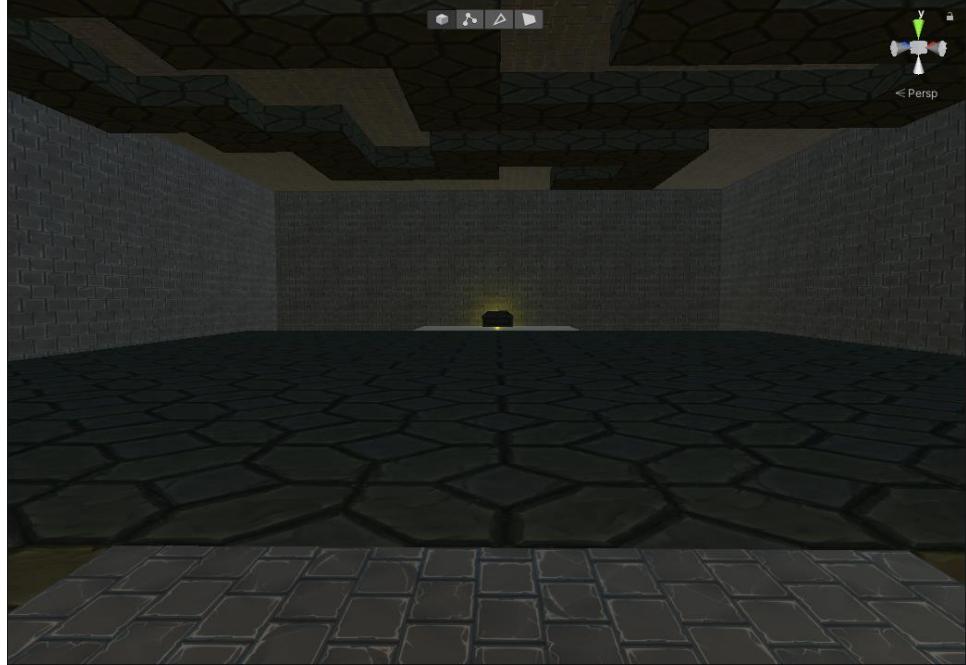


- - Room 3
 - I got the miniboss fight working, and I even have music playing while you fight with him. The bridges will collapse when the fight starts, and return when he is dead.



- - Room 4

- The tile room is working somewhat as I hoped. In some cases, the tiles won't fall through all the way which can lead the players to getting stuck, and since we couldn't get the up/down camera to work, you pretty much just have to guess which tiles are correct.



- Room 5
 - The only part of the boss room that got altered was the boss himself
- User Interface
 - The pause and quit screen has been fixed so that the resume and quit buttons now work.
 - The main HUD of the game has been added to the game as this is part of the final product.



■ Health Bar

The health bar was made to be dynamic depending on the max health of the player. The health bar consists of hearts that can be either half heart, a full heart, or an empty heart which will aid the user in understanding how much health they actually have. Furthermore, when a player levels up, they will be able to see their health increase reflect on the health bar as it will give them an additional heart.



■ Inventory Panel

The inventory panel shows the different items the player can have. A player will only be able to hold 3 kinds of items which will all be displayed in this inventory panel. To open the inventory panel, a player only needs to press the I button on their keyboard.



Clicking on the potion button will heal the user by 2 hearts. The player won't use a potion at all if they are already at max health as it would be useless to the user.

Clicking on the fairy in a bottle won't do anything for the user as it is only used for when the player dies.

Clicking on a key won't do anything for the user as a user will instead interact with something like a door to use a key.

When a user clicks on an item that they can't use, the button in the inventory panel will glow red and inform the user that they can't use that specific item right now, no matter what the item is.

This is all dependent on the conditions that was explained above.

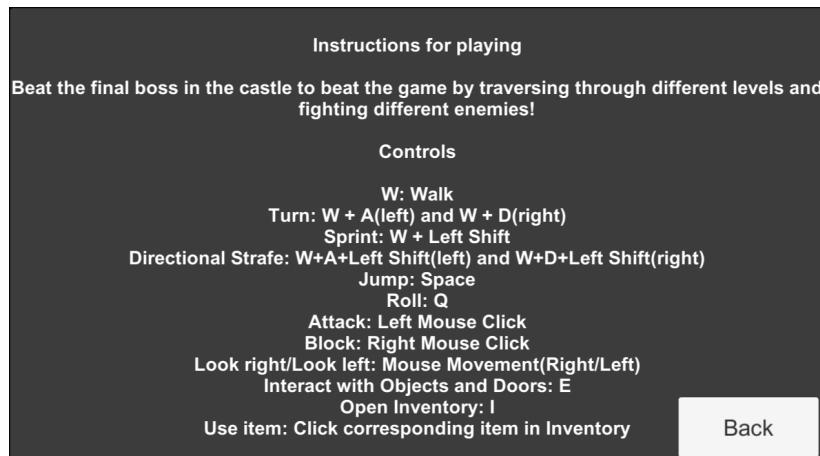


■ Player Level Panel

The player level panel displays both the level the player is currently at, and also displays how many experience points the player needs to level up to the next level. The level experience points are predetermined and hard coded in our scripts. Below are multiple examples of what the level panel will look like depending on the different values that the numbers can be.



■ Information Screen



We made a basic information screen that explain both the objective for the game and the controls for our game if the player wants to learn the controls before going through the tutorial of the game. However, our tutorial will teach the player about most of the game.

- Start Menu

The start button will start the game at the tutorial in the overworld. The quit button will quit the game. The information button will display the information screen which will explain instructions and the control for our game.



- Player Progression
 - A player can gain experience by killing the enemies that are in our world. Depending on the enemy, a player will earn more experience. The player will work up to the max level of 7 in our game. Each level will become harder and harder to level up to. The experience points needed will exponentially grow since the higher tier enemies will give more experience than the lower tier enemies.
 - When a player levels up, the player will gain more hearts and become stronger as they progress through the different player levels. Since the enemies will become more powerful as they progress, player progression is essential to this game.
- Chests:
 - Chests now only provide health potions, fairy in a bottle, or keys
 - Opening a chest increases the number of either health potions, fairies in a bottle, or keys in player inventory

Fairy in a bottle coming out of chest:



- Contribution by Group Member
 - Justin Holmes: OverWorld finishes, instructional UI text for tutorial, chests giving potions, chests giving fairies, all chest lighting/animation, Tier 3 Enemy AI/Combat/Animation, Lvl 3 Force Field/guards, Overworld Enemy placement/patrol point placement, Tiered Enemy balancing
 - Jared Dettwiller: Level 3 finishes, Boss AI and enemy functionality including sword and shield, audio for player and Enemies, music for the game which includes a music controller for the player, chests for the castle keys.
 - Matthew Latanafrancia: Worked on doing touch ups to the level 2 work that was done in the last milestone. Primarily worked on player progression, and miscellaneous work such as basic HUD, UI, fixing of the pause screen, going from one scene to another, and inventory work including use of potions and dropping potions. I also worked on fine touches to barrel breaking.