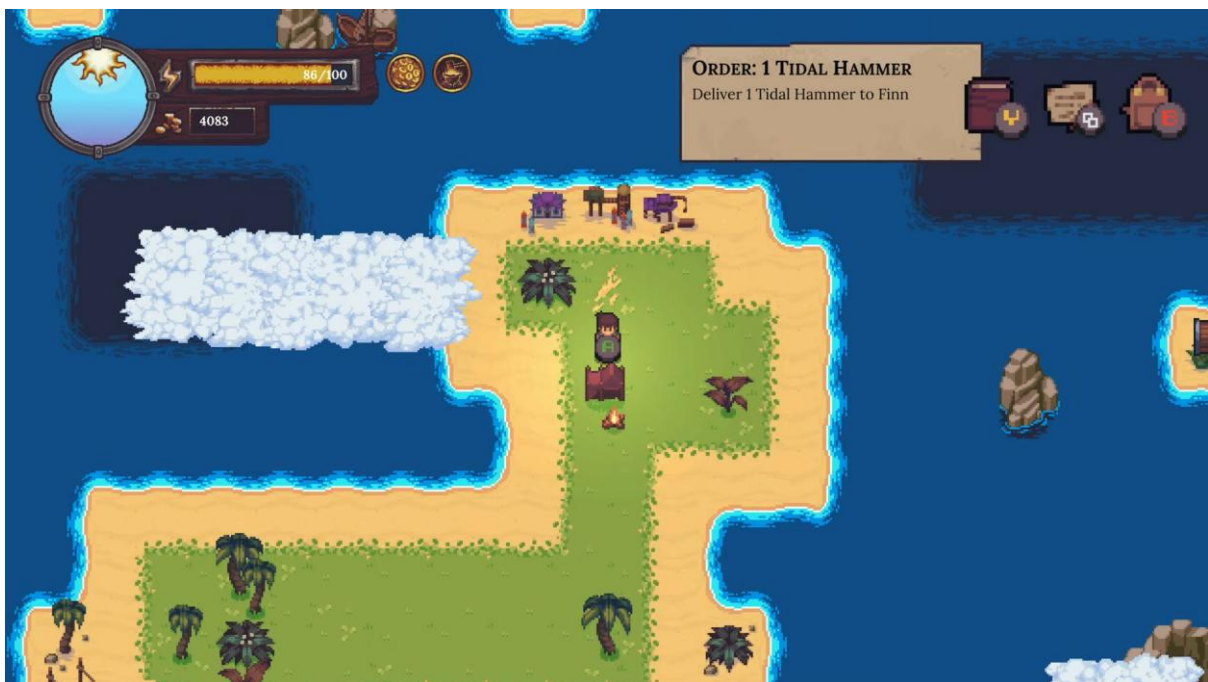


Knights Island

Inspirations

The main inspirations for my game are *While the Iron's Hot* and *Mario & Luigi: Bower's Inside Story*. *While the Iron's Hot* is a 2D side Scroller with 2.5D elements about blacksmithing around the world, and what interests me about this game is the Archipelago area within the game as the Setting for my game is a series of islands that the player travels between, so I can look towards this game and how it portrays the islands through it's tile set and structure for inspiration.



For gameplay I looked to towards Mario & Luigi: Bowser's Inside Story and how it handles the mix of puzzle and platforming aspects of the game. As in the game Bowser mainly focusing on the Puzzle aspect with it being a 2.5D elements where Bowser is free to walk around and the Platformer aspect is a 2D side scroller where the player controls Mario and Luigi, but what intrigues me is how the game combines both aspects, as for Mario and Luigi to progress Bowers must complete a Puzzle to help them move forward, which I could use for my game for puzzles to stop the player progression or make the game harder to complete.

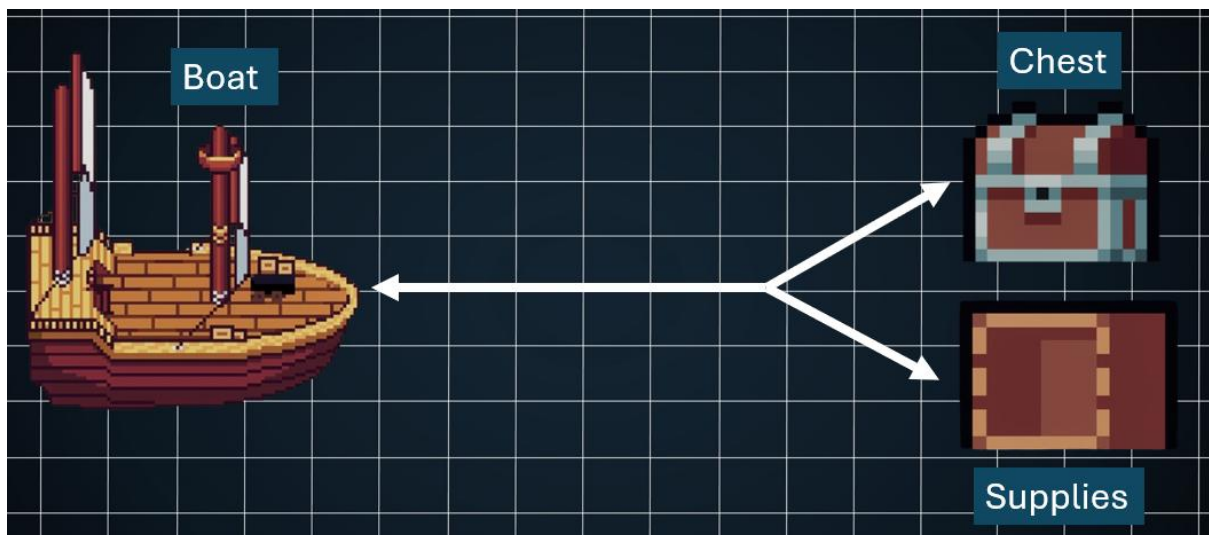


Gameplay loop

The Gameplay loop is important in all games as it defines what the player does in the game, as in *While the Iron's Hot* it is completing quests by crafting to be reward with more progression and for *Mario & Luigi* it is to platforming out of Bower's stomach with the help of Bowers by completing puzzle elements as well as turn base combat. For my game the gameplay loop can be separated into 3 steps:

1. The player spawns on the island next to the Boat and the Boat asks that the player obtains a Chest and Supplies.
2. The player collects both the Chest and Supplies.
3. The player returns to the Boat with both items in hand before Sailing away to the next level/island.

What makes my gameplay loop interesting is that the player starts at the same position in which the level ends and that each of the items required to beat the level are placed around the island so that the player needs to traverse the island to collect the necessary items and return to where they started to complete the level. What makes this gameplay interesting is what the player must traverse and/or complete to get these items.



Main Menu

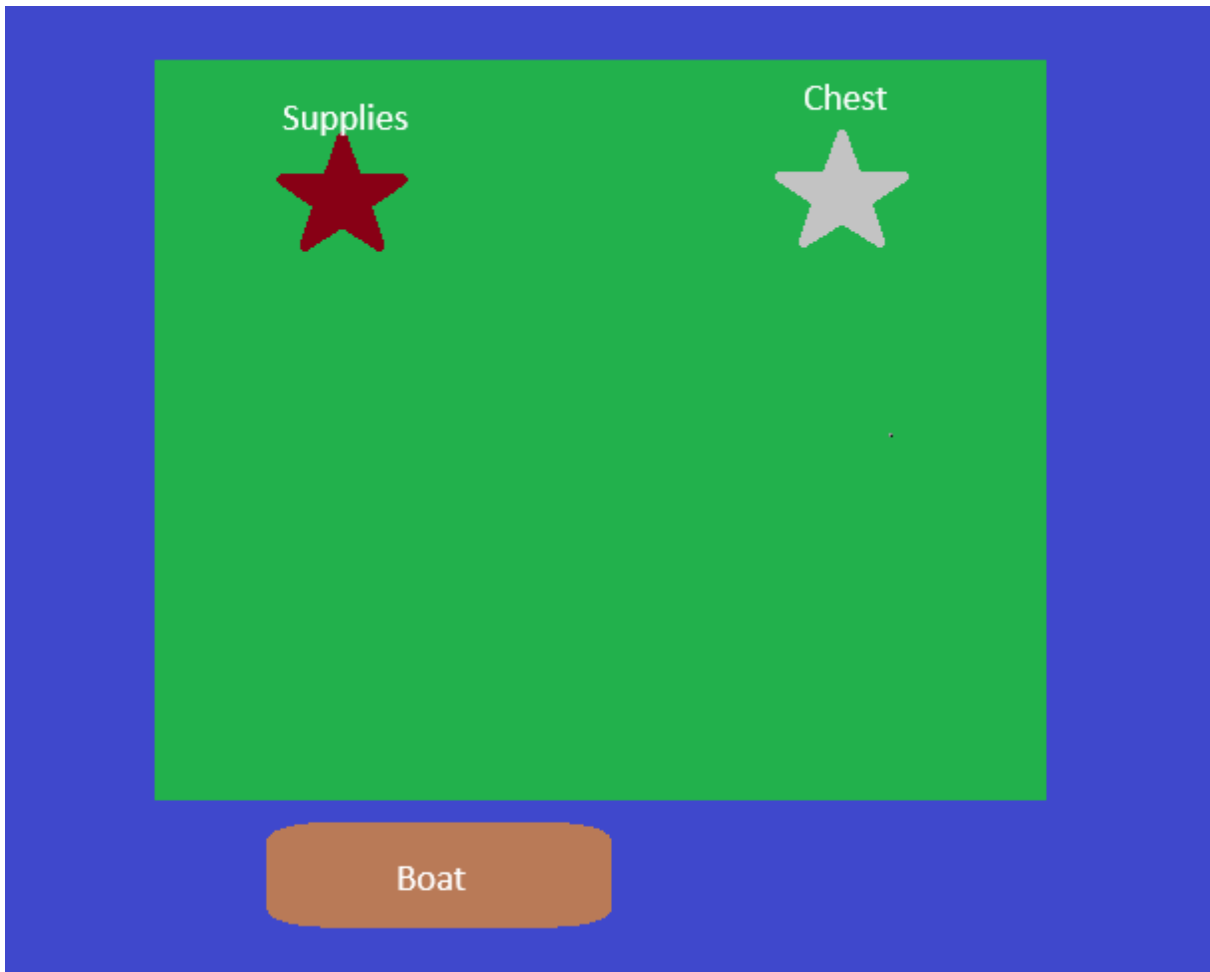
For the Main Menu it will be the first place the player will be as they start the game, and it features the importance of a Main Menu such as the Title of the game placed at the back of the island to easily be seen, a Play “button” and a Quit “button” so the player can either start the game or leave. But the speciality of my Main Menu is that rather than it being a UI it is a playable level so the player needs to move their character to interact with each of the “button”, which in my game the buttons are Boats which will either take the player to the first level/island or will quit the game for them and are placed at either end of the island so the player can tell which is which. Also, since my Main Menu is playable it also needs to feature a control scheme, so the player knows how to move, other wise they won’t be able to start the game or be able to leave.



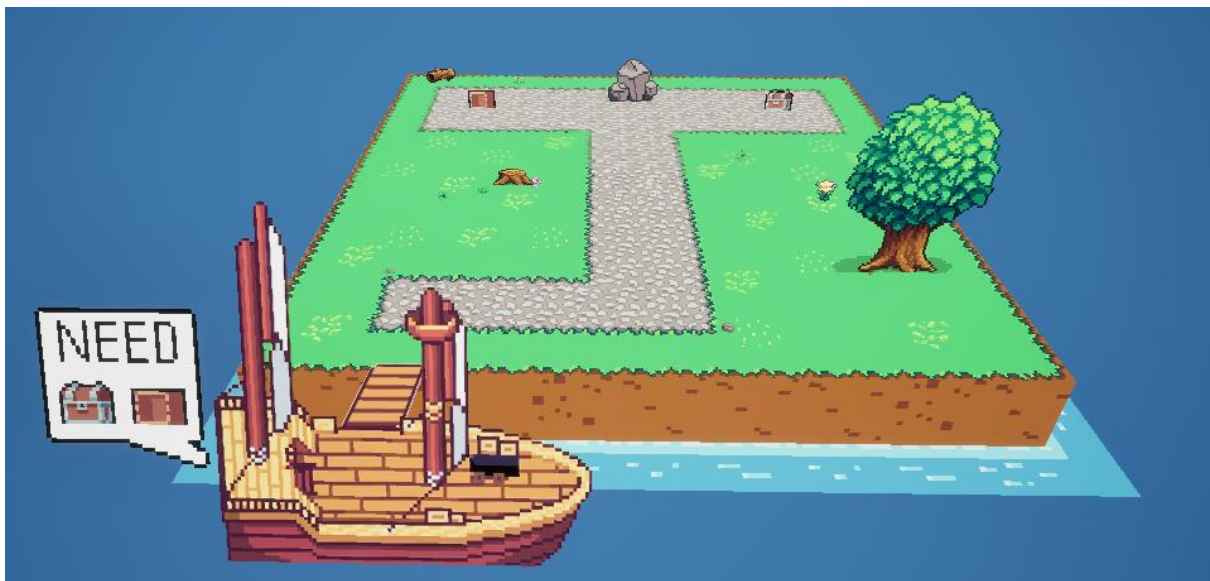
Level 1

For the first level it introduces the player to the gameplay loop of traversing the island and collecting the Chest and Supplies to be able to complete any level. To make this as easy as possible for the player to learn and understand I designed the level to be very simple with it just being a square that contains the Chest and Supplies on the opposite side of the island to where the player is located, so the player has to do is walk to the other side of the island, collect both items and return to the Boat. A later addition I made to this level was an addition of a that which leads the player from the sip to both items to make them stand out more on the island.

Level 1 Plan:



Level 1:

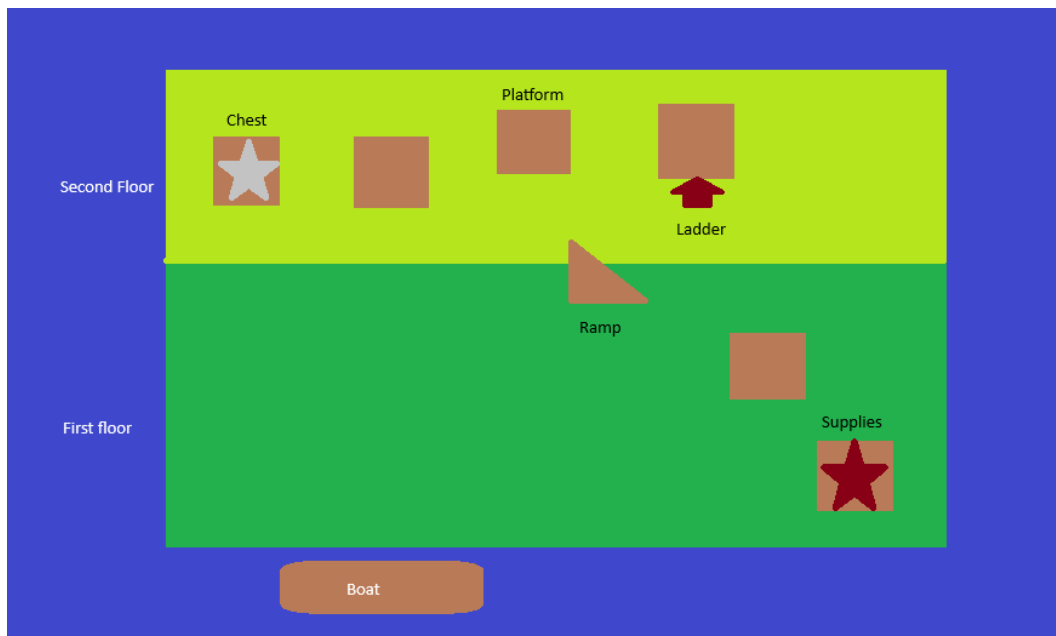


Level 2

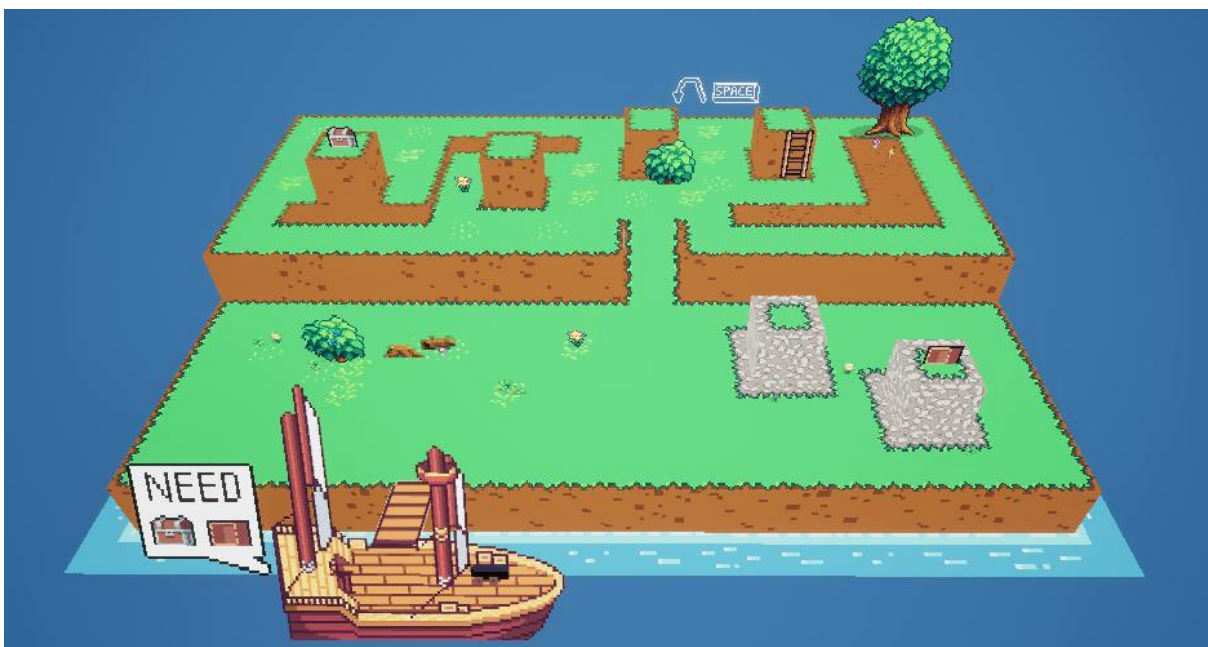
For the second level it introduces the player to the platforming aspect of the game, by teaching the player how to jump. As to complete this level the player must make 2 series of jumps to get the Chest and Supplies, and I designed this island to have differing elevations, so it also introduces the player to verticality of the levels so that the player knows they need to jump, down and around to be able to beat future levels.

As for this level it is divided in half with the back half being at a higher elevation than the front, starting half which the player can access through a ramp connecting both sides so that the player can get access to the Chest jumping puzzle and the Supplies jumping puzzle which are both accessed at the high back half of the island.

Level 2 Plan:



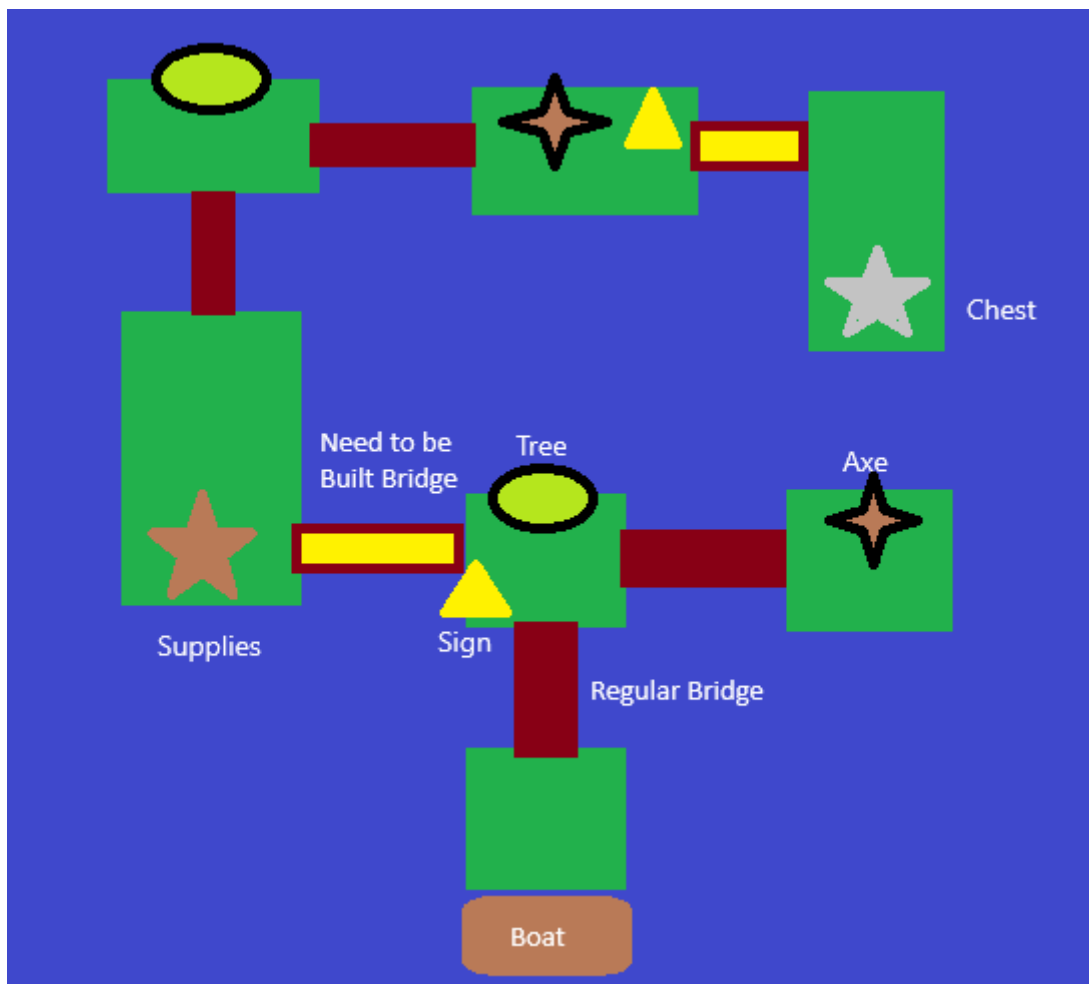
Level 2:



Level 3

For the third level it introduces the player to the first Puzzle of the game, The Bridge Puzzle. The Bridge Puzzle requires that the player finds an Axe to chop down a Tree to get Wood to build a Bridge, and I designed the Island to better teach the player this. By the island being a series of islands rather than 1 island that are connected by a number of bridges but some are missing, which the player needs to replace, this is because it introduces the player to bridges so they know what it is, also I designed the islands to be small so it better highlights the Axe and the Tree and to limit the player's movement to focus of the puzzle, and to prevent them from skipping it as well which is also helped by that I placed the Chest and Supplies on higher elevated islands which can only be accessed via Bridge which needs to be built.

Level 3 Design:



Level 3:



Level 4

The Forth level introduces the player to the second puzzle mechanic which is the Treasure Map and expands on the difficulty of the first puzzle by changing the placements of the Axe and Tree. This Map Puzzle is like the Bridge puzzle but rather than rewarding progression on the island it rewards the player the Chest, that is required to beat the level, so the player needs to complete this puzzle to beat the level. How it works is that the player will find a map which when picked up will reveal a Red X mark somewhere on the island that the player needs to dig with the new item, the Shovel, to obtain the Chest.

The Design for this level helps with the introduction to the Map Puzzle, but also expands on the terrain by it no longer just being simple squares but different shapes at differing levels of altitude to expand the level further by verticality rather than just making the level wider, as for the Map Puzzle, the Map is placed directly in the path of the player that leads to the Supplies so the player will encounter it, and the X Mark spawns next to the Map so the player is aware what the map does, and for the Shovel it is placed next to the Supplies so that when the player back tracks they will pass the X Mark holding the Shovel learning how the Puzzle works.

Level 4 Design:



Level 4:



Level 5

For the Fifth Level, with everything now introduced to the player, it is time to expand on the difficulty of the game by making the island itself more difficult to traverse and to place the items in somewhere that will force the player to inconvenient.

The design I went for this level is a circle and I placed each of the items in a location which requires the player to backtrack and loop the islands at least once or twice, from the placement of the Axe and Tree to the Map and X mark, also I expand on the terrain of the island by making parts of the island touching the water so the player has to be more careful with their jumps otherwise they will fall immediately into the water. The Speciality of this level is the placement of the Supplies and X mark are be visible at 2 important points in the level, as the Supplies are visible at the start of the level so the player knows where they must go and the X Mark is visible once the player grabs the Supplies as they would be able to see it on the other side of the island form where they are.

Level 5 Design:



Level 5:



Level 6

For the Final Level for the Game, I wish to go all out in difficulty, size and style, so I based this level off a mountain. This level is designed to be a Snake pass that reaches the top of the mountain, so I can divide each pass into floors for better adding puzzle elements (1 puzzle per floor), not every floor has a puzzle but each floor either connects to a puzzle or is either decorative to give the mountain more height. The Speciality of this Level is the new end goal, as rather than collecting both a Chest and Supplies, the player is asked to only collect 1 large Gold Chest by digging it up at a X Mark at the top of the mountain, to aid the player in understanding this new goal the Map is given to the player right at the start of the level so the player knows what they are looking for, and once they collect the Chest a "You Win" text will spawn to indicate to the player that they have completed the game.

There are 11 floors on this mountain island, and each have a unique feature to avoid this level just being a walking simulator:

Floor 1: Small outcrop where Boat is and where the player starts.

Floor 2: Ramp and path connecting Floor 1 to the mountain.

Floor 3: Holds the jumping puzzle for the Shovel.

Floor 4: jumping puzzle which gives the player the choice wither to jump or walk around.

Floor 5: Narrow path puzzle that the player needs to carefully tread through without falling, and a small jump holds the Axe.

Floor 6: Holds both Trees for the Bridge Puzzles for backtracking.

Floor 7: Holds Bridge Puzzle 1 and Narrow Path puzzle.

Floor 8: Holds Bridge Puzzle 2.

Floor 9: A Lake that will kill the player if they swim in, so they must walk around.

Floor 10: Calm Decorative path leading to the X mark.

Floor 11: Holds the X mark for the Gold Chest.

Level 6 Design:



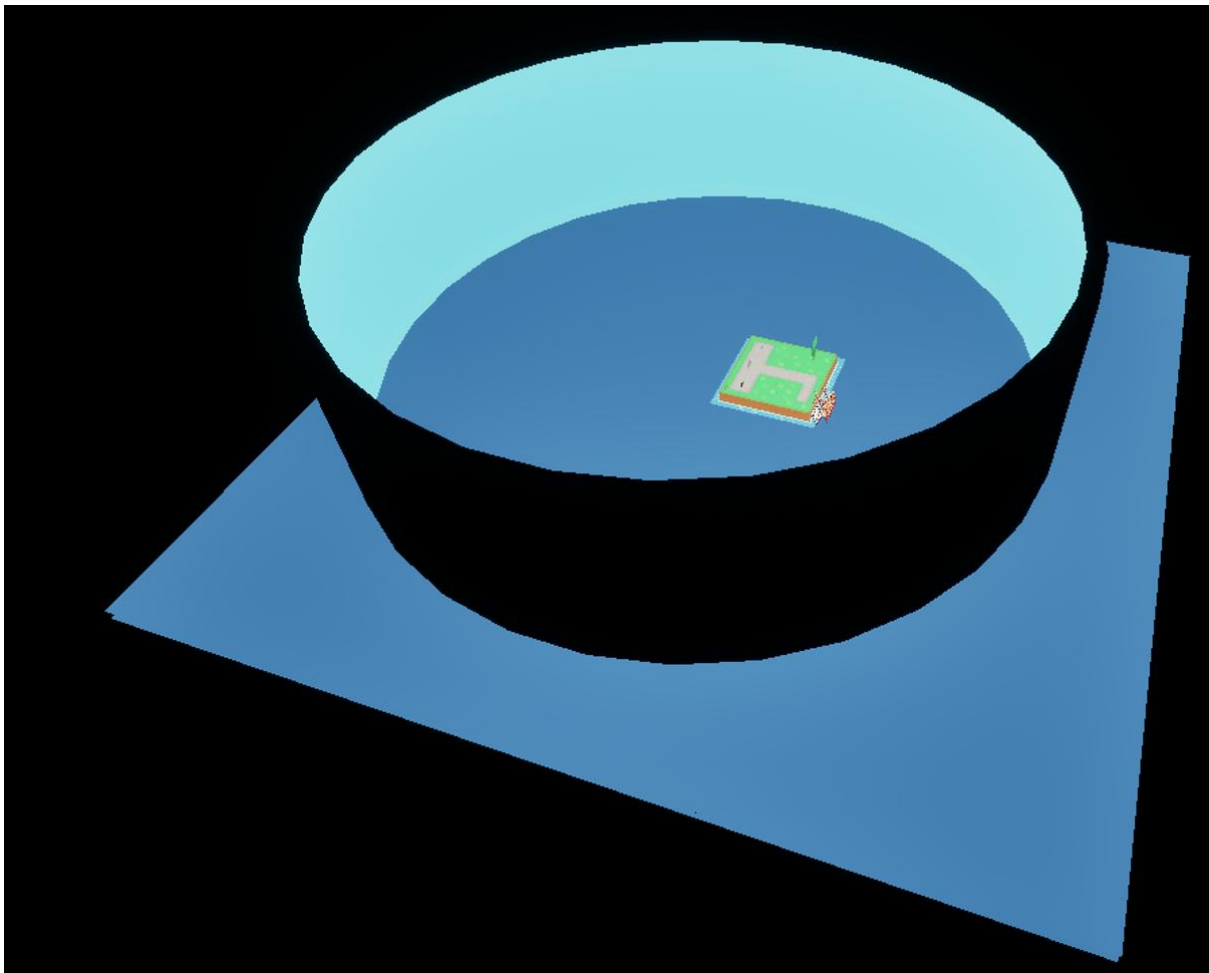
Level 6:



Level Structure

How my Levels are structured is the ground which the player stands on is a Tile Map using the Pixel Land – Forest tiles to make quick convenient flooring, as it is easy to alter and decorate. But for the rest of the level such as the sides of the island and decorative sprites, they are their own sprite which I placed in the level so that the decorates can easy to edit and placed where I wish them to be, and the sides of the islands are made to look unique without any/much repeating patterns to make the sides of the islands less noticeable, same with the island water divides which transitions between ocean and the island so it looks like the water is crashing against the island.

To create the horizon, I used a hollow cylinder with a blue emissive texture so it would create the curve seen in real life horizons, as the ocean curves with the world as you stare out into the sea, otherwise the straight line in the background separating the ocean and the sky ruin immersion as it does not look right.

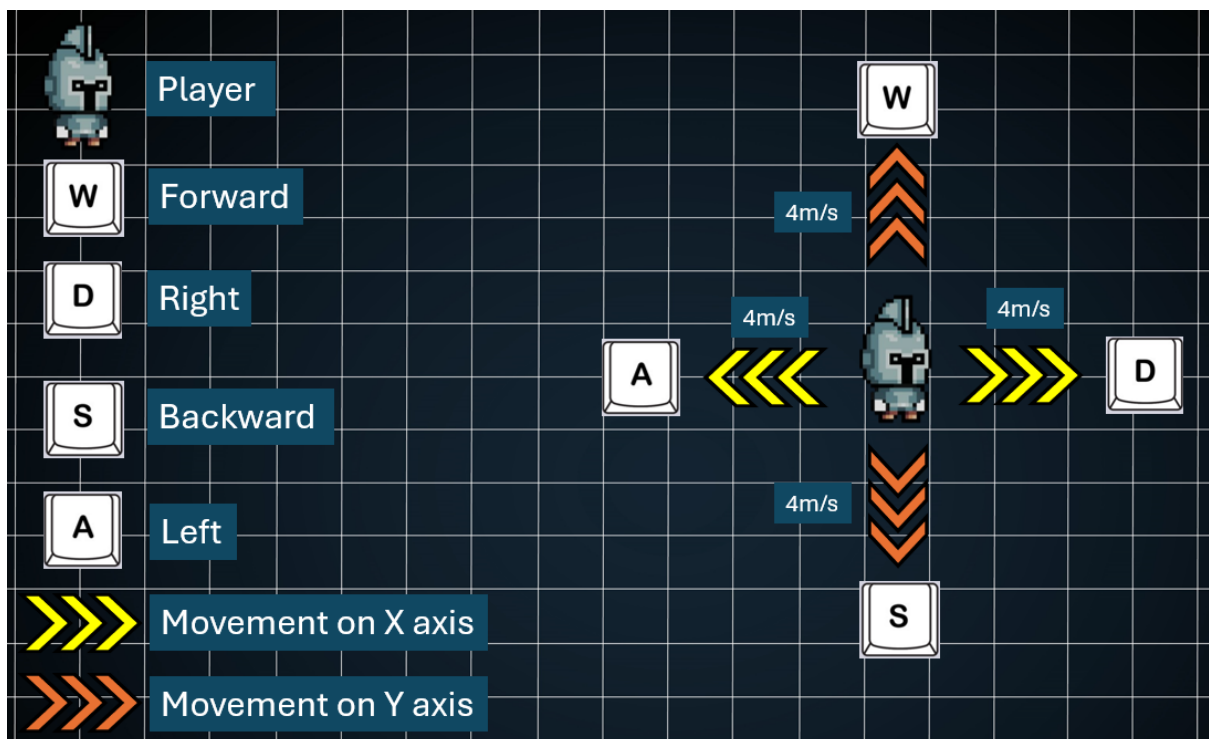


Mechanics

The Player Character

The character in which the player controls is a Knight with inputs, forward, backwards, left, right and jump, which is just movement, with no interaction button, as I chose to make all interactions automatic rather than requiring input to make the controls simpler and easier for the player to understand.

For the Movement since it is a 2.5D game rather than a 2D game the player needs to be able to move in all directions rather than just left and right. The player moves at 4m/s, which is slower than the standard 6m/s, because it helps with the scale of the island and to prevent the player from skipping a majority of the island puzzle, as it is difficult to make the island appear big while still being visible to the player so they can see ahead and plan their route, as if the island is too big the player doesn't know where to go because they can't see most of the island, but if the island is too small the player can easily just jump around the puzzles and skip most of the island, that is why the Mountain island is vertical steps away from the player camera so the player can see what's up ahead, so to fix this I altered the player's speed to be slower to stop them from worming around.



The player can also jump as it is the most important mechanic for the platforming puzzles, as without it the player will be unable to complete any. The player can jump upwards of 1.2 metres which is just over 1 tile (1 metre) and can jump gaps of up to 4.2 metres (4 tiles), the reason for the 0.2 is to give the player some leniency for some jumps so it looks like they just about made the jump, to make the game more exciting by the player doing things by the skin of their teeth.



Inventory System

In the game the player needs various items to complete puzzles and finish levels, such as the Bridge Puzzle which require the Axe then the Wood and the end Goal for the Boat requiring both the Chest and Supplies. Rather than have the player use a UI to tell what the player has in their Inventory, I wanted to use a system similar to Dead Space where it has the player's stats on the back of their character, so that in my game the player's inventory is attached to their character so when they pick up an item it appears above or around their character to show that they have it.

How it works is through an array Boolean and several sprites attached to the player character and the pickups communicating to the player, as for example the Chest item is just the Chest sprite attached to the player's head with a Boolean assigned to it, so when the player goes to pick up the Chest, the Chest Item itself communicates to the player to set the assigned Boolean to the Chest to True and to make the Chest visible on the player character, so that the player can tell that they have picked up the chest by it appearing in their "Inventory".



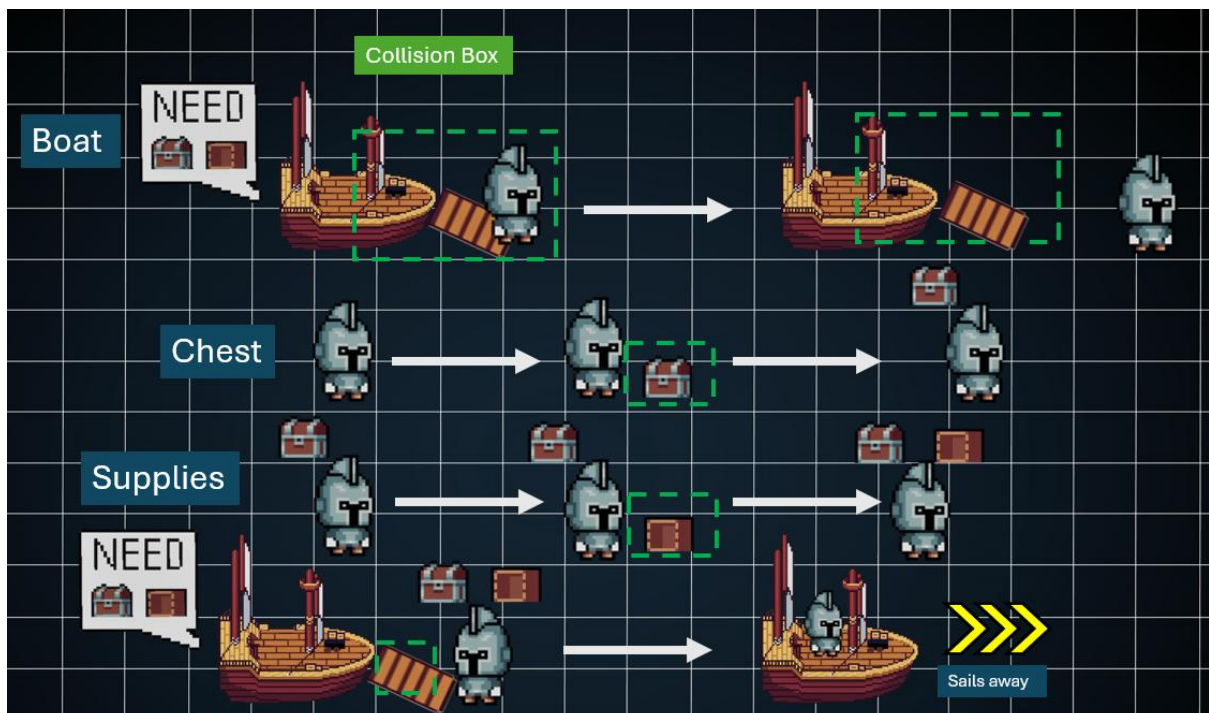
End of Level Goal

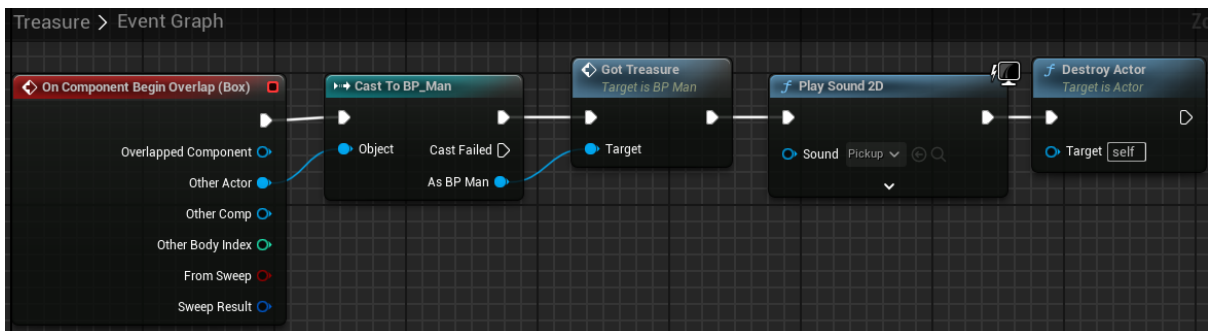
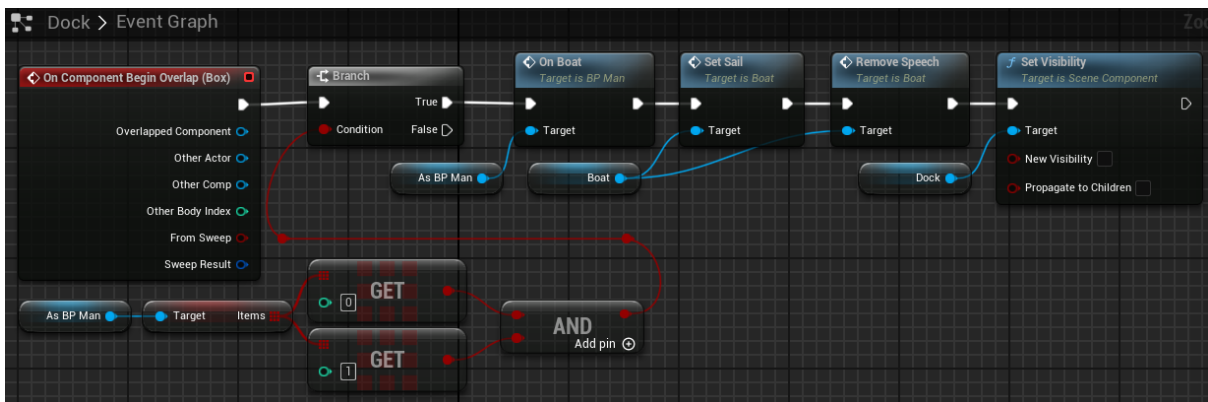
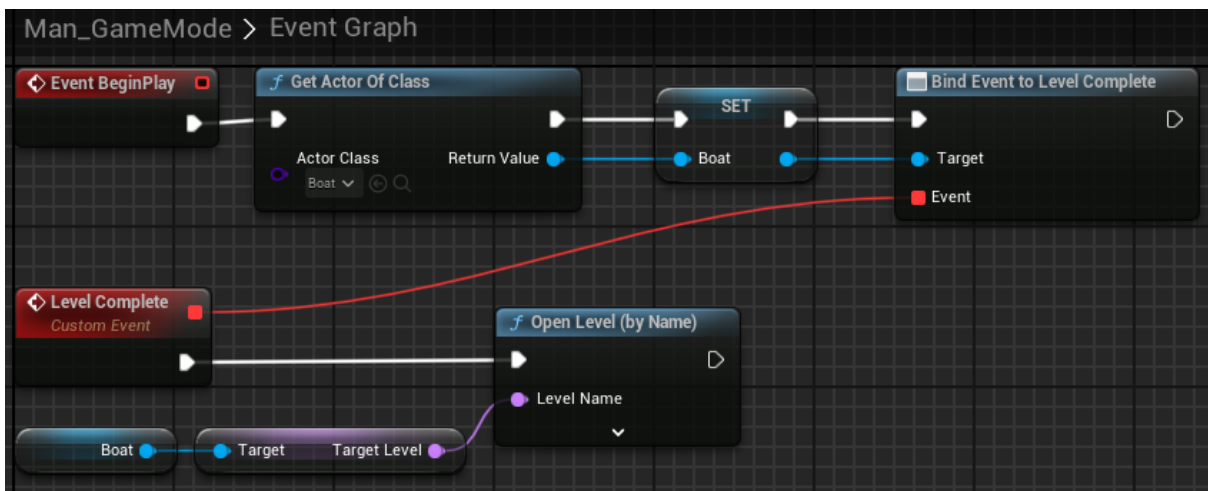
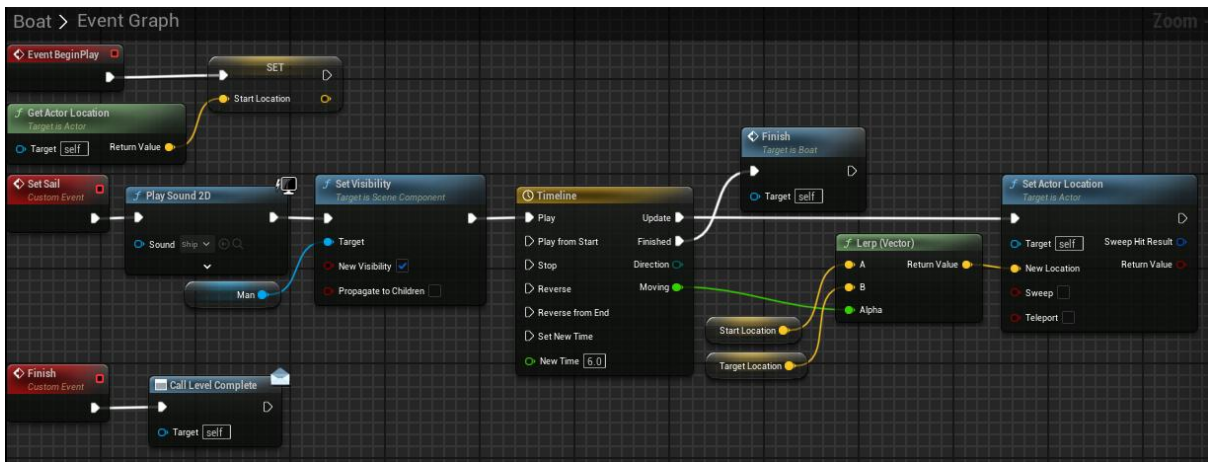
The Goal for each level (other than level 6) is to collect the Chest and Supplies from the island then return to the Boat to sail to the next island. How this works is the combination of 2 actors, the Dock and the Boat, and the Inventory System and the Game mode.

The Boat works with the Dock to trigger the end of the level and what the Boat does is first tells the player that they need to do, through a Speech Bubble that disappears/reappears when the player leaves/enters the area of the Boat through a collision box which alters the visibility of the Speech bubble. The Boat also controls opening the next Level through an editable variable which holds the next level's name, so when Dock activates the Boat, it will call an Event Dispatcher to the Game mode which will open the Next level after the Boat does it's sailing animation, which is the Boat sailing off camera through a timeline between two points.

The Dock checks to see if the player has the necessary items and tells the Boat to set Sail through a collision box at the end of the Dock, so it looks like when player walks across the dock and touches the Boat, they board the Boat. If the player has the necessary items it will activate 3 events, the first is the Camera lock for the Boat sailing animation, which is just making the player invisible and freezing them in place so the camera doesn't move, next is telling the Boat to Set Sail and remove Speech so the speech bubble doesn't drag along as the Boat moves, as for Set Sail it activates the timeline for the Boat moving and makes a player sprite on the Boat visible so it looks like the player got on the Boat and sailed away, when in actuality the player is just invisible on an invisible Dock, so there isn't just a floating Dock after the Boat moves, still on the island before the next level opens.

This is the same for all levels except level 6 which alters the end goal, rather than getting Chest and Supplies the player only needs to get is a large Gold Chest, and how this done is with duplicate actors that have slightly different code to accommodate the change (End Game), this isn't the most effect solution but since this is just the one use it doesn't become an issue.



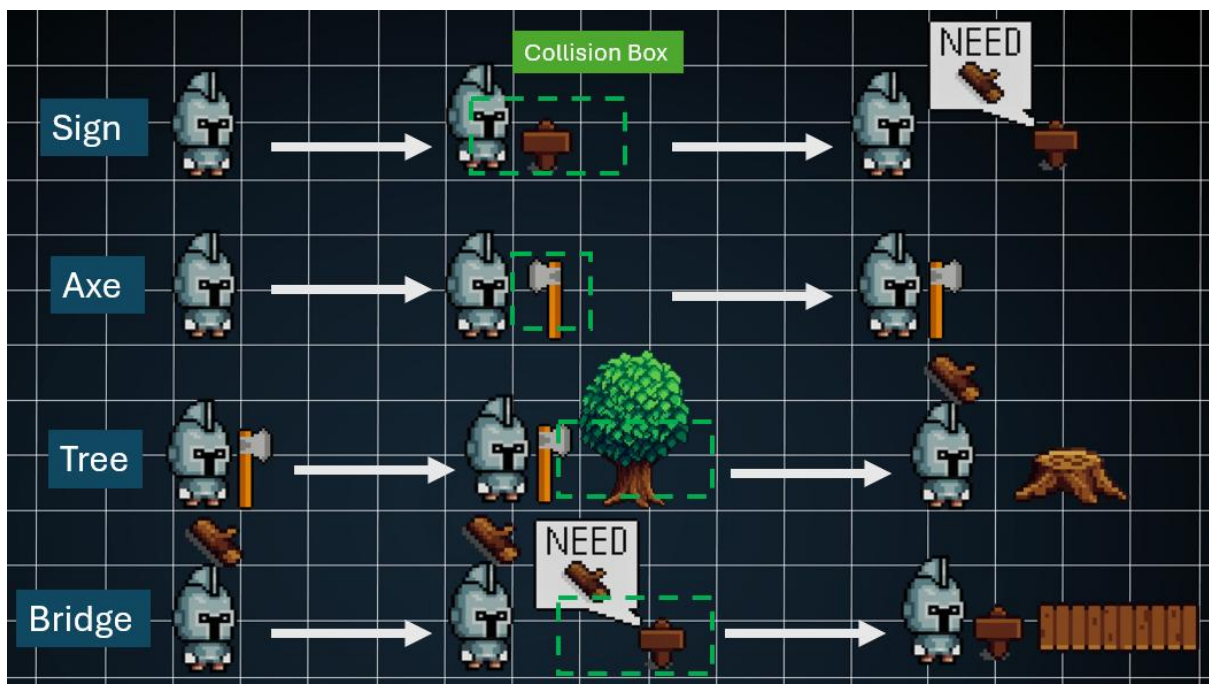


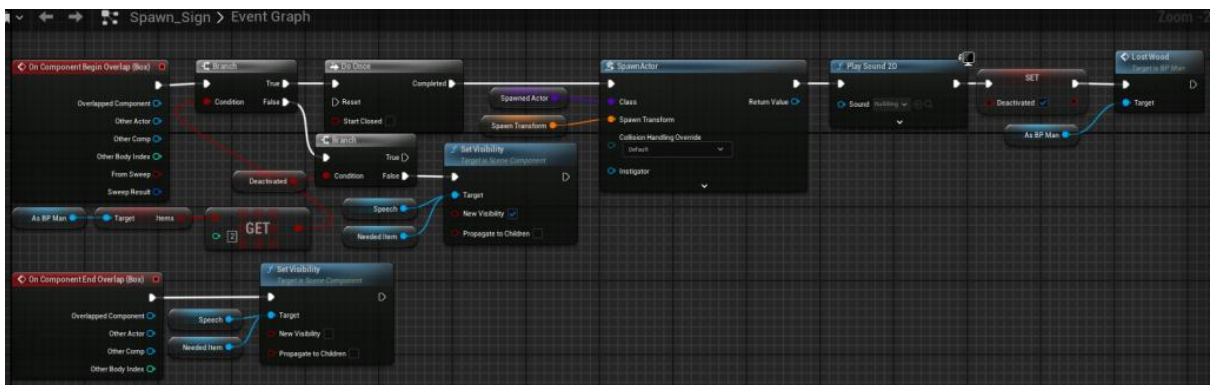
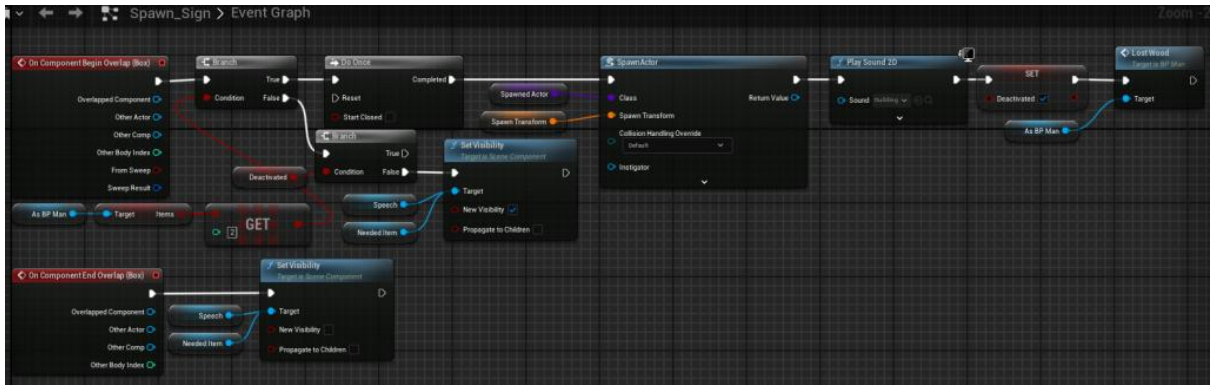
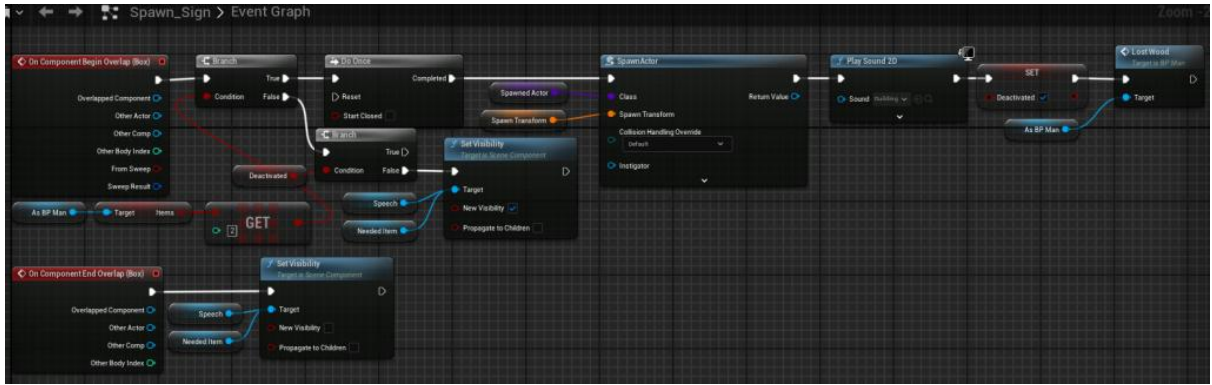
Bridge Puzzle

The first puzzle that the player will come across is the Bridge Puzzle. Which is a sign that asks the player to get an item, such as wood, and how they get Wood is by chopping down a tree using an Axe, so the player needs to first find an Axe, then collect the Axe and chop down a tree getting wood, then with the wood in hand they will return to the sign that will build the bridge for them.

How the puzzle works is with the inventory system by checking if the player has the required items, as the Sign will check if the player has any Wood and the Tree will check if they have an Axe, and if the player has an Axe they will be rewarded with Wood and if the player has any Wood they will be rewarded with a Bridge. What makes this unique is the Sign has a text box which will tell the player what they need by showing the icon, which will appear and disappear when the player approaches/leaves, and the Tree when cut down will consume the axe so the player can't use it for any other puzzles and will switch from a Tree to a Stump to show that it has been cutdown.

Initially I designed the Sign to be able to require and spawn different items and actors through editable variables so that I may be able to use it in other puzzles but I settled for keeping it to the Bridge Puzzle due to clashing with the Inventory System, because the item required needed it's own event which made it complicated an to save time and effort it was simpler to the Sign to remain in the Bridge Puzzle only.





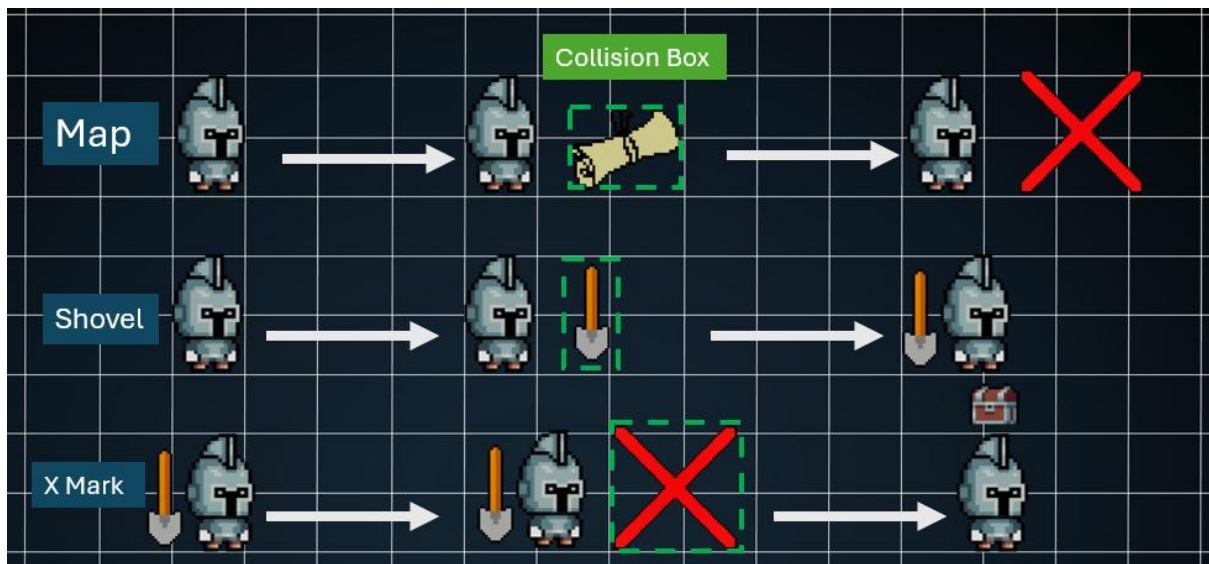
The Treasure Map Puzzle

Unlike The Bridge Puzzle that halts progression on the island itself, the Treasure Map Puzzle makes the End Goal more difficult to the player as it makes getting the Chest more difficult, rather than the player simply picking up the Chest from the ground, the player now needs to find the Treasure Map to uncover the X Mark which needs a Shovel to dig up the Chest.

How this works is the player will “pick up” the Map, as in they go to pick it up but once the Map actor’s collision box is overlapped it will spawn the X Mark in a chosen location through an editable vector variable on the Map actor. Next the player will acquire the Shovel which is no different than the Chest, Supplies and the Axe through the Inventory System by setting its corresponding Boolean to True as well as making it visible on the player. Last is the X Mark which when the player steps over will check if they have the shovel, and if they do it will reward the player with the Chest before destroying itself.

An Interesting Bug was found when the Player would pick up the Map with the Shovel in hand, which resulted in the player being given the Chest, as this is because for a single tick the X Mark spawns where the Map is before being set to where it is supposed to spawn, and for that single tick is able to check if the player has the Shovel and give the player the Chest, to fix this I added a tick delay to the X Mark so it only became functioning after 1 tick so it is unable to give the player the Chest immediately.

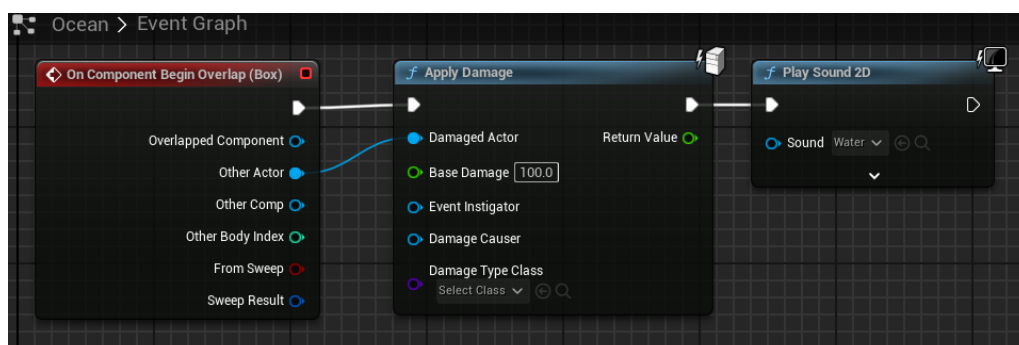
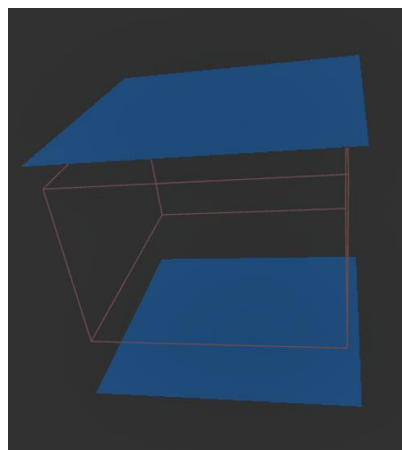
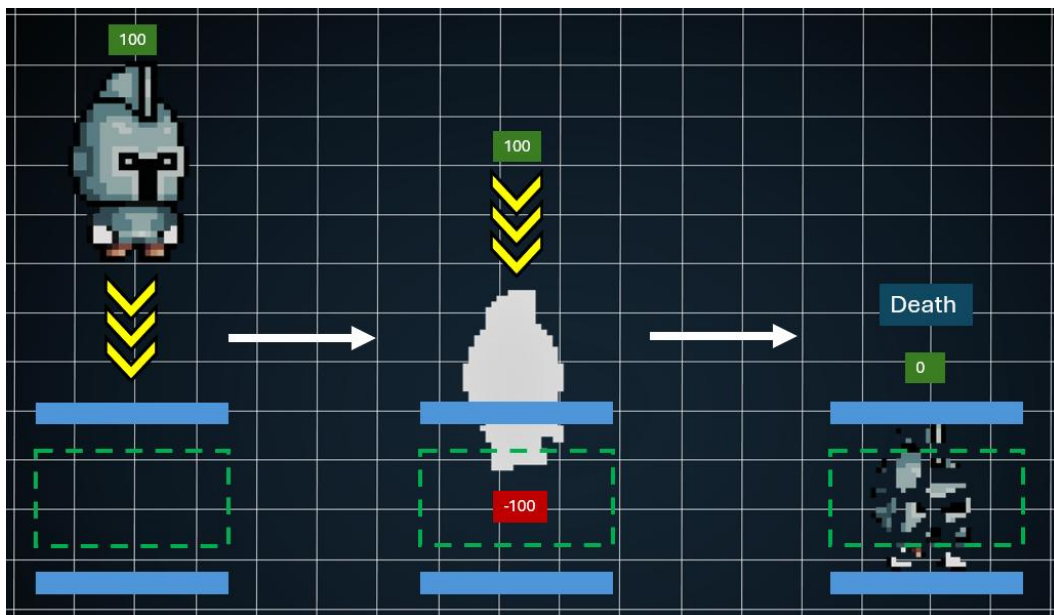
This Puzzle also has duplicate End Game actors used for Level 6 to accommodate the Gold Chest and the Win Text, as when the player digs the level 6 X mark they will be rewarded the Gold Chest and the Win text, so to make this change I just copied the actor and made some changes which isn’t the most effective way but is acceptable due to the 1 and only use. As if it was a different actor for each level, it would be very inefficient.



Ocean and Death

The Ocean is an Actor separated into 3 pieces, the top sprite, the Collision Box and the bottom sprite. The top sprite is the ocean tile in which the player sees surrounding the island, as well as some areas on level 6, which is just a dark blue sprite which I scaled (the actor) to fill the Level which has no collision so the player can fall through, the Collision Box is the part that applies 100 damage to the player, killing them instantly, the bottom sprite is just the top sprite but with collision to prevent the player from falling out of the world before they respawn, as they would be able to see under the map.

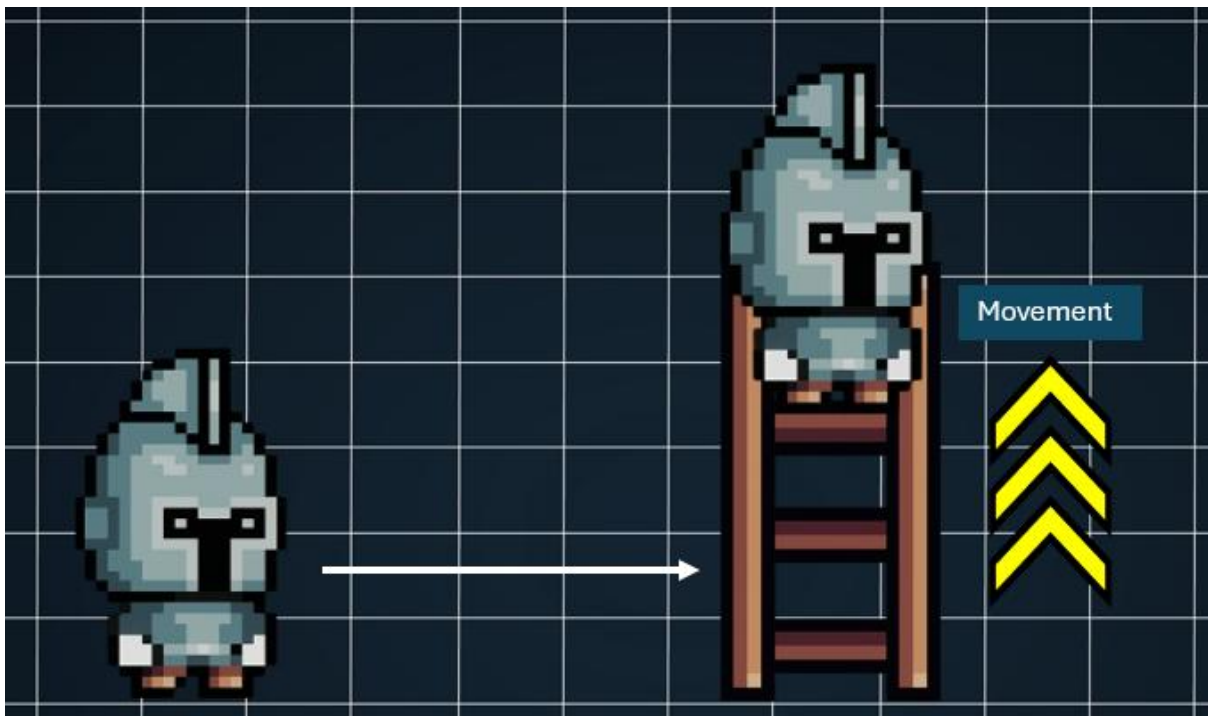
The only thing which can kill the player is falling into water, and if the player does that they will “respawn” at the start of the level, which is just the player checking if their health went below 0 and if so, it would reopen the current level, so the player has to start at the start of their level again as punishment.

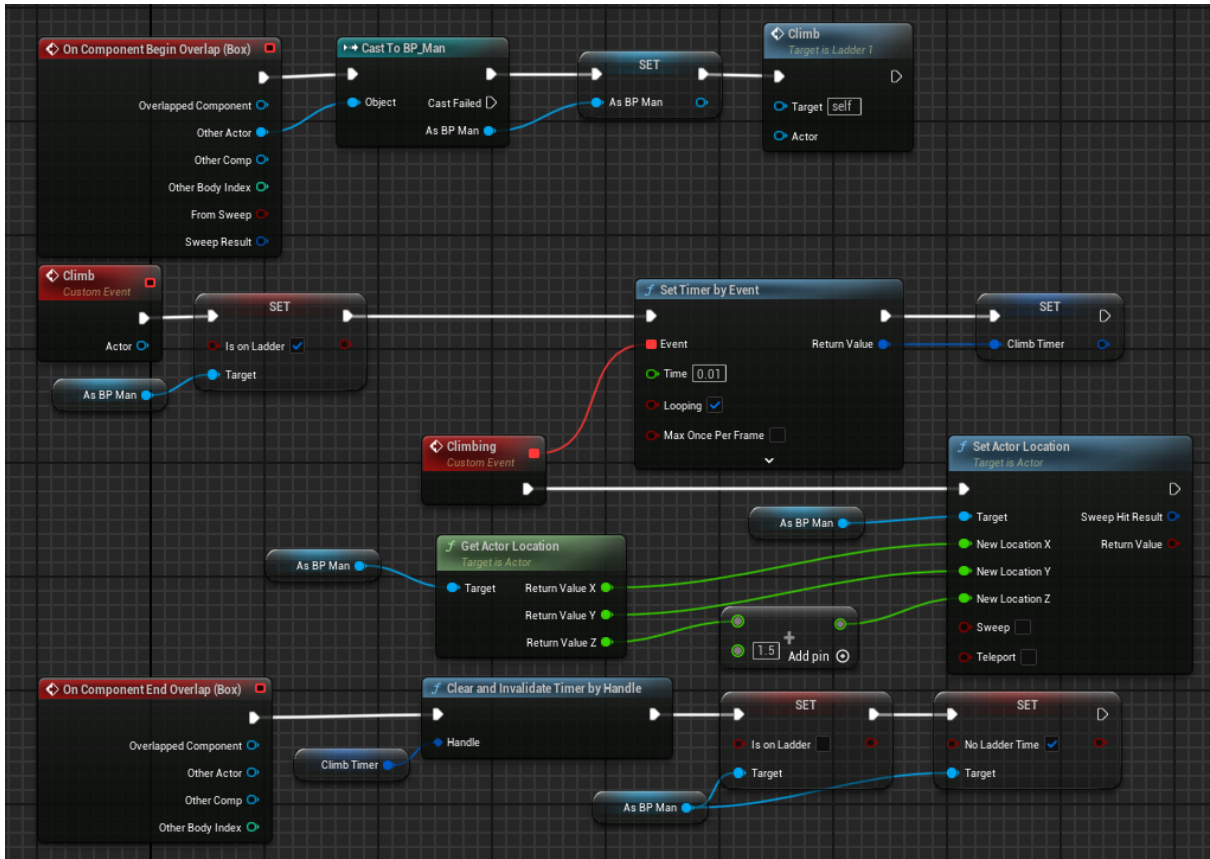
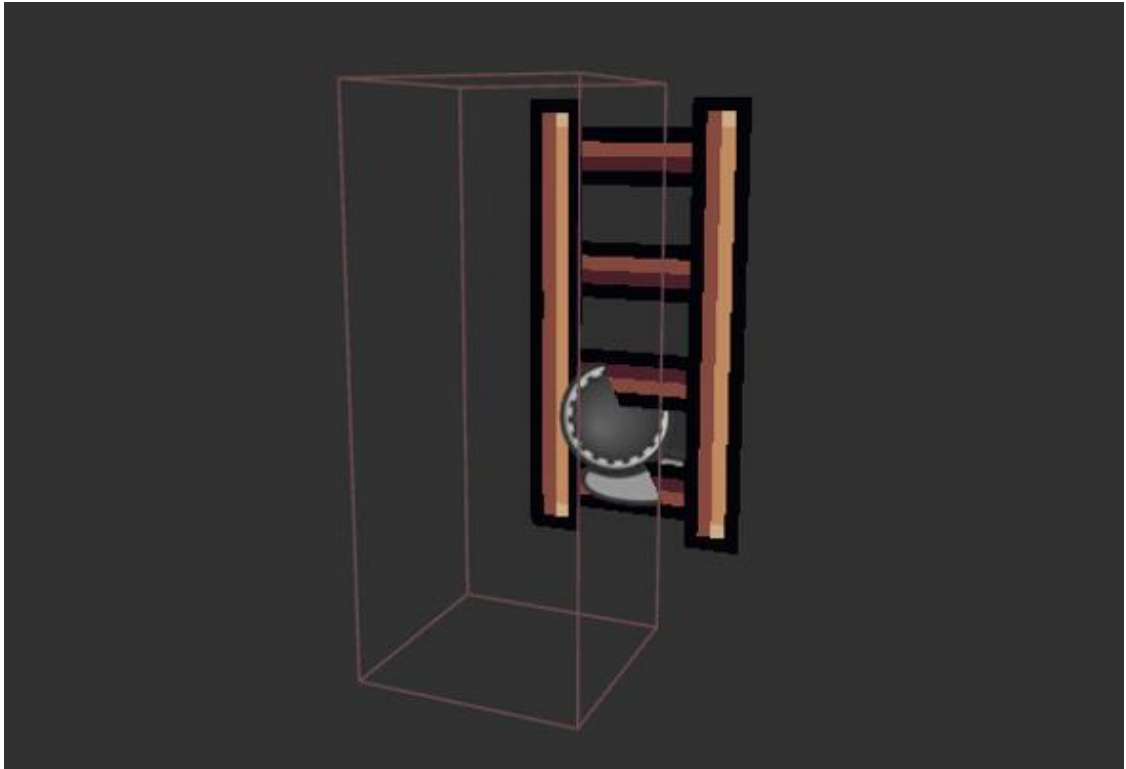


Ladder

For the Ladder it works by switching the player's movement mode to Flying so they float up the ladder until they reach the top or get off the ladder which switches them back to walking mode. I initially had some difficulty having the player climb the ladder as it would cause issues with alignment and launching the player, so I settled with altering the movement mode of the player so it lifts the player smoothly so it looks like they are climbing a ladder by this has the issue of that the player cannot climb down the ladder, which can be used to create 1 way paths, but the only way down is to fall somewhere else.

How the ladder works is when the player overlaps the ladder it switches the player to Flying, so they aren't effected by gravity as it would cause the player to shake violently from falling, it sets the player's location and adds 1.5 to the Z axis every 0.01 seconds, so the player goes upwards on the ladder, on a loop which is cleared and invalidated once the player steps off the ladder, which may not be quite efficient but it just works.





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