Module 17

Hack and Slash Prototype

Game Design and Concept Art (BA Hons Year 3)

Eve Ryan

Introduction

During this module, I intend to expand on my prior study, development, and knowledge of 3D animation abilities and methods gained in Modules 6 and 12 (Animation for Games and Character Rigging). My objectives for this module are to have a user-interactive Human-Computer Interface and my own prototype game for the components to be integrated into.

This module will serve as my degree's capstone, in which I will thoroughly test my animations to control my characters and components in order to provide the user with completely functional gaming experiences. In short, this module will bring my concepts to life, making them suitable for an e-portfolio and industry-standard interviews. In order to apply for jobs in the industry, I will have to demonstrate my abilities and dedication in terms of creativity, willingness to work hard, competence, technical proficiency, self-criticism, analysis, and evaluation.

Hack and Slash Genre

Hack & slash games were known as action games during the 1980s and early 1990s, and they were always two-dimensional. Due to the lack of three-dimensional games at the time, this genre was generally limited to side-scrollers (1UP, 2010). Shinobi is a good illustration of this. Many say that these games are more action-oriented platformers, although there is far too much battle for that to be true.

The hack & slash genre is known for its continual fast-paced action and lack of plot (Stegner, 2021). In a first-person shooter game like Bioshock Shock, for example, the story drives the game forward owing to its intricacy and the want to know what will happen next in the fictitious universe (Stegner, 2021). Most hack & slash games, on the other hand, do not have award-winning or well-thought-out narratives since they are an unneeded focus for the game (Stegner, 2021). Because it caters to a specialised audience that isn't interested in stories, the production value is typically lower than that of other games in the business, resulting in outdated materials and visuals. God of War (2018) is a recent hack and slash game for PlayStation that, because of its stunning graphics and gripping plot, has entirely changed the way people think about hack and slash games (God of War Review, 2022).

(God of War Review, 2022)

God of War, a computer game released thirteen years ago, revolutionised the action-adventure hack-and-slash genre. It generated two sequels, a prequel and two side-quels cementing Kratos as being one of PlayStation's greatest memorable figures. The fast-paced button-mashing action, fixed camera shots, old Greek folklore scenario, and Kratos' trademark dual swords were all eliminated by Sony (God of War Review, 2022). Instead, they included a melancholy, grizzled, paternal Kratos wandering Norse mythology's nine domains. The camera has repositioned closer to the player's shoulder, and the main weapon has now become the Leviathan Axe, which looks like a boomerang. The kill counter which they included in the new god of war was a great mechanic to make the fighting become addictive to the player, as it brings an extraordinary level of satisfaction (God of War Review, 2022). The variety of different enemies was also a great addition to this hack and slash game as it did not become repetitive. The character development was also a great asset within this game, which is unusual for this genre. This is why God of War redefined the genre in a lot of ways.

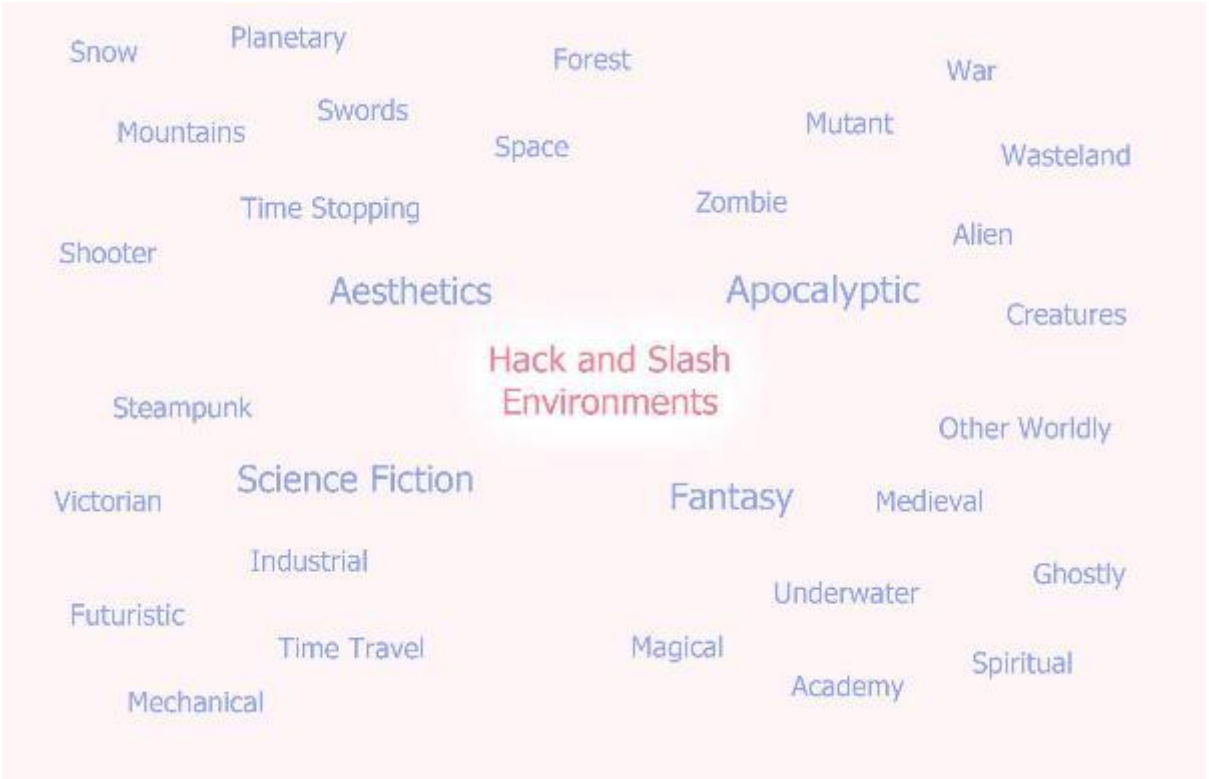
Bayonetta 2 is without a doubt one of the greatest hack and slash games ever made. The two most crucial characteristics in a hack and slash game are accessibility and depth. Bayonetta fights with all four limbs, and there are numerous combinations to generate furious combo attacks without disrupting the fighting system's rhythm. Many various weapons in Bayonetta have distinct damage and attack speeds. These may be swiftly changed out during combat, allowing the player to experiment with different playstyles without having to enter a large game menu. In contrast to other hack and slash games, Bayonetta 2 incorporates a system dubbed 'Witch Time,' which encourages a more defensive approach to gaming. When the player successfully dodges a big strike, 'Witch Time' is activated, slowing downtime and allowing the player to attack successfully if the enemy's attack patterns have been researched. The fighting in Bayonetta 2 isn't mindless button bashing; instead, the mechanics encourage the player to be alert, since the player must understand the enemy's tactics and respond to them in order to win the battle. Another aspect that encourages the player to avoid button-mashing is the requirement to utilise 'Witch Time' to fill up the 'Magic Meter' in order

to access the larger and more damaging attacks. This is ideal for adding complexity to a fighting system without overcomplicating mechanics.

Based on the time it took to defeat the boss, the length of the longest combination, and the amount of damage you sustained, each victorious battle gets a bronze, silver, gold, or platinum medal. This also encourages the user to perfect in-game skills in order to get a larger payout. The way Bayonetta 2 employs well-thought-out mechanisms and centres the game around them is excellent. This is a feature I'd incorporate in my hack and slash game, and it would detract significantly from Bayonetta 2's flow.

(Bayonetta 2 Review, 2022)

Mind Maps & Mood Boards



These mind maps helped me determine the aesthetic I wanted to achieve with my prototype hack and slash. I looked into the different hack and slash games that existed and what type of game they were. I then categorised different environments into sections to break down the existing theme I would want to work towards.

I created this mood board of different existing hack and slash games so I could reference it when building my environment and deciding where my camera would be stationed. This mood board will help during the brainstorming process as well as developing the prototype.

Environment

FUTURISTIC

Atmosphere

COLOURS

ELEMENTS

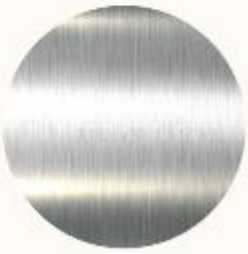
TYPOGRAPHY

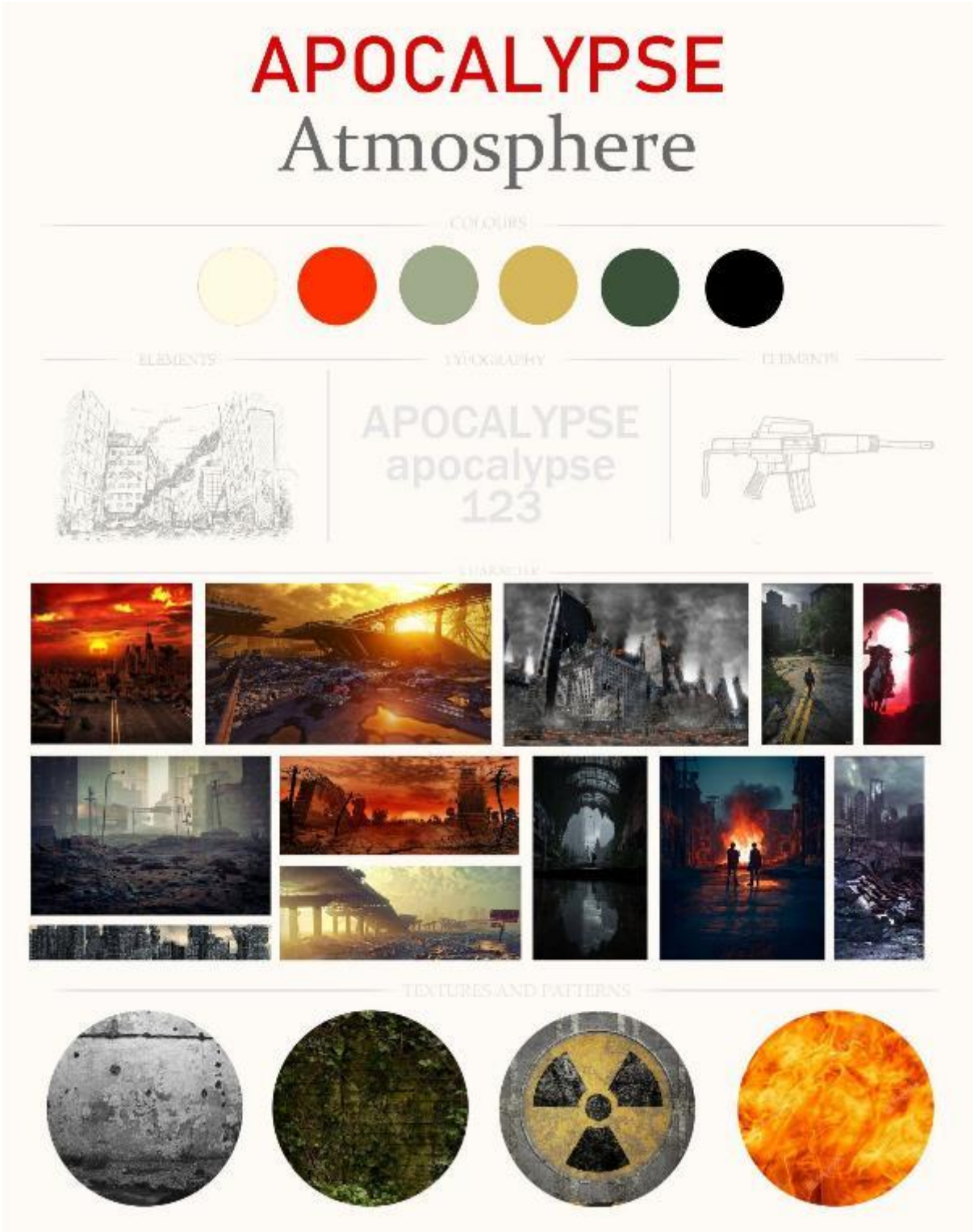
FUTURE
future
123

ELEMENTS

CHARACTER

TEXTURES AND PATTERNS





Nature was my first idea for my environment. I have developed a few natural-looking environments before which I really enjoyed doing, however, it may be time for a change. Using the procedural nature pack was really fun and not time-consuming, and I am more versed in how they work which would save me a lot of time. I also know a lot of foliage packs that are grass filled and look very beautiful within the game which I would enjoy using again now that my knowledge is enhanced.

My next idea for my environment was the futuristic setting. I created a menu system with this type of aesthetic in the past and I thought it looked great. I also asked a peer who created an urban-themed alleyway for one project and she informed me that there are a lot of assets I could use, but not as many as the natural ones. The lighting would also be key as I would have to focus on hot neon signs and make sure the mobs match the environment.

My last idea for an environment is a dystopian world. I briefly saw a few texture packs in my previous projects which would suit a dystopian world well. I think this would be a great setting for a hack and slash however I don't think it'd be as aesthetically pleasing as my other two ideas unless I executed it well.

I created these three individual charts so that I can see all of the specific factors that would go into the environment of my game all in one place. Every texture, aesthetic, colour and general element are important to see as a whole picture before going forward with a project. The theme I am most drawn to is the naturistic theme as well as the futuristic theme, due to the assets I already have in Unreal Engine 4's content browser. All three themes would fit a hack and slash environment as I referred to my mood board and mind maps of pre-existing hack and slash games before I completed my idea generation. As I continue my research I will cross-reference all the environmental ideas I had with all of the asset packs available to me. I will not have the time in the prototype to create all of my own asset packs.

Audience

Almost certainly every game developer will spend a lot of time and money on marketing before releasing their game (Carroll, 2017). Generating an educated judgement as to what demographic my game's target audience is will be crucial in maximising the efficiency and profitability of my time and money spent in a professional environment. These skills are important to develop as a student, therefore I will be using research and my own judgement to determine the target audience for my game.

The first thing which I should do, according to Carroll (2017) is creating a list of the top three competitors of my game. After this, I should do research into the demographic and research on each audience for the three games, making sure to document the data as I go. Finally, I'll ensure to take note of the crossover to figure out who my game's likely target audience is.

Organic searches on Google drive the majority of players to actual game apps and websites. Google AdWords makes demographic and economic information for specific terms and websites accessible to anyone for free. This website is great for searching the comparative games and then looking into the audiences which the similar games are pushed toward.

Facebook is another application, home to 2.91 billion accounts, which makes all data in their advertising audience insights free. Interests and terms can be searched, from this, it shows the demographics and other likes of the users who like or interact with the term which has been searched for.

After conducting these kinds of research and comparing my ideas to Bayonetta and God of War I discovered that on average my target audience will be around 40% female and 60% male between the ages of 15-25. I worked this out by calculating the mean of the percentages from Google Adwords and Facebook's advertising insights on the games.

Marketing and Platforms

The platform my hack and slash game could possibly be marketed on will be console and PC. This is due to the simplicity of the game and the simplicity of controls. My game will contain combo attacks which can be used by clicking with M1 and M2 in a specific order or pressing the buttons on a controller in a specific order. Realistically this game would only be on the PS4 and Xbox One, as it has been created in Unreal Engine 4. I would also market the game on Steam due to how popular it is and the revenue taken is very fair. I also prefer steam to other gaming platforms as it is the most popular for PC games. I would also have my game on Xbox and PlayStation so it is cross-platform and has a higher revenue.

Software

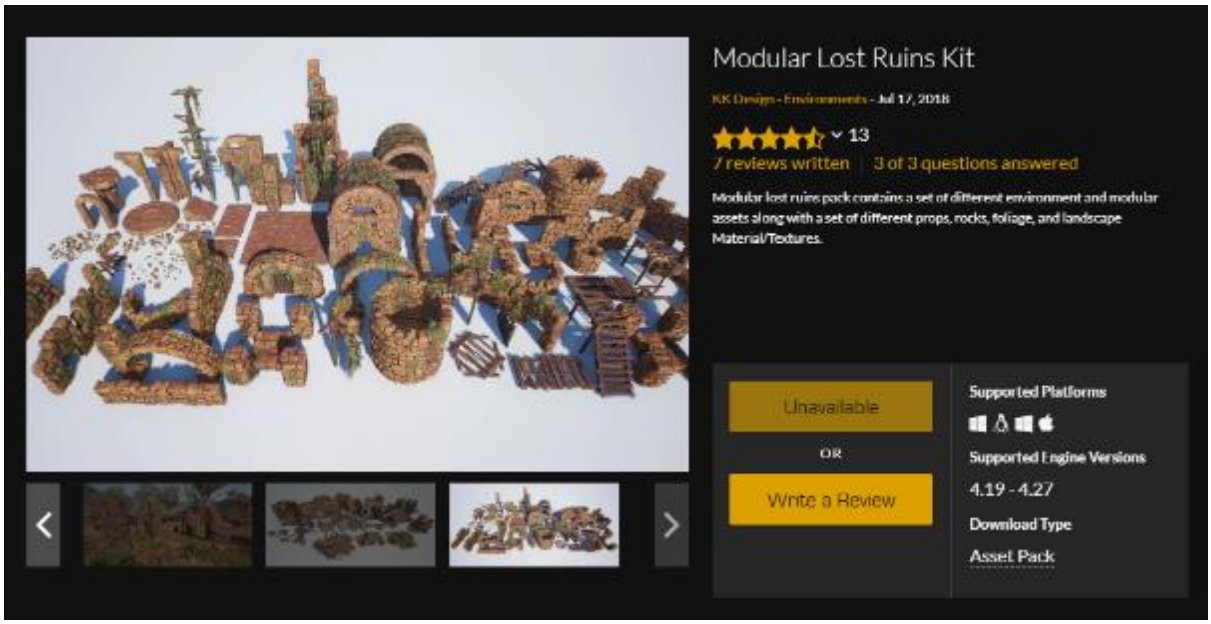
Unreal Engine 4 is the program I will be using to develop the prototype hack and slash game for this project. I will be using Unreal Engine 4 as it is the software I have been using over the past two years and know more about it than any other game engine. The software is more stable than Unreal Engine 5 as it has not been fully released and is early access only. For this reason, I will be using Unreal Engine 4. The assets available from Epic Games for Unreal Engine 4 are a lot easier to access than other engines such as Unity. Over my time on this course, I have collected a lot of different free assets once a month, therefore I have a lot more options when creating my prototype.

Resources

The Advanced Village Pack by Advanced Asset Packs is one of the most ideal packs to use because it contains enough assets to create an entire environment whilst still looking aesthetically pleasing. It is slightly different from the theme I wanted to achieve due to its style, however with the correct lighting and post-process editing I could adapt it to fit the genre of game I want to achieve. The pack is royalty-free and saves plenty of time as I'm not having to custom create assets. The downside to this is that my game may look as though I have obviously used an asset pack. This is acceptable for this brief because it is only a prototype. If I were to develop my own hack and slash as an official game I would custom make all of the assets with a team.

Modular Lost Ruins Kit

This Kit I found by KK Design is an incredible environment for a natural setting. It would be more a jungle setting than a typical inhabited natural village. If I could find any NPCs to match this environment such as trolls or anything of the sort it would match well. The style is something I haven't delved into before and I would have to conduct research into older cultures with similar architecture to create a realistic environment. This kit would also save a lot of time as I would not have to create assets but it would look as though I have used a kit.



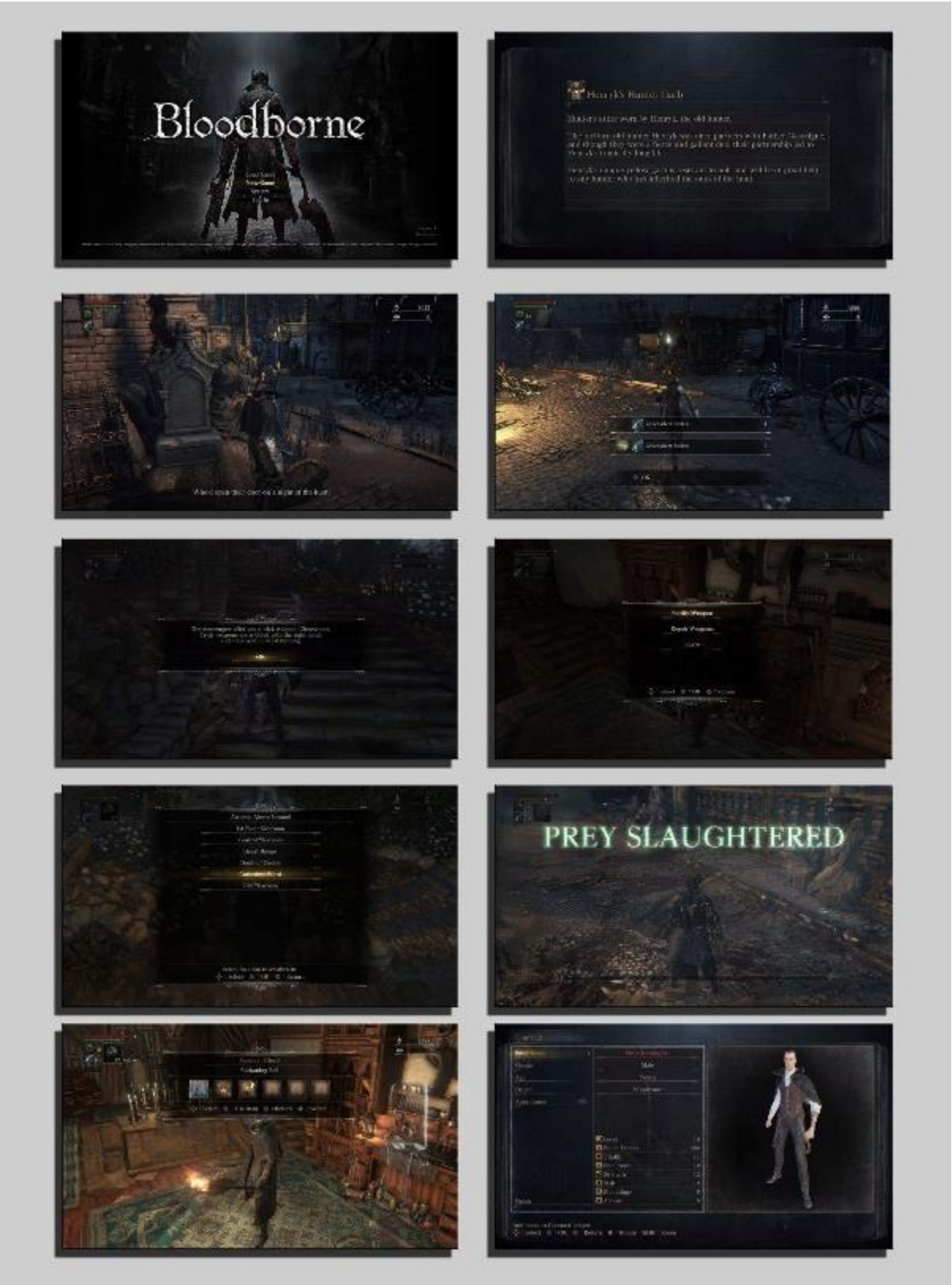
Winter Forest Asset Pack

The Winter Forest asset pack is a great choice for my environment due to how much foliage and props come with it in such a small file size. It is great for filling an outdoor environment and the aesthetic is wonderful. This pack is free on the Epic Games store for the month (December) which is fantastic for me to work with and try a new environment pack whilst working.

Particle and Wind Control System

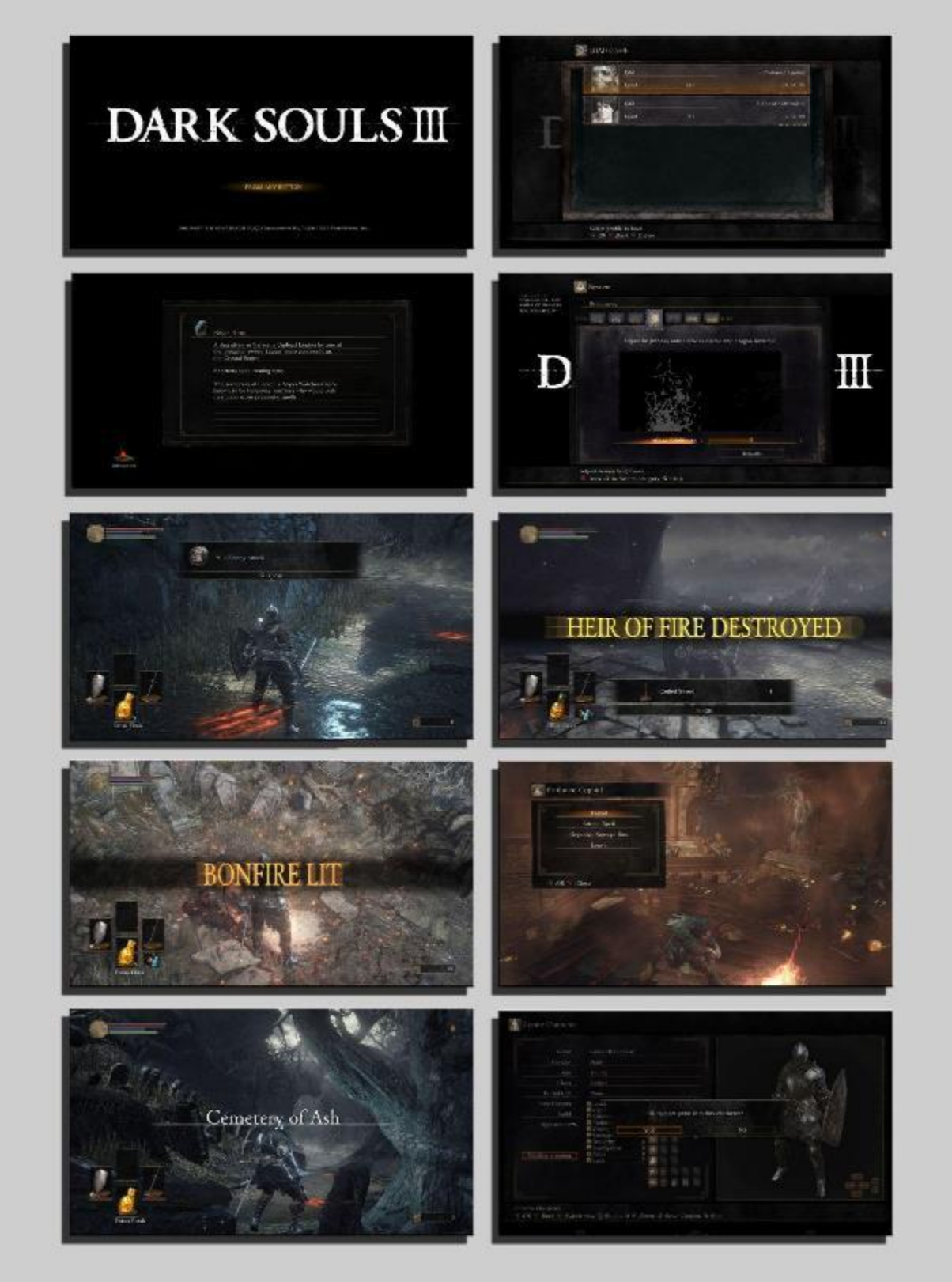
In every UE4 project I use which needs an environment, I always use the fireflies in this asset pack. They add to the magical feel of a world and I love the dim light they give off. The pack also comes with snow and mist which I may use in my project if I decide to venture off with that idea.

Hack and Slash Additional Research



Bloodborne is one of my first inspirations for my prototype. I love the colour palette of Bloodborne; burnt oranges emerald greens and greys. Bloodborne much like Dark Souls is a hack and slash game with beautiful environments, assets and creatures. where I will draw most of the inspiration from is the fighting style as well as the overall aesthetic. I intended to create a Victorian Street however due

to the lack of Victorian assets in the current epic games free library I may have to look elsewhere. Bloodborne uses the font Baskerville created by Henry Baskerville in 1757 in Birmingham. The font is very well known for being used in games based around this time period. Typography is something I'll definitely keep in mind when creating my prototype as the mood is set heavily in the opening menu. I will refer to this mood board in my development to keep on track with the theme I want to follow.



Much like Bloodborne Dark Souls 3 is another game I take great inspiration from. it is very similar in the fighting style as well as the aesthetic. However, due to it being more modern like Bloodborne it is a lot older with older architecture and environments. It is a lot more fantasy-based in its aesthetic and has a lot less graze than Bloodborne. the colour palette used in Dark Souls 3 or more fiery oranges light browns and Moody Blues to create a wonderful atmosphere, much like I intend to. the

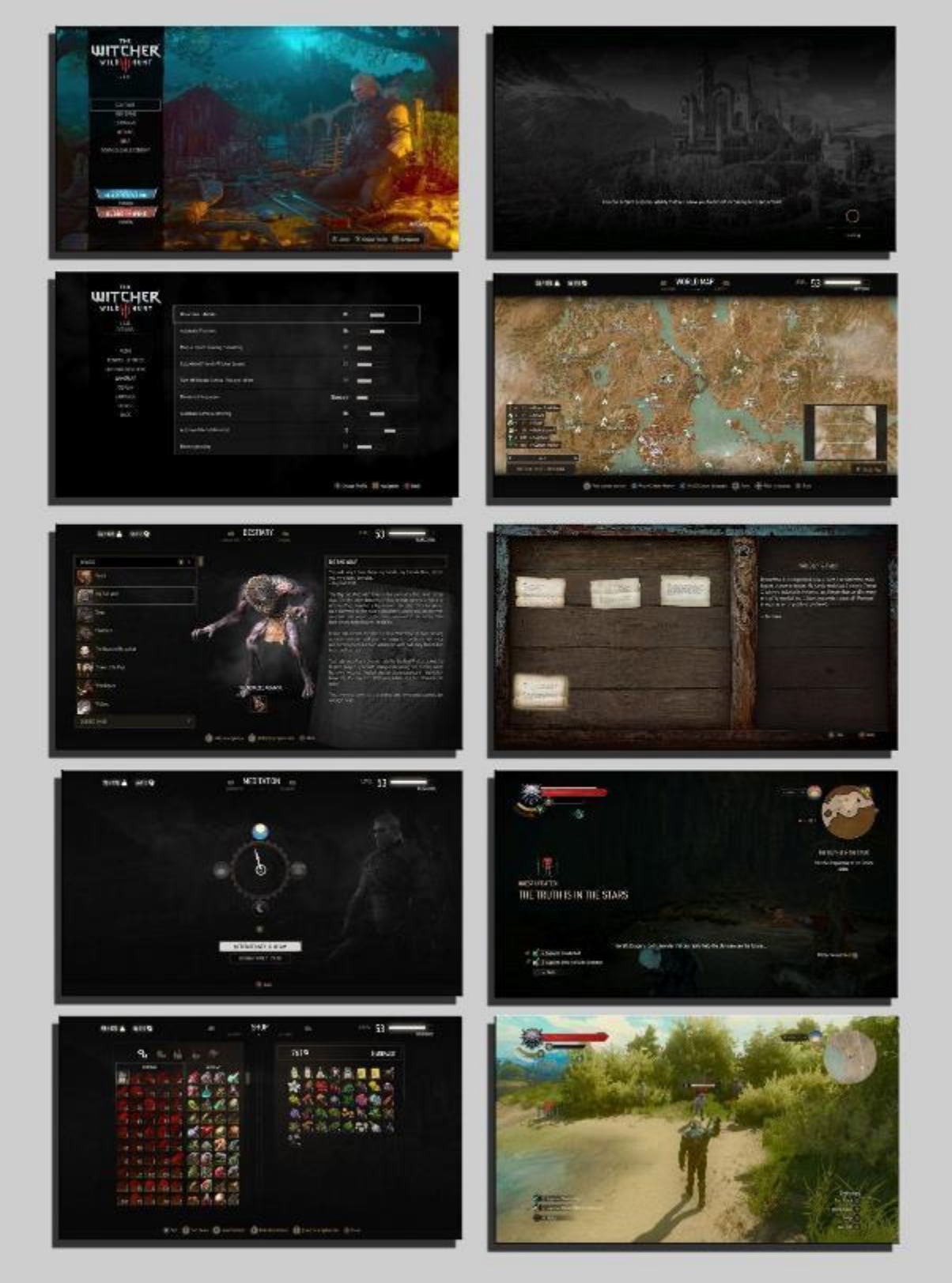
animations and fighting style are also very inspirational, and something I need to look at from a more animation based view. you something I would include if I have the animation was a roll to dodge attacks, however, we do not have access to the mocap studio due to covid restrictions.


Demon's Souls


DEMON VANQUISHED


GATES OF BOLETARIA

Following the Bloodborne and Dark Souls trail I also looked into a game I actually haven't played which is Demon Souls. It follows the same aesthetics as Bloodborne and Dark Souls however is more ghostly in its appearance. I feel like a more ghostly aspect including colours particle effects and storylines of characters would be more appropriate for the theme I'm wanting to go for my hack and slash game so it is not a cookie-cutter hack and slash in a fantasy-based dystopian world. this is something I will consider once I have looked into my asset library.



Stepping away from the Dark Souls family I looked at the Witcher 3. the Aesthetics are a lot different including the UI system, the text, and the environment. I haven't played Witcher 3 however I have done research into the gameplay and seen how the game looks and what systems are implemented. I take inspiration from Witcher 3 as I think the menu system is very well thought out, designed and appropriate for a hack and slash type game.

I use Adobe Photoshop to sketch out an environment for where I'd want my small fighting area to be in my level one scene. thatch houses or possibly new ones depending on the materials available to me I feel encompass the aesthetic of Dark Souls, Bloodborne, Witcher and Demon's Souls. I think the dark brown buildings against hot fires with a moody looming castle in the background is the perfect environment I would want. I Began blocking out this area including the Castle, based entirely upon my sketch.

First Build

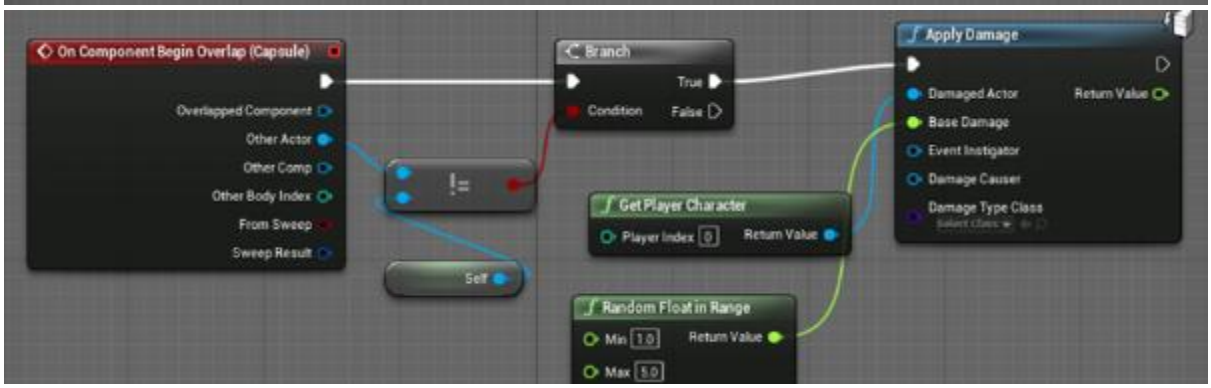

Perspective
Lit
Show
Scalability: High
Load Level

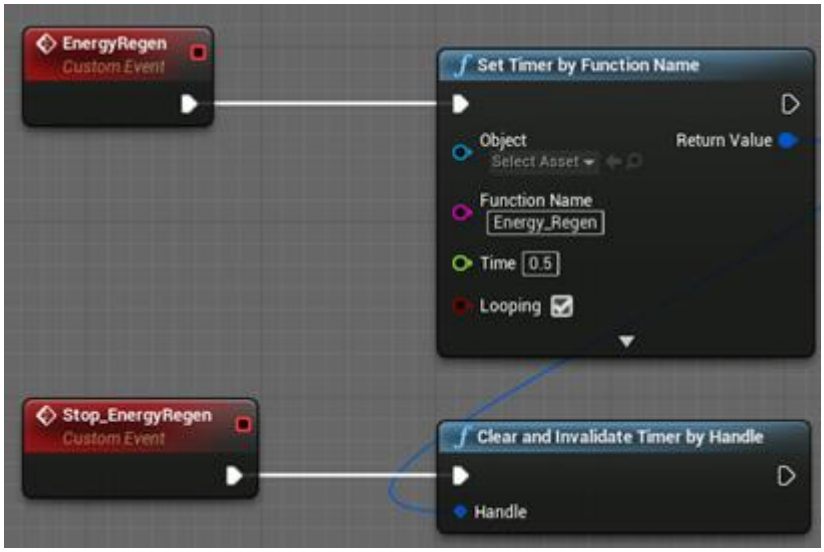
As I explain later in the problems section of this development log, I had to go my separate ways from this map due to collision errors. However, I thought it was important to show my first attempt at creating this hack and slash map. due to the assets available on websites where people uploaded free 3D models, I had to go for a more modern street appearance. it reminded me of an industrial street much as you would see in TV shows such as Peaky Blinders, or the old Sherlock movies. I was starting to dislike this aesthetic anyway, but I was hoping the Castle and the lighting would change my opinions. I did have plans to play with the materials on the buildings to make them look older too. to do this with one building simply by making the bricks darker and adding a grunge filter to make them appear more worn however didn't do much to make the environment change. I did this by Simply placing the map into Photoshop and editing it directly in there before re-uploading it as material in the unreal Engine asset browser. Maybe a blessing in disguise, due to the errors I had to scrap the entire project.

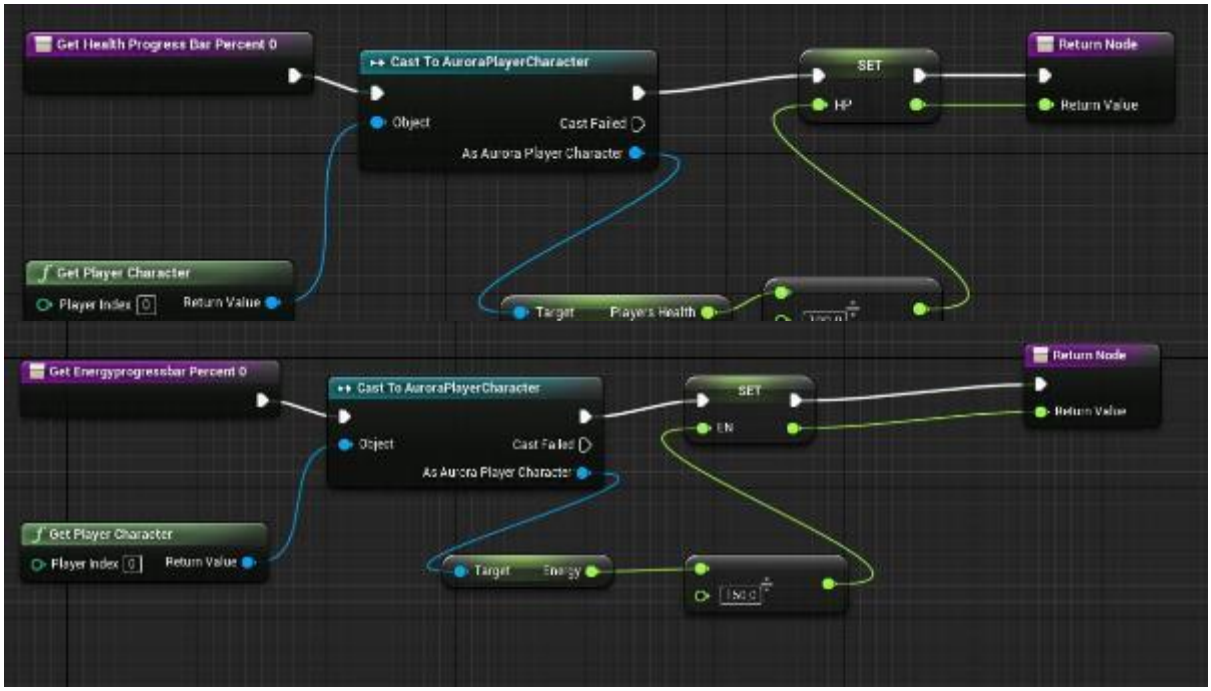
Health and Energy Progress Bars

I began by creating a new heads up display widget blueprint. I then added progress bars and attached health and energy text as this is what the progress bars will be used for. With the progress bars selected I created a function; these appear in the event graph. The first node gets the health from the character which is set in the player blueprint by using the green float variables. I set the health of my character to 100 and energy to 150. In the function, I divided by 100, as our progress

bar ranges from 0 to 1. I then attached that variable to the return node and I did the exact same to the energy progress bar. After this, I created the widget and added it to the viewport. I tested the display and made sure the progress bars were filled with the default blue colour, meaning the values were applied.

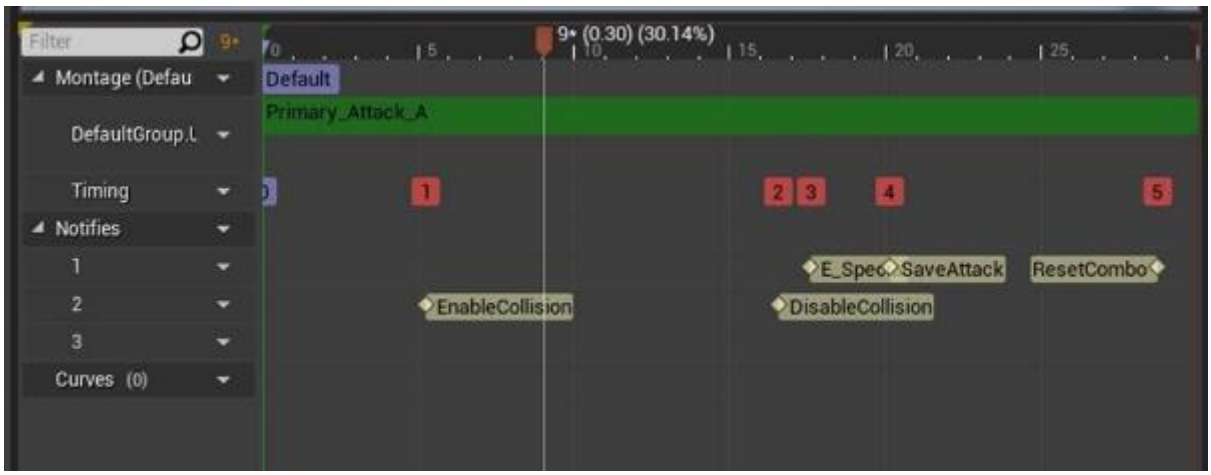


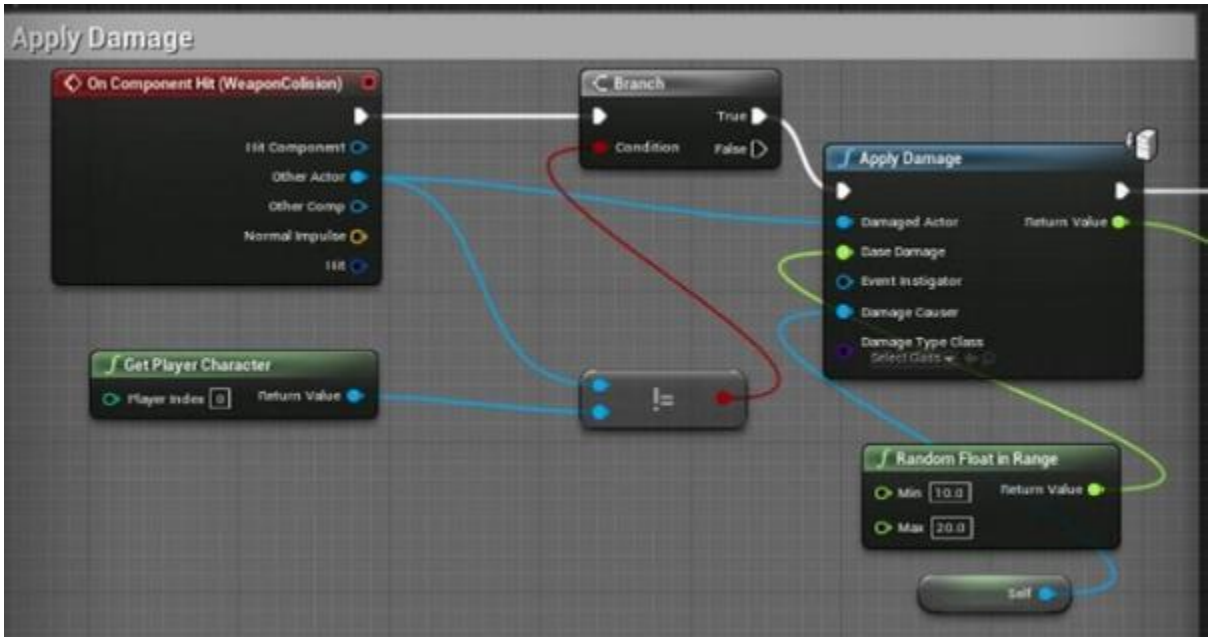


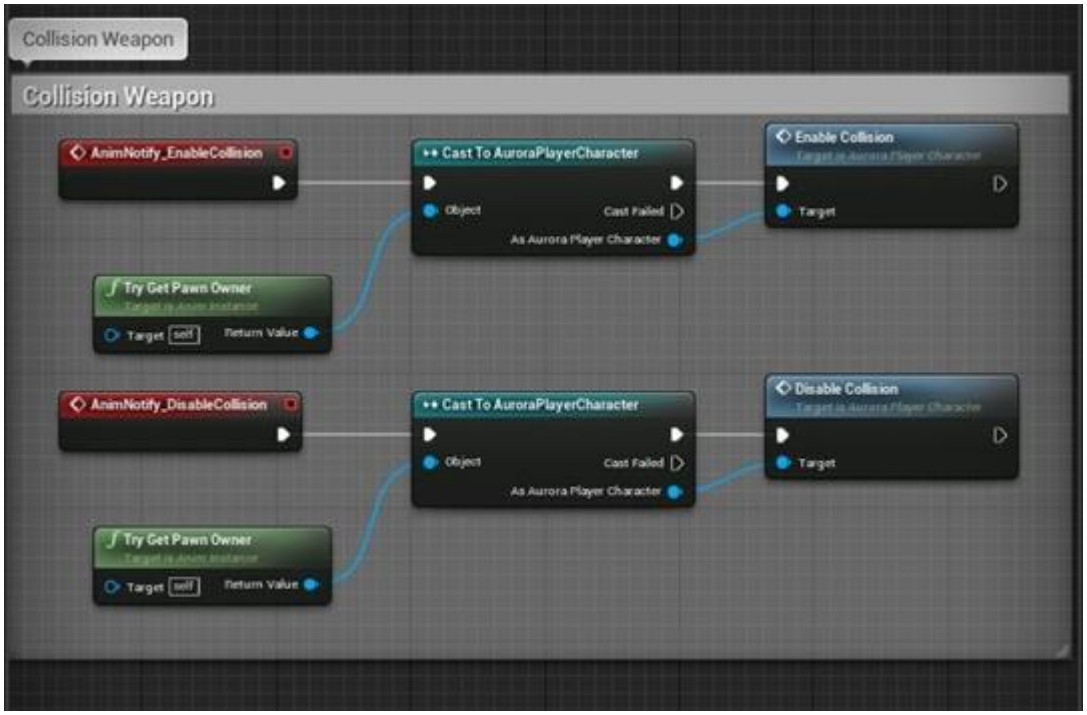


Damage

There are plenty of different visual objects I can play with; so I made a new blueprint class actor. This actor is a cube with a collision box, adding an event so that the overlap causes damage to my player character. I did this in a custom event that used the apply damage node, selecting the play character as the damaged actor and adding a random float range of damage to cause to my player character. I also added a print string so I could see it working. In the player blueprint I added an event any damage node, which makes sure when the instigator is not equal to the player character, damage can be applied. I then set the values of the damage events so my player was able to take damage.




Apply Damage
On Component Hit (WeaponCollision)
Hit Component
Other Actor
Other Comp
Normal Impulse
Hit
Branch
True
Condition
False
Apply Damage
Damaged Actor
Return Value
Base Damage
Event Instigator
Damage Causer
Damage Type Class
Select Class
Get Player Character
Player Index 0
Return Value
!=
Random Float in Range
Min 10.0
Max 20.0
Return Value
Self


Collision Weapon
Collision Weapon
AnimNotify_EnableCollision
Cast To AuroraPlayerCharacter
Object
Cast Failed
As Aurora Player Character
Enable Collision
Target
Try Get Pawn Owner
Target
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AnimNotify_DisableCollision
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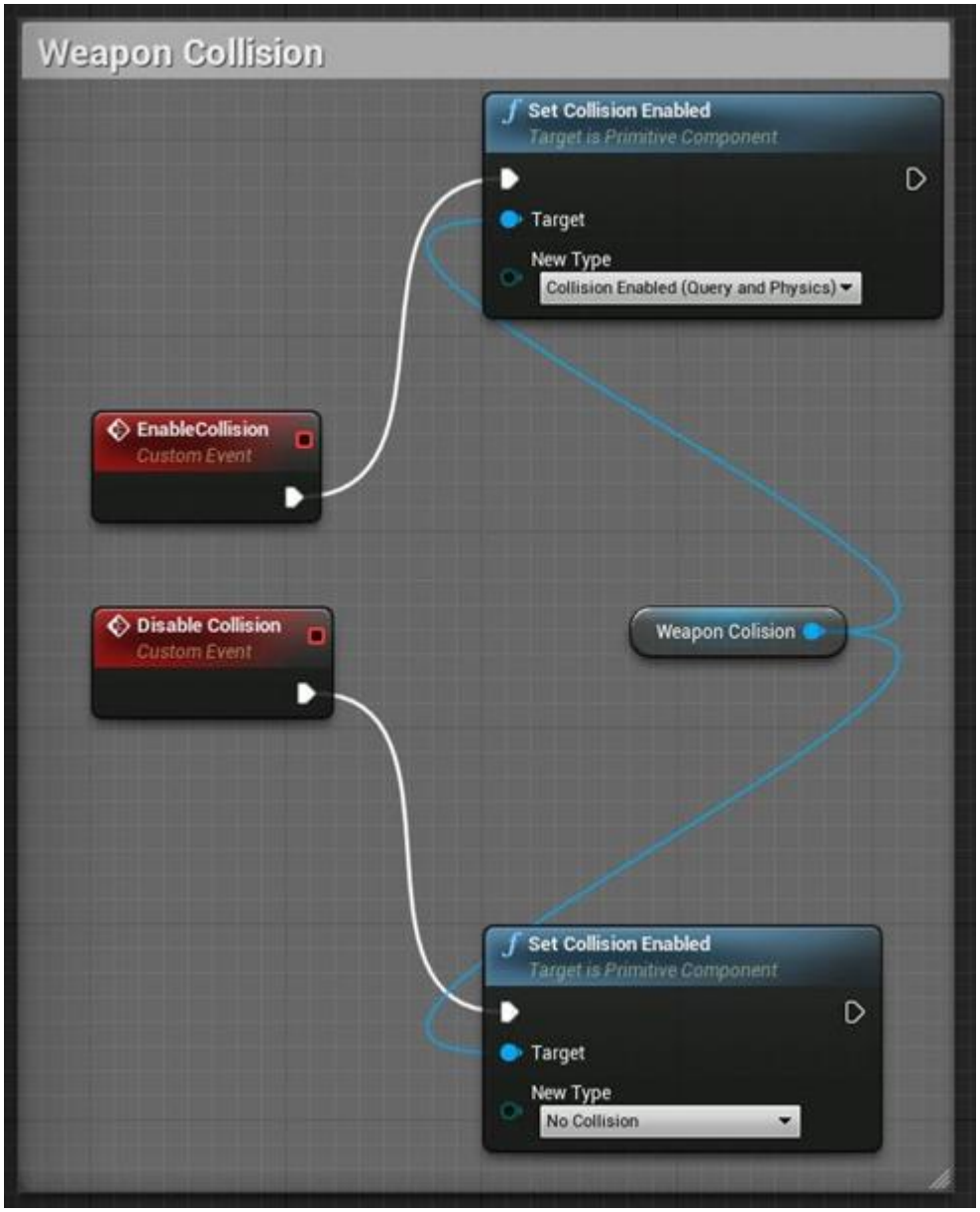
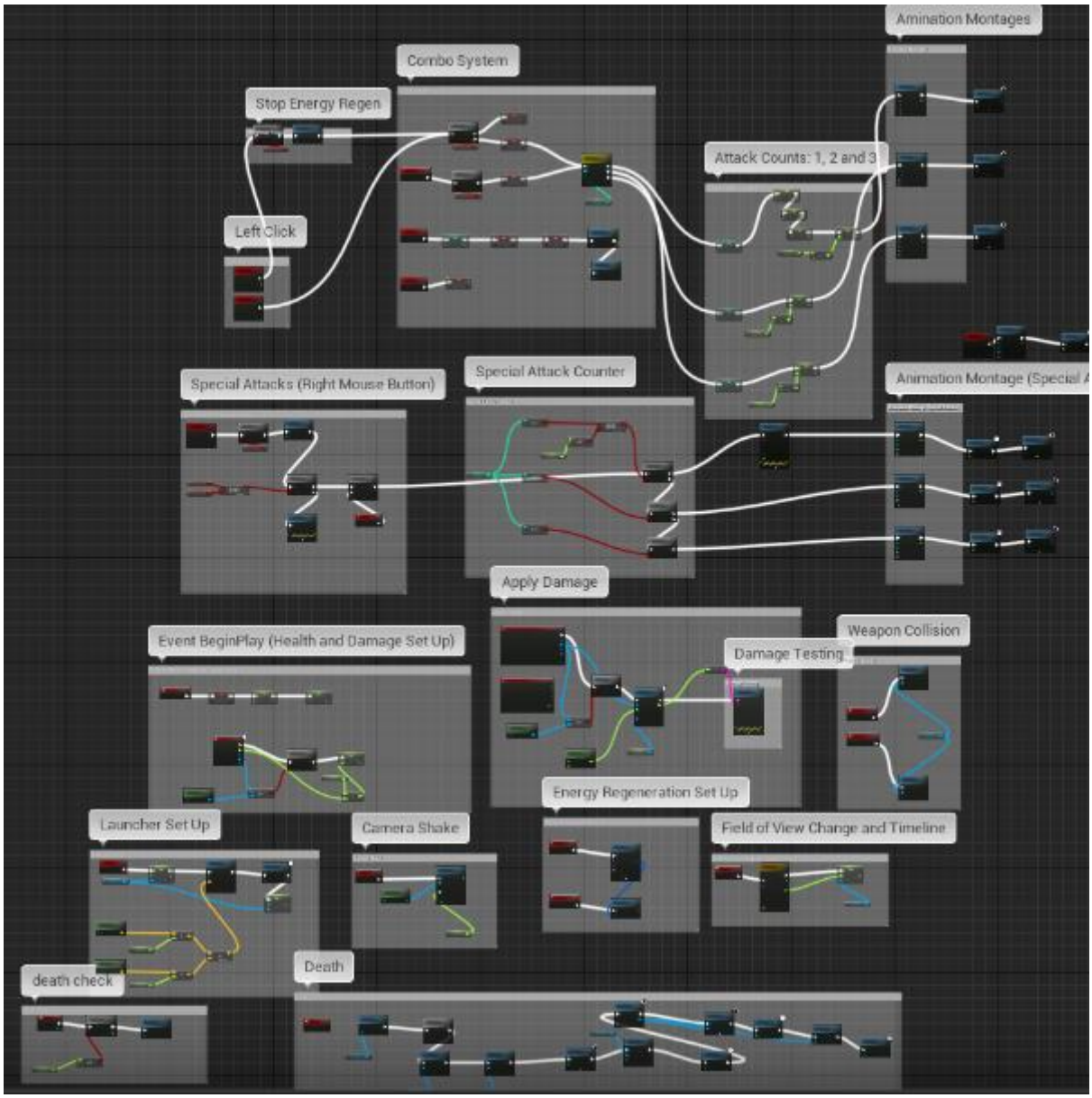


Combo System

Paragon characters are already set up, however, I modified its system to play my own special attacks. I created a montage so that if the player clicked during a certain portion of the animation a combo attack would progress through. I also created animation notifiers that corresponded to the animation blueprint, firing these events. I then cast to the player character and call the custom event which would take me to the character combo attack section of the blueprint. I created a special attack so that if the user left-clicks and then right clicks there would be a special attack performed. I set this up in the montage named 'ESpecial' to fire the animation. I also created a reset special event so that the user could do this more than once. I had to create the montage

special attacks and ensure I attached a print string so I could make sure they were firing.



Launcher

I wanted my character to leap forward during one of her special attacks, so I added a launcher. In the player character blueprint, I made a new custom event and set the ground friction from the character movement node. I then got the actors forward and up vector and created two float variables to create a launch force and up force. I then multiplied these nodes and plugged this into the launch velocity of the launch character node. I then added a re-triggerable delay and set the ground friction back to default. I plugged the set launch force and up force nodes into the combo attack chain so they would apply when the user left-clicks. To activate this custom event I added an

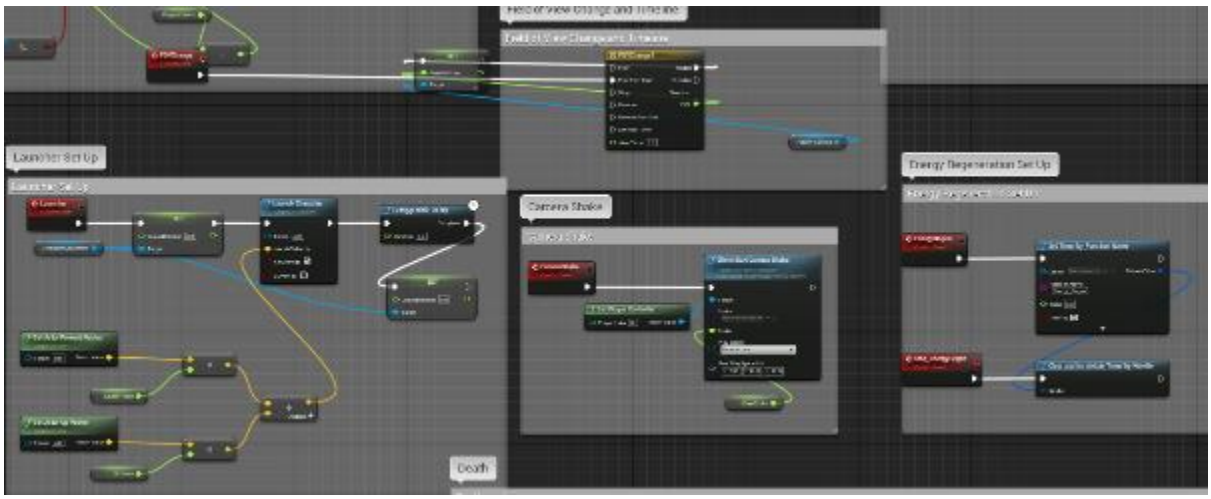
anim notifier in the animation blueprint and placed it as the character hits with the weapon so it looks seamless. This anim notifier then triggered the custom event.

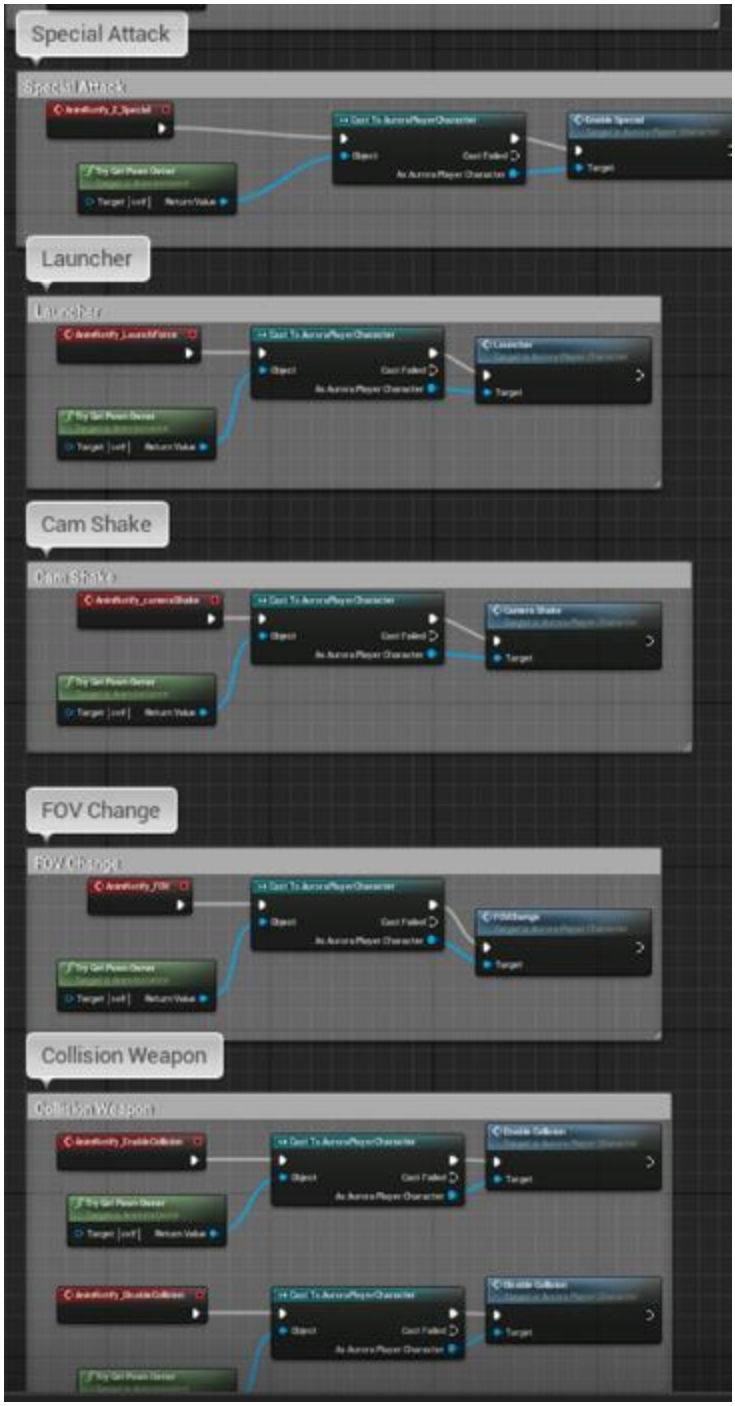
Camera Shake

To add more impact to the launcher event, I created a custom event to shake the camera. I created a camera shake blueprint class actor and changed the values to match how much I wanted the camera to shake in the viewport. I then created a float variable called 'Cam Shake' to plug into the nodes. From this, I created an anim notifier for when I wanted the camera effect to fire. I wanted this to be when the character jumped so it looked like they jumped with a lot of force. I then plugged the set float variable alongside the launcher variables in the combo chain to watch it play alongside the launcher.

Field of View Change

To add even more of a dramatic effect to this attack I created another custom event that used a timeline node; which I am used to from creating moving platforms in my game last year. I created a float variable called 'FOV' to set my field of view in the timeline. I added a float track in the timeline and looked at the default field of view angle in the camera settings within the timeline. I then changed the angle slightly in one of the nodes to make the view distort momentarily. Much like with the launcher and the camera shake I created an anim notifier the same way. I however didn't call the event in the combo chain as it is a one-time event so I left it as a custom event and didn't set the float variable in the combo chain.





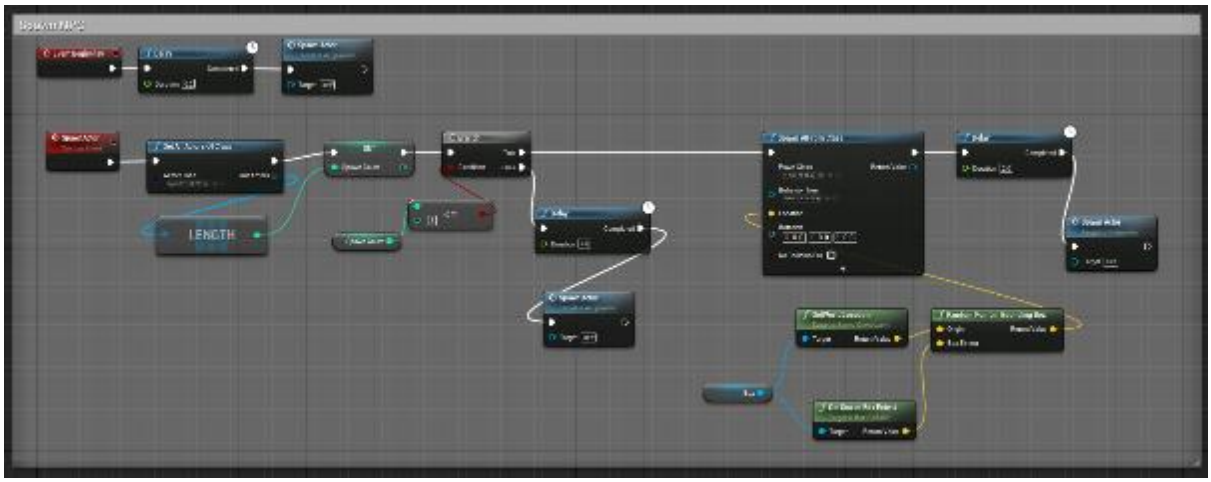
Energy Regeneration and Depletion

In the event begins to play, I attached a boolean variable called alive and made this true. I then set the health and energy afterwards, which needed no change as I preset up the rest. Then I took a look at how I could start removing energy from my energy bar by each attack, by bringing in the energy variable and misusing the float value by float value. I set that in the chain before the animation montage. I then added conditions to special attacks, meaning if there isn't enough energy then they can't be performed. I did this by doing a check, energy less than (float variable) or equal to 100, connected to an ‘AND’ boolean, then the special attack can’t happen.

I made a custom event called ‘Energy Regen’ and another called ‘Stop Energy Regen’. I created a new function that gets the energy variable and adds a value of 1, (clamped at 150) and then set it back into the graph, setting the timer by the function name, so that every half of a second 1 energy will be regenerated. I then added a clear and invalidated timer by handling into the stop energy regen, plugging the pins incorrectly. I then set the energy regen custom event to fire into the reset combo chain, and during the combo attacks I fire will stop the energy regen.

NPC Spawner Setup

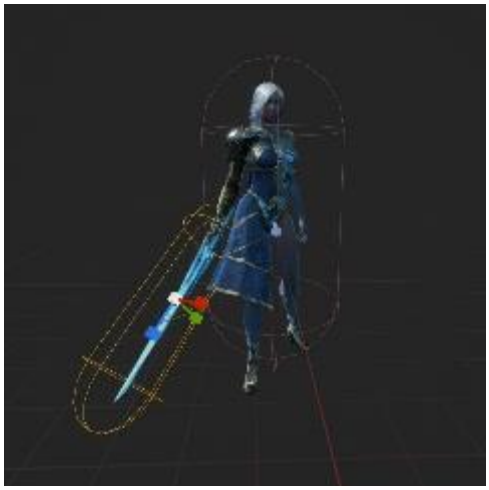
The first thing is to make a small fighting area. I placed all these assets in level 1, added a nav mesh bounds volume inside the persistent level and in the details panel made sure it's movable so it will reload every time a level is loaded. I then added a trigger box and a target point for our enemies to spawn in.

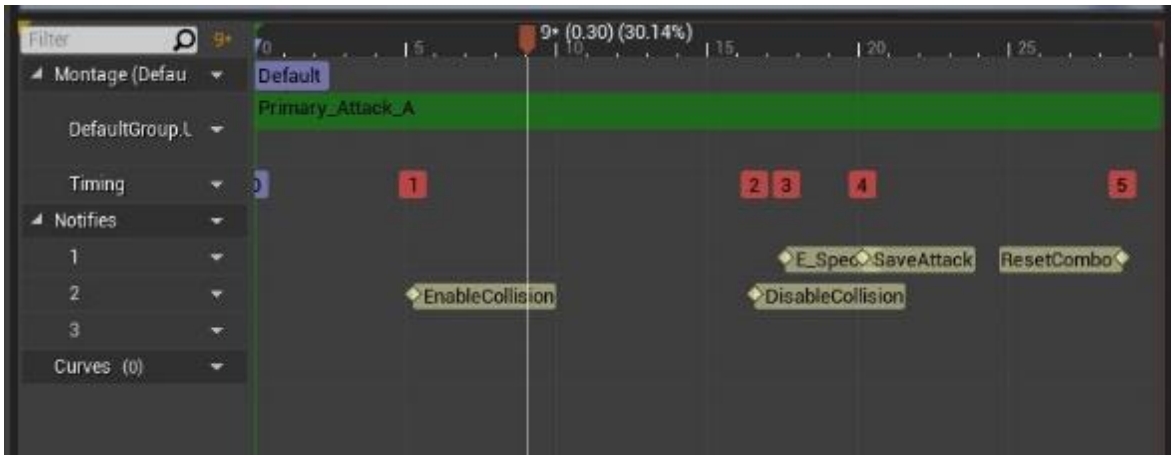


Receiving and Causing Damage

So my player could strike enemies, I made the weapon collision in the player blueprint a child of the skeletal mesh. To be able to attach an accurate collision box I removed the animation blueprint so my player would stop moving. This made it easier to centre the mesh. I used an on component hit node for the weapon collision in the player blueprint. I made sure the damaged actor wasn't equal to the player character so the player cant hit themselves, and applied damage with a random float in range. I also added a print string to check this worked.

To receive damage, I added an event any damage which would take away health using the float variables, ensuring we cant damage ourselves again. I then used anim notifiers to decide when the collision should be enabled and disabled on the character’s sword. These anim notifiers cast to my collision presets. I placed the notifiers in the time slot of when the character struck with her sword, so my character only causes damage during this period of the animation.




Filter
9*
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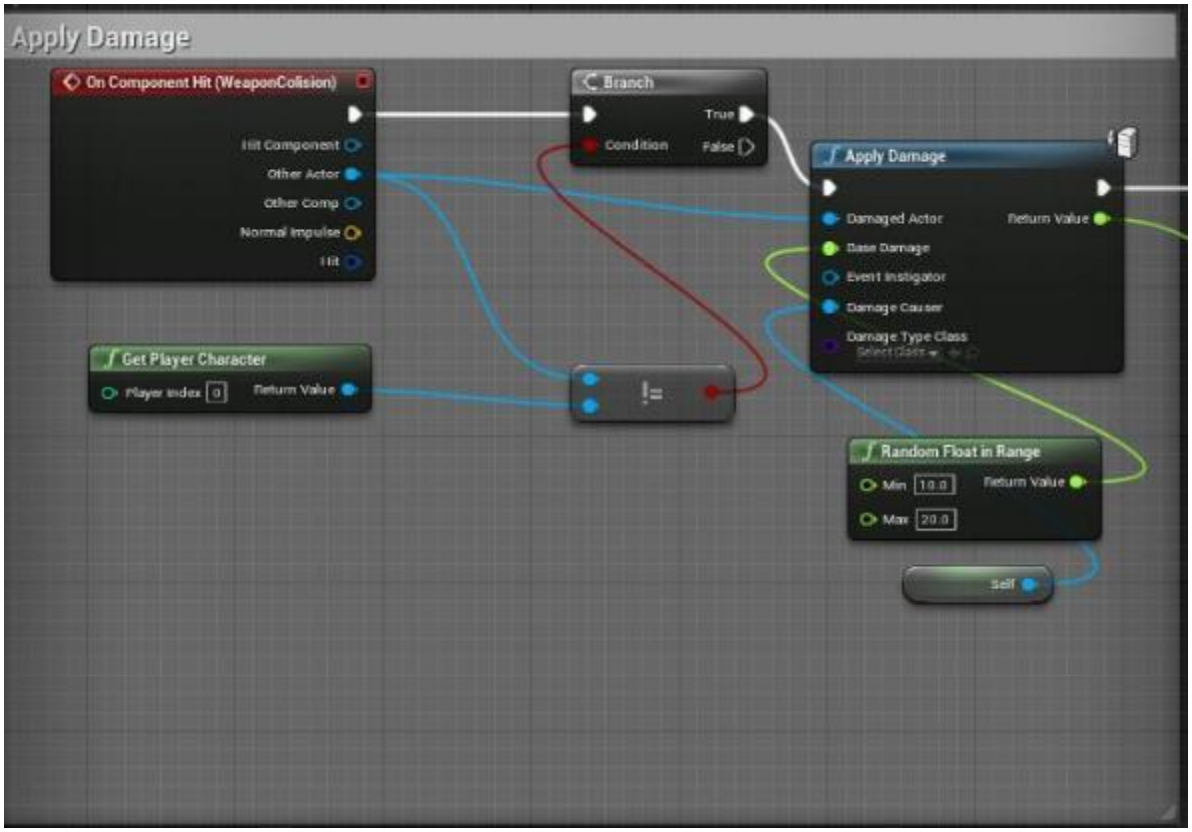
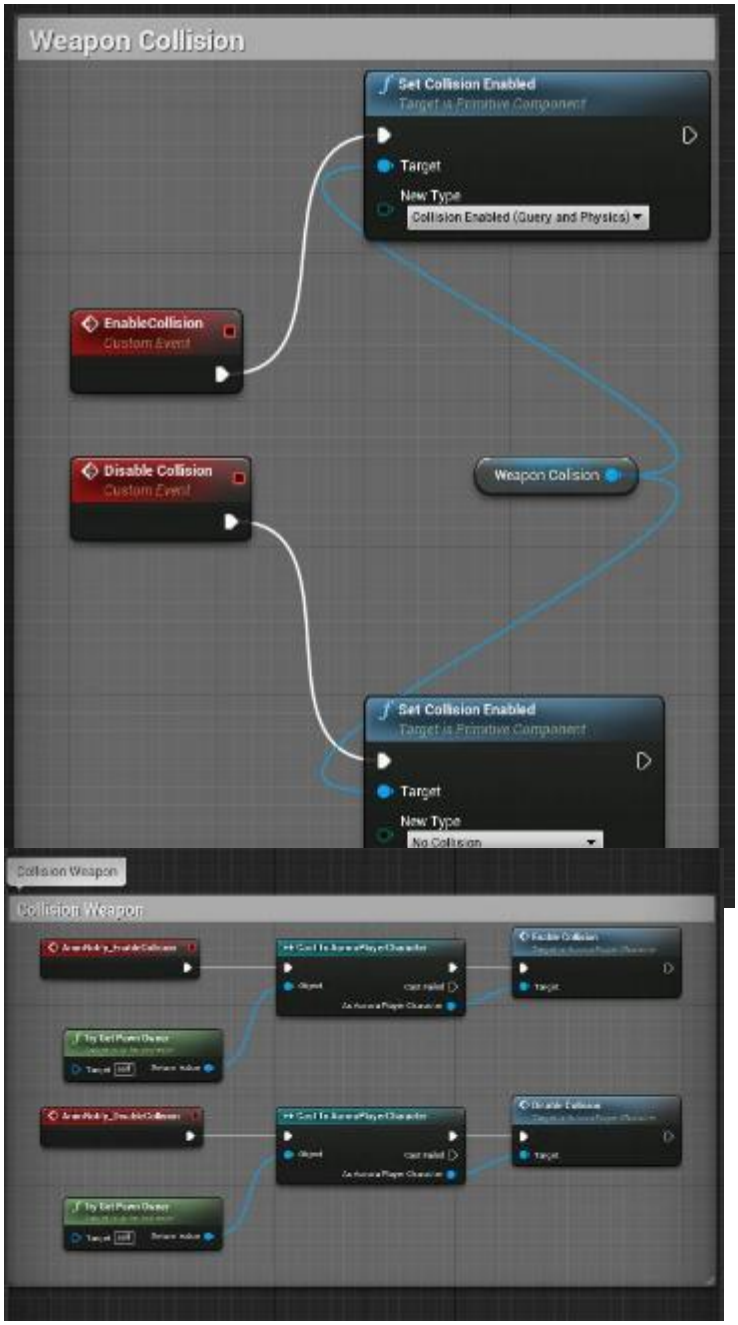
4
5
E_Spec
SaveAttack
ResetCombo
EnableCollision
DisableCollision

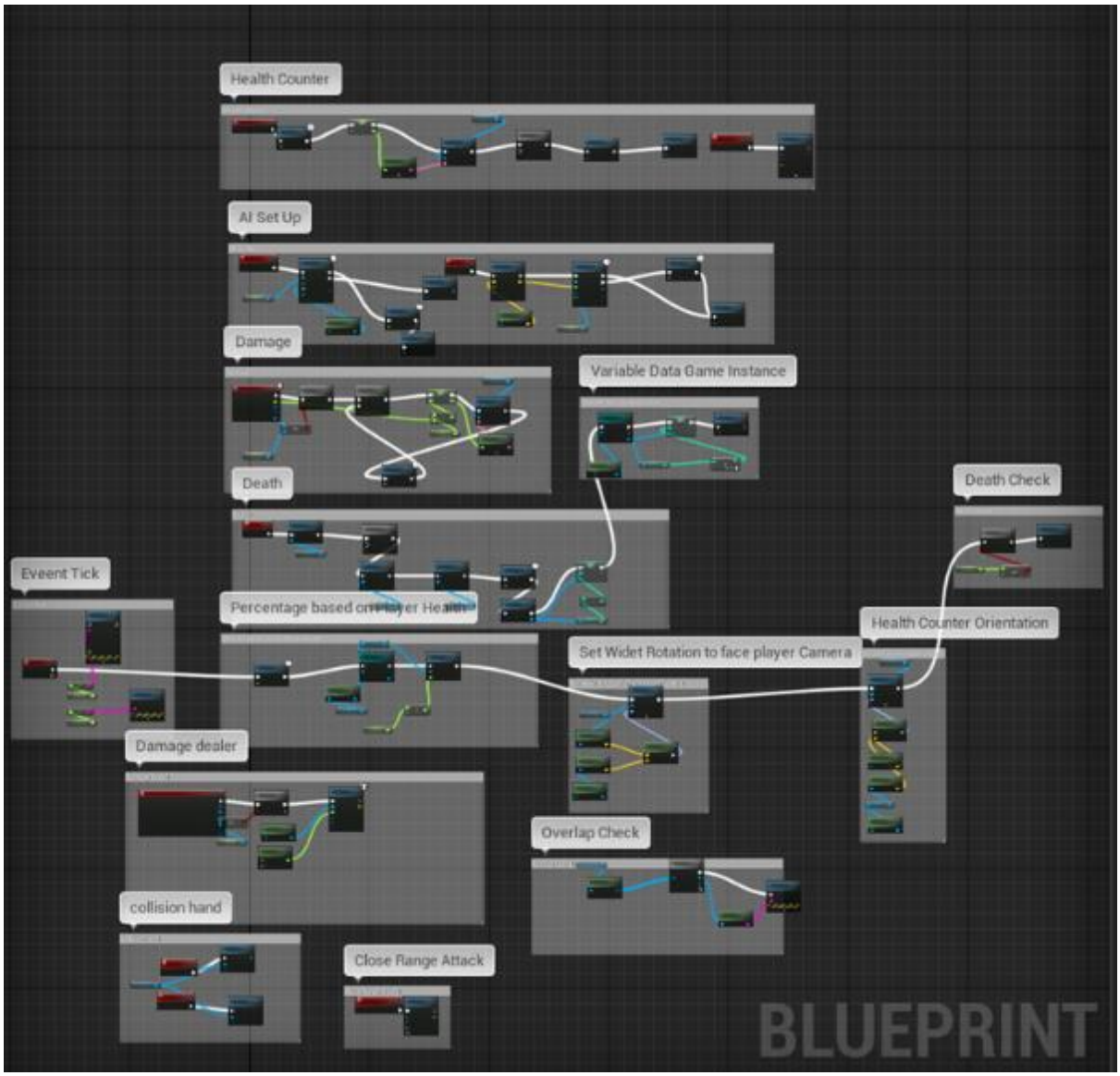

Apply Damage
On Component Hit (WeaponCollision)
Hit Component
Other Actor
Other Comp
Normal Impulse
Hit
Branch
True
Condition
False
Apply Damage
Damaged Actor
Return Value
Base Damage
Event Instigator
Damage Causer
Damage Type Class
Get Player Character
Player Index 0
Return Value
!=
Random Float in Range
Min 10.0
Max 20.0
Return Value
Self



NPC Development

I created a new animation blueprint using a snow creature skeletal mesh, I added a state machine to the output pose node. I went into the state machine and added an idle run. I then created a blend space 1D blueprint and used the asset browser to add some animations into the blend space. I tested this by holding shift and dragging the key to see the blend. I then saved and went back to the animation blueprint. I then could see my blend space in the asset browser and dropped this into my idle run state machine. It then made speed a variable in the state machine so I could edit this later.

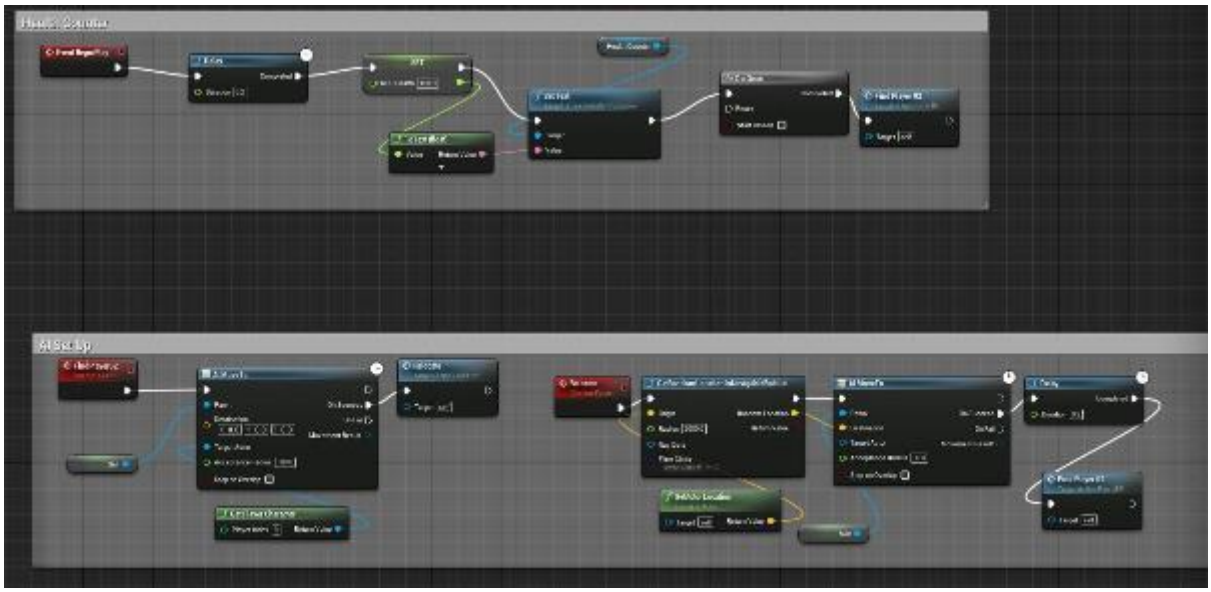
In the event graph, I used the get velocity and vector length nodes to set the NPCs speed. I then created a widget that is essentially the health bar for the NPC. I created it and did a custom screen size of 100x100px. I then added a progress bar and some text to be used as a health counter so that the player can see when they are nearly dead.

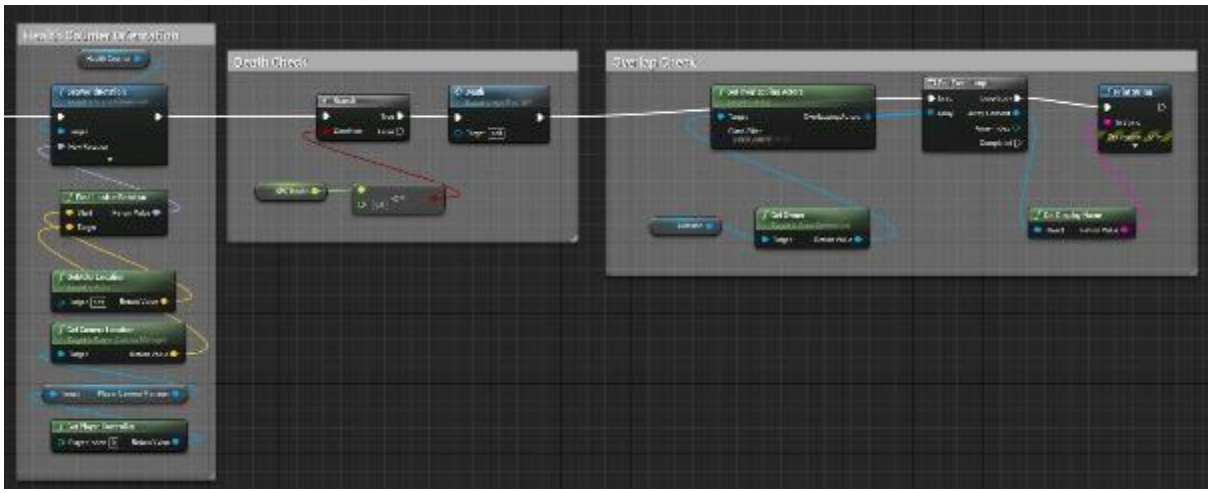


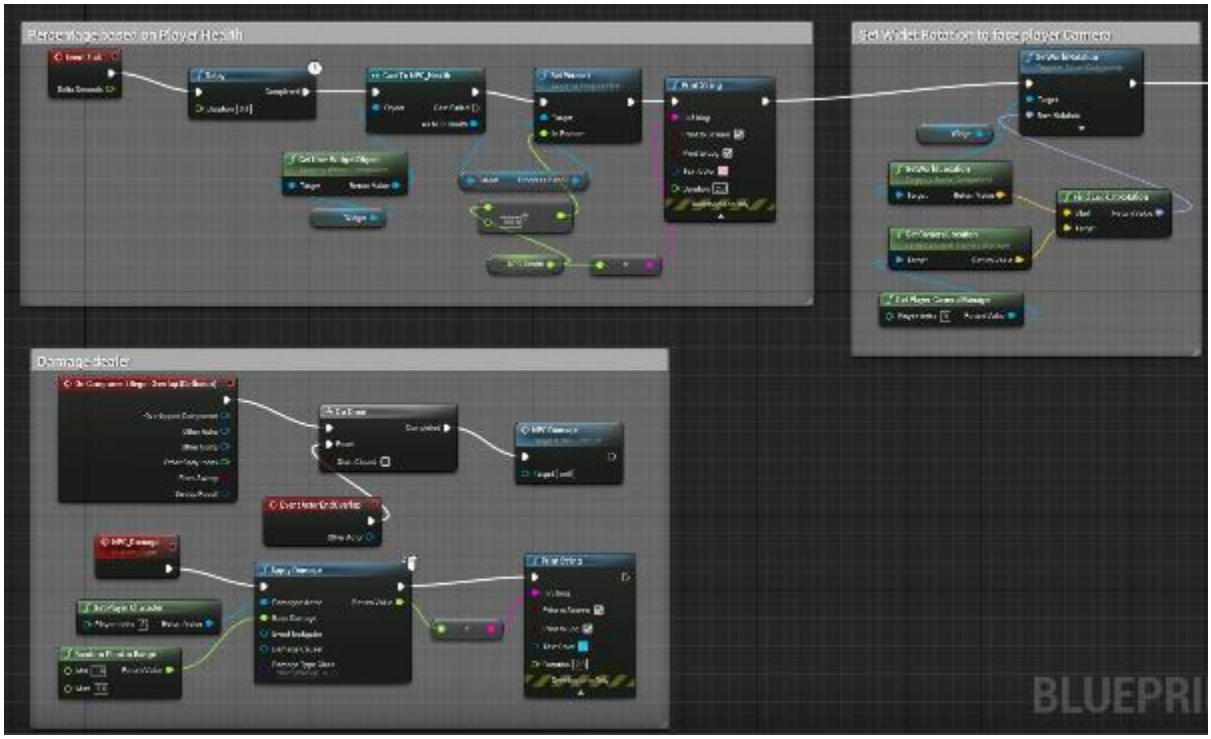
In the event graph, I added a delay and then set the NPC health. I then set the text to a variable and targeted the health counter to give me a visual output. I set the blueprint to do this once. I then started a custom event to make the NPC search for the player in the game. I used AI move to and referenced the player. The target actor is the 'get player character' node. On success, I fired another custom event called relocate which is another AI move, which will make the NPC move somewhere else within 2000 units. On the success of this, it refires to locate player character in a constant loop.

For the damage, I added an event any damage which is not equal to itself. I then added a delay and a do once to slow down the process. I also added float variables to remove the NPC health upon damage received, much like I did in the player blueprint.

I then made an event tick to set the health bar percentage based on the player health, which casts to the NPC health. I then wanted the widget to face the player camera at all times, as it wasn't facing straight on during the gameplay. I did this by setting the location of the widget to target the location of the player camera. I then added the health counter orientation in a very similar set up however I got the player controller variable instead of the camera. I then set up a death event so that if the health is zero or below the NPC movent stops, the collision is disabled, set simulate physics is enabled and the actor of the class is destroyed.

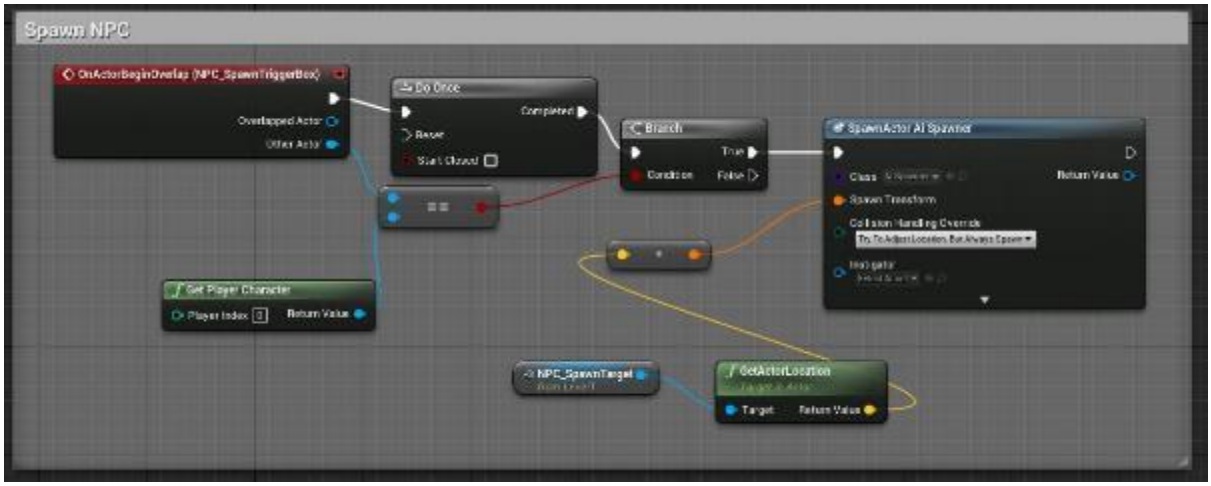






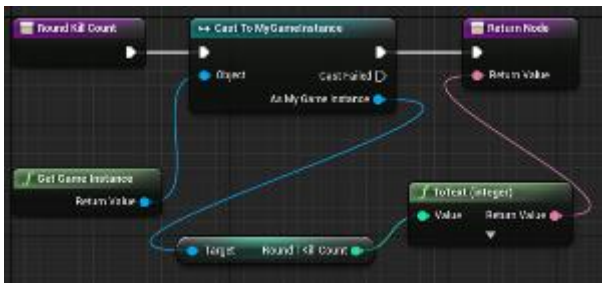
NPC Spawner Continued

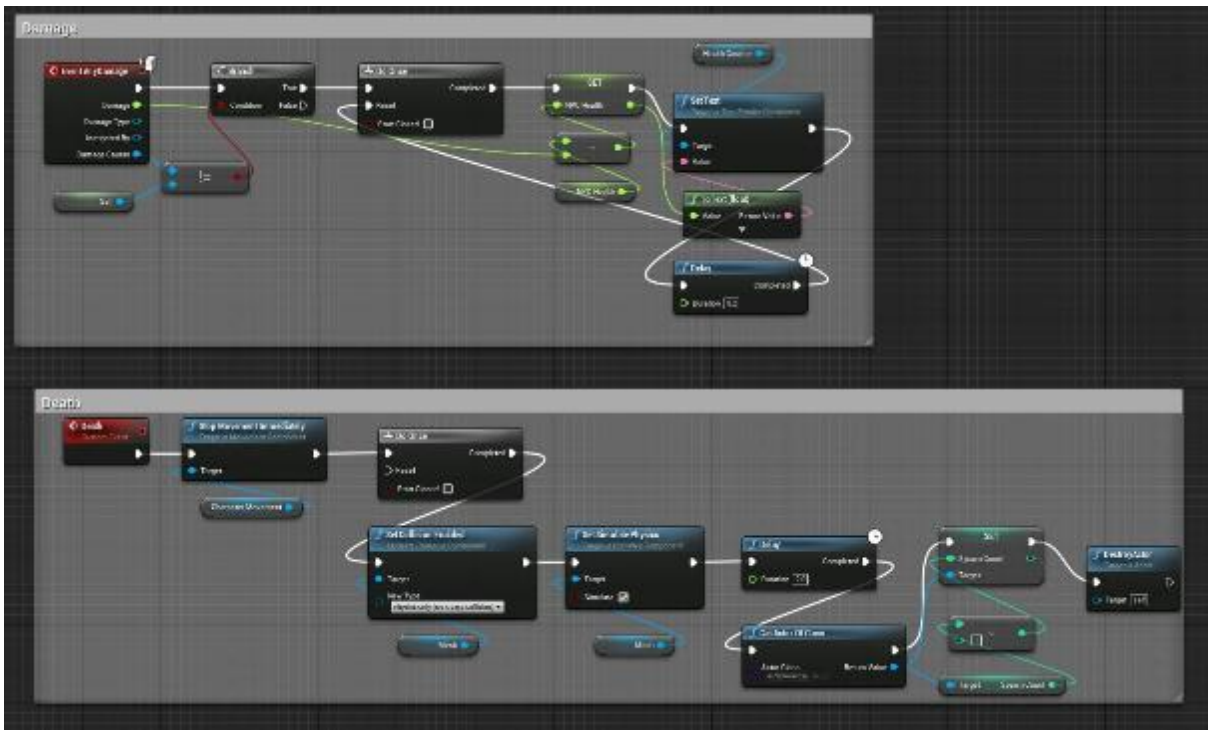
I added a new blueprint class actor called AI spawner. I opened it up and I created a custom event called ‘spawn actor’ which gets all actors of class ‘NPC’. I then created an integer called ‘spawn count’, and then did a conditional check to see if it's less than or equal to the number three. If it's not true it'll return the check and it can spawn more AI from class. I selected my snowy NPC as the spawning class. I then got the world location and scale box, targeting my area to make the AI spawn somewhere in this collision box. I added a delay after this which is continuous. I then added a trigger box which was used for an on actor begin overlap event. When my player runs through the trigger box, it spawns all of the AI within my navigational mesh bound.



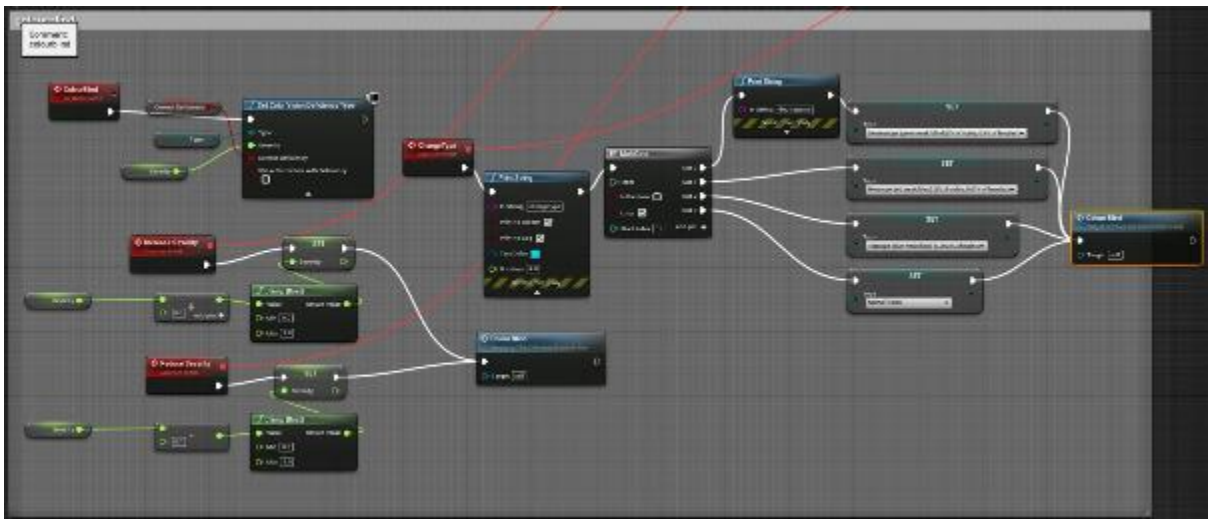
Kill Count

I used a horizontal box and added 2 text boxes, making sure to change the font size so it's readable. I then selected the numbers and add two zeros. I then created a binding event and casted to the game instance. I then made a round one kill count variable in my game instance as an integer. I then make a two text integer and a return node. To update my kill count through the game instance I put it at the end of the death check code in the NPC blueprint. I then casted to the game instance and added one value to the integer and set the variable, before the NPC was destroyed. This adds to the variable integer and updates the kill count number. At the end of the level one is when I spawn the widget blueprint in the level blueprint. I then made a custom event to remove it from parent.





Colourblind Filter Setup

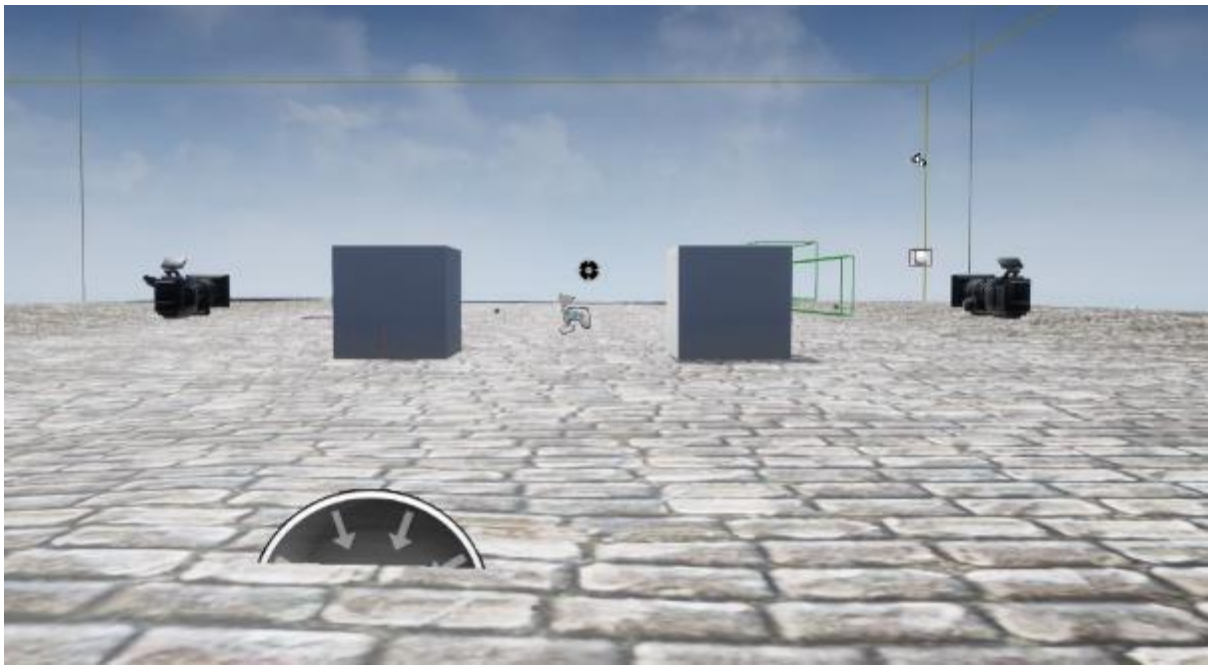


I included the colour blind filter as most games don't have this and it was very easy to implement. I use three variables including the severity, the type of colour blindness and the correct deficiency. I then use the event dispatcher buttons to bind events to change the levels of severity and the type by 0.1 float values.

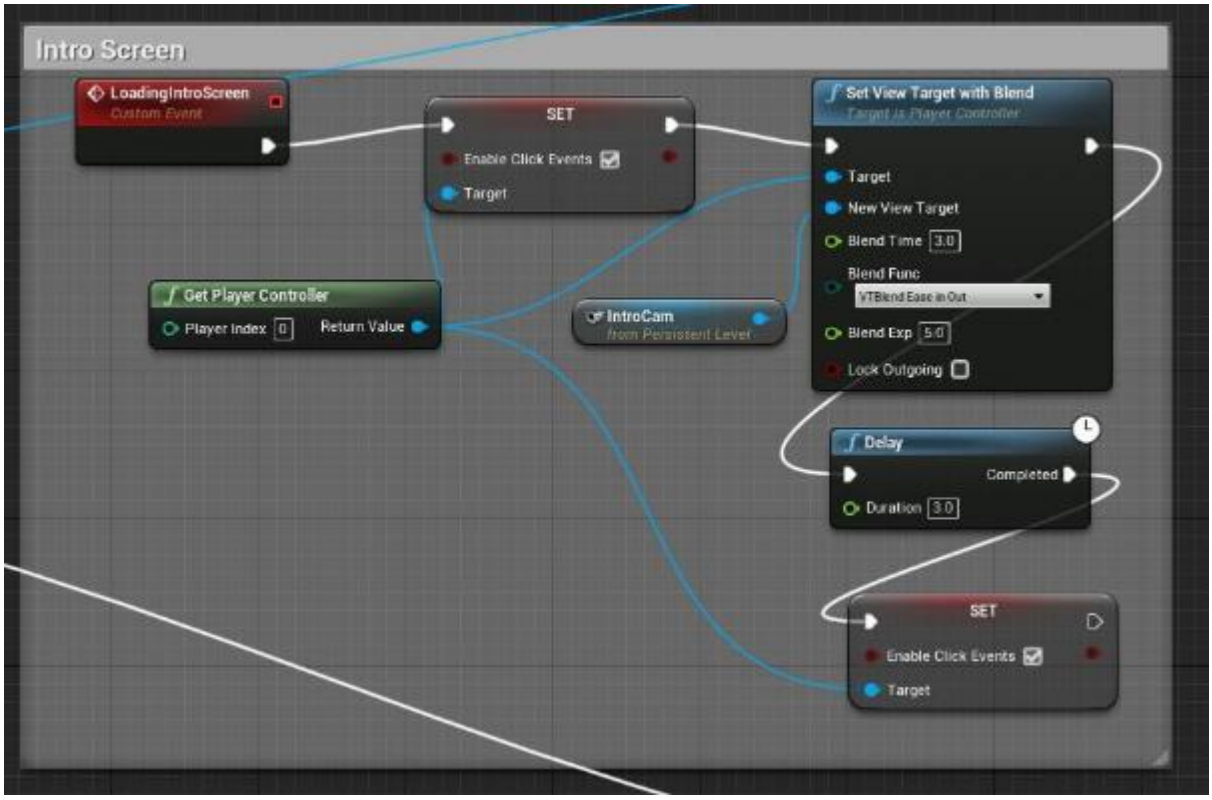
Menu System

When my level first opens there is a menu screen with two buttons, start and options. When options are clicked a sub-menu opens with anti-aliasing options view distance options and colourblind filter selections. I included these as it is important for a player to be able to run the

game no matter what system they have, as graphics in Unreal Engine 4 can be quite taxing. When start is pressed the persistent level loads and the player can choose from one of two characters. Here you can see the progress of how I started using simple cubes to simulate my idea and then how it progressed.

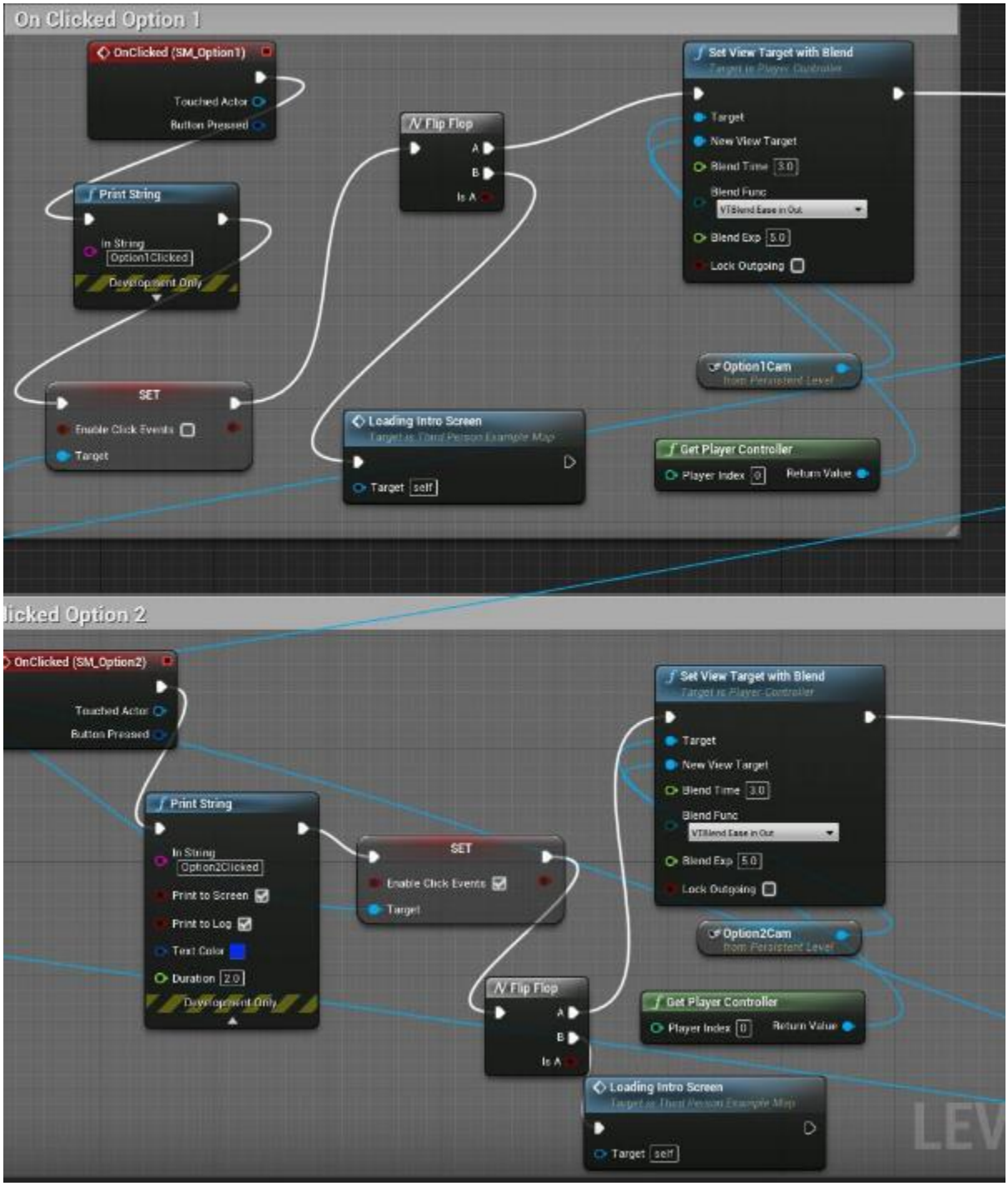


From here The player can click between two characters I use the flip flop mode so that when the player wants to back out of one of the characters it will take them back to the choose your hero screen. when the character is clicked a new camera is selected for the viewport and blends nicely.



when the characters are clicked they both give a different line of dialogue which is a little bit quiet over the background music, however, it is still audible. I also used a website and downloaded some button press noises for audio feedback, which shows the characters have been selected and the Skins have been changed.

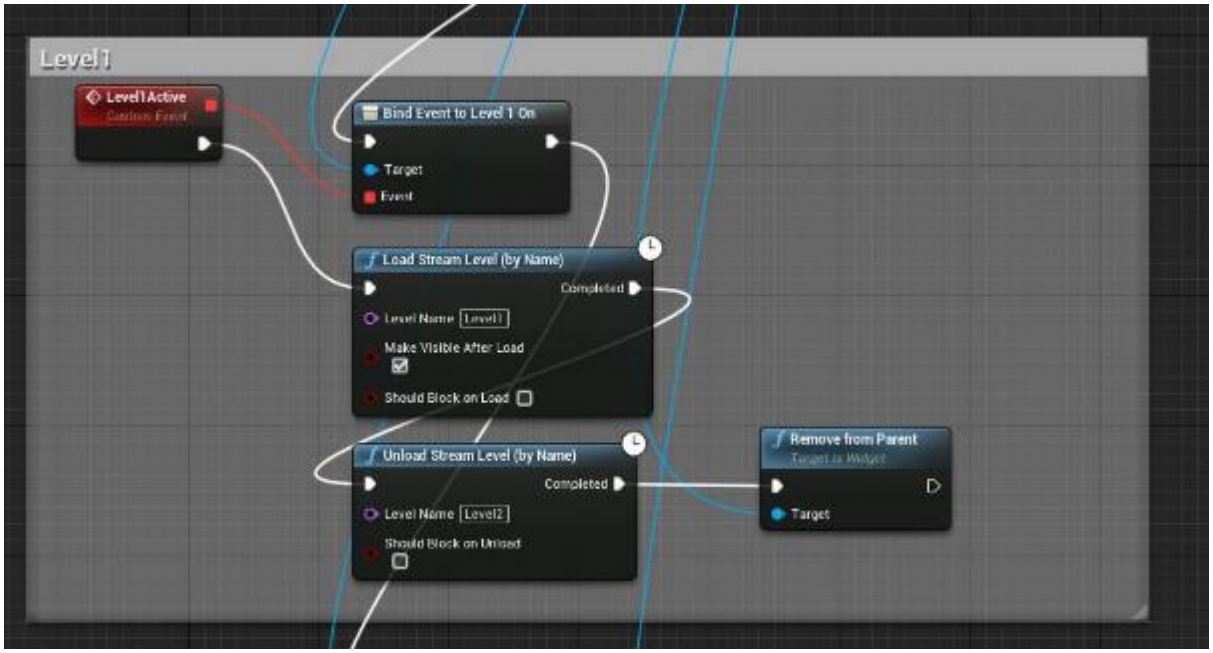

DARKENED EMPRESS
MOONGLADE FROST
SNOW QUEEN
START

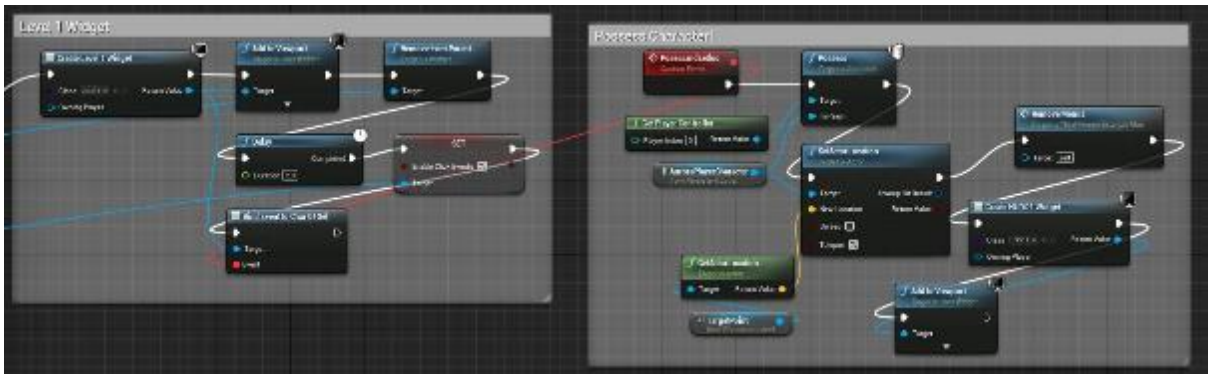

On Clicked Option 1
OnClicked (SM_Option1)
Touched Actor
Button Pressed
Flip Flop
A
B
Is A
Set View Target with Blend
Target is Player Controller
Target
New View Target
Blend Time 3.0
Blend Func
VTBlend Ease in Out
Blend Exp 5.0
Lock Outgoing
Print String
In String
Option1Clicked
Development Only
Option1Cam
from Persistent Level
SET
Enable Click Events
Target
Loading Intro Screen
Target is Third Person Example Map
Target self
Get Player Controller
Player Index 0
Return Value
icked Option 2
OnClicked (SM_Option2)
Touched Actor
Button Pressed
Print String
In String
Option2Clicked
Print to Screen
Print to Log
Text Color
Duration 2.0
Development Only
SET
Enable Click Events
Target
Set View Target with Blend
Target is Player Controller
Target
New View Target
Blend Time 3.0
Blend Func
VTBlend Ease in Out
Blend Exp 5.0
Lock Outgoing
Option2Cam
from Persistent Level
Flip Flop
A
B
Is A
Get Player Controller
Player Index 0
Return Value
Loading Intro Screen
Target is Third Person Example Map
Target self

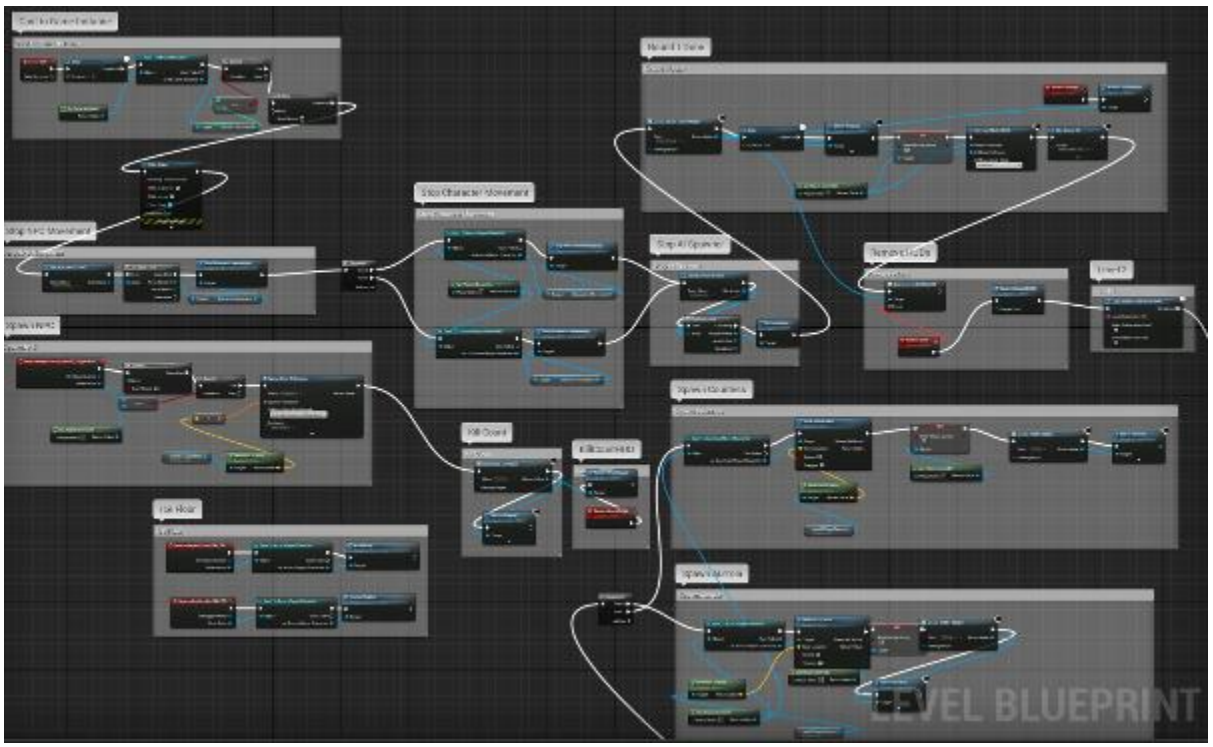
Using a game instance technique much like I did last year, I added different skin options for each character. Each skin applies perfectly and loads into the game correctly in levels 1 and 2. I named the skins myself to give the game a more immersive feel. When the user presses start the characters play an animation with particle effects. Aurora walks down a set of glacial stairs and hits her swords. I added Foley sounds for her heels on the stairs and the swords swoosh. For the Countess character, her blades siphon around her with an added wind effect.

The starred event is bound to level one and then everything begins to load in the level 1 blueprint.

Level 1

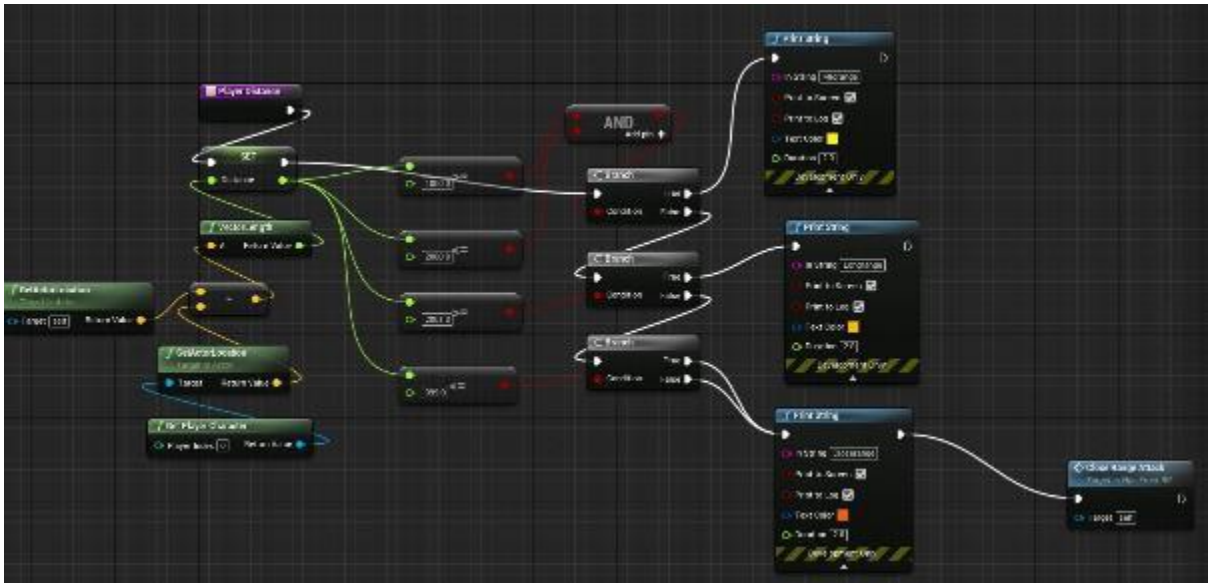

Level1
Level1Active
Bind Event to Level 1 On
Target
Event
Load Stream Level (by Name)
Completed
Level Name
Level1
Make Visible After Load
Should Block on Load
Unload Stream Level (by Name)
Completed
Level Name
Level2
Should Block on Unload
Remove from Parent
Target


Level 1 Widget
Protected Character

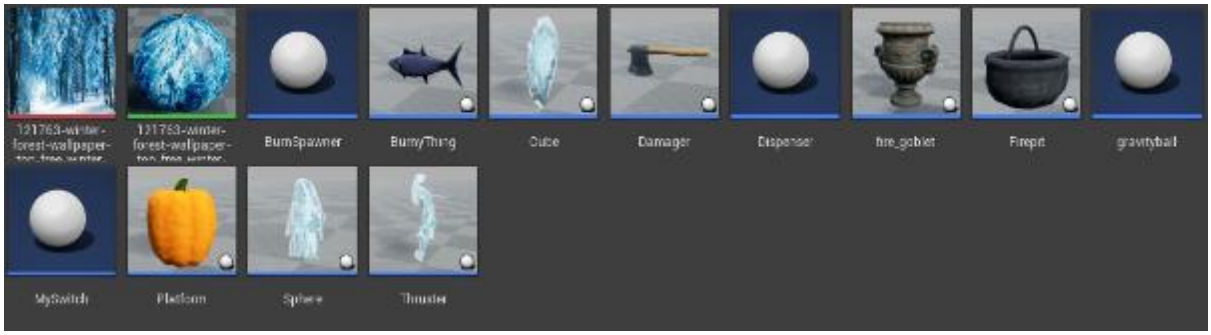

LEVEL BLUEPRINT

All of the widgets from the character selection menu are removed and the new ones are added. these include the HUD showing the health and energy levels of the character, and the kill count, however not immediately as this is caused by a trigger box collision as well as the AI spawner. I added sounds for each attack, including three different ones for three different left mouse clicks. her jump also has a sound that plays. there was some trouble with the special attacks as the left and right Mouse click events were very buggy. I, therefore, changed the special attack to the F key. this was a lot better and is more realistic in modern video games. the special attack is fully animated with particle effects, camera Shake, the field of view change and sound. This adds a lot more depth to the game.

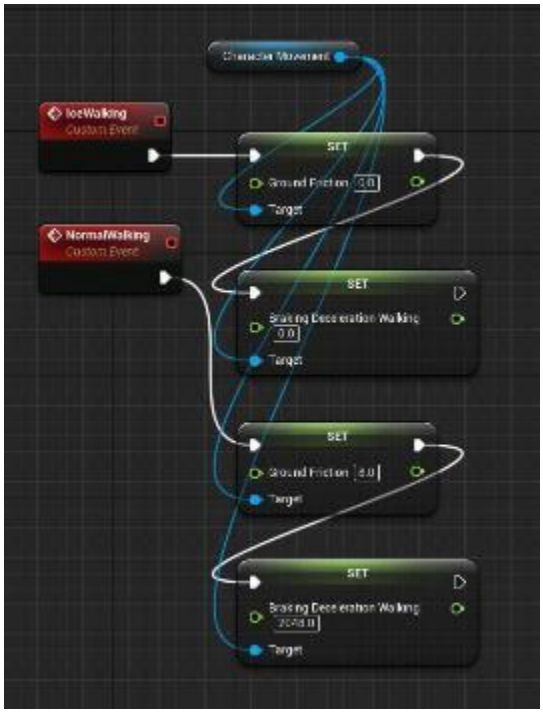
When the NPC spawner is triggered, the snow creatures begin spawning within the forest and looking for my player character. when they hit with a close-range attack which was set up by me, they punch instead of slam. I did this by using an anim notifier as well as completing the Blueprint in the NPCs blueprint. These NPCs are also set up so there are particle effects when they punch which match the character's aesthetic.

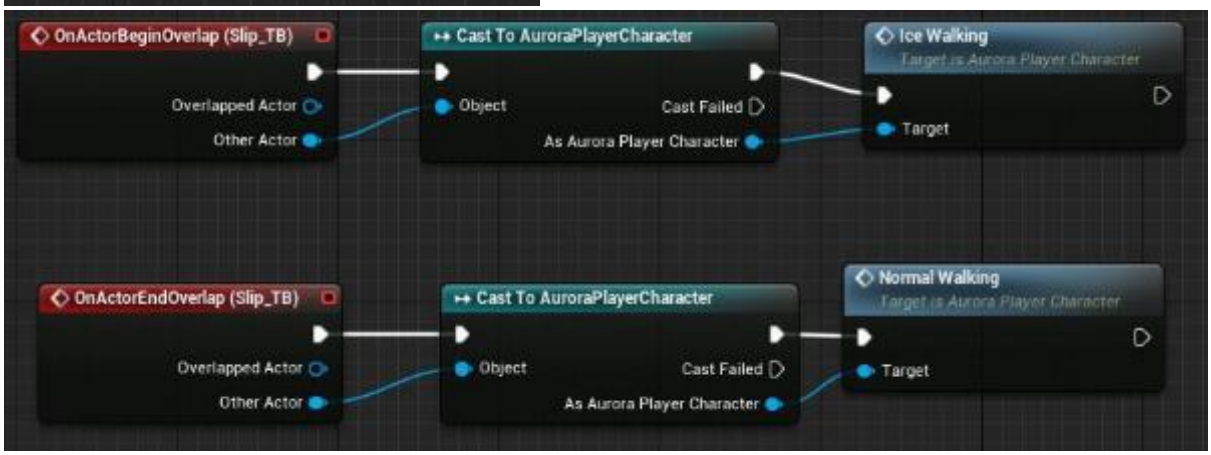


I also added some fun events in level 1, such as a slippery floor that is placed on the ice Lake plane. this makes the characters skid around as their velocity is very low. I also added a dispenser which spawns giant icicles that fall on the character. I didn't want them to cause damage however they are capable of pushing the character off of the bridge onto the icy floor. I also added a gravity ball that simulates the blowing of harsh wind. it is not strong enough to Scoop my character up however, it does cause the jumping to slow and movement is hard to control. I did have some problems with the gravity ball picking up my NPCs but they are eventually put back down. I also made a thruster within an ice sculpture which floats on the lake.



For the actual design of level one, one-eyed created a forest with blue and purple lighting to make it appear magical. I had a small icy Lake in front of a few Viking cottages in the snow. I did not stick with my original theme of a Victorian Street, as unfortunately, I did not have enough assets to make this work. I did however go back to my mood boards and used in nature theme.



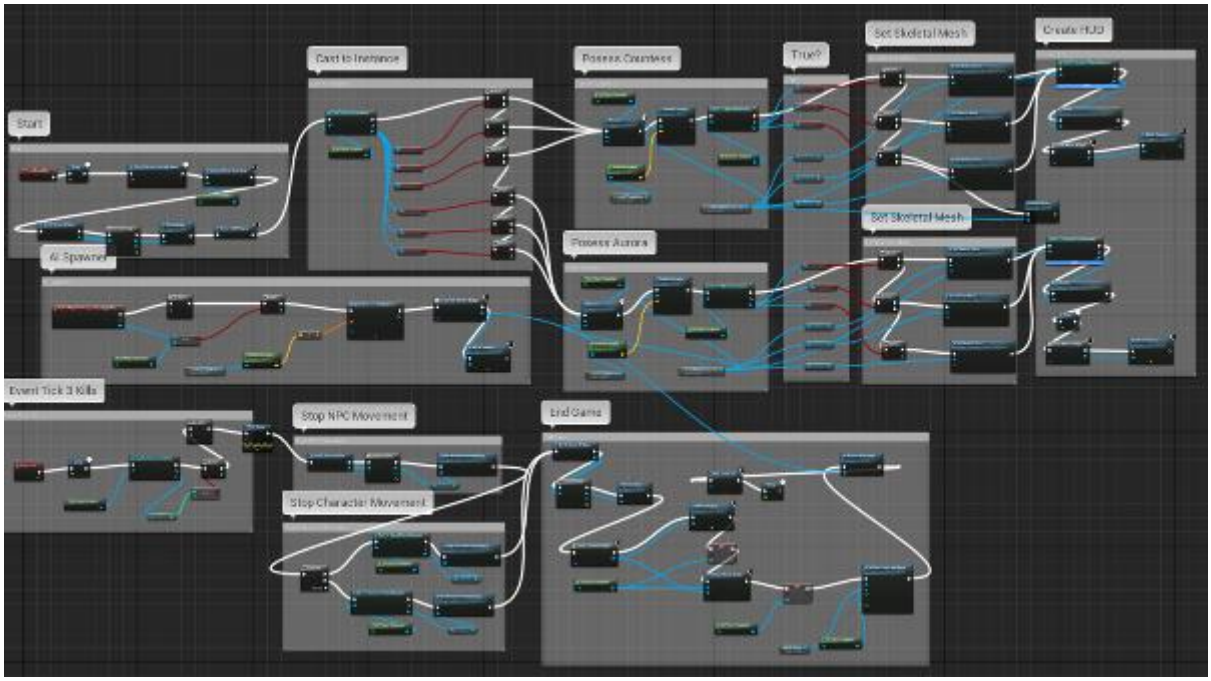


When the kill counter hits 3 In level 1 this causes a widget to pop up saying level complete with a prompt to continue. When the player presses continue the same character with the correct skin spawns in my level 2 zone.

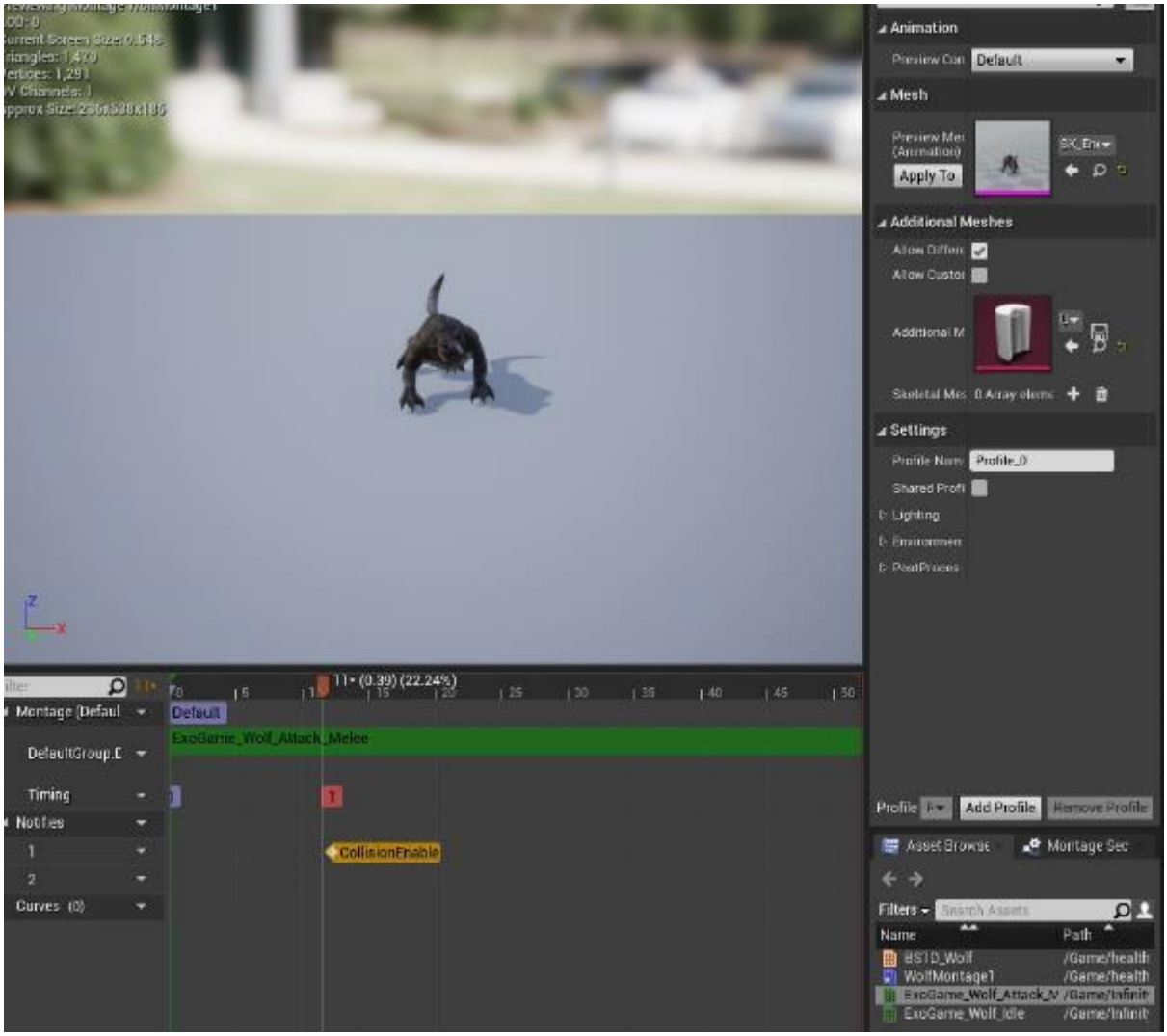
Level 2

Making sure the engine is checking the game instance every second with a tick to update the kill count, I created a widget blueprint to say 'round one complete'. After this, I added a button to call Level 2 as an event dispatcher. I then set the input mode as UI only so the player cannot play during this screen. I also did some other checks, including despawning all of the remaining NPC by stopping their movement and destroying the AI spawner with the destroy actor node so no more NPCs appear.

I then loaded the level and set the new spawn location to reanimate my character, not forgetting to hide the mouse cursor. In the level 2 blueprint, I then unloaded Level 1 and then set input mode to game mode.



I then created a new NPC by duplicating the first NPC blueprint which saved me loads of time. I created an animation blueprint and set it up the exact same way, as well as a blend space. This time however I used a different skeletal mesh, a wolf. I then went into the game instance and duplicated the NPC variable and renamed it. I also duplicated the AI spawner and the class actor to the new NPC, as well as the get all actors of the class node. I then made a new trigger box and new nav mesh bounds, as well as a new target point for the AI spawner. I did the same code as I did before. In the death check, I also made sure that the correct kill counter was targeted in the death check.



I had some major problems with the HUD in level 2 which did originally work but then it stopped. on the odd occasion the character spawns with no energy and no health, however, most of the time the character spawns with the correct energy function, but something in level 2 is making their health deplete even though they are not colliding with anything. This is very confusing however in future I will try and find ways around this and play with collision settings.

I have some fun additional setups in level 2, such as spinning axes that deal damage to the player. I also have some goblets which light up with rolls of Fire when the character walks past them. I used a blueprint class actor and a trigger box to spawn the particle effect of Fire and a point light. When the character walks through the corridor into the library, this is when round 2 officially starts and my new NPCs begin spawning. I used a wolf mesh however the running animation was very choppy. They do attack and deal damage and they are killable just like my first

round of NPCs. and the kill counter hits 3 the camera pans to the frozen sculpture in the library surrounded by smoke and the end screen appears saying congratulations.

For the actual design of level 2, I use a castle hall with Knights in armour, flags books and goblets almost like an armoury. It matches the menu system of my level, as it is a very medieval castle aesthetics.

The character spoons right at the back of this corridor and has to run through all of the goblets and axes to get to the trigger box which will spawn the new enemies as well as the kill counter widget. Even though the HUD was working strangely the kill counter did not have a problem spawning and being accurate for any player.

Update: The HUD is failing because even though the code is correct the NPCs are not despawning in level 1 and my character is frozen there. This is causing damage as I checked with a print string. I looked over different solutions however no fix has worked.

Sound

I made my own mastersound class with two child sound classes for the SFX and the music. I added a royalty free magical song for the background of my entire game on loop and imported some buttons sounds. I converted these to WAV files online. I imported clicky button sounds for when the user hovers over a button, and a swoosh sound effect for when skins were selected and the play button. the dialogue for the characters was already included in the Paragon files. I added a death noise, noise for jumping and attacking as well as sound effects during special attacks and other animations. I didn't like countess's voice therefore I usd Aurora's for both. In the future I will make my own sounds if I have more time like I did last time. I would even go as far as to want my own music within my game, however this is just a prototype so for now royalty free music is not a problem.

Buttons and HUD Design

Anti-Aliasing

2560x1440

ULTRA

RESUME

RESUME

The type I used was very clear and easy to read against the dark background. I did use a serif font however with the serif it is not hard to read for someone with vision impairment due to the size.

the HUD design was difficult therefore I ended up using royalty-free pictures however if I had more time in the future I would design my own HUD to match the theme of the game.

Peer Review

"Your video is so good wow! I really enjoy the sound effects when the character performs an attack and the music used within the environment really fits perfectly with the theme of the game. The only peer review is to add a bit more to the second level as I really love how it looks but the wolf NPC's would be great alongside maybe a bigger boss? Just to emphasize that as the rounds increase the bosses abilities do too sort of thing. Also a pause menu would be cool to see!" - Megan

"Things i like. I really like the environments you have created and the lighting art that matches the theme you are going for as well. The character selection is very well done IMO. I like how you can select what character you want to pick from and the outfits they are wearing. Also i like the animation that is played when confirming what character you are playing as. I also like the different sound you have used throughout the game. Different melee and hit sound with a combination of magic like effects make the game feel more polished compared to a gameplay demo. I like the special abilities you have used as well. The particles make the attacks feel more impactful.

Things I could see needing improvement. One thing I could see that needs a little work on is the widgets. I think the health and energy is a little large and needs to be resized. The kill count and game over could have some personal touch added compared to the default assets as well. Remove the Fortnight Music plz. My ears can only take so much. Maybe add different ways the player can earn more health or energy back as well. Unless this is a gameplay choice to not do this. Also, you could make the AI run away after hitting you. This makes it so you can't just spam kill them and they could spam kill you." - Jamie

"The start menu is really good and gives the player the option to access different settings such as the resolution and colourblind filters which is awesome. I think each set could be in its canvas just so the player isn't overwhelmed with the number of options that are there. The ability to change characters is an awesome feature that helps players put their personalities into the game. The first environment is cool, but it is hard to see in it. you have said that you will change it and I can't wait to see that. The enemy types fit the feel of the game and demonstrate a great level of consistency. The second level has great lighting and is a nice contrast to the first level. The range of different enemies changes up the combat which is refreshing. It would be cool to introduce a levelling system for the enemies so the player knows how difficult they can be. The victory music is very loud I almost died." - James

"I like how your game has multiple playable characters and the menu has a nice smooth flow with the camera blending. Also, the animations look very smooth and timed perfectly.

Initially when loading in tonthe game It was a little hard to see perhaps add some more lights or adjust brightness. The sound effects are definitely a good addition and go well with

the attacks . The music is also chill for the theme sounds nice. The level layout on level 2 is very well put together and the lighting is much better here. The health and power UI is nice ok_hand clearly states to player what each one does. Once u tidy up the bugs and glitches will be very polished. Well done." - Chris

"Your level is sick bruh im jealous its incredible ok ill do peer review now whoops- Peer review: - I love the aesthetic of the level, with the music, characters and effects all interlinking together - Attention to key details such as the ice being slippy, having a slowed gravity sphere and having effects including the spinning axes are all unique and help bring new dynamics to the gameplay - The fortnite music is a bit too loud! - The button sound effects are good, but perhaps can be lowered a little as they are rather loud - The main menu start buttons and options could perhaps have a design to them, such as intricate frostted ice look or a unique font so they blend more with the menu design? - The health bar, I believe it was mentioned, does not show real health, perhaps having a revive system in place or potions for healing would be good! Other than that, looks amazing and I really love the level of detail and thought put behind its construction and design! keep up the amazing work!" - Beth

Though I didn't have time to act upon all of the peer of you I received I did implement some features as suggested by my peers. the first thing I did was rearrange my settings menu to be more readable and clear. I was having trouble figuring out how to layout my buttons, however with the use of 4 vertical boxes, and messing around with padding spaces and the toggle fill setting, I managed to create and menu which was a lot easier to follow.

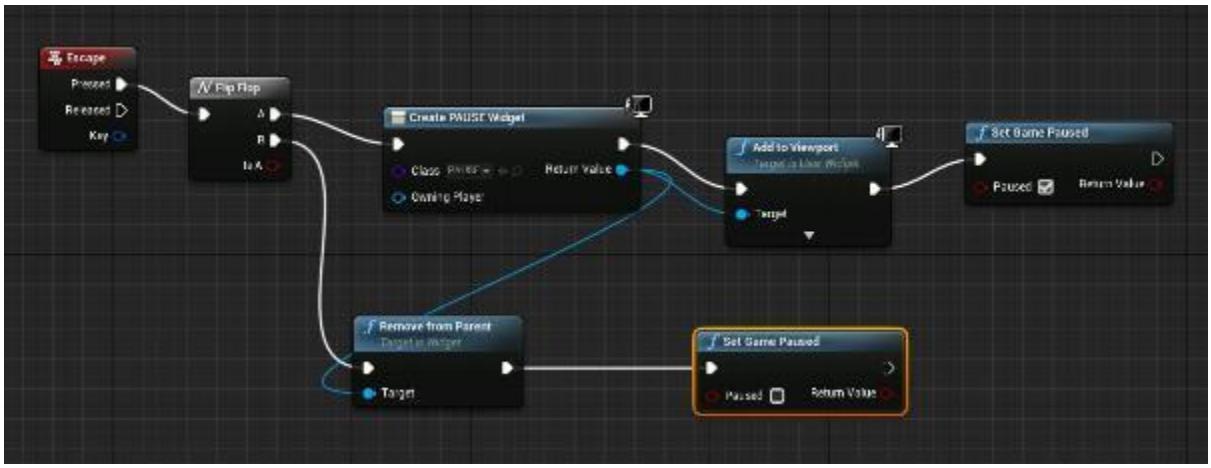
I also decided to add colour blocks into the the colorblind filter section of the menu you so that's the user can can a perfectly balance the colour intensity of the filter. I did this as the background and text is very blue so it would be hard to to get the filter correct in the initial menu without these colour blocks.

Here you can see it is a lot easier to see what the filter has done to the different colours. this was a great feature to add last minute and I'm glad I did.

Here is an example of an applied filter in the world. I made sure to use the red and blue colours for my health and energy bars so they are clearly distinct from each other.

Another future I added because of the peer review was the pause menu. this was very easy to create and the code is very simple to follow. I decided to use a blurred background as I did in the first game I made as it does give the effect that the game is paused and the user knows that all movement has stopped. I added a settings button in the menu so the user can change the graphics settings in game.

these buttons all work fine.



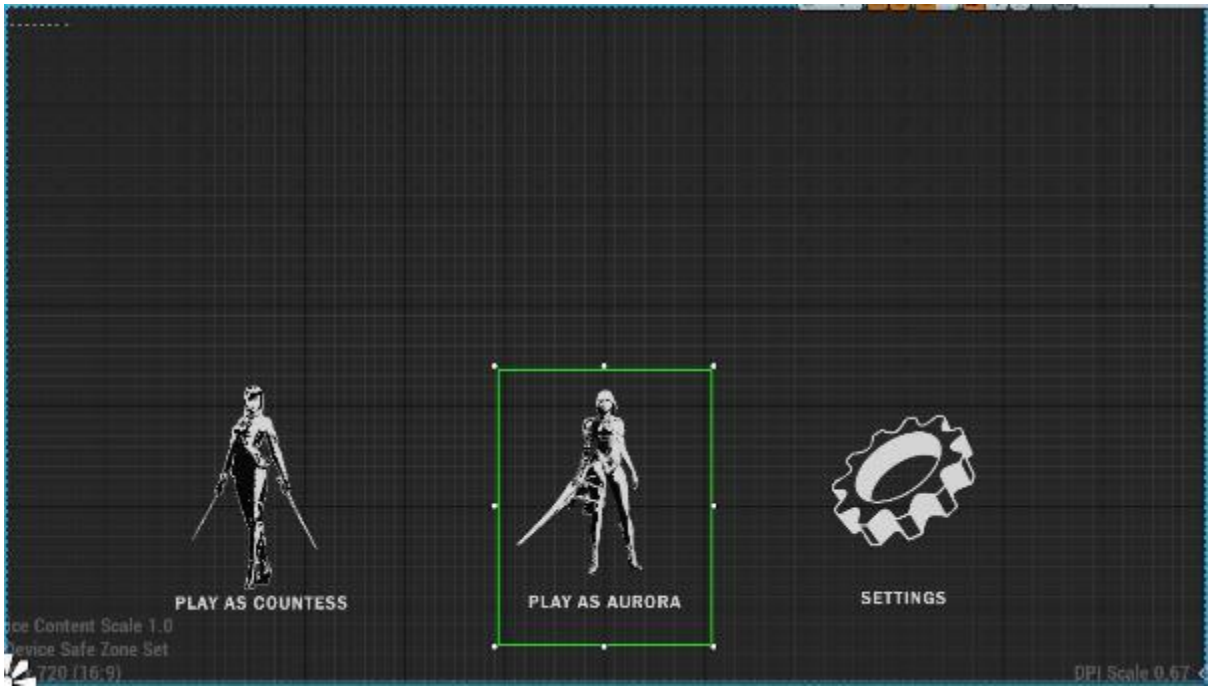
If I had more time I would change the layout of the pause settings options however they do work and do the job of the settings menu. I would like them to match the pause screen next time.

Another feature I changed was the start menu buttons, all I added was an inner shadow so that it is clear the user is hovering over the correct buttons. this also is now a thing in the buttons in the pause menu. I did this as James's correct in saying sometimes UI can be confusing.

Something I would definitely do if I had more time is creating a health potion or some sort of actor the player can collide with to gain more health. This is a very prominent feature in most games especially hack and slash ones. depending on which character was selected there would be different actors to correspond to the character. for example, aurora's health potion would be something blue and the countess's health potion would be something red. I may even have energy potions to If I had time.

Problems

When I first started the development of my level I decided I wanted to build some of the environment before doing too much of the code. I spent a long time Gathering assets and playing around as lighting and the skybox to create a moody Victorian Street based on the game Bloodborne which was one of my inspirations. Unfortunately, I was having major collision issues with my NPCs which weren't a problem before I built the environment. it was very frustrating I didn't know what was wrong. It put me off a lot of the development and I decided to completely restart my game from scratch.



The main collision issue was the enemies hitting my character off of the map as well as their health not decreasing. I still to this day do not know what the problem was however redoing the map managed to fix this.

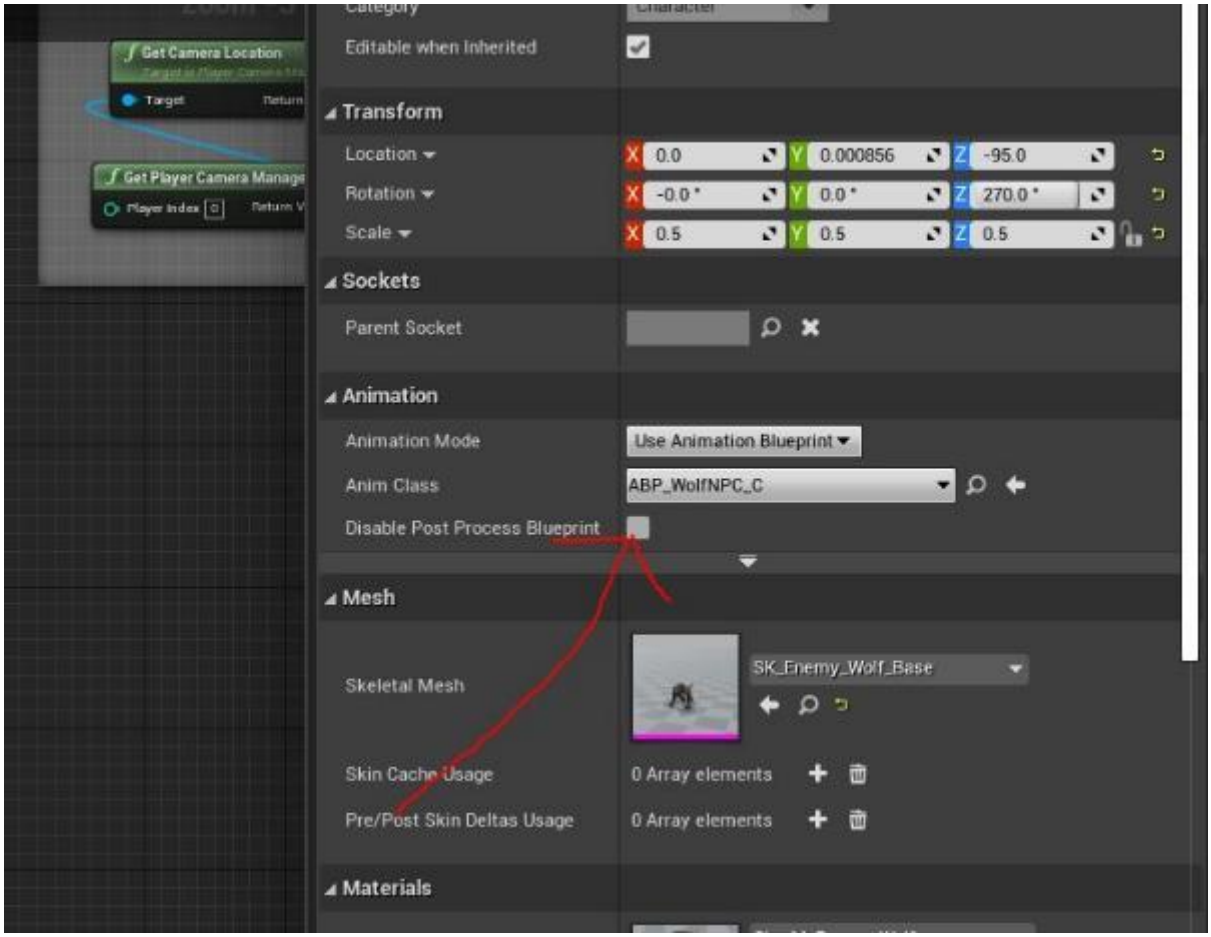
As you can see in the last image I also had a completely different idea for button design. I am however very glad I changed the entire theme of my level as I now look back on these buttons and find them very unappealing.

Indeed initial level however I did achieve a Bloodborne aesthetic with the assets I chose. it is a shame it's got scraps however next time I know

where I can find particular assets and how I can use lighting to portray a mood or time period.

Another major problem I had was when following the tutorials I didn't know where I wanted to go with the initial menu buttons that I had created. it was very different to my last level which I had begun all of my code in a menu assets level. This made it very difficult to translate over into this year's project as I wasn't sure how the game instance would work, or any other actor from the persistent level being translated into the menu assets level. I got around it by using a Wireframe which I had never made before to map out what buttons did what, art what and when the levels would load based on which events.

Another issue I had was the animation. none of my animations was playing as I had not selected which slot I wanted the animations to be based on. This only happened once and I learnt from my mistake and ensure to select the correct slot for every character. Another problem with animation I had was my second NPC wolf. They don't run at my character even though the blend space has them running. I'm not too sure why this is. However, I did have a worse problem with them as they didn't animate at all until they were right next to my character. this was fixed easily however as I had just not selected to use the wolf animation blueprint in the Wolf NPC blueprint. In the future I know to always have the animation blueprint selected.



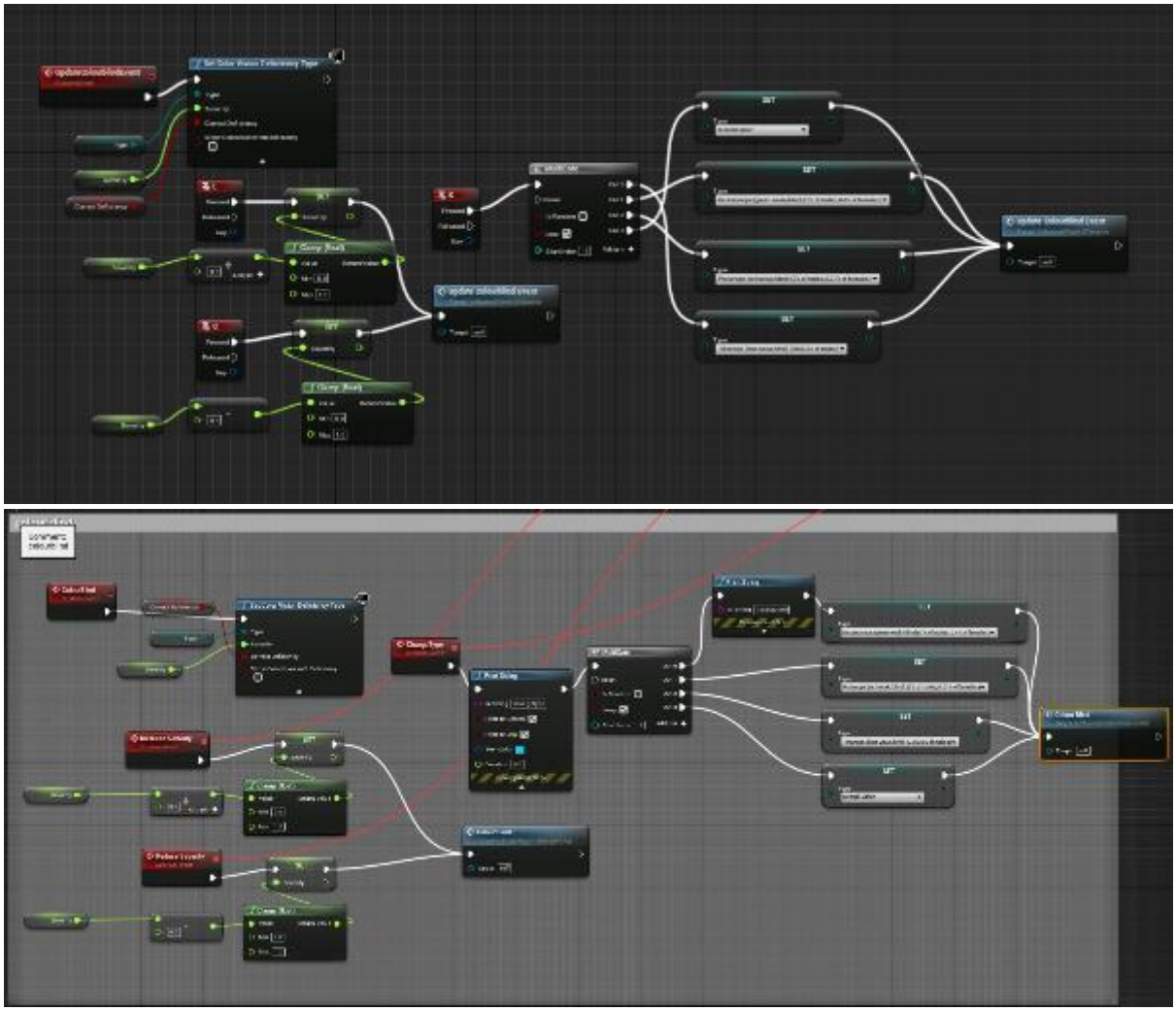
A sound issue I have is that when my characters are selected start is pressed and animation is played with a sound effect. This works completely fine and is very smooth, however for some reason when I press play on my game these sound effects play in the menu before I've pressed anything. this is quite strange and I'm not sure why this is, however, this is something I would look to investigating in the future as I have not done too much with sound. I believe it may be something to do with the class actor which controls the sound. Another sound issue I have which isn't too bad is that when I'm going in and out of my character selection screen the dialogue plays twice even though I only have a sound 2D node on flip-flop A. I don't understand why the sound plays twice however it used to work fine. this only changed when I added more sounds into the game. I'm not sure if it's a bug or not but again this is something I would look to fixing in the future having more knowledge of sound.

Another issue I had was the spinning axes. The actors now spin fine and cause damage, however, I wanted them to travel back and forth using a timeline node. I have a lot of experience using timeline nose and have never had a problem before, however for some reason the axes do not want to move. I even tried an alternative method of using a transform node and variables being locations 1 and 2 as vectors to move the axe. However the axe still was not having it, and I had to scrap the idea of flying scary axes they instead just rotate in place using a rotating movement applied to the mesh in the Blueprint.

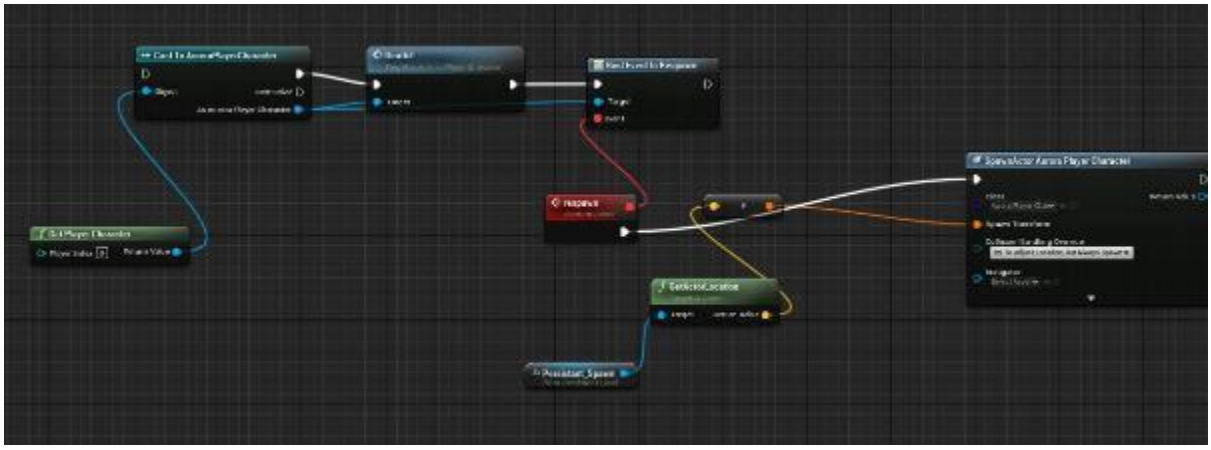
Another strange issue I am having is I have a rogue character spawning in level 2 in the corridor. there is no target point or any reason why these characters should be spawning in the corridor. it's always the Countess character and her skin is changing every time I press play it doesn't matter what

skin is selected on each character she'll always spawn. I've tried switching Around The Blueprint code so that the last thing to spawn is the character with a delay so that there's no error however this still didn't work. the only thing I can think that is causing this issue is that the computer I am running the game on sometimes struggles due to all of the assets so I believe there is just a run-time error due to my computer specs. I think this is due to the fact that when I was screen recording my level a lot more problems arose that has never happened when the screen recorder is not playing. This makes a lot of sense and if I was to make a game that wasn't a prototype I would do everything to clear up these issues and then sure I was running the game on a computer with a newer graphics card.

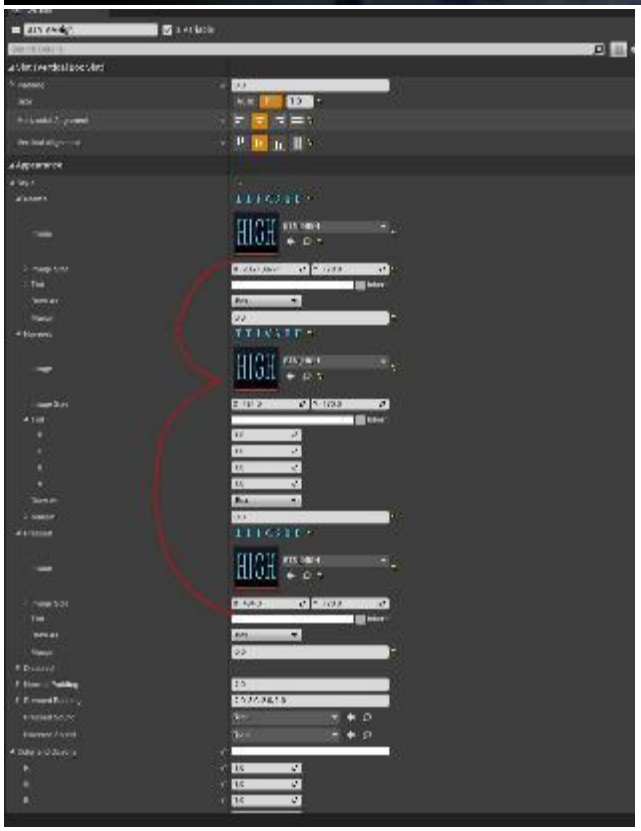
Another issue I was facing is the colourblind settings layout. originally I followed a tutorial on YouTube. Within this tutorial, he set up the bindings so that in the player character blueprint when certain keys were clicked it changed the intensity and the type of colour deficiency. This wouldn't work for my game as it is a very strange way to implement the code. Instead, I had to use my own initiative to try and get it to work via menu buttons. Using functions and calling across blueprints and binding events is a very scary concept to me that I have not explored until I tried to get the colour blind settings to work in my menu. I was successful by chance of playing around in The Blueprint and I am very happy that this worked with no issues. when the colour filter and intensity is selected it stays on for the entire game in levels 1 and 2. Here is a before and after of how I had the code set up. The first picture is in the player blueprint and the second picture is in the third person example map blueprint.



Another issue I have was the death of my character. it was not hard to have my character die and play animation when her health hit 0, neither was there a problem having her respawn. The only issue was the fact that she would not spawn with reset health and energy I did not know at all how to come about this problem, as her health and energy are set right after the event begin play mode. I don't know which blueprint I would have to put this in due to the variables being local to Aurora. Here is an example of the code I used which didn't work very well. I remove the death entirely for now however when the code is connected it does indeed work she just respawns with no health and no energy which causes her to be stuck in a death loop. I have done respawns before and it worked entirely perfectly using target point, however, there was no health set up in that game so it makes sense that it worked.



Another problem I had was all of the buttons in my settings menu warping on hovered. it took me a while to figure out why however I realise that I had to directly change the image size on three different occasions for each button as well as make sure the module was always set to zero. this was an easy fix but very easily missable. next time I will ensure to do this on all buttons settings and then copy and paste the button to save time, or use a button widget instance as I did in my advanced HCI module so all the buttons are the exact same.



Evaluation

Overall I am very happy with my hack and slash prototype game. I am happy with how much more quickly I can work using Unreal Engine 4 and how I can now implement not just one aspect of game production but all aspects such as combat, NPCs, health and Regeneration, skin changes, sound, particle effects and animation.

I worked well when tackling problems and had great time management in the beginning however throughout this project I felt I could have devoted more time to it to push my level even further. This

time around I also used a lot of peer review and made drastic changes to UI as well as other small features in the game. These features included the layout of my options menu, the overall brightness of my game, blueprint script and sound. I realised how important peer review is and it is very great to have a second opinion on a big project. It is very easy to be frustrated and ignore fundamental problems in UE4, so having a helping hand was also very important in some cases. For example, I and two other peers could not get our animations and kill counts to work, however after we all compared our code we realised we all had solutions to other people's problems.

Future Development

In the future I will ensure to follow my Gantt charts properly and not so loosely, I also intend to set myself weekly targets so that I do not fall behind in production. I was also like to collaborate more with peers as I think working on such a big project alone is not the best way I work. when I did have the chance to bounce ideas off my peers it felt great and was really insightful.

Another thing I would like to do in the future is possibly work using Unreal Engine 5 so that I can play around with the new lighting system and textures to add even more depth to my game. I'd also like to experiment with VR and AR as this was something I tried in another module and I think it would be a nice push in the direction of a more advanced HCI system.

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