

INTO THE CHAOS: AN UNREAL ENGINE BASED ACTION GAME

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DECLARATION

I, Md. Imtiaz Hossain Subree, student of Department of Information & Communication Technology, Comilla University, Roll: 11609031, Registration No: 11609031, would like to solemnly declare here That the presented report of my project namely "INTO THE CHAOS: AN UNREAL ENGINE BASED ACTION GAME." is uniquely prepared by me under the supervision of Md. Rakib Hasan, Lecturer, Department of ICT , Comilla University. While preparing this report I did not breach any copyright intentionally.

.....

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CERTIFICATE

This is to certify that the project entitled **INTO THE CHAOS: AN UNREAL ENGINE BASED ACTION GAME** by **ID: 11609031**, has been carried out and completed all departmental requirements and submitted his final dissertation within due time on 31st March, 2021. His performance has been satisfactory during this project period.

I wish him every success in life.

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ABSTRACT

Video Games have made a great impact in the World. It's the biggest entertainment medium in the world today. The market worth of Game industry is 138 billion in 2021. So there's a lot of opportunities in this field. Among these games, PC game plays a bigger role. This project is a complete PC game, developed using Unreal Engine 4. The Genre of this game is somewhere between Action Role Playing Game(ARPG) and Hack and Slash. The story is based on time travel that leads to connect the past with the future. The Protagonist has to defeat the Vikings that invaded the present world and also has to find out the mystery of this incident. This game has a lot of gameplay elements and options to choose, and difficulties, AI agents and other obstacles will make the game more interesting to the players. All the assets and Animations were made with Blender 3D and the game was developed in UE4. Blueprint Visual Scripting has been used to code this game. The story, Gameplay mechanics and the progression of the game, assets and animations everything is unique and built through the development process. No assets were taken from anywhere else and were made uniquely.

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Chapter 1: Game Concept

1.1 Introduction:

Into the Chaos is a 3rd person experience developed for the PC platform.. It's a 3D Action RPG(Role Playing Game) . The story is based on Time Travel. It's a combination of Norse mythology, Vikings era and Present Time.

1.2 Description:

Into the Chaos is a 3D Action RPG that has been built using Unreal Engine 4. It's a mid poly game. All the assets, characters, animations has been built using Blender.

The story starts in a city which is under attack of a lot of Vikings all of a sudden. The city is blocked with an invisible barrier that disconnected all kind of connections with the outer world. The Protagonist, who is a Cyborg, decides to take the charge of freeing his city from this mysterious and unknown situation.

1.3 Key Features:

Unique Story: The story is a unique mixture of the future and the past. It's based on time travel that leads to connect the past with the future, and thus Vikings attack.

It not only represent the time travel, but it also has a strong Mythological background.

Graphics: It's a Mid Poly Game. The assets and Characters used in this game is neither very low poly or very high poly.

The visual is Non-Photorealistic. Toon Shading has been used to make the game visually interesting.

Camera Angle: Tracking Camera system has been used in this game. Camera moves along with the movement of the Protagonist. And camera can rotate 360degree around the Protagonist while he isn't moving.

Sound: All the sounds of weapons and environments have been collected from [Freesound - Freesound](#) and [Purple Planet Royalty Free Music \(purple-planet.com\)](#) .

Player's Abilities: The Protagonist, who is a Cyborg, has a lot of unique abilities that makes the game more interesting. The abilities get revealed gradually.

Difficulties: The game keeps getting difficult as the story progresses. There are various kinds of difficulties.

Single player is against multiple opponents. The difficulties depend on the number of AI enemies and their power level.

1.4 Genre:

Into the Chaos falls nearly somewhere between Hack and Slash and ARPG(Action Role Playing Game) genre.

1.5 Platform:

This game has initially been made for PC platform. Further plans are to publish this game in Nintendo Switch and PlayStation depending on the game's success. But pc will be the primary platform.

Chapter 2: Game Mechanics

2.1 Core Game Play:

The core Game Play of “Into the Chaos” is fighting against Vikings in a mysterious situation.

The Protagonist, having no idea about what's going on, starts fighting against Vikings that have attacked his city. The Scientist, who has helped the Protagonist in a lot of ways, besides his being a Cyborg, helps the Protagonist investigating the situation through the game.

The story begins in the house of the Protagonist, where he realizes that something is wrong here. There is Vikings everywhere in this city and the city is somehow disconnected from the outer world. The Protagonist starts communicating with the Professor and at the same time starts cleaning his city by killing those Vikings while discovering the Mysterious truth gradually.

The Game has 2 levels, 1 is the City and the other is the land of Vikings, both connected with a portal in a Lab.

2.2 Game Flow:

As discussed earlier, the game has 2 levels. It starts from the City where the protagonist

lives and continues gradually to the end.

The game play is basically outdoor. 2 things are consistently being done by the Protagonist.

1. Killing enemies.
2. Continuous conversation with the professor.

The game is focused mainly on killing enemies in various ways. There are lot of abilities to use.

The professor is another lead character in this game. He helps the Protagonist in various ways. As he has built everything special inside protagonist, he can control these abilities as per requirements.

The Protagonist, in the beginning, having no idea about what's going on, calls the professor. The professor then explains the situation to the Protagonist through the game and starts unlocking abilities of the Protagonist one by one.

As the game progresses, the story becomes more complex and the Game Play becomes more difficult. Player has to cope up with the situation, keep counts of the powers he can use and know how to use those abilities in which situations.

While unlocking the abilities, a tutorial will be shown about how to use, the advantages and the disadvantages of the ability.

2.3 Characters:

There are 2 main Characters in this game.

1. X the Protagonist.
2. The Professor.

2.3.1 X-the Protagonist

X is the main Protagonist in this game. He is an a former special-forces soldier. He was a war hero who was wounded from an explosion and lost his left arm. He was wounded badly and had a little chance to survive. So the Professor, who's an old friend of X's dad, decided to turn X into a Cyborg to save his life.

After being a Cyborg, X has got some incredible powers. He has got an auto regenerating power source that can produce some massive amount of energy. Thus, he has got some abilities that can be used to defeat enemies with ease.

As these powers are dangerous, the Professor hasn't made everything available for X. They can be unlocked by the professor if ever needed.

Besides those abilities, X has got some excellent fighting skills as he had served in the Military for a long time.



Figure 2.1 Protagonist X

2.3.2 The Professor

The Professor is another important character in this game. The Professor is the one true ally of the Protagonist. He is directly involved in creating the main Protagonist and gave him powers and abilities.

The Professor is responsible for a lot of such incidences. His scientific experiments are sometimes helpful for the society and are sometimes are really messed up.

Recently he was not seen outside his lab for long time. And suddenly one day, the Vikings invaded the City. He was working on Time Travel for long time. He was trying to create a Wormhole that connects 2 spaces and times together. But it was nearly impossible for him because wormholes are naturally unstable and collapse nearly the instant they're formed.

There may be a connection between Professor's experiments and these Vikings. But whatever it is, the Professor plays an important role in this game.

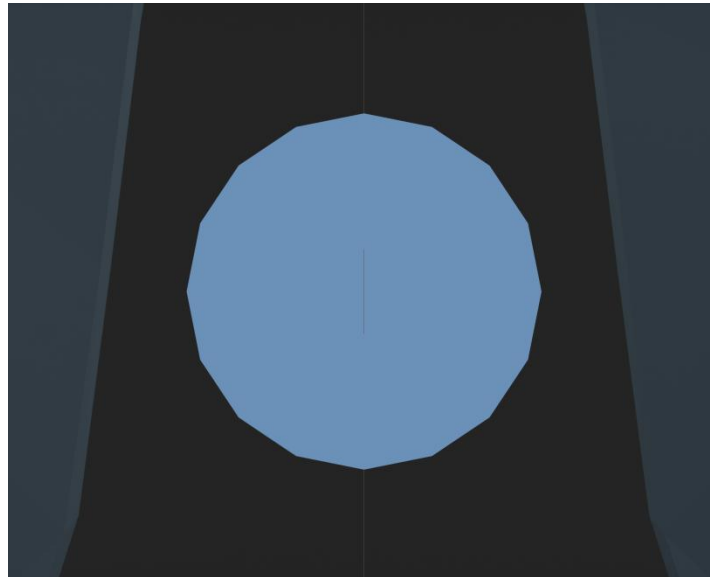


Figure 2.2 The professor

2.4 Enemies:

There are 3 main types of Vikings according to their Strength, Power and Durability.

They are:

1. Normal Vikings
2. Giant Vikings
3. Final Boss or God Viking

2.4.1 Normal Vikings

This Kind of Vikings are humans. They are made of flesh and blood.

As brutal warriors, their strength and durability is quite higher than normal human beings. They're considered as the most Brutal and Bloodthirsty warriors in the history of mankind. So they aren't easy to be defeated.

Features	Units
Health	15
Damage Power	0.5-1

Table 1: Normal Viking Features

Abilities:

Some abilities that are shown by these Normal Vikings in the game. They are:

1. Weapon Attack: Many kinds of weapons are used by these Vikings. These are the primary attack weapons.
2. Kicking Attack: Sometimes they use kicking the player as attacking form. Damage is nearly equal to weapon attacks.

3. Dodging Ability: Enemies can dodge player attack surprisingly anytime. This feature makes the game more challenging.

4. Blocking Player Attack: These Vikings can block nearly any attack of the player, which make it more difficult to kill a Viking.



Figure 2.3 Normal Vikings

2.4.2 Giant Vikings

This Kind of Vikings are monstrous, both in size and abilities.

They are generally not completely human, but kind of Hybrid Monsters. They are really brutal in attacking, and have immense strength and durability. They don't feel pain and can attack continuously.

Features	Units
Health	50
Damage Power	1

Table 2: Giant Viking Features

Abilities:

Their abilities are limited. But their immense strength and durability make them more brutal. They'll attack continuously without feeling the counter attack. The abilities are:

1. Weapon Attack: Many kinds of weapons are used by these Vikings. These are the primary attack weapons.
2. Kicking Attack: Sometimes they use kicking the player as attacking form. Damage is nearly equal to weapon attacks.



Figure 2.4 Giant Viking

2.4.3 God Viking

He is the final boss of this game. He is no human being, but a human body possessed by an Evil God.

He is the leader of this Viking tribe. He has been possessed by the Evil God to defeat the protagonist. He is so much powerful and has godly powers. He has got Godspeed,

teleportation power, power of throwing projectile from distance, immense health and healing power. He is too strong to be defeated.

Features	Units
Health	120
Melee Damage	0.5-1
Range Damage(Projectile)	0.1-1
Healing	+50
Moving Speed	1320
Teleportation Speed	5000

Table 3: God Viking Features

Abilities:

Some abilities that are shown by these Normal Vikings in the game. They are:

1. Weapon Attack: The God Viking has a special kind of Axe as his primary weapon. He can Attack fast and efficiently with this weapon.
2. Range Attack: For being possessed by a God, this Viking Earl has an ability to through magical projectiles from a long distance towards the target. And he never misses the target.
3. Healing: He has a quick heal ability that can recover his initial state from any condition in seconds. But he can't use this ability frequently but approximately once in a battle.
4. God Speed: He has a fast moving ability that can outmatch any speed. He can move from here to there in a blink of an eye.

5. Teleportation: Beside having God Speed, he also can teleport inside a limited distance, which makes him more powerful and a hard nut to crack.



Figure 2.5 God Viking

2.5 Weapons and Abilities of Protagonist:

The Protagonist is a Cyborg who has a Power source to keep him alive and also to power his weapons and abilities. He has a Robotic Arm that executes most of the actions like Firing and using the abilities.

Besides these, he uses an Axe inherited from his father as his primary weapon.

2.5.1 Weapons:

Axe:

Axe is the primary melee weapon of the Protagonist. He can do some unique moves using this Axe and can use it continuously. Other weapons or abilities are depended on his power level and some are limited, but for being a manual weapon, the Axe can be used anytime.

Features	Units
Weapon Damage	1
Max Combo	5

Table 4: Axe Features



Figure 2.6 Axe

Arm Gun:

An Arm Gun is Attached with X's Robotic Arm. This gun fires electric power bullet generated by the Power Source. Bullets can be fired one by one with some delays in between. It needs time to reproduce a bullet, so this feature can't be used continuously.

Features	Units
Damage	2
Max Capacity	5
Bullet reproduction delay	4
Firing delay	0.2

Table 5: Arm Gun Features



Figure 2.7 Arm Gun

2.5.2 Abilities:

The Protagonist has a lot of abilities that are generated using his Power Source. Most of these abilities are executed by his Robotic Arm. These abilities are depended on the power units and can only be used when sufficient power has been regenerated.

The available Abilities are:

Super Speed Ability:

Player can move one place to another place of a short distance in the blink of an eye. This ability can help the player to escape from a difficult situation.

Features	Units
Speed	3000
Power used	2

Table 6: Super Speed Features



Figure 2.8 Super Speed

Air Attack Ability:

The Protagonist has 2 low power Jet Engines attached to his legs. Thus he can stay in the air for longer period of time.

It helps him to escape a situation and attack enemies from air.

Features	Units
Air Time	1.5
Power used while Air Attack	6

Table 7: Air Attack Features

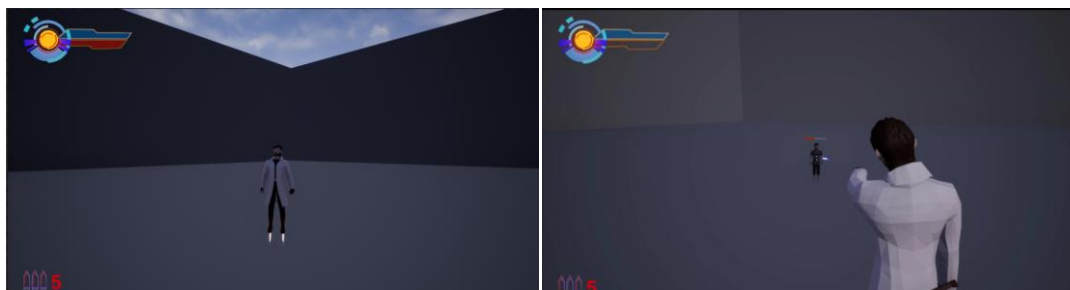


Figure 2.9 Air Attack Ability

Super Punch Ability:

Protagonist can punch harder and faster with his Robotic hand. This Punch is very effective and can do severe damage to an enemy.

Features	Units
Enemy Damage	5
Power used	3

Table 8: Super Punch Features



Figure 2.10 Super Punch Ability

Shield:

Protagonist can Block almost any attack from the enemy. It protects him from getting hit and stay in the game. Using this ability will reduce the power gradually.

Features	Units
Player Damage	0
Power used	0.5/s

Table 9 Shield Features



Figure 2.11 Shield

Power Boom:

This is the most powerful ability of the protagonist. It creates an electric energy shield around the protagonist for an instant and kill anyone(Normal Viking) inside that area. This ability is rare to use as full power level is required.

Features	Units
Enemy Damage	15/enemy
Power used	10

Table 10 Power Boom Features

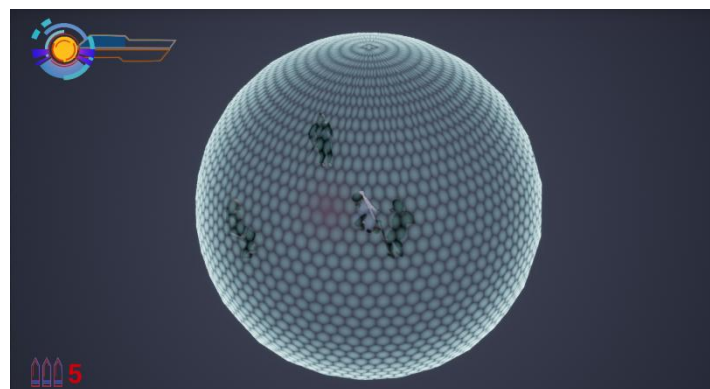


Figure 2.12 Power Boom

2.6 Weapons of Vikings:

The Vikings generally use their ancient weapons. They use Swords, Spears, Shields, Axes and so on. Though these ancient weapons are light compared to modern Weapons, but their ferociousness, savagery and brutality make them really dangerous even now.

List of weapons:

- Sword
- Shield
- Axe
- Spear

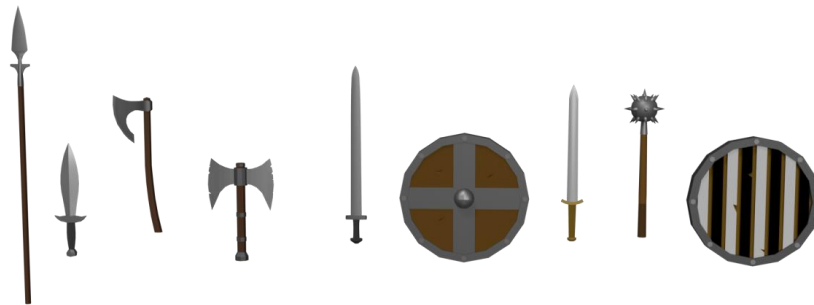


Figure 2.13 Viking Weapons

2.7 Game Physics:

2.7.1 Movement:

There are several types of movement of the Protagonist.

1. Walking: Walking is the normal movement of the Protagonist. He can walk while turning around 360degrees.

Features	Units
Speed	300

Table 11: Walking

2. Running: Character is able to move faster without any tiredness for a long time.

Features	Units
Speed	600

Table 12: Running

1. Jumping: Protagonist has simple jump and double jump ability. Double Jump depends on the power level.

Features	Units
Single Jump Air time	0.5-0.75
Double Jump Air time	1.5

Table 13: Jumping

2.7.2 Others:

Physics Body:

Physics Bodies (BodyInstances) are the simplified 3D meshes that Unreal Engine 4 uses for physics simulations. They can be formed of boxes, spheres, capsules, or convex hulls.

Physics Body is used in characters and AIs to apply realistic physics on that Character. Physics body is applied in the different parts of the body to give that part special movement and flexibility based on different actions.

Ragdoll Physics:

A ragdoll is a collection of multiple rigid bodies (each of which is ordinarily tied to a bone in our Skeletal Mesh) tied together by joints that restrict their movement. In computer physics engines, ragdoll physics is a type of procedural animation that is often used as a replacement for traditional static death animations.

When the player dies, each rigid body collapses to the ground and it looks realistic.

Collision:

Every object that can collide gets an Object Type and a series of responses that define how it interacts with all other object types. When a collision or overlap event occurs, both

(or all) objects involved can be set to affect or be affected by blocking, overlapping, or ignoring each other.

2.8 Artificial Intelligence:

A good way to think about building AI is that the decision making process is handled by **Behavior Trees**, stimuli from the environment (such as sensory information) is sent to Behavior Trees from the **AI Perception** system, and queries about the environment itself are handled through **EQS**.

2.8.1 Behavior Tree:

Behavior Trees have been used to create artificial intelligence (AI) for non-player characters in this project. While the Behavior Tree asset is used to execute branches containing logic, to determine which branches should be executed, the Behavior Tree relies on another asset called a **Blackboard** which serves as the "brain" for a Behavior Tree.

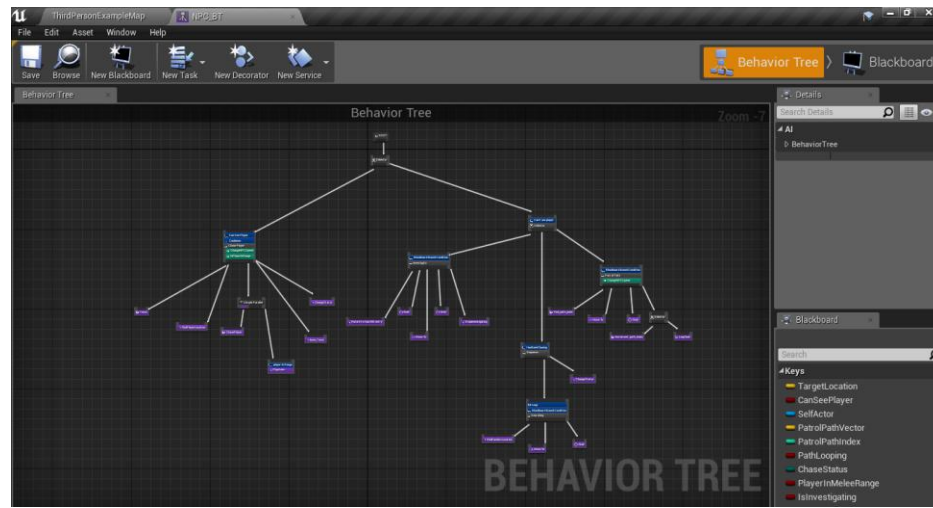


Figure 2.14 A simple Behavior Tree

2.8.3 Environment Query System (EQS):

The Environment Query System (EQS) is a feature within the Artificial Intelligence system in Unreal Engine 4 (UE4) that is used to collect data from the environment.

Within EQS, questions can be asked about the data collected through a variety of different Tests which produces an Item that best fits the type of question asked.

An EQS Query can be called from a Behavior Tree and used to make decisions on how to proceed based on the results of your Tests. EQS Queries are primarily made up of Generators (which are used to produce the locations or Actors that will be tested and weighted) and Contexts (which are used as a frame of reference for any Tests or Generators). EQS Queries can be used to instruct AI characters to find the best possible location that will provide a line of sight to a player in order to attack, the nearest health or ammo pickup, or where the closest cover point (among other possibilities).

2.8.3 AI Perception

The AI Perception Component is a type of Component that can be added to a Pawn's Blueprint from the Components window and is used to define what senses to listen for, the parameters for those senses, and how to respond when a sense has been detected. You can also use several different functions to get information about what was sensed, which Actors were sensed, or even disable or enable a particular type of sense.

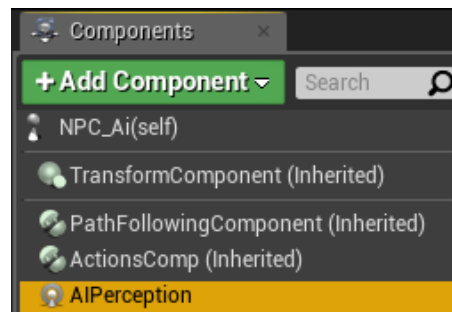


Figure 2.15 Ai Perception

Senses that have been added to this game are given below:

1. AI Sight Sense
2. AI Hearing Sense
3. AI Damage Sense

2.8.4 AI Sight Sense

The AI Sight config enables to define parameters that allow an AI character to "see" things in the Level. When an Actor enters the Sight Radius, the AI Perception System signals an update and passes through the Actor that was seen.

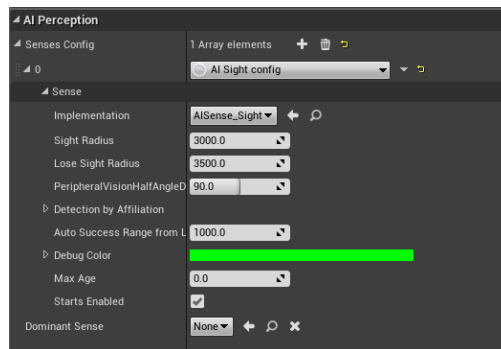


Figure 2.16 AI Sight Config

2.8.5 AI Hearing Sense

The AI Hearing sense can be used to detect sounds generated by a Report Noise Event, for example, a projectile hits something and generates a sound which can be registered with the AI Hearing sense.

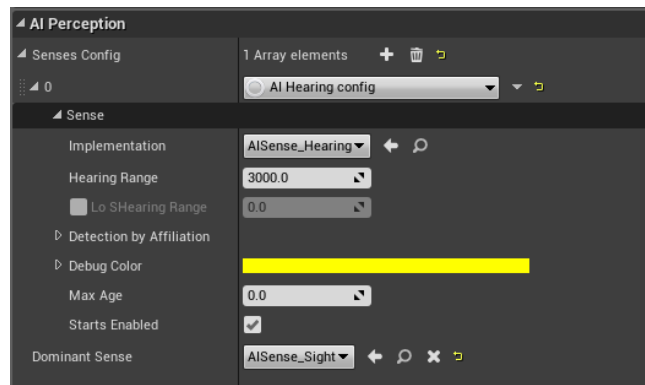


Figure 2. 17 AI Hearing Config

2.8.6 AI Damage Sense

AI can react to damage events such as Event Any Damage , Event Point Damage , or Event Radial Damage when AI Damage Sense Config is used. The Implementation property can be used to determine how damage events are handled.

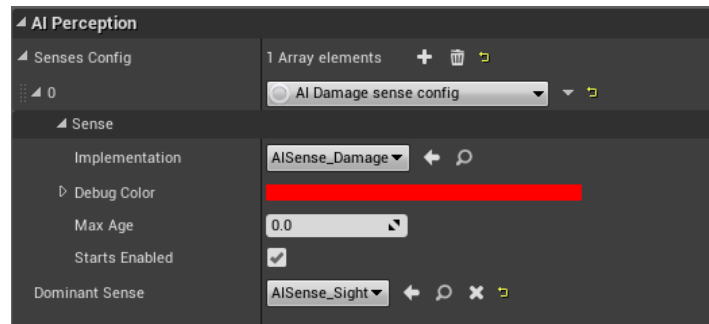


Figure 2. 18 AI Damage Sense Config

2.9 Player Inputs:

The PlayerInput Object is responsible for converting input from the player into data that Actors (like PlayerControllers or Pawns) can understand and make use of. It is part of an input processing flow that translates hardware input from players into game events and movement with PlayerInput mappings and InputComponents.

2.9.1 Hardware Input

Hardware input from a player is very straightforward. It most commonly includes key presses, mouse clicks or mouse movement, and controller button presses or joystick movement. Specialized input devices that don't conform to standard axis or button indices, or that have unusual input ranges, can be configured manually by using the RawInput Plugin

2.9.2 Player Input

PlayerInput is a UObject within the PlayerController class that manages player input. It is only spawned on the client. Two structs are defined within PlayerInput. The first, FInputActionKeyMapping, defines an ActionMapping. The other, FInputAxisKeyMapping, defines an AxisMapping. The hardware input definitions used in both ActionMappings and AxisMappings are established in InputCoreTypes.

ActionMappings:

Map a discrete button or key press to a "friendly name" that will later be bound to event-driven behavior. The end effect is that pressing (and/or releasing) a key, mouse button, or keypad button directly triggers some game behavior.

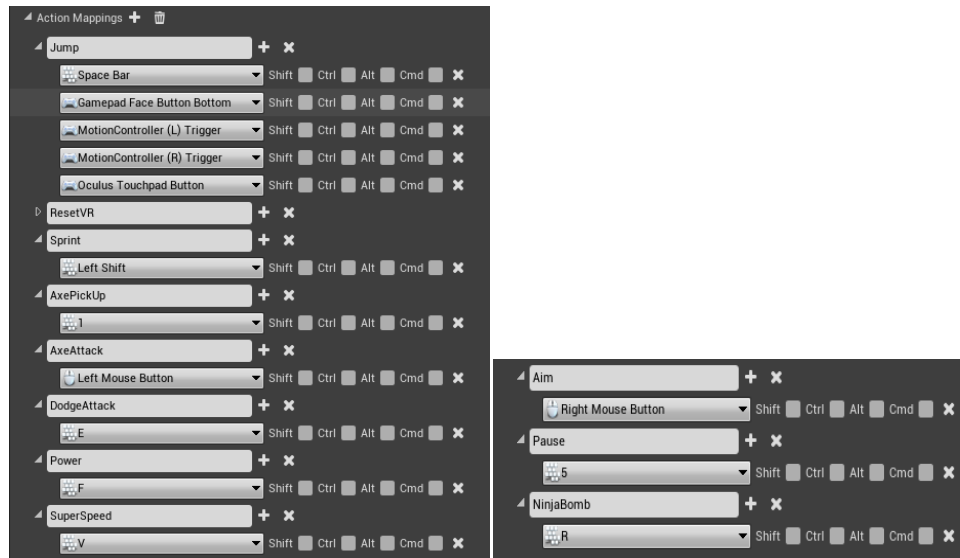


Figure 2. 19 Action Mapping

AxisMappings:

Map keyboard, controller, or mouse inputs to a "friendly name" that will later be bound to continuous game behavior, such as movement. The inputs mapped in AxisMappings are continuously polled, even if they are just reporting that their input value is currently zero. This allows for smooth transitions in movement or other game behavior, rather than the discrete game events triggered by inputs in ActionMappings.

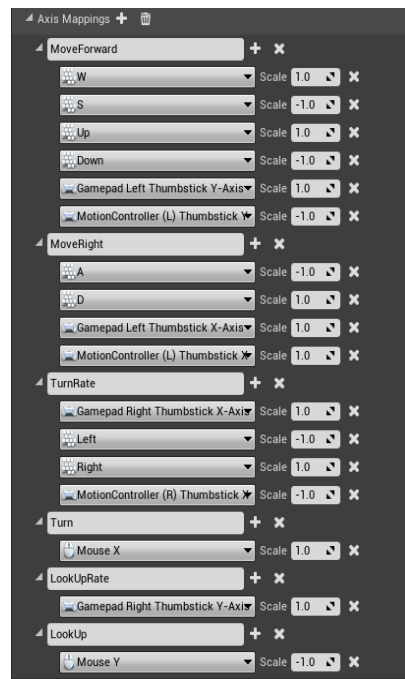


Figure 2. 20 Axis Mapping

2.9.3 Code Implementation Example:

Movement Input and Mouse Input:

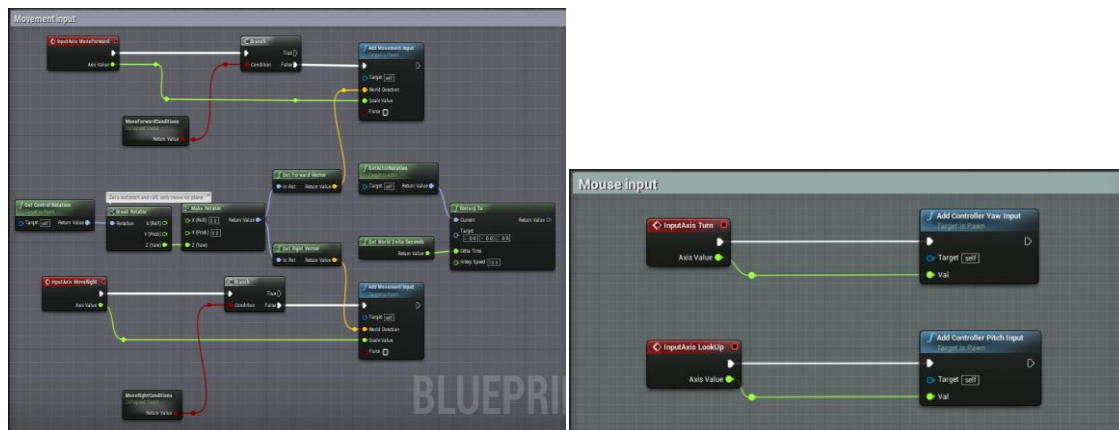
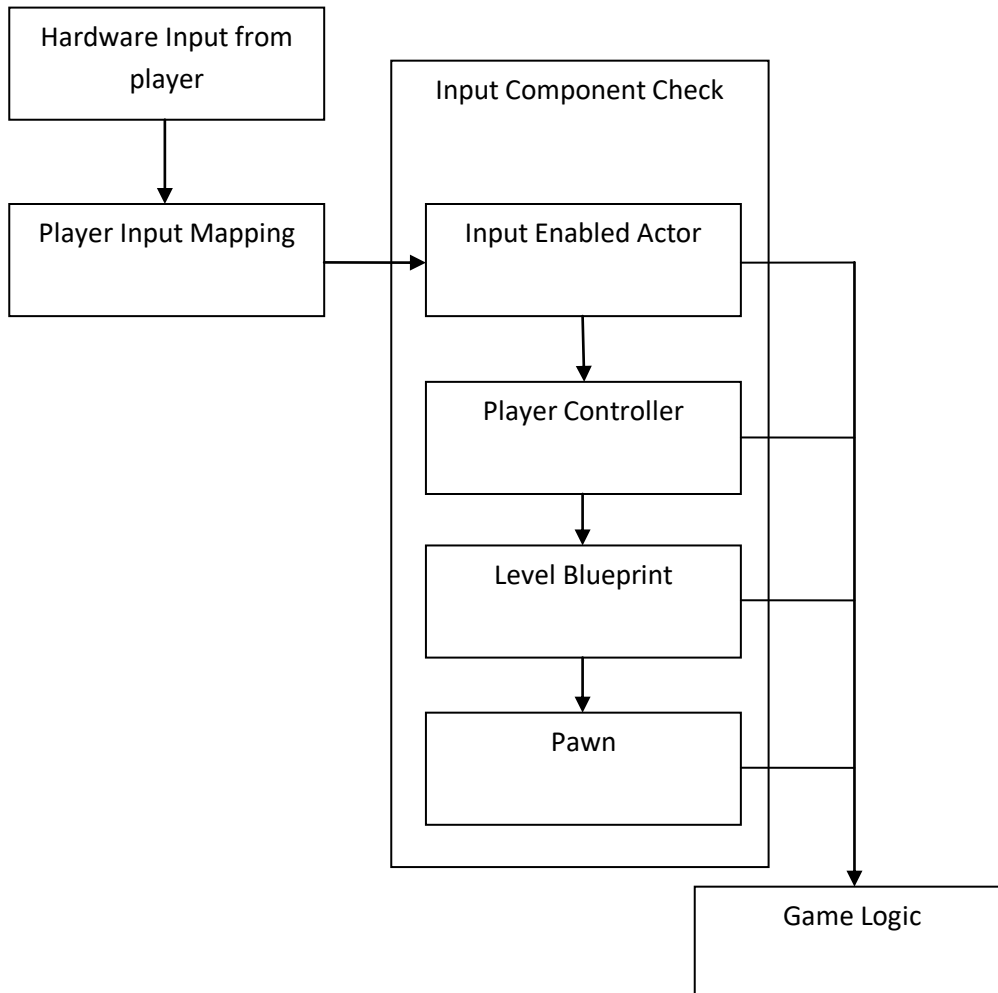


Figure 2. 21 Movement and Mouse Input

2.9.4 Input Processing Procedure:



Chapter 3: User Interface

3.1 Overall Goals:

User Interfaces refer to menus and other interactive elements. These elements are usually drawn overlaid on the screen much like the HUD, but in certain circumstances they could be part of the game world itself rendered onto a surface in the world. The most obvious examples of UIs are the main menu displayed when the game starts up or the pause menu shown when the player has paused the game. However, other UIs may be displayed during play. These could be used to show dialog between characters in the game or in more complex situations, such as in an RTS or RPG, they may be integral to the game play itself allowing the player to choose weapons, armor, units to build, etc.

3.2 Flowcharts:

The following are flow charts for the different screens and their individual data flow. The save screen and load screen are shared so it is only included once in the start screen flow chart.

3.2.1 Start Screen Flow Chart

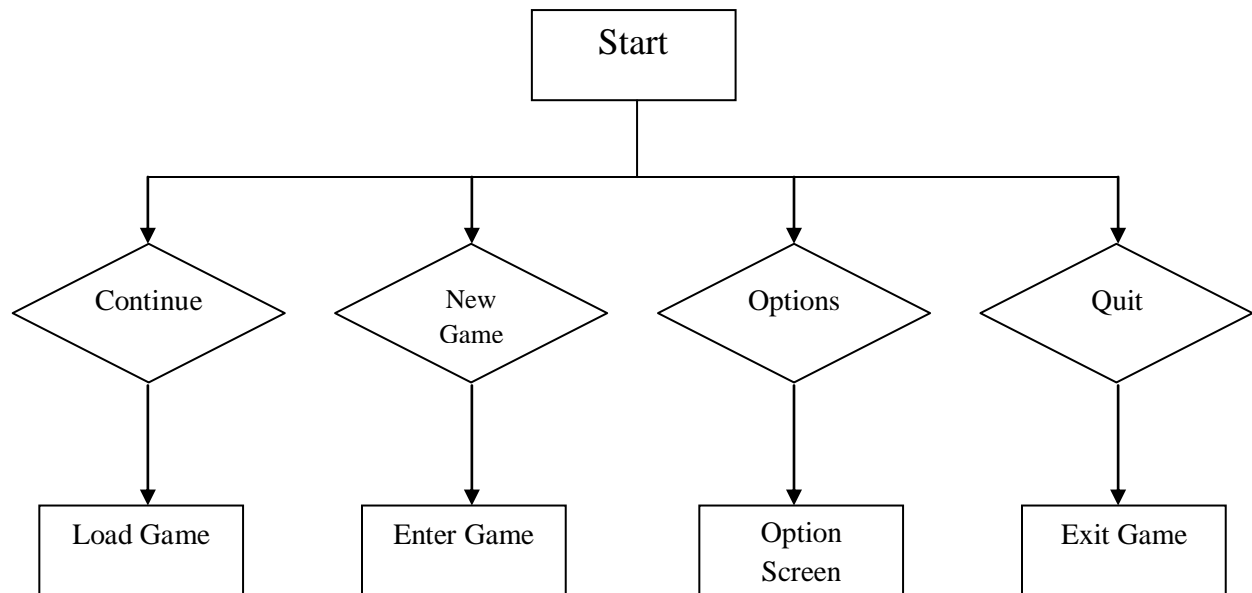


Figure 3. 1 Start Screen

3.2.2 Option Menu Flow Chart

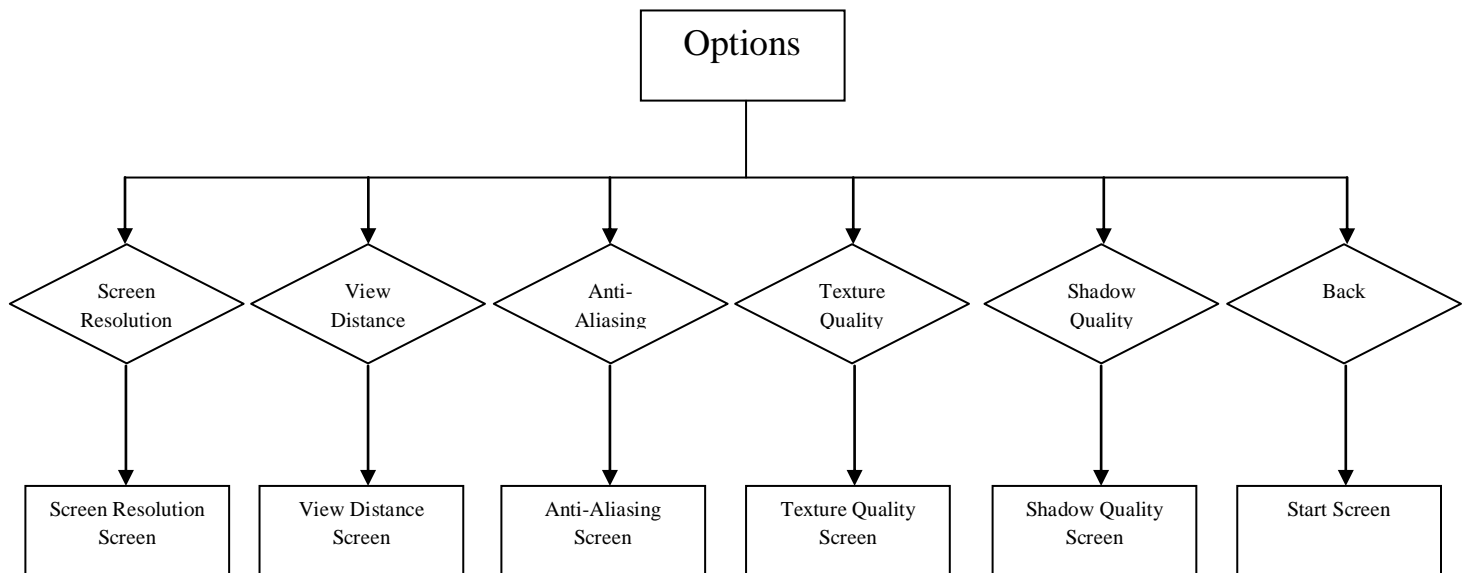


Figure 3. 2 Option Menu

Screen Resolution



Figure 3. 3 Screen Resolution

3.2.3 Pause Menu Flow Chart

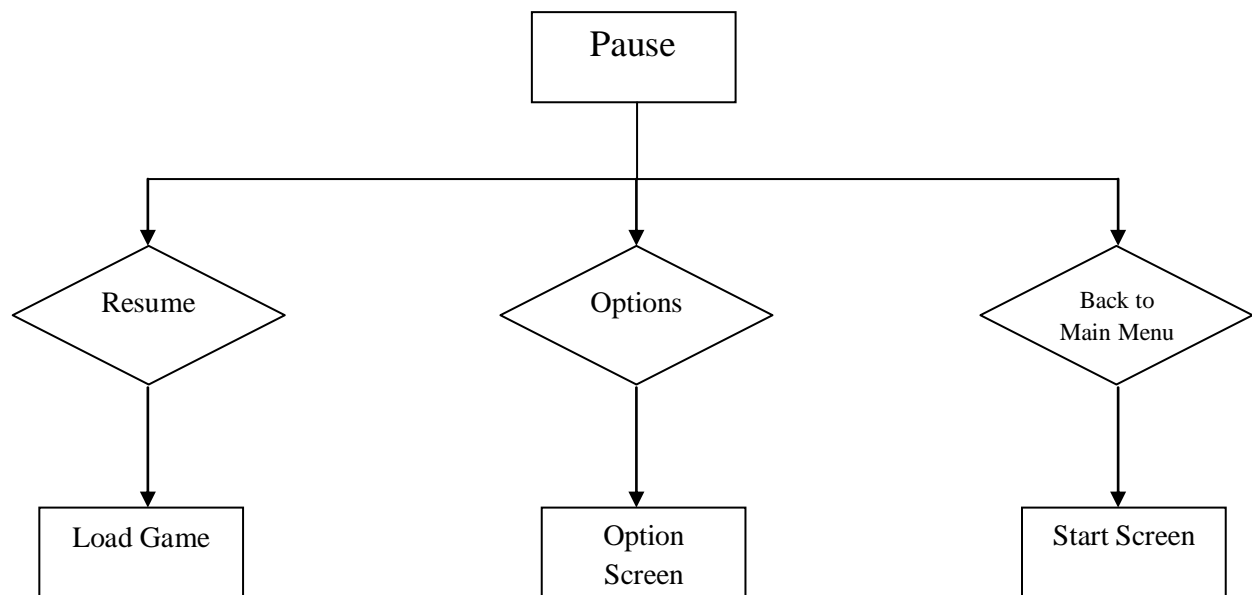




Figure 3. 4 Pause Menu

3.3 Functional Requirements

1 - Start Screen

The selection on the start screen uses a simple highlighted selection.

1:1 – Continue

Clicking on continue will immediately take you into your last game save by date/time.

1:2 – New Game

The new game screen has the settings for action level and. Once clicked, the game will automatically starts up.

1:3 – Options

The options screen includes,

Screen Resolution

View Distance

Anti-Aliasing

Texture Quality

Shadow Quality

Chapter 4: Art, Animations and Cinematic

4.1 Overall Goals:

Into the Chaos is a 3D Third person Hack and Slash game. So all the arts in this game are actually 3D.

All the assets have been made in Blender 3D. No Concept Arts have been used to make these models.

Overall goal was to make the game environment a mess. Vikings have attacked in a city all of a sudden. There is a chaos all over the place. The general mass don't know what to do and the Vikings don't know what to expect. So there is a chaos everywhere. The City is burning and there is fire all over the city. The Vikings have block the city roads and burnt everything including vehicles on the roads.

There are a lot of types of assets used in this game. The game has been divided into 2 levels. One is the City and the other one is the Viking Village. So there are completely different kinds of 3D assets used in both levels.

4.2 3D Assets:

4.2.1 City Level Assets:

1. Buildings: Total 20 kinds of different buildings are there in this level, in which, 4 Buildings are accessible and full of furniture and other instruments. The House of the Protagonist, the Hospital, the Railway station and the Lab are included in these buildings.

2. Roads: 4 kinds of roads are here including highways and other road assets.

3. Road Props: There are a lot of Road Props in this game.

- Electric Poles
- Roadblocks
- Traffic Lights
- Dustbins
- Bus stops etc

4. Trees: There are a lot of Trees and Shrubs in this level that are different from the Viking level trees.

5. Vehicles: Variety of vehicles are there in this level including private cars, bus, pickups, trucks etc. Also there are trains in the railway station.

6. Lab: Lab is a very important place in this game. Everything started in this place. The Lab has a lot of machines and equipments

- The Time Machine
- Computers and Laptops
- Generators
- Controllers
- Wirings etc

6. Others:

- Lake and Water
- Filling Station

4.2.2 Village Level Assets:

1. Huts and Houses: Total 12 kinds of different Huts are there in this level including Earl's House.

2. Stones and Mountains: A lot of kinds of stones have been used in this level Including Giant Stones to small stones. Also there are Mountains in the background.

3. Water Sources: 3 kinds of water sources are used here. Well, Pond and River. All the water materials are different from each others.

4. Trees, Shrubs and Grasses: There are a lot of Trees and Shrubs in this level that are different from the City level trees.

5. Others:

- Roads
- Hatches
- Boats
- Carts
- Boundary, walls and fences

4.3 Animations:

All the animations used in this game are made in Blender 3D software.

All these Animations are Character Animations used in Protagonist and the Vikings from movement and attacking purposes. These Animations are generally

- Idle Animation
- Walking Animation
- Run Animation
- Jump Animation
- Attack Animations
- Death Animations

Other than these Animations, there are a lot of other Animations for Protagonist and Vikings. Specially Protagonist has a lot of different kinds of Animations related to his Powers and abilities. All of them are different and unique.

Moreover, for having different rigging bodies, the Protagonist and the Vikings have different kind of animations.

There are different Animations for same movement. For example there are a lot of Death Animations, various kinds of Attack Animations which makes the game more interesting.

Some Animations are looping animations. Some frames are looped for a selective action or condition. Jumping Animation and Aiming Animation of the Protagonist has this kind of Animation looping.

All these Animations are In Place Animations. No Root Motion has been used in this game.

4.4 Cinematic:

Cinematic hasn't been added to this game yet. It's a long term process and will be added later for Trailer and some in game scenes.

Chapter 5: Gameplay Programming

5.1 Overall Goals:

Into the Chaos is a Hack and Slash Genre game. This game is full of actions. The gameplay is intense and a lot of work has been done behind the gameplay. The full game is dependent on coding and technical stuffs.

5.2 Language:

As the primary Programming Language, Blueprint has been used to make this game.

The **Blueprints Visual Scripting** system in Unreal Engine is a complete gameplay scripting system based on the concept of using a node-based interface to create gameplay elements from within Unreal Editor. As with many common scripting languages, it is used to define object-oriented (OO) classes or objects in the engine.

This system is extremely flexible and powerful as it provides the ability for designers to use virtually the full range of concepts and tools generally only available to programmers. In addition, Blueprint-specific markup available in Unreal Engine's C++ implementation enables programmers to create baseline systems that can be extended by designers.

5.3 How Do Blueprints Work:

In their basic form, Blueprints are visually scripted additions to the game. By connecting Nodes, Events, Functions, and Variables with Wires, it is possible to create complex

gameplay elements. Blueprints work by using graphs of Nodes for various purposes - object construction, individual functions, and general gameplay events - that are specific to each instance of the Blueprint in order to implement behavior and other functionality.

5.4 Blueprint Types:

There are commonly 2 types of Blueprints.

1. Level Blueprints
2. Blueprint Classes

5.4.1 Level Blueprint:

Each level has its own Level Blueprint, and this can reference and manipulate Actors within the level, control cinematics using Matinee Actors, and manage things like level streaming, checkpoints, and other level-related systems. The Level Blueprint can also interact with Blueprint Classes (see the next section for examples of these) placed in the level, such as reading/setting any variables or triggering custom events they might contain.

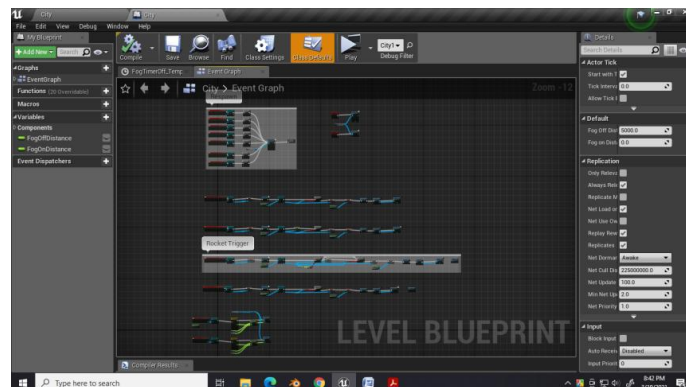


Figure 5. 1 Level Blueprint(City)

5.4.2 Blueprint Class:

Blueprint Classes are ideal for making interactive assets such as doors, switches, collectible items, and destructible scenery. In the image above, the button and the set of

doors are each separate Blueprints that contain the necessary script to respond to player overlap events, make them animate, play sound effects, and change their materials (the button lights up when pressed, for example).

In this case, pressing the button activates an event inside the door Blueprint, causing it to open - but the doors could just as easily be activated by another type of Blueprint, or by a Level Blueprint sequence. Because of the self-contained nature of Blueprints, they can be constructed in such a way that you can drop them into a level and they will simply work, with minimal setup required. This also means that editing a Blueprint that is in use throughout a project will update every instance of it.

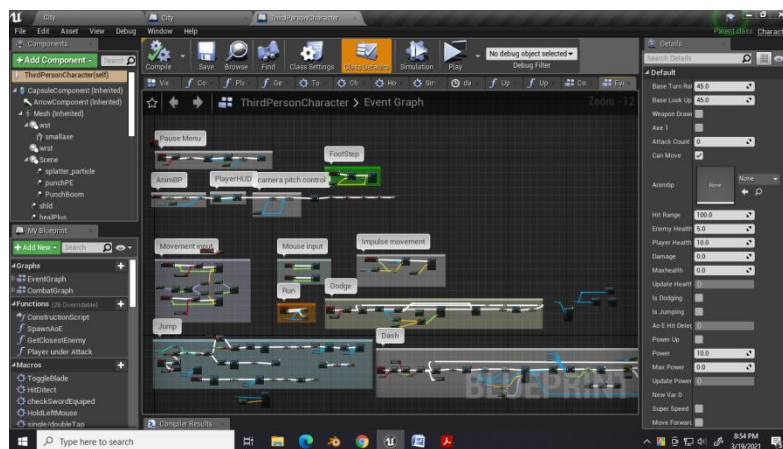


Figure 5. 2 Blueprint Class(Third Person Character)

5.5 Gameplay Blueprint of Protagonist :

5.5.1 Jump:

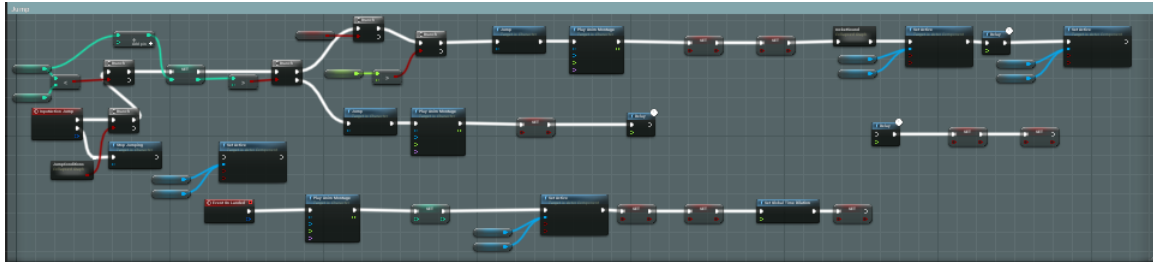


Figure 5.3 Jump BP

5.5.2 Dash:

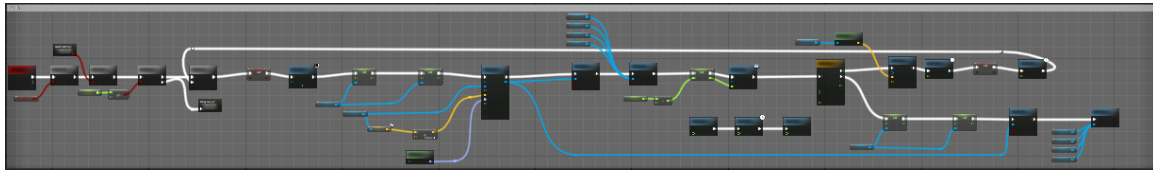


Figure 5.4 Dash BP

5.5.3 Dodge:

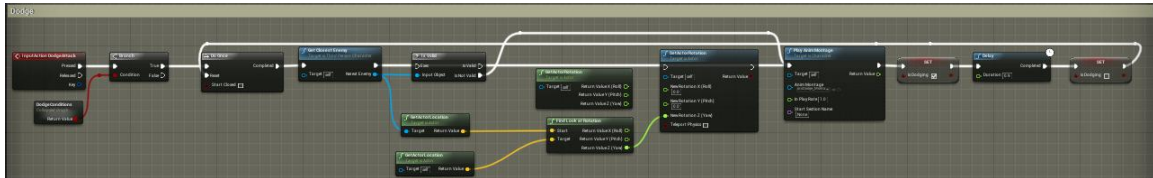


Figure 5.5 Dodge BP

5.5.4 Heal:

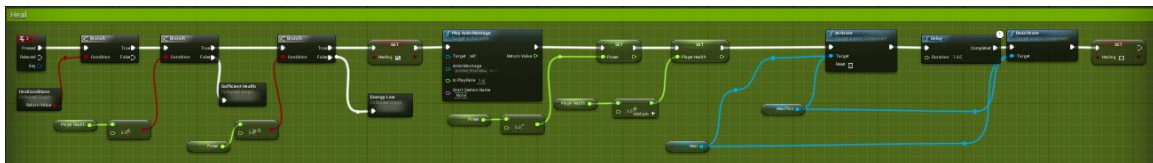


Figure 5.6 Heal BP

5.5.5 Health and Power Regenerate:

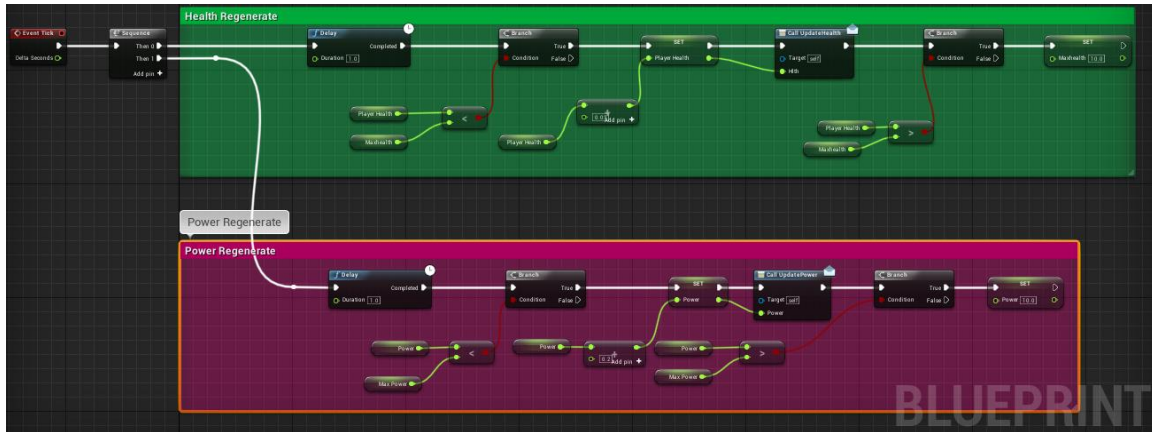


Figure 5.7 Health and Power Regenerate

5.5.6 Shield:

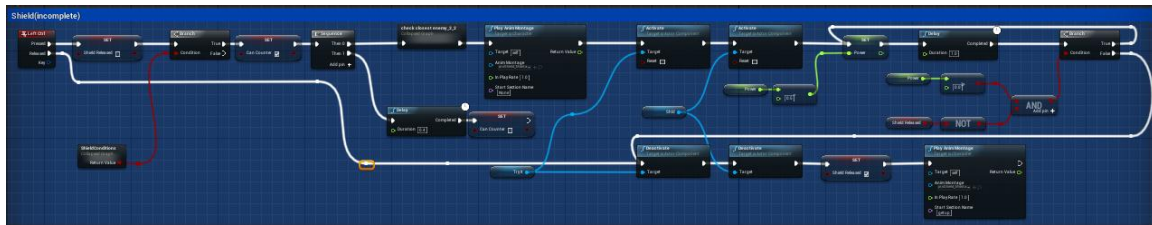


Figure 5.8 Shield

5.5.7 Axe (pickup, attack & damage):

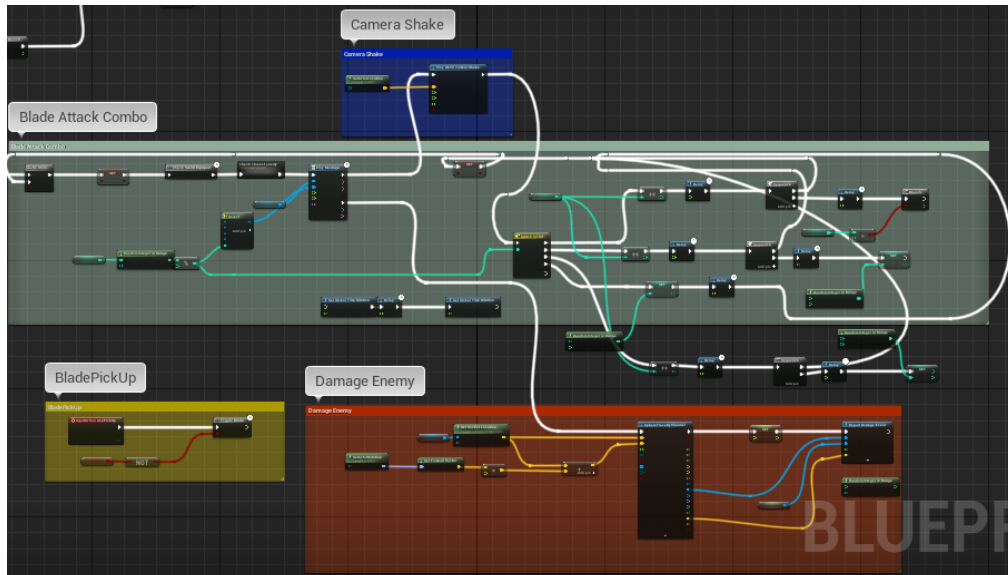


Figure 5.9 Axe BP

5.5.8 Shooting:

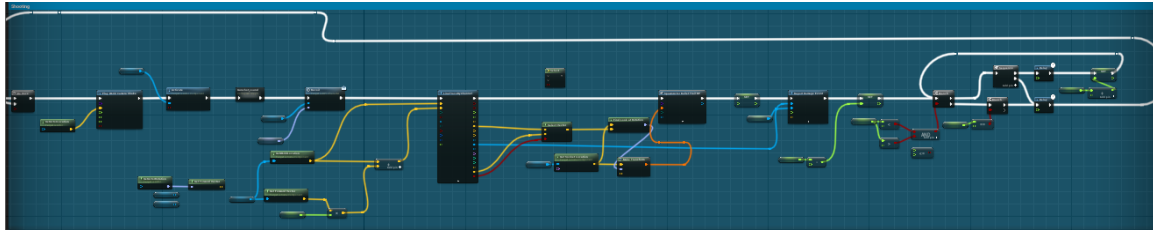


Figure 5.10 Shooting BP

5.6 Gameplay Blueprint of NPC AI :

5.6.1 Attack:

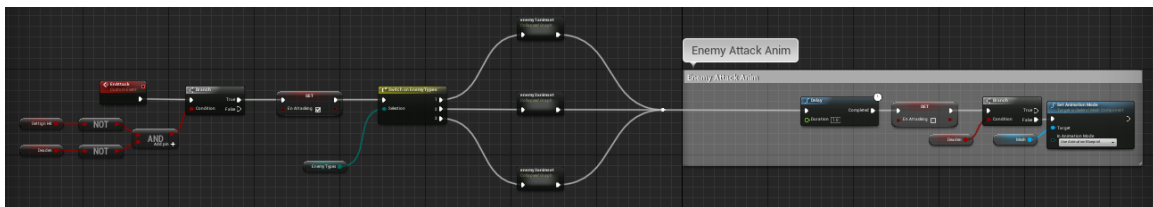


Figure 5.11 Attack BP

5.6.2 Player Damage:

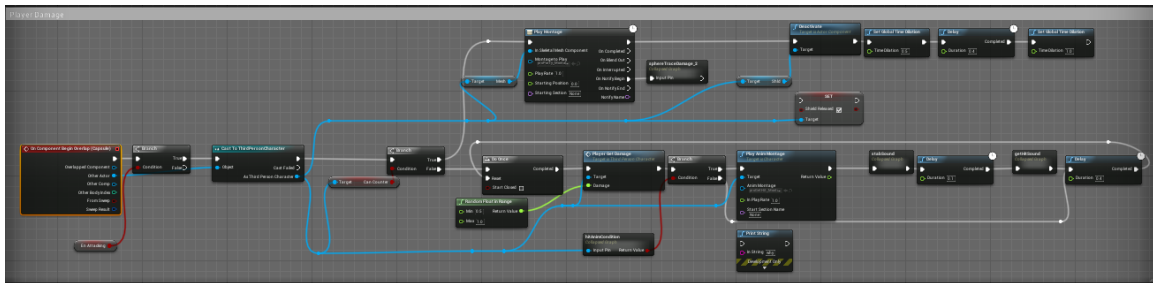


Figure 5.12 Player Damage BP

5.6.3 Death of Enemy AI:

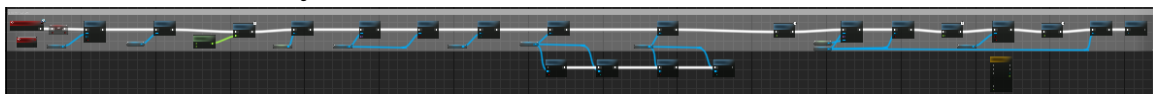


Figure 5.13 Death of Enemy

5.6.4 Enemy Block:

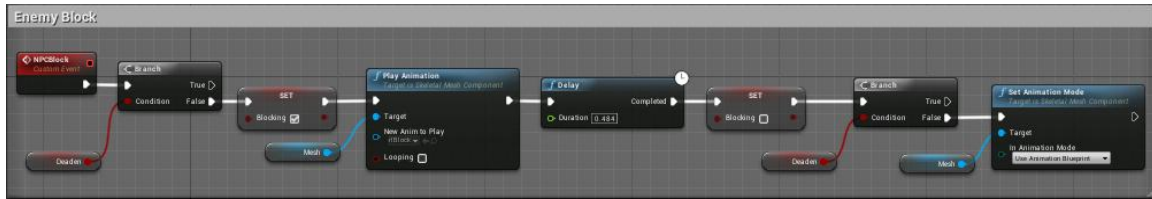


Figure 5.14 Enemy Block BP

5.6.5 Sight Sense:

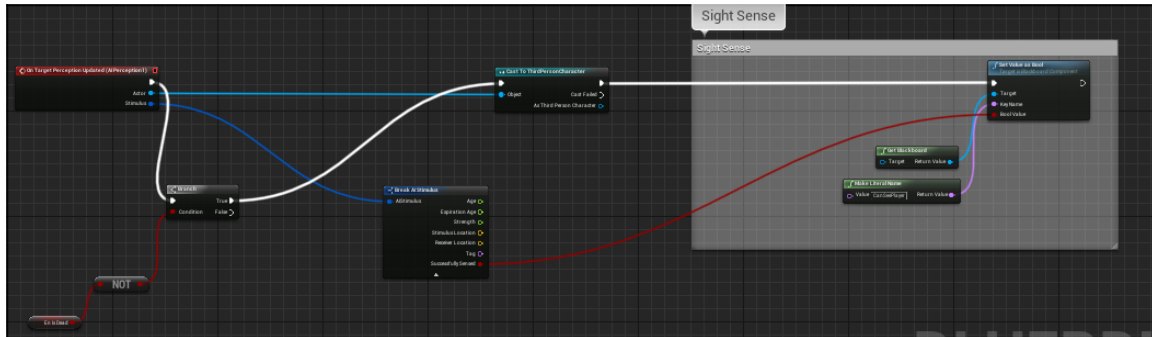


Figure 5.15 Sight Sense

5.6.6 Damage Sense:

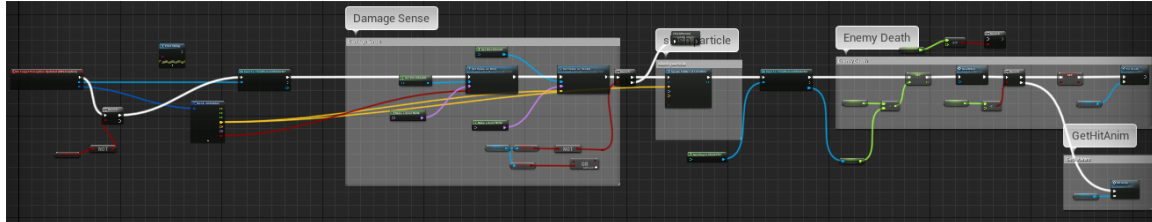


Figure 5.16 Damage Sense

5.6.7 Hearing Sense:

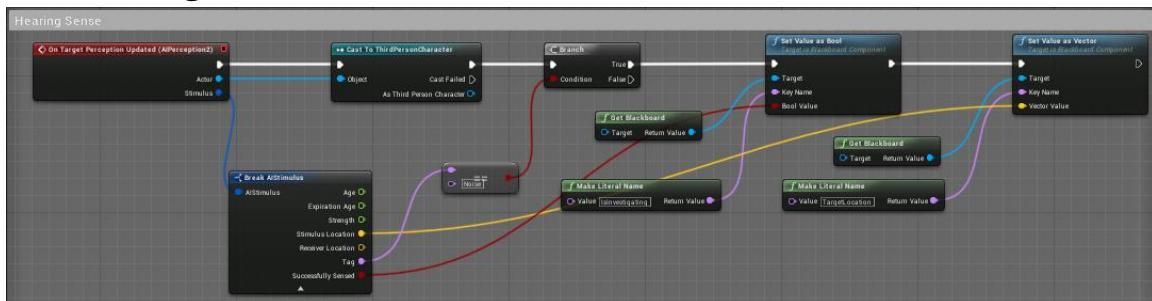


Figure 5.17 Hearing Sense

Chapter 6: Sound Effects and Music

6.1 Overall Goals:

SFX and Music are the most important parts of making a game alive. SFX plays a vital role to have a complete feel of a game. Every different thing in this game has a different kind of sound effect. It's a Hack and Slash Genre game, so the sound effects must be very thrilling and Action oriented.

6.2 Sound Effects:

All the SFX of weapons and environments have been collected from

[Freesound - Freesound](#)

and

[Purple Planet Royalty Free Music \(purple-planet.com\)](#)

6.3 Soundtracks:

No Soundtracks or gameplay music have been added yet to this game because of Royalty problems.

Chapter 7: Discussion and Conclusion

Video Games Has made a great impact in World economy. In 2018, the market was expected to be worth approximately 115 billion U.S. dollars and the source projects the industry revenues to surpass 138 billion by 2021.

A November 2020 forecast by game analytics firm Newzoo said gamers worldwide would spend \$174.9 billion on games this year, marking 19.6% year-on-year growth. Also, the gaming market was projected to generate \$217.9 billion in 2023.

Bangladesh's game market was worth \$62.22 million, said a 2017 Newzoo report, which was based on data available up to December 2016. The report ranked Bangladesh as having the third-largest video game market in South Asia after India and Pakistan, and 61st among 100 countries globally.

Despite having such a big market, Bangladesh lags far behind in this field compared to other countries. We have a few games in Bangladesh and most of them are mobile games. Game development as a profession can open doors of many possibilities.

Into the Chaos is a PC Game made using Unreal Engine 4. This game is being made for a year and is still under development for further improvements.

Bangladeshi Game industry is growing day by day. Hopefully “Into the Chaos” can be a part of this revolution in Game Development of Bangladesh.

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