

UNBOUND: A Game using Unreal Engine 4

Submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Computer Science and Engineering

by

Prabath Reddy SV (17SCS5153)



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SCHOOL OF COMPUTING

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited with Grade “A” by NAAC | 12B Status by UGC | Approved by AICTE

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119

March - 2021



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC I 12B Status by UGC
Approved by AICTE

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of Mr. Prabath Reddy SV (17SCS5153) who carried out the project entitled "UNBOUND: A Game Using Unreal Engine 4" under my supervision from November 2020 to March 2021.

Internal Guide

AISHWARYA R

Head of the Department

Dr.L.Lakshmanan M.E., Ph.D

Dr. S. VIGNESHWARI, M.E., Ph.D.

Submitted for Viva voce Examination held on _____

Internal Examiner

External Examiner

DECLARATION

I Prabath Reddy SV hereby declare that the Project Report entitled “UNBOUND: A Game using Unreal Engine 4” done by me under the guidance of Ms.Aishwarya R and _____ is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Computer Science.

DATE:

PLACE:

SIGNATURE OF THE CANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to **Board of Management** of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. T.Sasikala M.E., Ph.D .**, Dean, School of Computing and **Dr.L.Lakshmanan M.E., Ph.D.,and Dr.S.Vigneshwari M.E., Ph.D.**, Heads of the Department of Computer Science and Engineering for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Project Guide Ms. Aishwarya R for her valuable guidance, suggestions, and constant encouragement paved way for the successful completion of our project work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Computer Science and Engineering** who were helpful in many ways for the completion of the project.

ABSTRACT

Throughout these years, innovation has changed our reality and our everyday lives. Innovation has made stunning instruments and assets, putting helpful data readily available. Present day innovation has made ready for multi-useful gadgets like the smartwatch and the cell phone. In those days' children go out to play at least once a day. But now the world and our lifestyle has changed. A digital game is played on an electronic device. These games are always rule and goal oriented. It is a piece of software that aids to entertain its users by providing little obstacles to overcome. A game is interactive on electronic devices such as smartphones, consoles, and computers. Mobile gaming is a gigantic market for likely income. There are innumerable examples of overcoming adversity like Angry Birds, Candy Crush, Clash of Clans, Flappy Bird, and so on. They have motivated millions to show a drive-in portable game turn of events. As indicated by Admob, 62% of cell phones clients introduce a game inside the main seven day stretch of buying their gadget. This speaks to an enormous market potential. In any case, a couple of versatile games can recuperate their improvement consumption. Building up a fruitful portable game is no cake walk. For making a productive game, you need to consider your objective business sectors, make a connecting with interactivity, and deliberately adapt it. So, considering all these aspects we will incorporate all these factors in our further game designing process to provide entertainment, relaxation and which is also profitable for us. It will be user friendly and for sure it is infrastructures and design will attract the users.

TABLE OF CONTENTS

CHAPTER NO	TITLE	PAGE NO
	ABSTRACT	v
	LIST OF ABBREVIATIONS	viii
	LIST OF FIGURES	ix
1.	INTRODUCTION	01
	1.1 INTRODUCTION	01
	1.2 BACKGROUND	01
	1.3 OBJECTIVE	02
2.	LITERATURE SURVEY	03
	2.1 LITERATURE SURVEY	03
	2.1.1 ADVANTAGES	05
	2.1.2 DISADVANTAGES	05
3.	AIM AND SCOPE OF THE PRESENT INVESTIGATION	06
	3.1 AIM AND OBJECTIVE OF THE PROJECT	06
	3.1.1 OBJECTIVE	06
	3.2 PROJECT SCOPE	06
	3.3 METHODOLOGY	07
4.	EXPERIMENTATION AND METHODS	08
	4.1 REQUIREMENTS OF THE SYSTEM	08
	4.1.1 HARDWARE REQUIREMENTS	08
	4.1.2 SOFTWARE REQUIREMENTS	08
	4.2 WORKING PRINCIPLE	08
5.	RESULT AND DISCUSSION	25
	5.1 RESULT	25
	5.2 OUTPUT	25
6.	CONCLUSION AND FUTURE SCOPE	29

	6.1 CONCLUSION	29
	6.2 FUTURE SCOPE	29
	REFERENCES	30

LIST OF ABBREVIATIONS

ABBREVIATIONS	EXPANSIONS
FPP	First Person Perspective
TPP	Third Person Perspective
HUD	Heads Up Display
NPC	Non-Playable Character
FPS	First Person Shooter
TPS	Third Person Shooter
RTS	Real-Time Strategy

LIST OF FIGURES

FIGURE.NO	NAME OF THE FIGURE	PAGE.NO
3.1	METHODOLOGY DIAGRAM	7
4.1	CREATING YOUR GAMESPACE	9
4.2	DEFAULT LEVEL DESIGN	9
4.3	CAMERA & CHARACTER	10
4.4	POSITIONING OF CAMERA	11
4.5	DEFAULT ANIMATIONS	11
4.6	IMPORTED ANIMATIONS	12
4.7	ANIMATION BLUEPRINT OF THE CHARACTER	12
4.8	RE-ALIGNING THE CAMERA	13
4.9	CHARACTER MESH	14
4.10	CHARACTER PHYSICS	14
4.11	CHARACTER MATERIAL 1	15
4.12	CHARACTER MATERIAL 2	15
4.13	EVENT GRAPH OF THE CHARACTER	16
4.14	PRIMARY WEAPON DESIGN	16
4.15	PRIMARY WEAPON MATERIAL	17
4.16	PRIMARY WEAPON RELOAD	17
4.17	SECONDARY WEAPON DESIGN	18
4.18	SECONDARY WEAPON MATERIAL	18
4.19	SECONDARY WEAPON RELOAD	19
4.20	FIRING SYSTEM	19
4.21	WEAPON SYSTEM	20
4.22	ZOMBIE DESIGN	20
4.23	ZOMBIE MATERIAL	21

4.24	ZOMBIE IDLE BEHAVIOUR	21
4.25	ZOMBIE ATTACK BEHAVIOUR	22
4.26	EVENT GRAPH OF PAIN VOLUME	22
4.27	ELEMENTS USED IN HUD	23
4.28	HUD DISPLAY	23
4.29	AERIAL VIEW OF INITIAL LEVEL DESIGN	24
4.30	AERIAL VIEW OF THE ONE PART OF FINAL LEVEL DESIGN	24
5.1	OUTPUT SCREENSHOT 1	25
5.2	OUTPUT SCREENSHOT 2	26
5.3	OUTPUT SCREENSHOT 3	26
5.4	OUTPUT SCREENSHOT 4	27
5.5	OUTPUT SCREENSHOT 5	27
5.6	OUTPUT SCREENSHOT 6	28
5.7	OUTPUT SCREENSHOT 7	28

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Unreal Engine is the world's generally open and progressed constant 3D creation platform for photoreal visuals and vivid encounters. It is used by many game developers as one among the various game development engines. Adding on more to its facts, unreal engine is one of the most famous and used game designing engines. It is very helpful for beginners also. In the growing video games world, there are many games yet to be developed and released and majority among them are designed using unreal engine. So, among various amazing games the boasting Project Athia which was titled as Forspoken later has also used the unreal engine.

Basically, from Childhood I have grown seeing and knowing about video games. Because of the impact and urge it developed, video games are my passion. The growth and craze on video games have made me also to choose this as my career. Like me many budding developers can use this engine to design their games using Blueprints Visual Scripting system. This engine is one of the trustable and market trending engines of the gaming world. You can use simple codes and develop your games. It has amazing and workable graphics quality. It can also be used as pre-programmed modules.

1.2 BACKGROUND

Unreal Engine is a freeware. It means the developers are free to use it and design their desired games and establish their talents. Another notable benefit of this unreal engine is that it can be used with various other applications like Blender and many for development purposes. They also provide you a learning platform where you can know and study about several areas like artistry, programming and so on and you can identify your strengths of designing a game. So, they do not provide you workstation for designing but also to identify your pros and cons.

Unreal engine is a user-friendly system. It has 3D real time features that provides the users an immense experience and it is also one of the fastest growing game designing system in the market. It is very easy to access that even the beginners can design their games using unreal engine.

1.3 OBJECTIVE

The vital idea of my undertaking is to plan a first-person shooter game. The basic role of this game is to give relaxation and fun. So essentially it falls under entertainment discussion. In any case, if necessary, you can likewise dive deep into the specialized perspectives and upgrade it. By upgrading the mechanism used, you can use this as a recreation program which is based on continuous marvel for military personnel. So, all the previously mentioned are the fundamental destinations of my unreal engine and my motivation of picking it.

As mentioned by upgrading the dimensions of this game reaches a different destination and it can be used as enemy's behaviour predictor in Military. By the infusion of realism into this game, it serves a protective purpose. All this happens when it is enhanced which is the secondary and further developments of this game.

As of now I design this first-person shooter game for entertainment purpose. It will be played from the protagonist perspective. So, the end user may find it little more realistic which will make the game more engaging and interesting.

CHAPTER 2

LITERATURE SURVEY

2.1 LITERATURE SURVEY

In [1], an experimental quiz is conducted to determine the UI type a player prefers in games. User Interface depends on the game. Quiz contained various MCQs that are to be answered. It is found that most players prefer diegetic user interfaces over non-diegetic user interface. Players found it difficult to overcome the experiment within the 20-minute time frame.

The experiment in [2] determined that among input devices such as mouse, VR headset and controller, mouse had the least error rate and movement time. A group of 9 people were made to play games on a desktop PC and the sessions was monitored. Comparison was made between Razer Hydra, a gamepad, and a mouse. Error rate and movement time of each device is represented as graphs which is clearly given. VR technology is still in developmental stage. VR games are not as popular as other games. Experiment is not justified.

[3] evaluates the relationship between performance, gender, and enjoyment of a first-person shooter game. Players are made to play Counter Strike Global Offensive, a fps game. Two studies were deployed. An online survey containing multiple choice questions is taken before the game session starts and the players are made to play the game. It is concluded that men were not influenced by the game performance while women were influenced. Results may vary for distinct people.

Laura et al [4] describes NPC's behaviour in games. NPCs are controlled by AI. Unreal Engine is used for the experiment. Various functionalities and features were explored. Unreal allowed them to explore the game engine. The AI's movement and combat ability are tested. Flow chart in [4] shows how the choices are split and how the NPC behaves based on those. The study shows various choices that an AI can take. Only basic choices are given to the AI.

Marco, Daniele described a better method to place spawn points in maps through [5]. They sort of took the blueprint of the map, used some mathematical equations to mark the points to be placed so that players will spawn there. The spawn points were decided based on some factors such as player safety etc. Players spawn there only

when no enemy players are near those points. Too complex to be used for a small sized game.

Research in [6] proved that experienced gamers had better endoscopy handling skills compared to non-gamers. Trainees were instructed to use a previously validated simulator which was monitored. They were made to complete their test runs as quickly as possible. Gamers had lesser completion time compared to non-gamers. It was concluded that video game experience is related with faster acquisition of scope handling skills.

Experiment in [7] captured number of keystrokes of a gamer. Game logs that recorded keyboard and mouse input, some game events and survey responses from the player. These logs were reviewed, and the data was used to derive a conclusion. Formulas were used to derive the conclusion. Prediction is inaccurate. Logs from a group of people does not represent the content of an entire community. Different games have different play style. Precision matters.

Rizani and Iida in [8] analysed the popularity of Counter Strike Global Offensive. CSGO was focused on two aspects, rounds system and gameplay. Proved that the game is highly skilful yet popular. Results were influenced by different players. Different skill level influences the result and conclusion. Round's system has higher GR value while gameplay has lower GR value. Different games have different systems.

[9] research player mental health through monitoring of respiratory and heart rate. Gameplay was recorded using OBS. Bots were added to fill in place of players. Players reported that playing with bots did not imitate the conditions of a stressed online game. So, they were not able to as be stressed as a regular online match. Results not accurate as number of players varied across different game sessions.

[10] surveys best UI layout for a game. A recorded session of a game is played on a screen and the players are asked to watch it. The system detects whether the vision of the player is within the prescribed layout or if gaze shifts elsewhere. Based on this, the system determines the parts of a layout that is most viewed by the player. This helps game developers to carefully design game UI.

2.1.1 ADVANTAGES

- The study proved that expert players prefer diegetic user interfaces [1].
- Simple representation of the information with data provided for comparison between the devices used as a graph [2].
- In [3] one of the methods used is the best one in this context.
- The flowcharts and the diagrams helped in identifying the problem and splitting the problem to solve it part by part [4].
- [6] Supports the idea of games helping in medical field as well.
- Gathered data from more than 470 gamers [7].
- Used Zephyr Bio Harness Strap and statistically compiled and extracted the output [9].
- [10] Helps game developers to carefully design the UI that gamers prefer.

2.1.2 DISADVANTAGES

- In [1] the game used for the experiment was not appropriate as Deus ex: Mankind Divided had multiple ways to approach a problem, the task was very difficult to overcome in 20-minute time frame.
- VR games is still in the developmental stage. Hence this experiment is not justified [2].
- In [4] the choices that are supposed to be taken by the AI is too simple.
- This method is quite complex to be used for a small sized game [5].
- [6] Concludes that people who had prior experience with gaming performed better compared to the non-gamers.
- Predicting a gamer's skills based on the number of keys pressed per minute is not accurate. For e.g., a seasoned gamer takes a single shot to the head eliminate his opponent compared to a newbie who takes multiple shots to neutralize. Precision matters in some games [7].
- In [8] taking just one game as an example and analysing its popularity. There are many games that does not follow CSGO's systems but are more popular than it.
- The results are not accurate as the number of players attending each game sessions varied [10].

CHAPTER 3

AIM AND SCOPE OF THE PRESENT INVESTIGATION

3.1 AIM AND OBJECTIVE OF THE PROJECT

The ultimatum of this Unbound- First person shooter game is to provide entertainment to the players. Shooter games are a subgenre of computer game, which regularly test the player's sharpness, presence of mind and speed in single player conditions. A shooting game is a game where the spotlight is predominantly on the loss of the character's opponents utilizing the weapons given to the player. It aids the player to experience a real time shooting experience.

3.1.1 OBJECTIVE

- It is designed using unreal engine. So, it's easy for the players to access and use the available features in game.
- The graphics of the game is very eye catching so keeps the players enthusiastic and engaged.
- It helps the player to be focused since shooting games requires lot of quick moves.
- Since it is played on the protagonist perspective it gives the player a real-time experience of shooting.
- The main task will be to kill enemies. So, this develops the player's presence of mind.
- Since it is a single player shooting game, it's boosted the player's interest completing the game without any external support.

3.2 PROJECT SCOPE

The scope consists of three, the scope of the user, the scope of the location, and the scope of the system:

➤ User scope:

A game lover always expects entertainment and relaxation from a video game. Since this game has a good graphic feature, all game addicts can be benefited from by this game.

➤ Scope of location:

Nowadays all people have either computer or mobile phone. So, anybody can access this game from anywhere. Portability and sustainability are high.

➤ System scope:

This game is designed using Unreal engine which is very user-friendly system. Basic to complex level of games can be designed using Unreal real engine.

3.3 METHODOLOGY

Game Logic expands Propositional Dynamic Logic by summing up its semantics and adding another administrator to the language. The engine, sound engine and vision input engine. The graphic engine is associated with the display. It is a hardware which can process graphics and does not depend on CPU. The API receives instructions and creates images and texts. Sound engine is associated with the with the hardware device speaker. This sound engine software helps to manage and build audio facility for video games. The designers can add sounds according to their options. Vision input engine aids to create 3D animated graphics by incorporating several Techniques. The gadgets which are utilized for contributing the information and the projects in the PC are known as Input Devices. Information gadget can understand information and convert them to a structure that a PC can utilize. Yield Devices can create the completed result of machine handling into a structure usable/discernible by people. So, games are made interactive by hardware devices like speaker, desktop, Mouse, keyboard, etc.

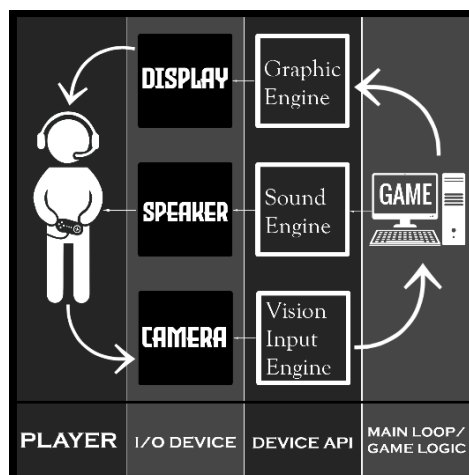


Fig 3.1

CHAPTER 4

EXPERIMENTATION AND METHODS

4.1 REQUIREMENTS OF THE SYSTEM

The system needs two types of requirement. They are,

- Hardware Requirements
- Software Requirements

4.1.1 HARDWARE REQUIREMENTS

- Desktop PC or Mac.
- Windows 7 64-bit or Mac OS X 10.9. 2 or later.
- Quad-core Intel or AMD processor, 2.5 GHz or faster.
- NVIDIA GeForce 470 GTX or AMD Radeon 6870 HD series card or higher.
- 8 GB RAM or greater.

4.1.2 SOFTWARE REQUIREMENTS

To play the game, all you need is either Windows 7 64-bit or Mac OS X 10.9. 2 or later versions. But to view the background work done inside the Unreal Engine you need Unreal Engine's Software which is a part of Epic Games. Epic games is a free software which acts as a market place for game, and the version to be installed is 4.25.4 or later to view and edit.

4.2 WORKING PRINCIPLE

After setting up the hardware and software requirements we start to build a game in Unreal Engine. This process does not involve direct coding or scripting part whereas it deals with the Event Graphs. Event Graphs are the hierarchy in which the functions and variables will be interconnected to form such graphs. These connections in the functions and variables deals with every aspect of the game. Here I'll show how the project was started and what all have been included in this process.

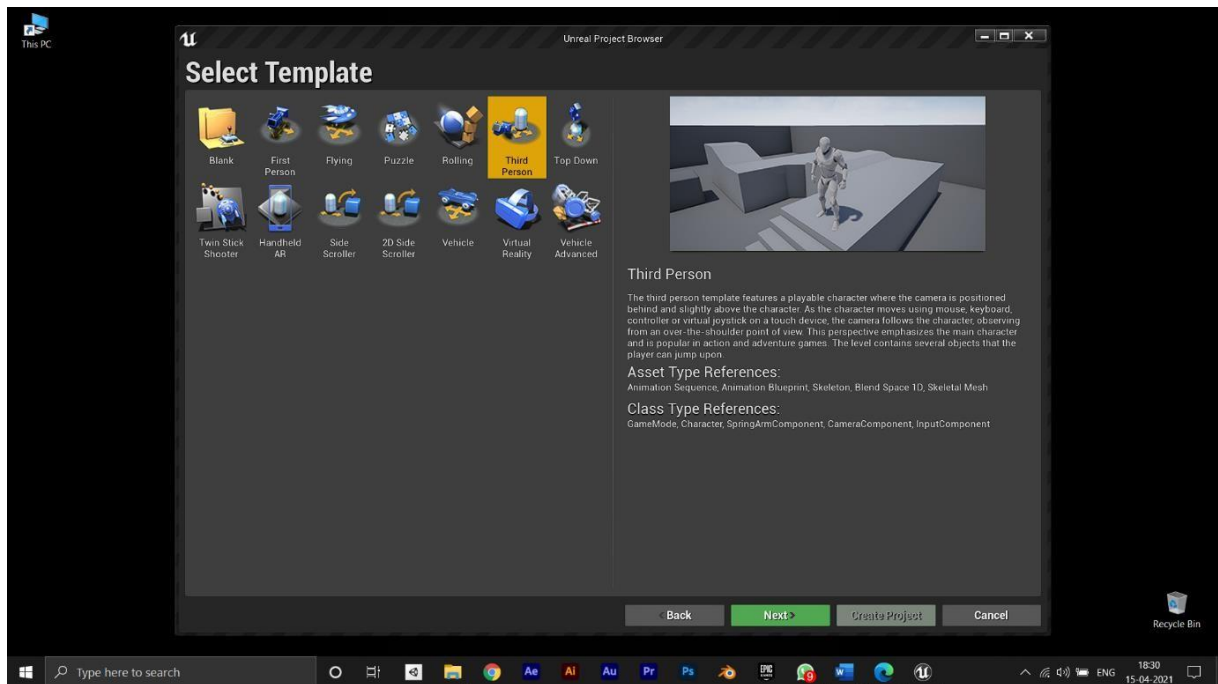


Fig 4.1

Though the project was to design a First-Person Shooter we started it all with the basics of a Third Person based gaming system. As you can see, I've selected the third person options from the above list of selections. These selections provide us with the basic elements required in that specific genre of game which will be helpful to build over it.

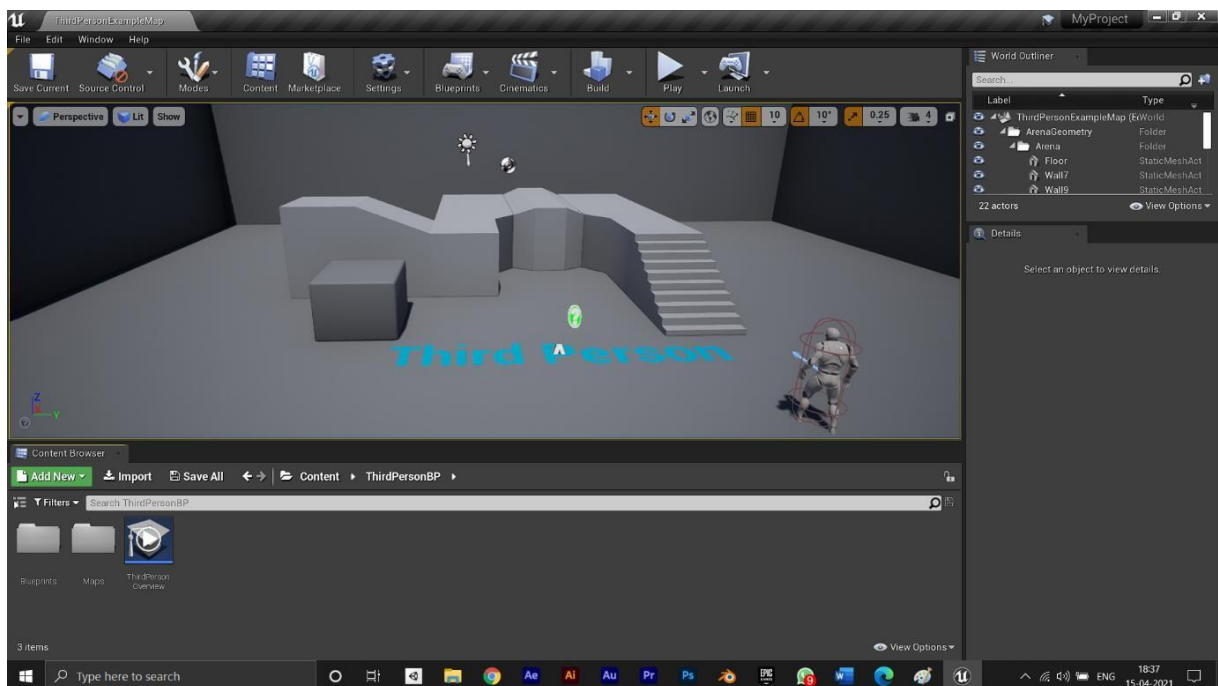


Fig 4.2

Once you selected the third person module and then give file location and choose your platform for which this game is made you will get this screen. This is the default build of a third person game in Unreal engine. But I wanted to develop a first-person perspective game so I would change the positioning of the camera.

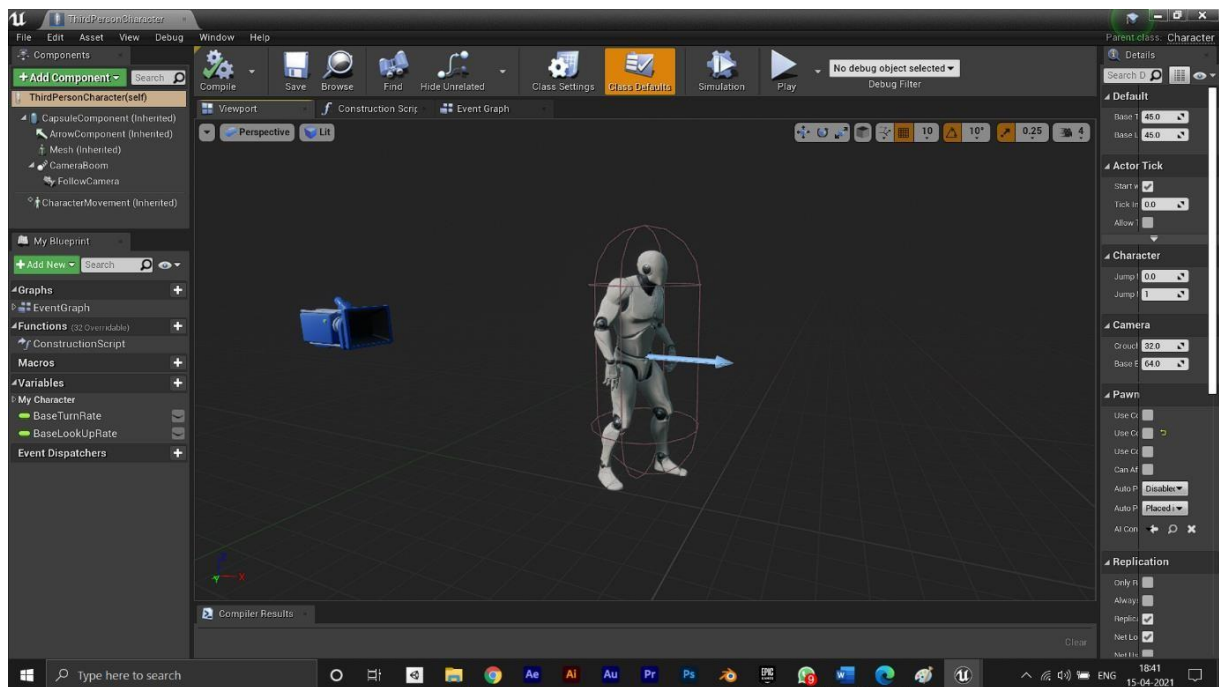


Fig 4.3

As you can see the camera is behind the default character in the above given picture, which is why we get a third person kind of perspective in this build. Once we adjust the camera position and align it to the character, we would get a first-person kind of perspective.

These are the Animations that we've imported to our project by default, we will be using a new set of animations for character.

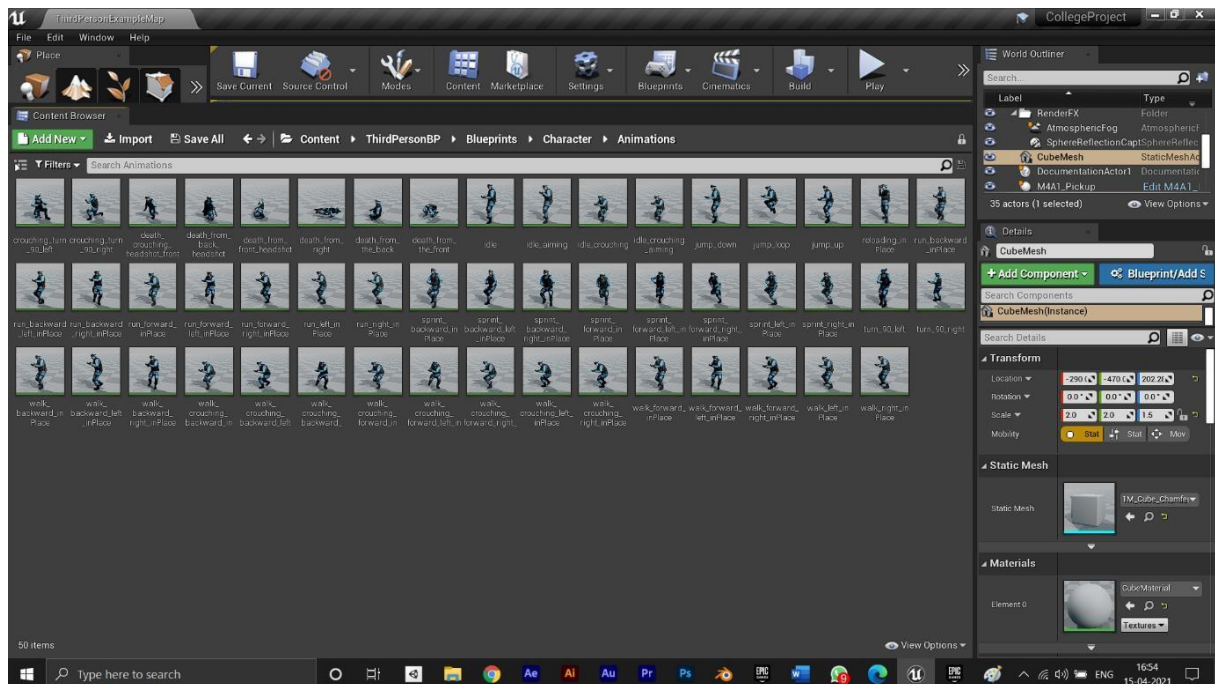


Fig 4.6

These are the animations we'll be using in this project. These animations will be assigned to the character we created.

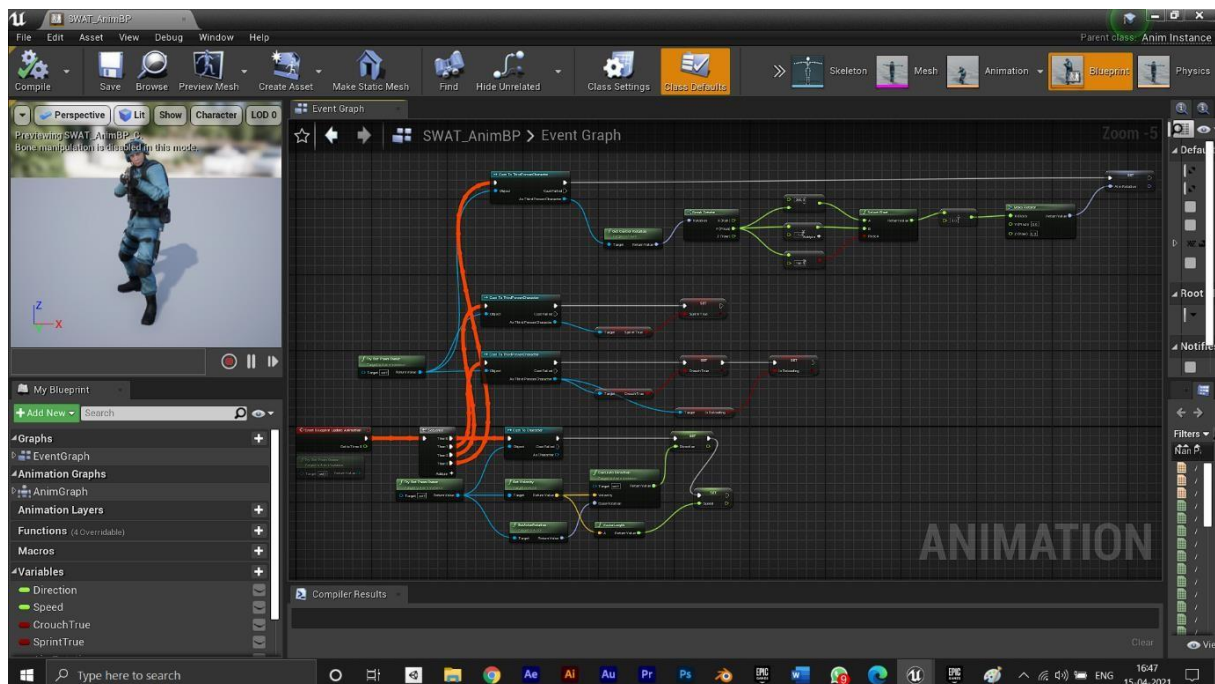


Fig 4.7

Once the animations are imported, we create an animation blueprint and then assign each animation accordingly to the input from the user. Then we use the Event Graph to connect it all and make sure those animations work perfectly.

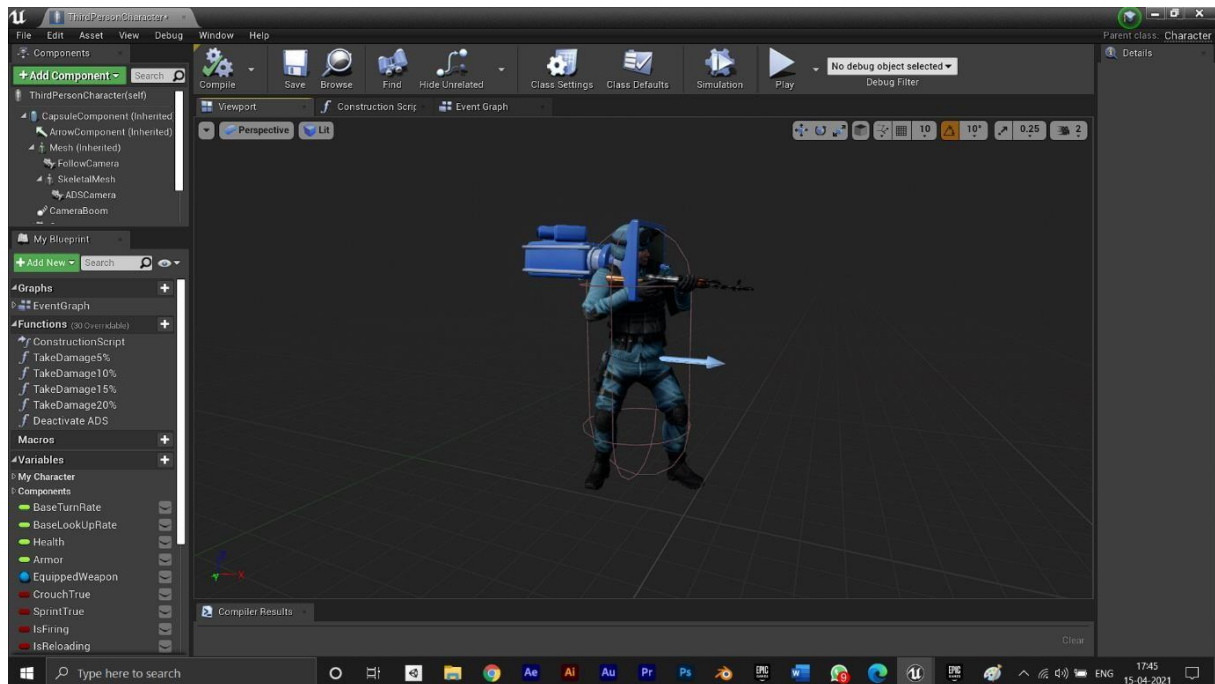


Fig 4.8

As we did for the mannequin mesh, we have to re-align the camera for the character we've created because the size of the character varies even though the length of the mesh remains the same, but the positioning of the head and hands will also play a major role in the view.

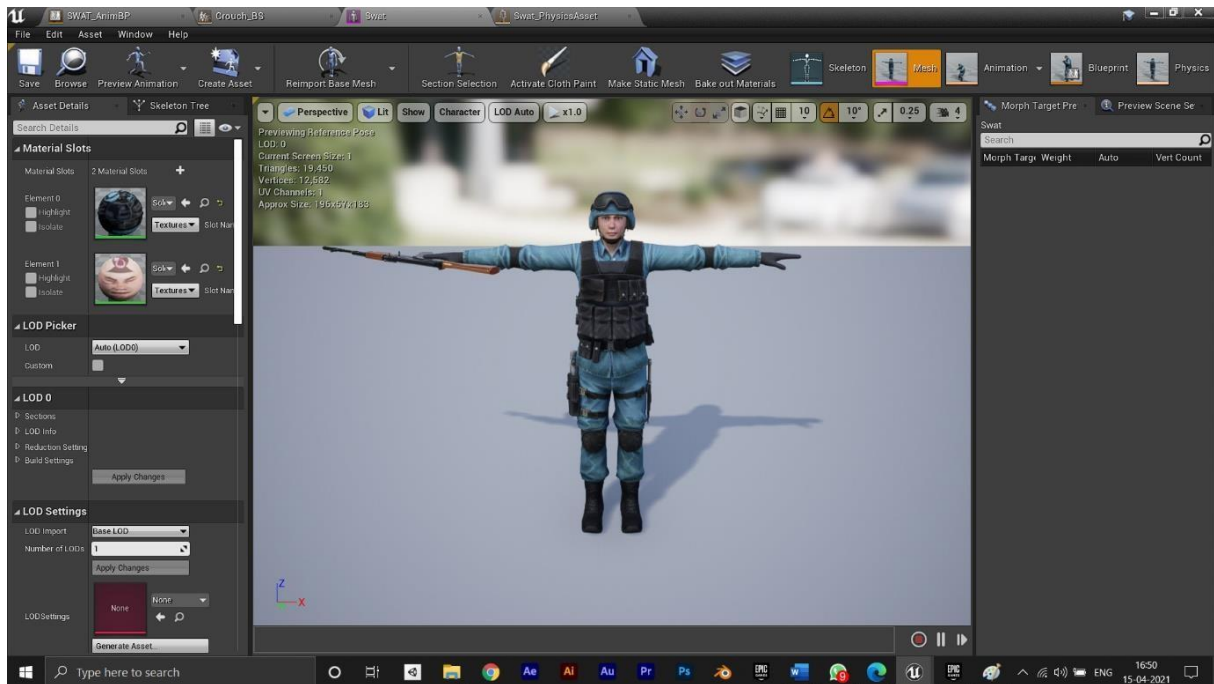


Fig 4.9

This is the character that we've created as the protagonist of the game. It's this character's perspective which we'll be playing in the game.

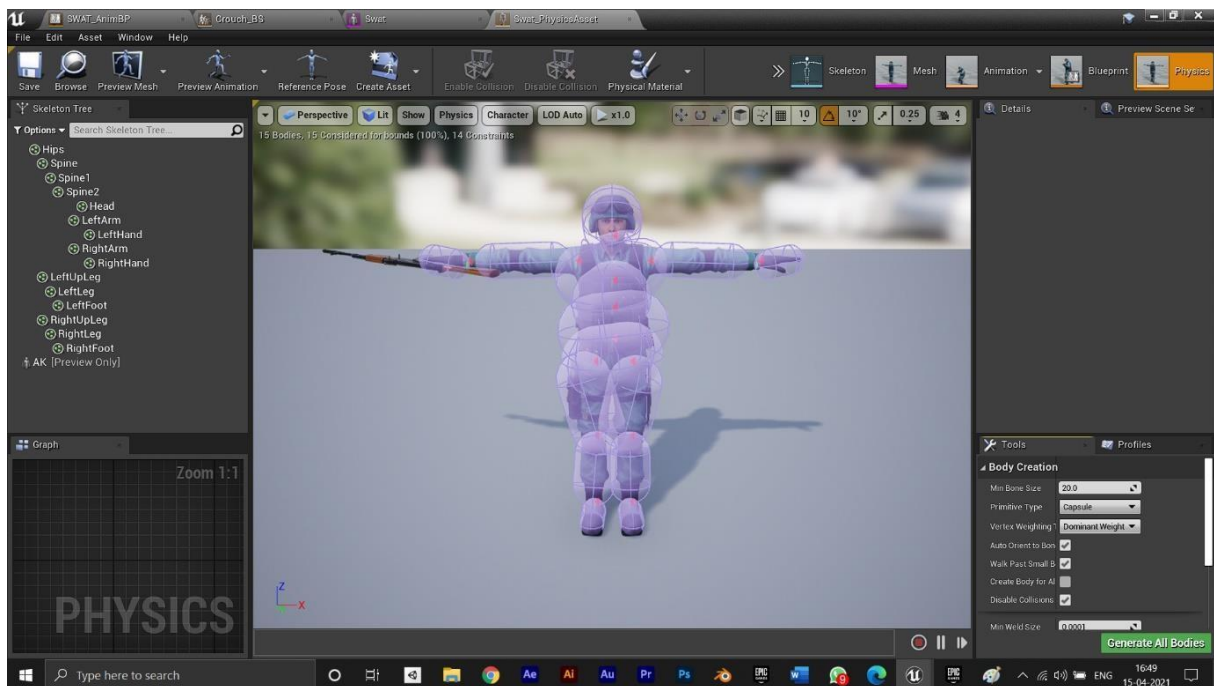


Fig 4.10

This shows the physics involved in the character each oval/circle represents a joint which will act as actual skeletal joints in game.

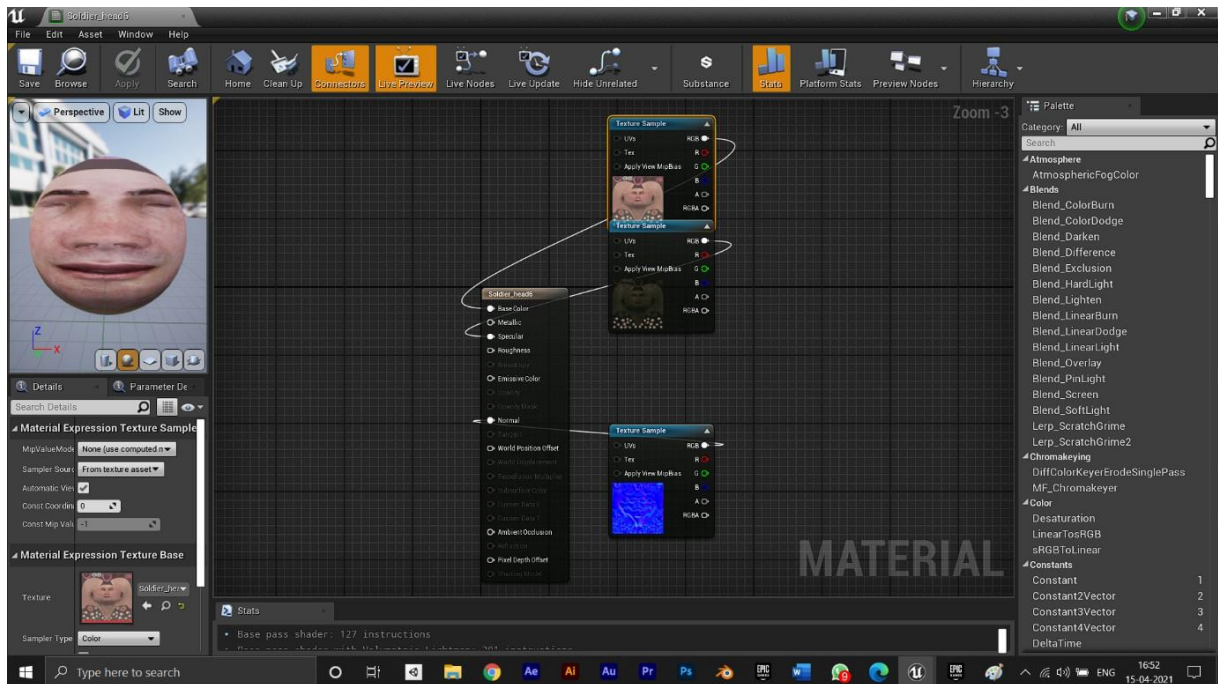


Fig 4.11

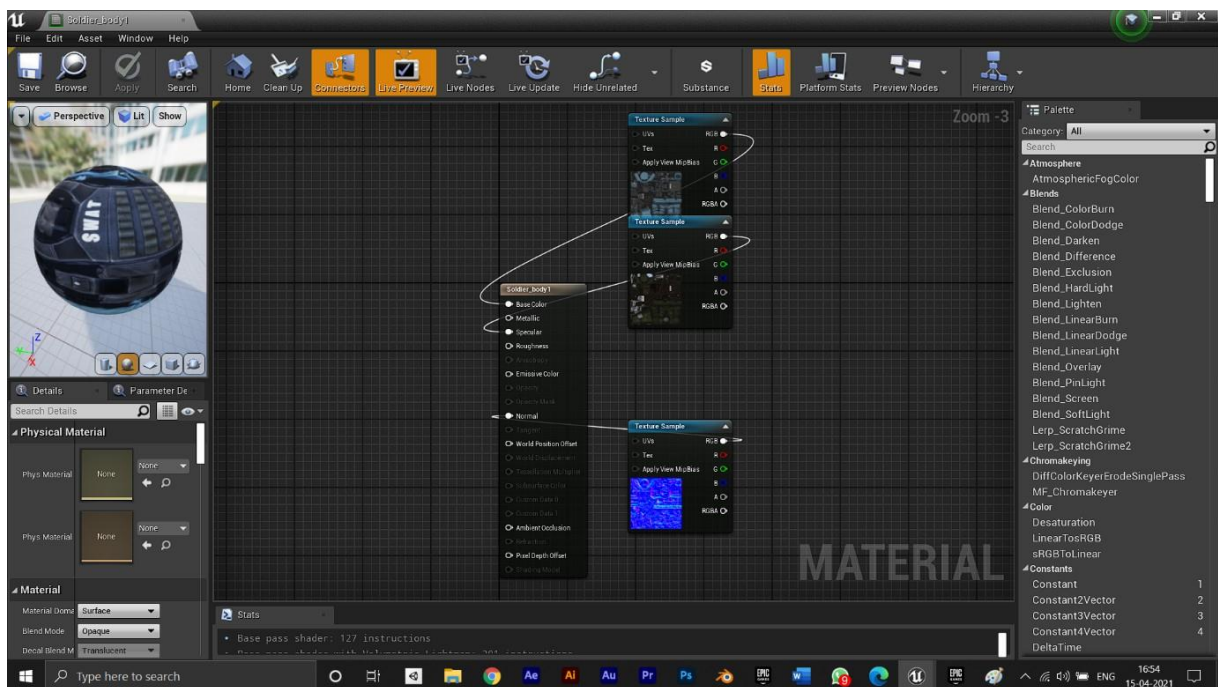


Fig 4.12

These are the textures involved in the character we've created. The first texture here is the skin texture which we've used as the skin of the character and the second texture is the vest and costume of the character.

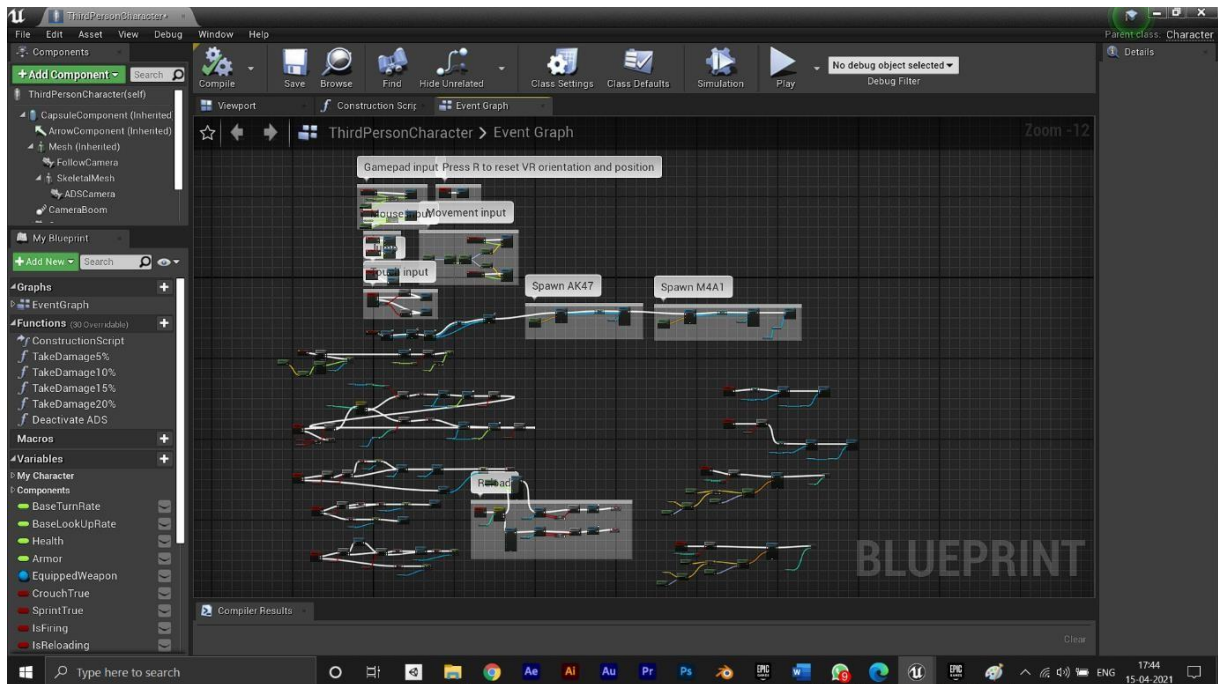


Fig 4.13

This is the entire Event Graph of the character we have created this consist of all the functions that the character has to perform. Few are input based functions; those functions will take the user's input and behave accordingly. The remaining are non-input-based functions like pain, damage, health, armor etc.

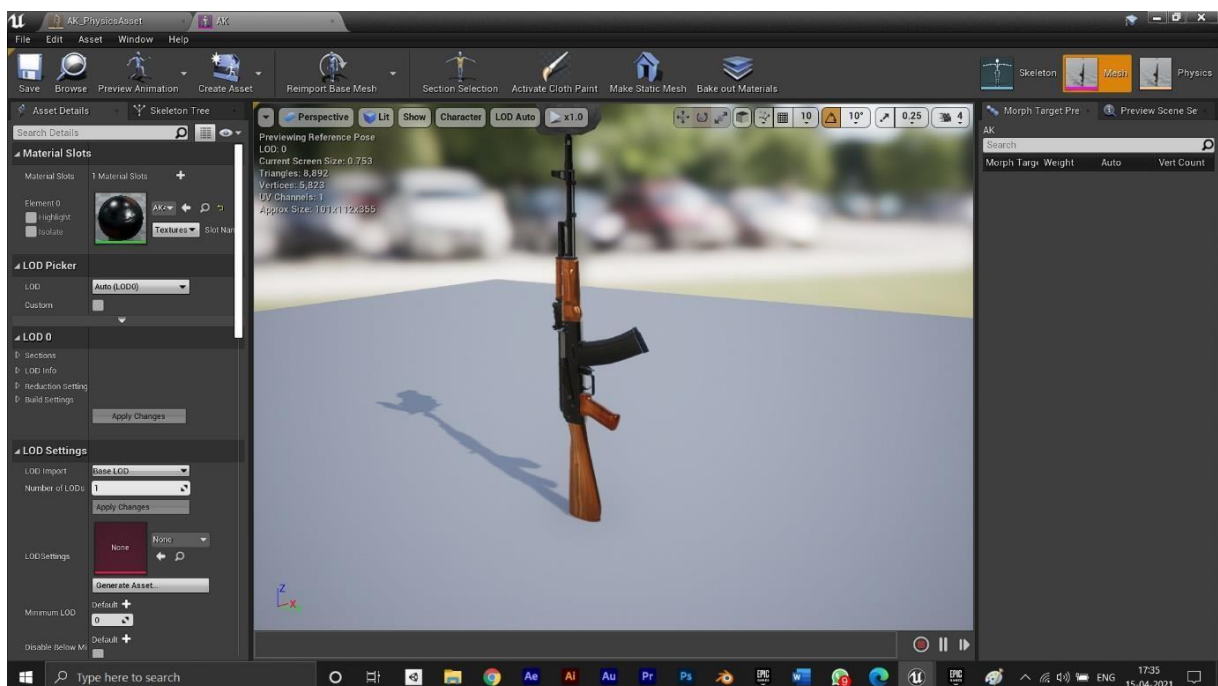


Fig 4.14

This is the design of the AK-47 we've used in the game, this is the default gun that the character uses in the game, it is more likely to be considered as the primary weapon.

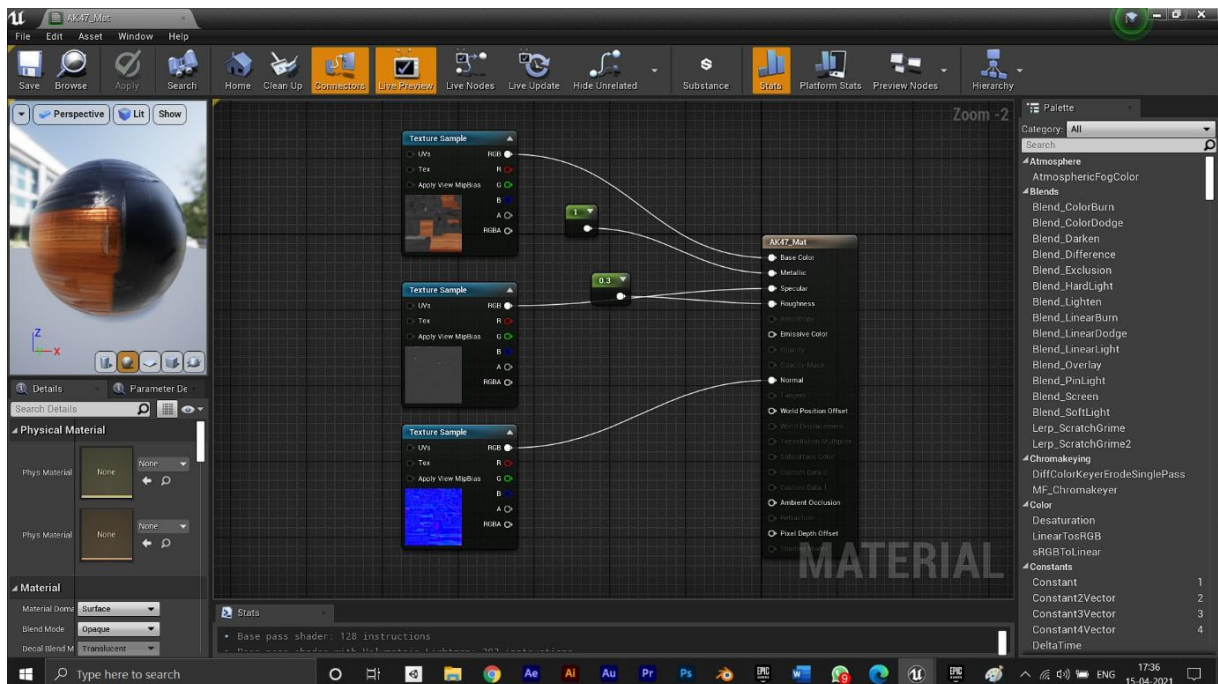


Fig 4.15

This is the material used as the texture of the gun, like the previous textures we used for the character created.

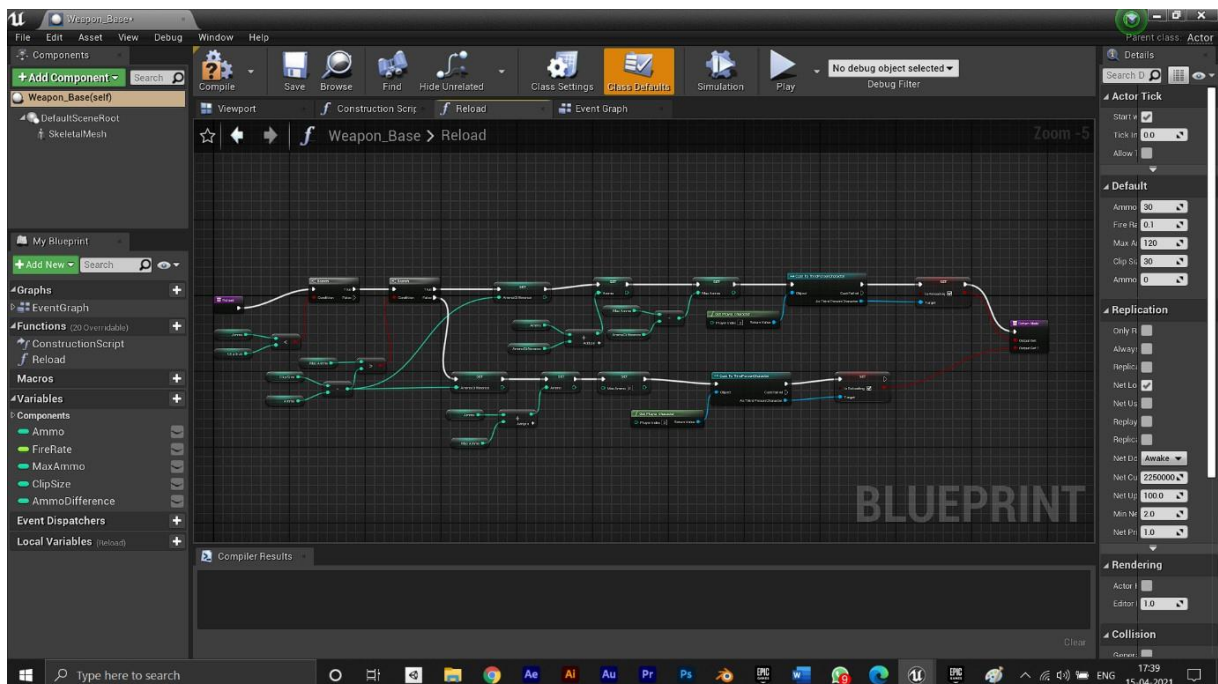


Fig 4.16

This is the Event Graph of the reload mechanism used. Reload mechanism doesn't involve reloading it includes the animations involved, total ammo reduction etc.

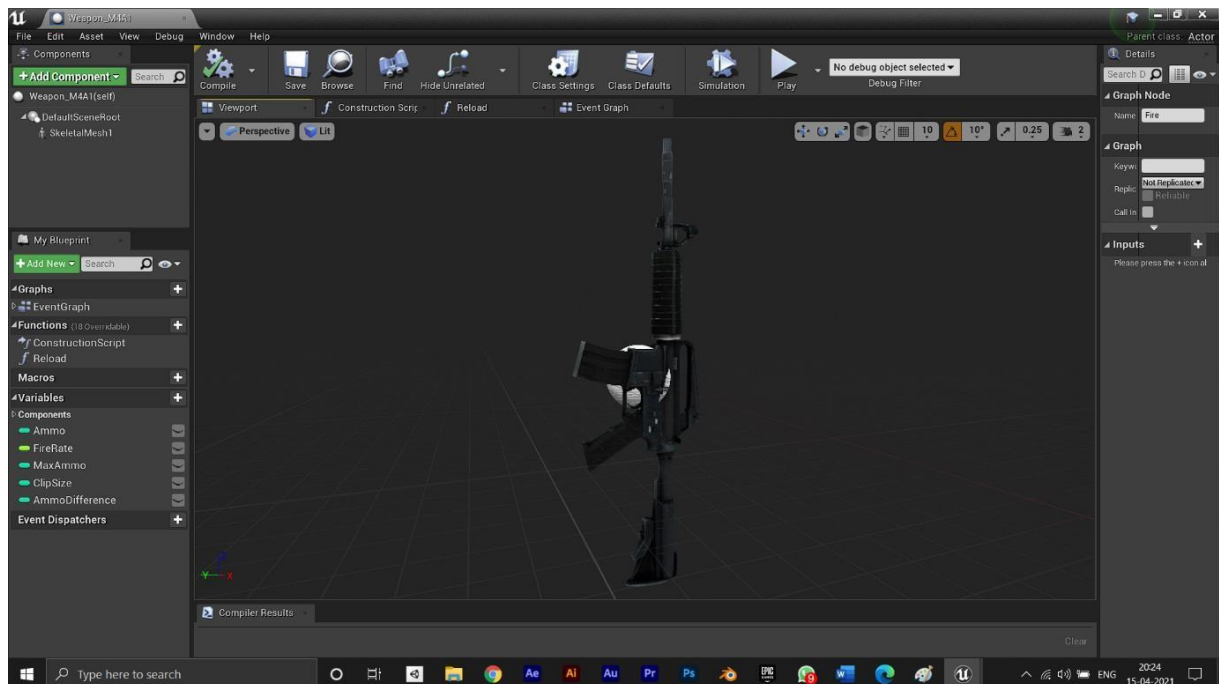


Fig 4.17

This is the design the M4A1 used in this game. This gun is more likely to be considered as the secondary weapon of the game. This will not be available with the character at the starting of the game, you might have to search for this gun inside the map.

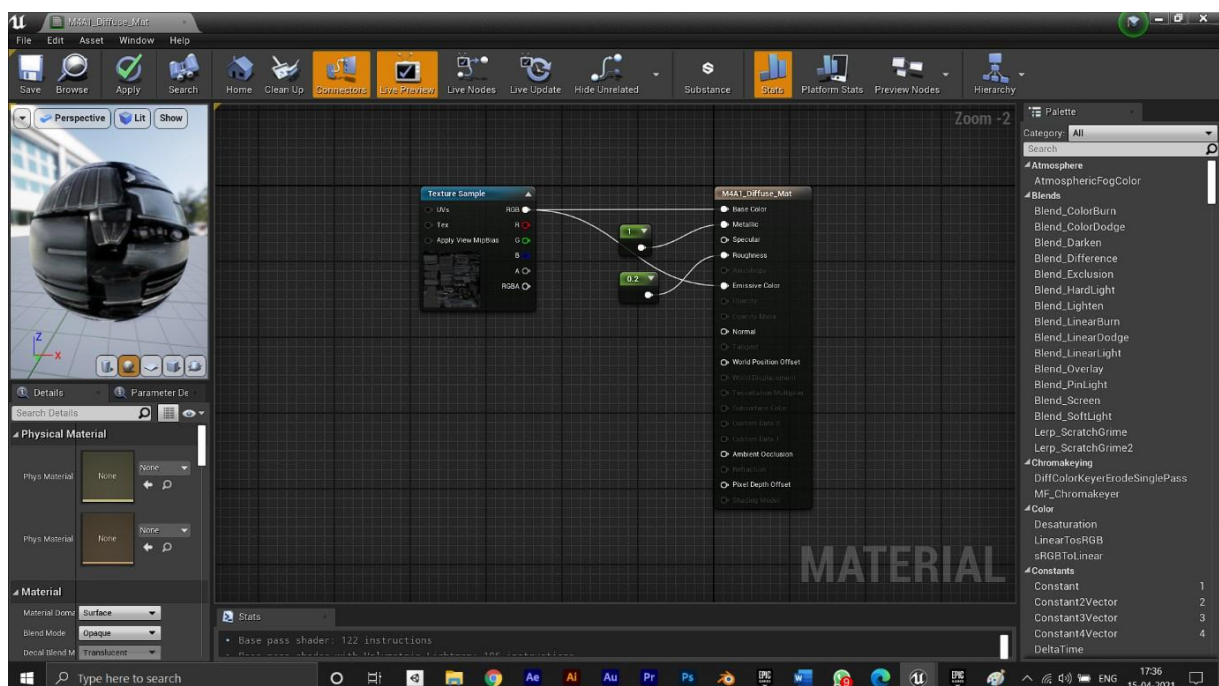


Fig 4.18

This is the material used in the M4A1 gun. Like how we used the previous textures for AK-47 and character skin we'll be using this skin to bring out the liveliness of the gun.

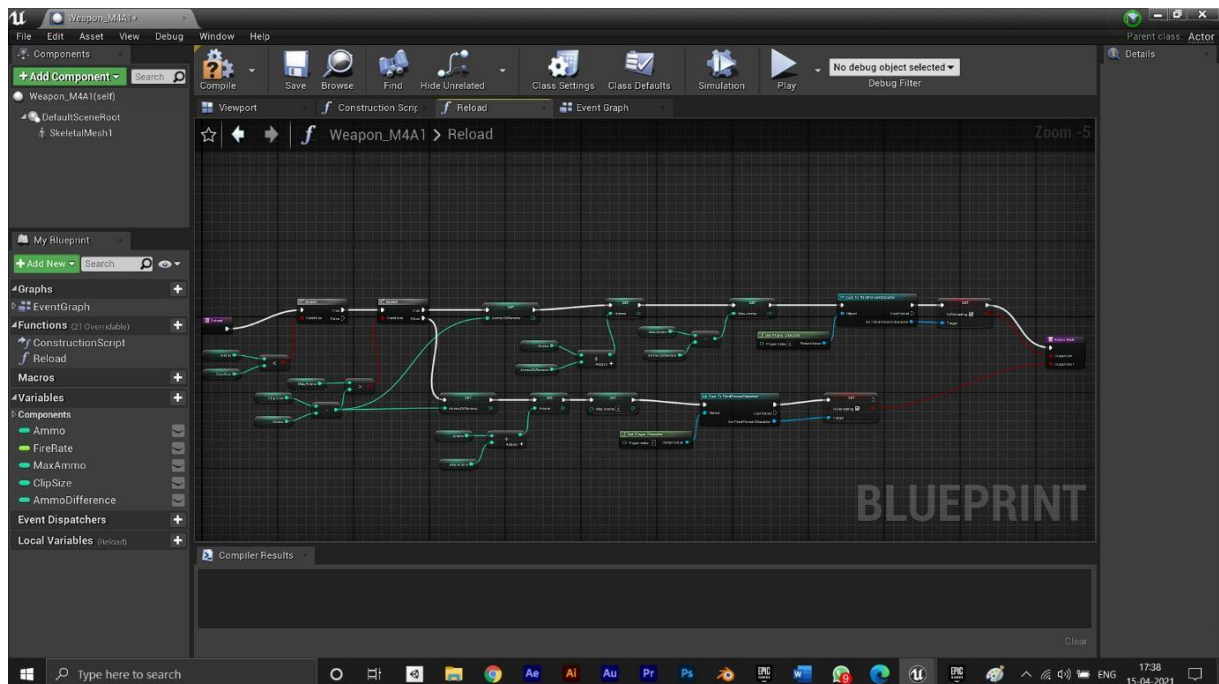


Fig 4.19

Same as AK-47 reload mechanism M4A1 also has a similar reload mechanism the difference is that M4A1 has different set of ammo than that of AK-47, so the ammo part alone differs in this mechanism.

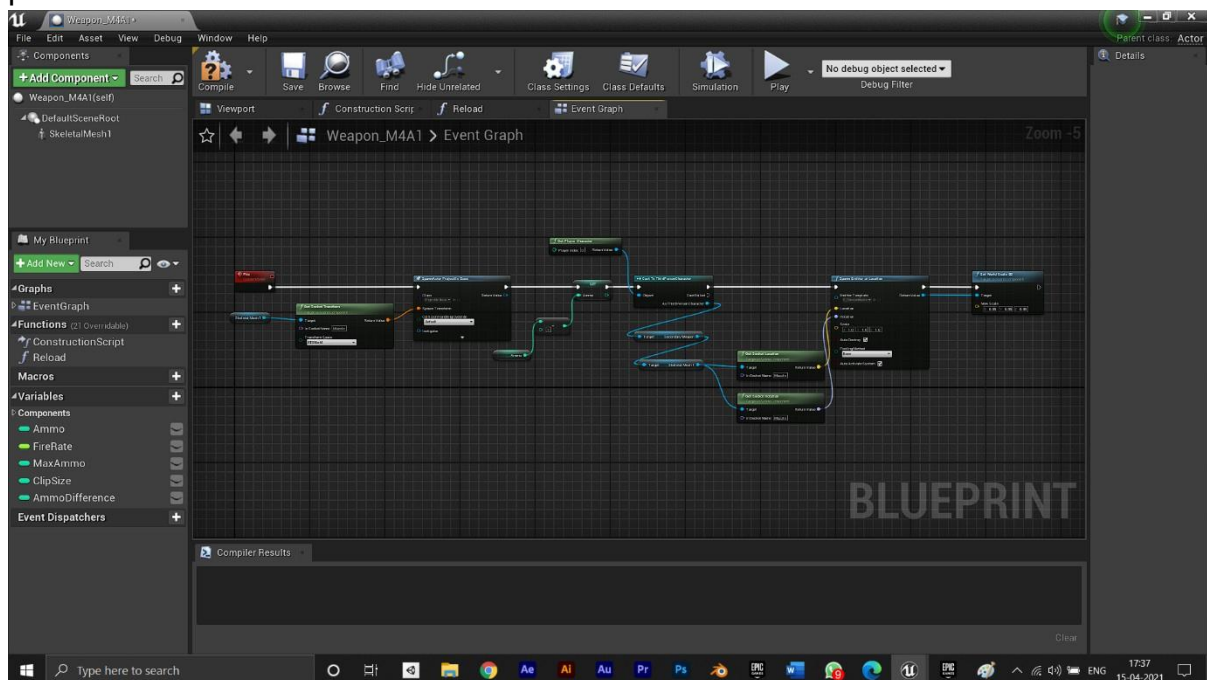


Fig 4.20

The Firing system in M4A1 is also different from AK-47 because we have added an extra silencer muzzle to the M4A1 so the whole firing system to be replicated in a separate way that the bullet emerges from the silencer.

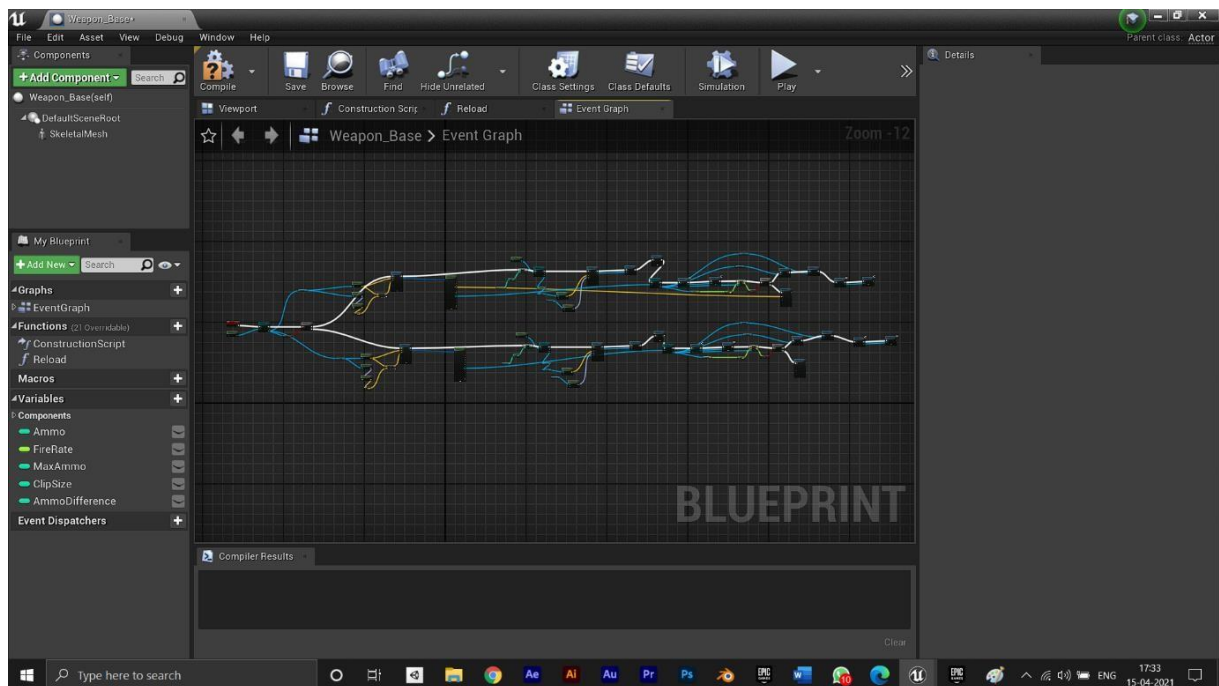


Fig 4.21

The normal weapon system for this game includes the choices weapon, swapping, reload, firing, and ammo. So, this Event Graph basically manages all the other sub functions involved with weapons.

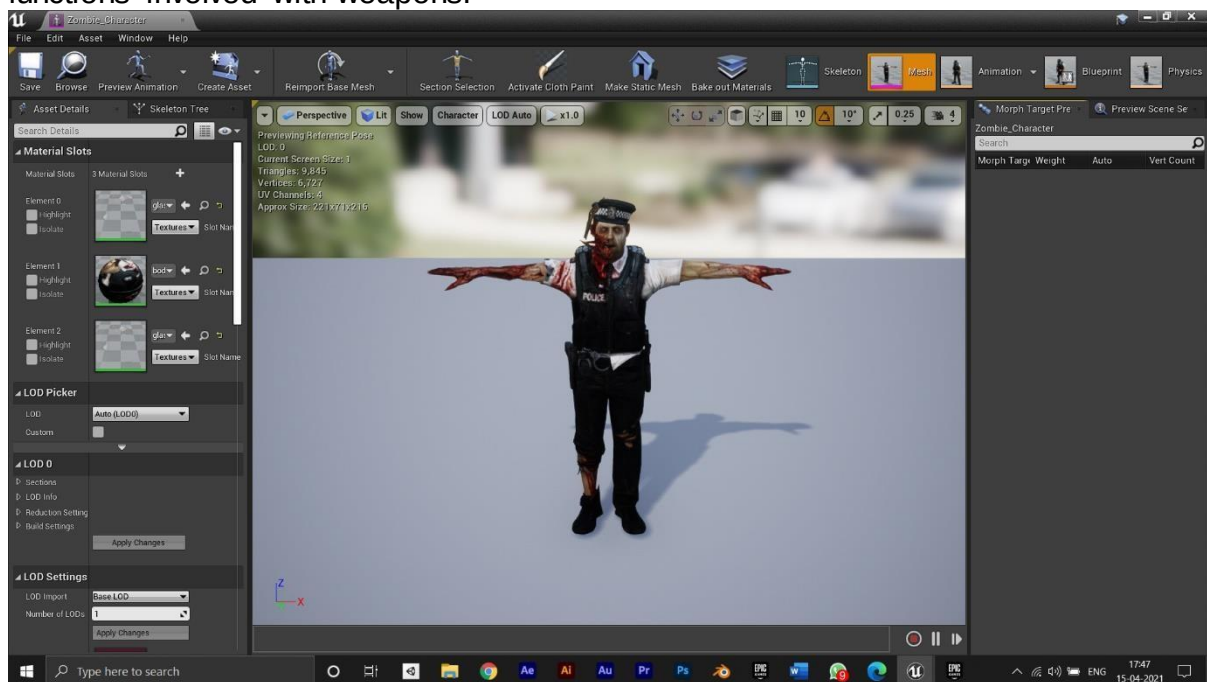


Fig 4.22

Now we have introduced the NPCs of the game. This is the computerized character which will try to kill us. I have made to character look like a Zombie to bring more realism to the player as well as fun.

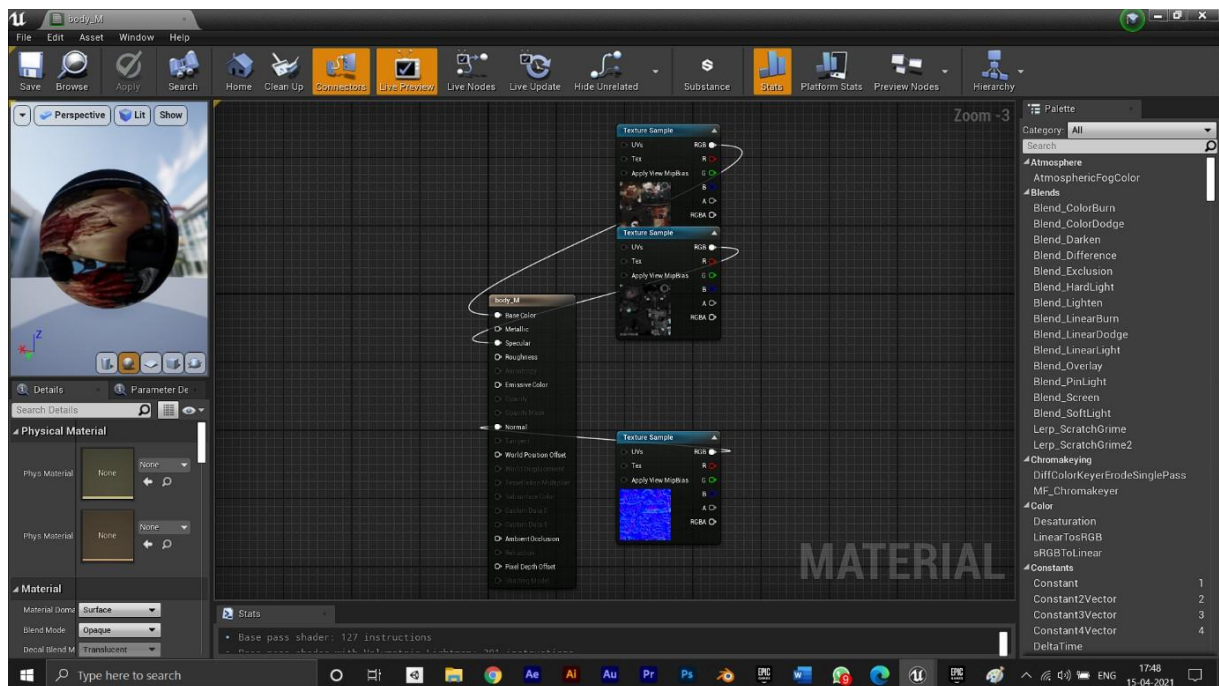


Fig 4.23

This is the material which is used as the skin and texture of the zombie. Similar process like the previous materials we've used.

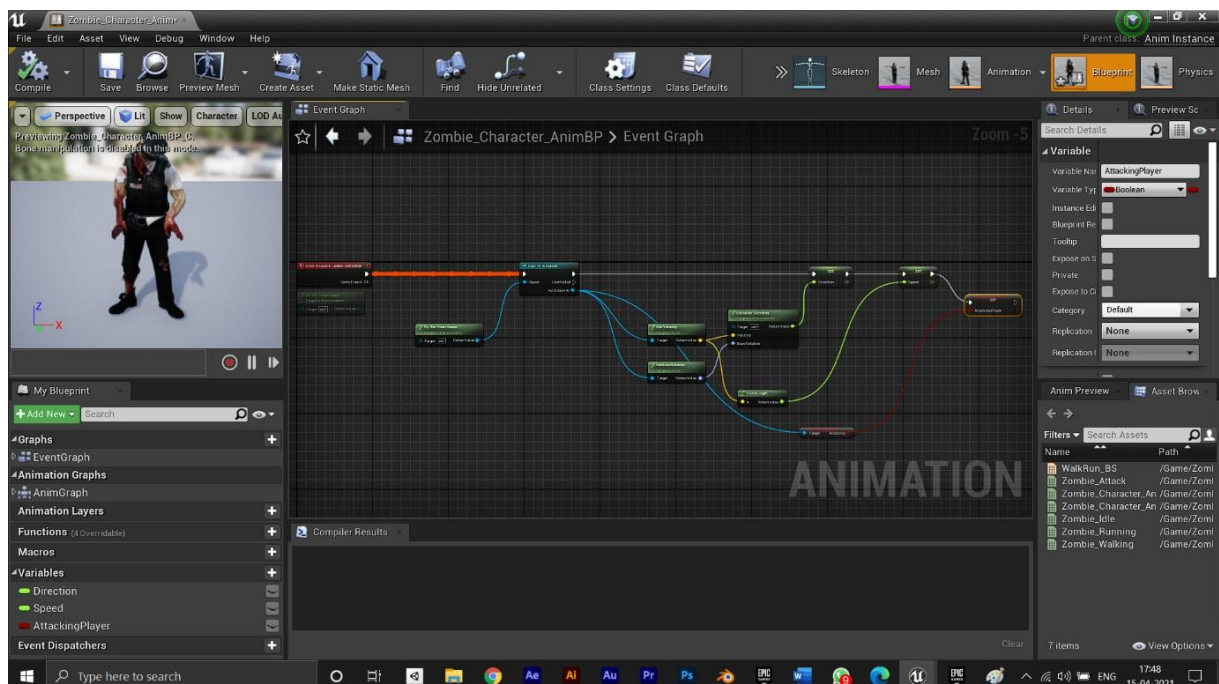
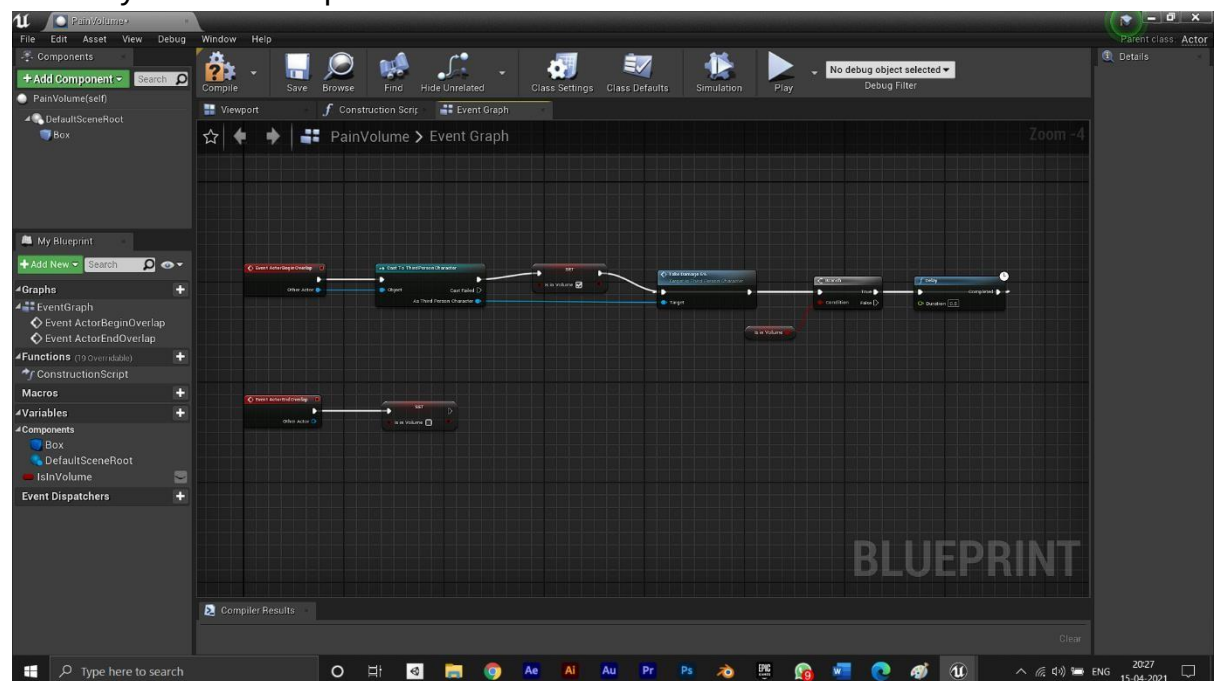


Fig 4.24

This is the NPCs behaviour when in attacking or in an attacking range of the character. When in range the NPC even starts to run to reach the character. Typically, zombie mentality has been implemented for more realism.



22

This is the Pain volume used in the game. It is nothing but the Damage per hit. There are different kinds of damage in this game. For example, Damage taken from a Zombie is only 5% per hit whereas a Damage taken from a grenade is 10% or 15%.

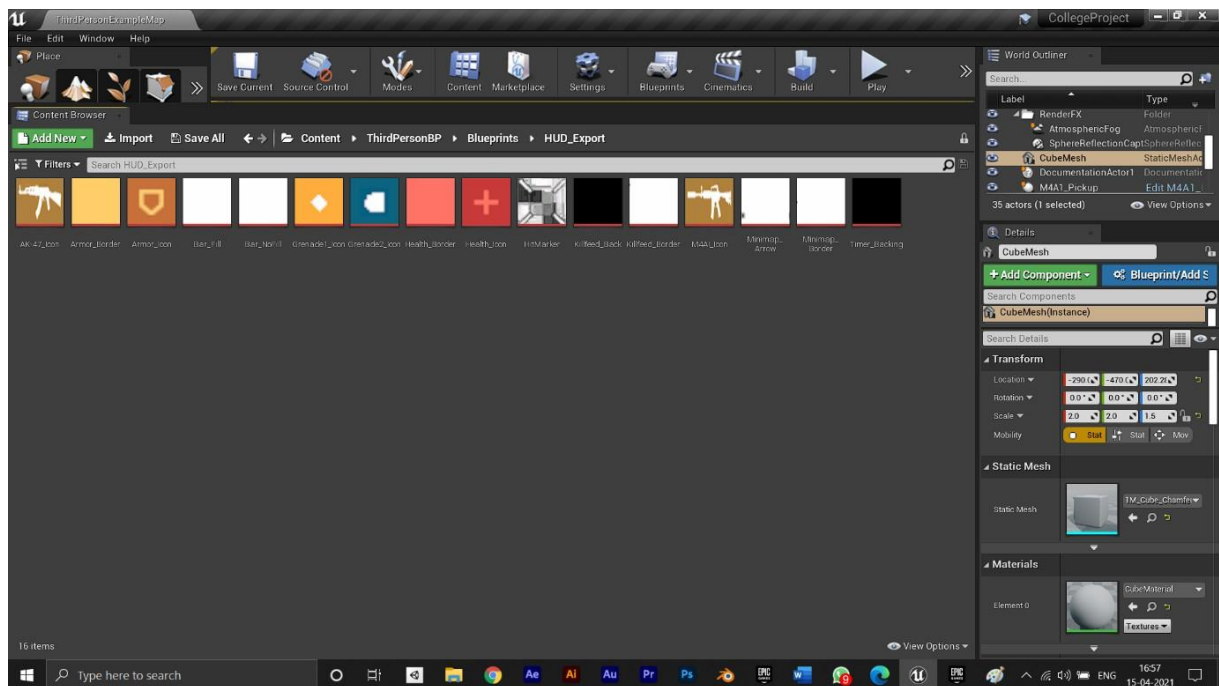


Fig 4.27

These are the elements used in the final HUD. It contains elements like health bar icon, armor bar icon, reticle, etc.

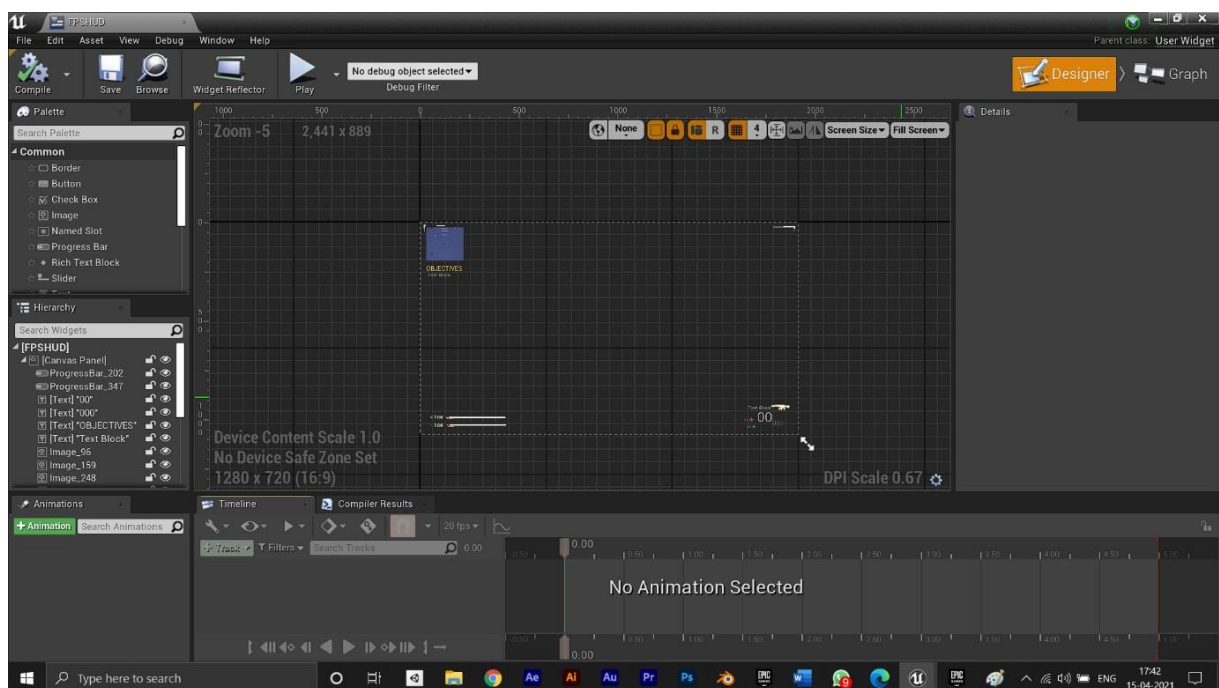


Fig 4.28

That rectangle is the HUD it consists of mini map, health and armor, ammo, weapon and pretty much everything to me noticed while playing a game.

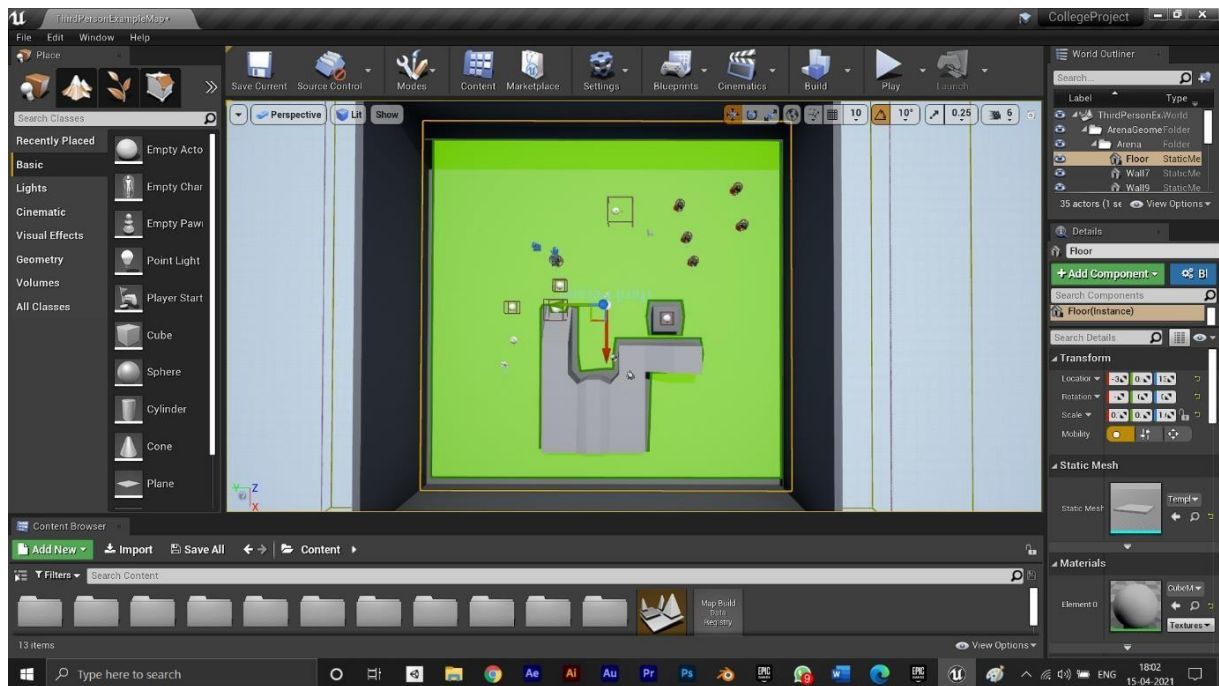


Fig 4.29

This is the default map when we started to design the game.

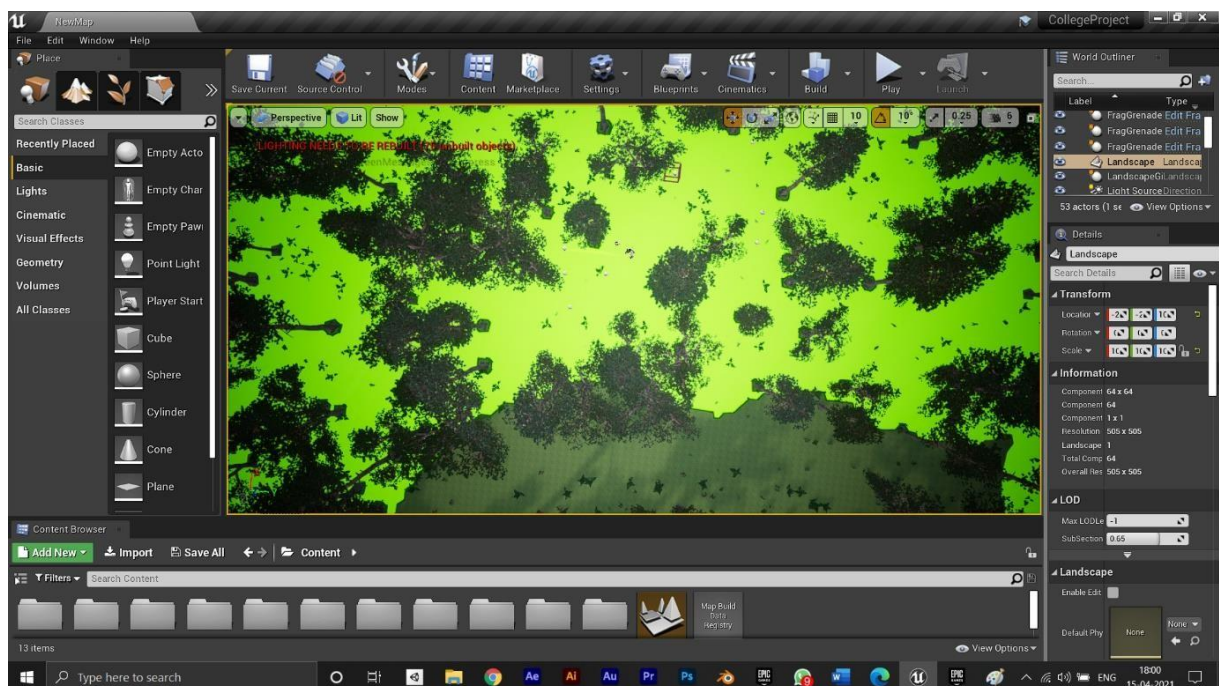


Fig 4.30

This is only one fourth of the new map we've designed because the more I zoom out to cover the entire map the smaller the details are, hence covered only one fourth.

CHAPTER 5

RESULT AND DISCUSSION

5.1 RESULT

A video game is designed for players to make them involve themselves into the gaming atmosphere and experience a real time playing. Keeping all the requirements of gamers we have designed this game. This game's main focus is to provide entertainment and fun. After the completion of this game, a set of people were made to play the final product. The results of the testing show that the primary goal of entertainment is fulfilled by the review and experiences shared by the players.

5.2 OUTPUT

The following screenshots are from the final outcome of the designed game.

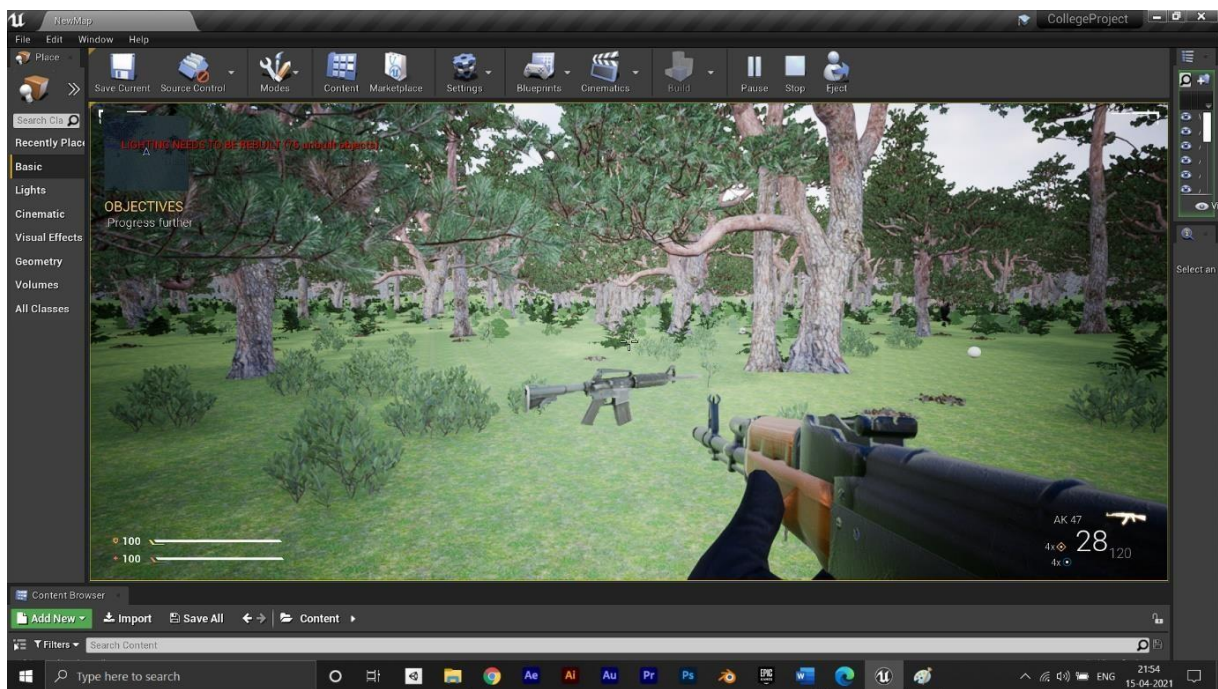


Fig 5.1

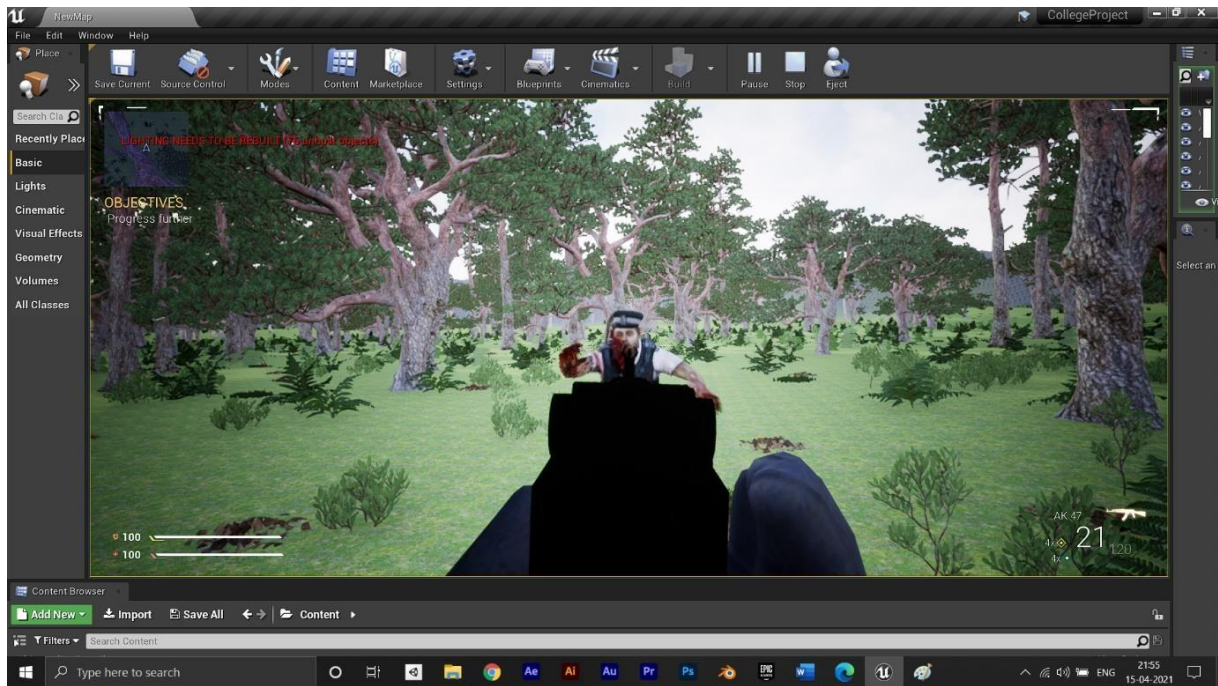


Fig 5.2

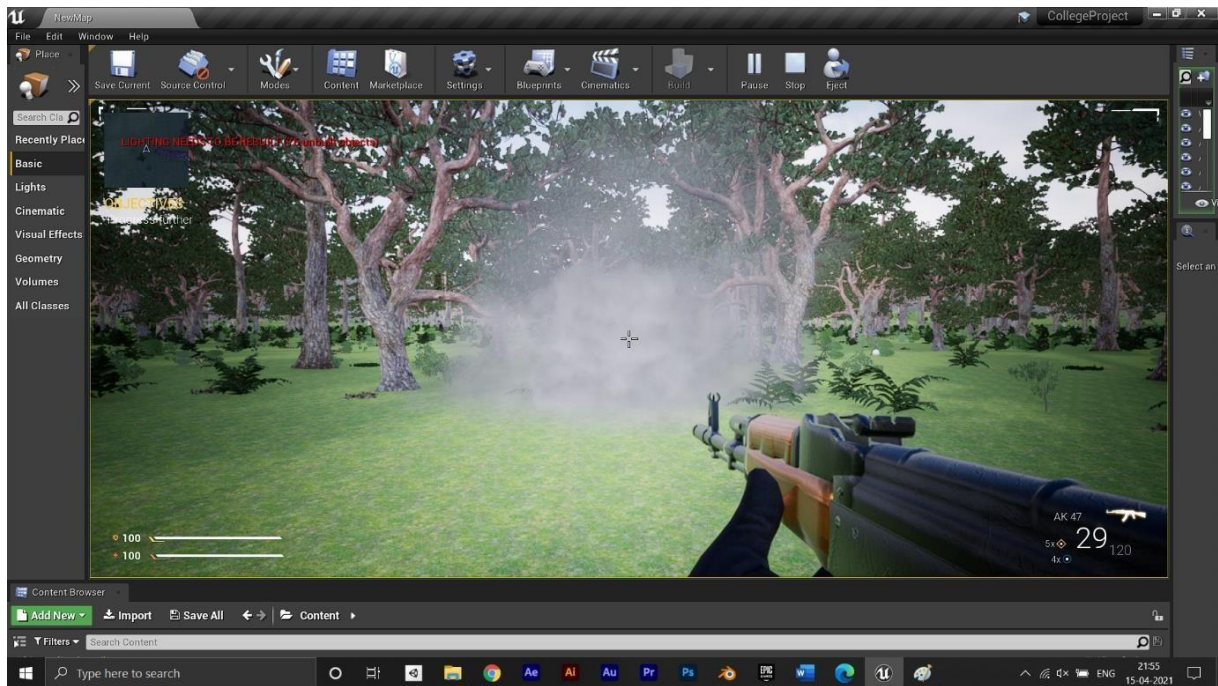


Fig 5.3

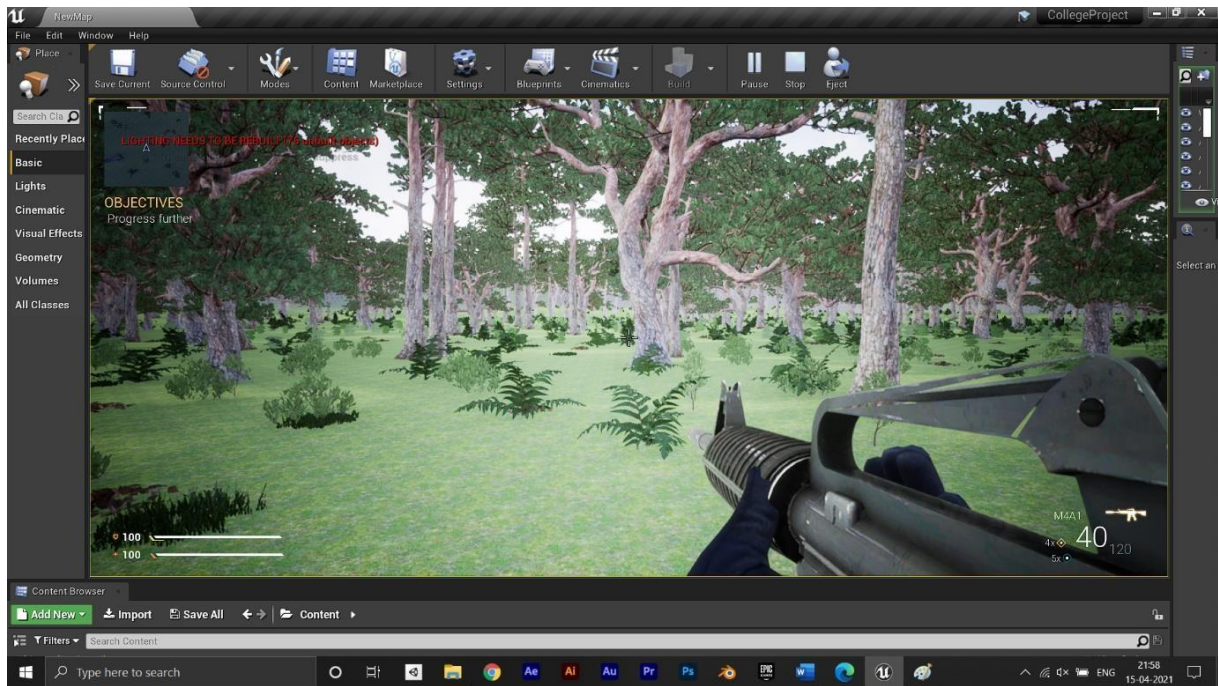


Fig 5.4

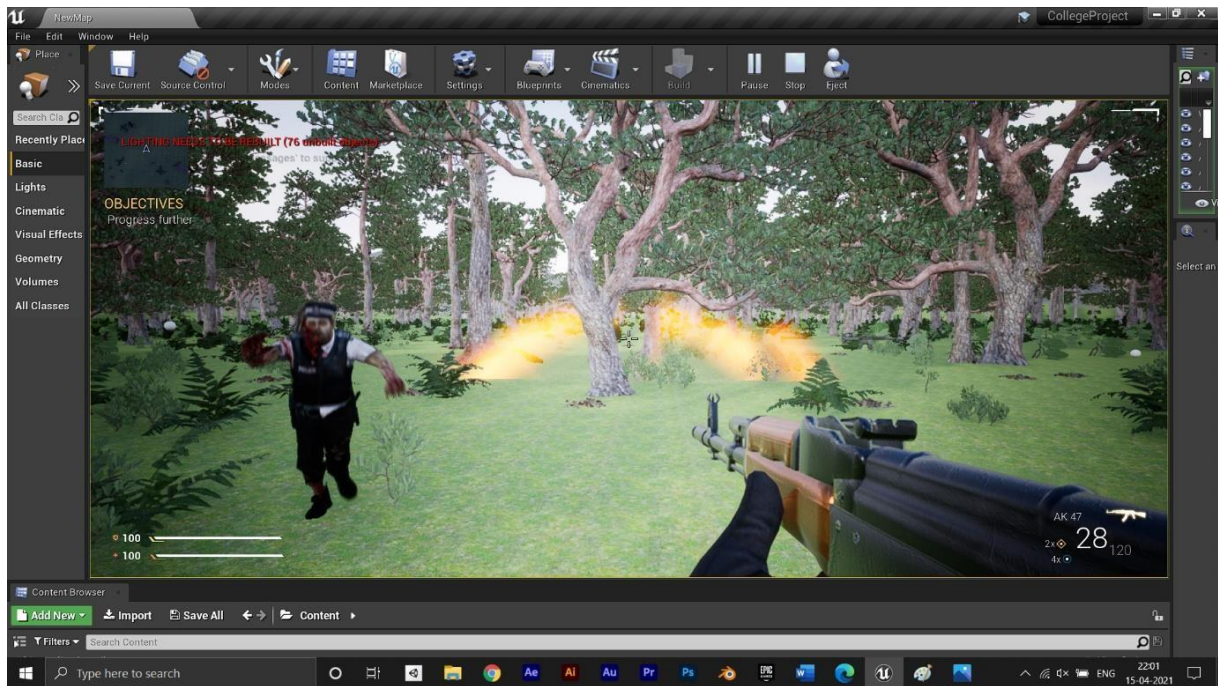


Fig 5.5

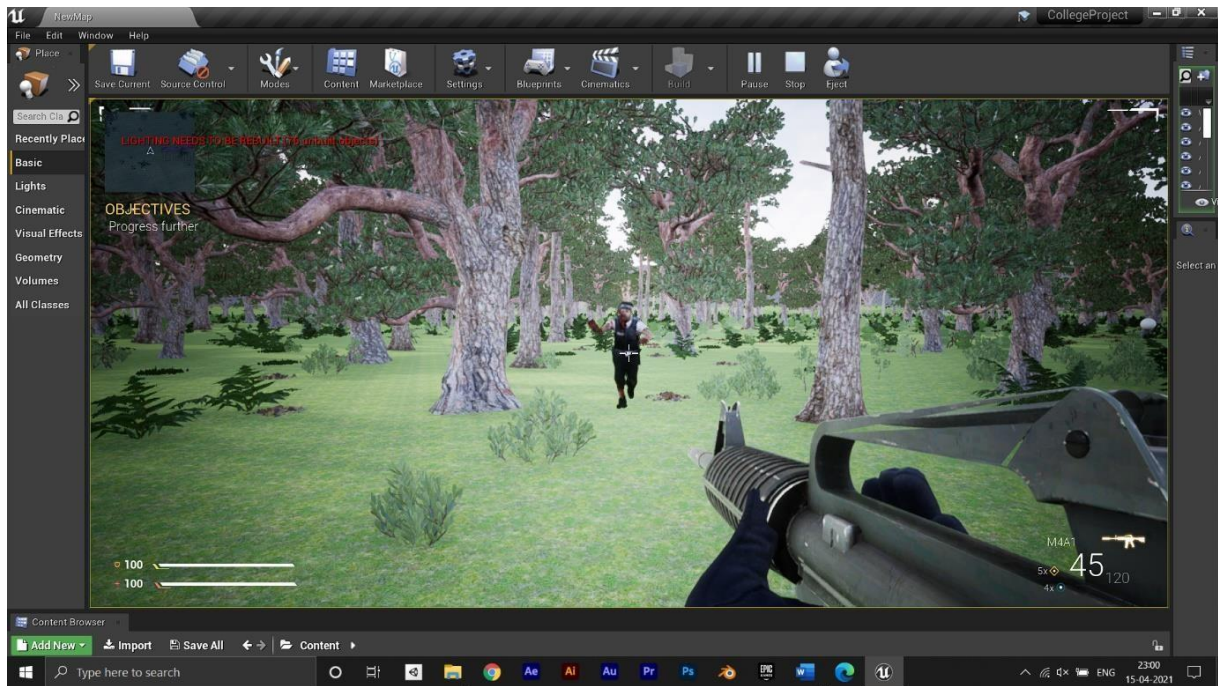


Fig 5.6

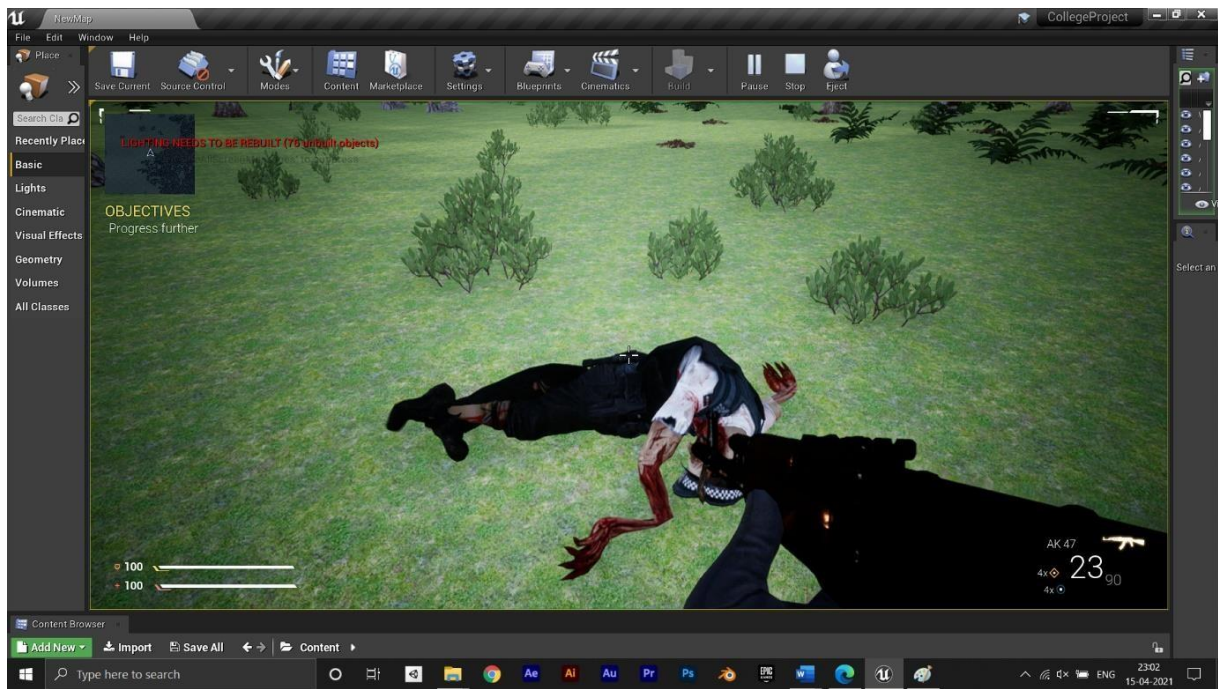


Fig 5.7

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 CONCLUSION

Technology has changed our existence and modified our lifestyle and approach towards life. Playing a game can be characterized as a movement that somebody takes part in for entertainment. It provides fun; it expands mind work, rehearses intellectual abilities and cheerful compound. As technology has progressed, it has expanded, with more visual boost, innovativeness, and fulfilment. Video games can likewise show significant abilities or address difficult issues, associations. It can advance the utilization of games for training and social activity, and frequently include youngsters in the making of games they can use to communicate on significant issues and recent developments. Keeping all this factors in mind, we have designed this game. Since this game is a real time shooting game, it helps the users to visualize and engage themselves fully into this game. The whole main purpose of this game to provide entertainment and by incorporating all advanced visual and audio features the main goal is achieved. When looking into the future aspects of this game, even though it is designed for entertainment purpose it can also be used for simulation program. When we enhance this game, it can be used by the cops during a crime scene, it can also be used to train army personals. This decreases the security threats and can help people use tech-based video games for making the place we live a better one.

6.2 FUTURE SCOPE

Computer games are these days a matter of madness past age's breaking point. From kids to grown-ups, all goes distraught behind this creating technology. Computer game and mixed media is a consistently developing industry. They generally introduce new progression in technology. As per NASSCOM, the Indian gaming industry does near \$890 million of business consistently and there are more than 100 game advancement associations in India as of now. It is a rising interest for experts in this field, from specialists to developers to designers to sound designers. Since this game is designed using Unreal engine it also brings profit when introduced into market. When the system is further enhanced it can also be used for simulation process that helps training military cops in security.

REFERENCES

1. Joonas Lehmusjoki (2017), "The Effects of User Interface type on Player Immersion in First-Person Shooter Games", Master thesis paper from University of Jyväskylä, 2017.
2. Yasin Farmani and Robert J Teather (2017), "Player Performance with Different Input Devices in Virtual reality First-Person Shooter Games", SUI '17: Proceedings of the 5th Symposium on Spatial User Interaction, October 2017.
3. Toby Hopp and Jolene Fisher (2017), "Examination of the Relationship between Gender, Performance, and Enjoyment of a First-Person Shooter Game", *Simulation & Gaming* Vol. 48, Issue 3, 2017.
4. Laura A. Ripamonti, Silvio Gratani, Dario Maggiorini, Davide Gadia and Armir Bujari (2017), "Believable group behaviors for NPCs in FPS games", **2017 IEEE Symposium on Computers and Communications (ISCC)**, 3-6 July 2017.
5. Marco Ballabio and Daniele Loiacono (2019), "Heuristics for Placing the Spawn Points in Multiplayer First Person Shooters", **2019 IEEE Conference on Games (CoG)**, 20-23 Aug. 2019.
6. Carmel Malvar, Tiffany Nguyen-Vu, Patricia Anne C. Prodigalidad, Mark A. De Lusong, Alan Soetikno, Tonya R. Kaltenbach and Roy M. Soetikno (2020), "Video Game Experience is Positively Correlated with Faster Improvement on Endoscopy Handling Skills", *Gastrointestinal Endoscopy (GASTROINTEST ENDOSC)*, Volume 91, Issue 6, Supplement, June 1, 2020.
7. David Buckley, Ke Chen and Joshua Knowles (2017), "Rapid Skill Capture in a First-Person Shooter", *IEEE Transactions on Computational Intelligence and AI in Games* 9, November 2014.
8. M. Nazhif Rizani and Hiroyuki Iida (2018), "Analysis of Counter-Strike: Global Offensive", 2018 International Conference on Electrical Engineering and Computer Science (ICECOS), 2-4 Oct. 2018.
9. Jonah Glass and Carolyn McGregor (2020), "Towards Player Health Analytics in Overwatch", 2020 IEEE 8th International Conference on Serious Games and Applications for Health (SeGAH), 12-14 Aug. 2020.
10. Yuto Mizumatsu, Ryohei Oda and Tomoki Kajinami (2018), "A User Interface to Visualize the Viewing Tendencies of e-Sports Players", **2018 IEEE 7th Global Conference on Consumer Electronics (GCCE)**, 9-12 Oct. 2018.