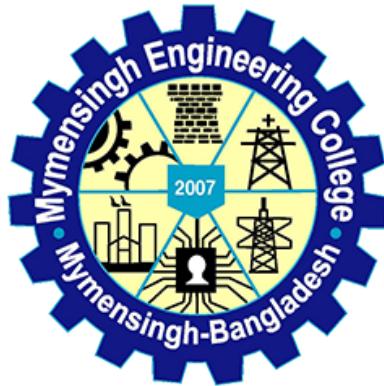


Mymensingh Engineering College



Project Report on
Third Person Platformer Game: Null Void
CSE-2216: Application Development Lab

Supervisor

Md Nagrul Islam

Lecturer

Department of Computer Science & Engineering
Mymensingh Engineering College

Submitted By

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Declaration

"Null Void" is an exciting third-person platformer game that immerses players in a thrilling adventure through a mysterious and dangerous void. With challenging gameplay, stunning graphics, and a compelling storyline, "Null Void" offers a unique and engaging experience for players of all skill levels. As a partial fulfilment of the requirements for "Application Development Lab," our team has worked tirelessly to create a game that not only meets but exceeds the expectations of our players. We are confident that "Null Void" will be a game that players will love and enjoy for years to come.

Approval

This project, "Null Void," submitted by Md Shakil Anower Samrat, Progga Laboni Lamia, Mahfuja Khatun Trisha, Md. Sujon Ahamed, Supayan Chakma, Md. Tanvir Hasan Sayem, and Abu Saleh Misbah Uddin, has been reviewed and approved by the supervisor, Md. Nagrul Islam, Lecturer of the Department of Computer Science and Engineering at Mymensingh Engineering College. The project has been thoroughly evaluated and it is confirmed that it meets the requirements and standards set forth by the department. The team has demonstrated exceptional skill and effort in the design, development and implementation of the game, and it is deemed ready for submission. The supervisor recommends that this project be accepted as partial fulfillment of the requirements for the "Application Development Lab" course.

Approval of

Md Nagrul Islam

Lecturer

Department of Computer Science & Engineering
Mymensingh Engineering College

Abstract

This project, "Null Void," is a third-person platformer game developed using the Unreal Engine 5 game engine and Blueprint, a visual scripting system, as well as C++ programming language. The project was undertaken as a partial fulfillment of the requirements for the course "Application Development Lab" at Mymensingh Engineering College. The primary objective of the project was to enhance the skills of the team members in game development and create an engaging and challenging game for players.

The game features high-quality graphics, challenging gameplay mechanics, and a compelling storyline that immerses players in a thrilling adventure through a mysterious and dangerous void. The project team aimed to create a game that is user-friendly, easy to navigate and can be enjoyed by players on Windows operating systems. The game may not offer advanced functionality for experienced players, but it is a successful demonstration of teamwork and dedication in the development of a game using industry-standard tools and technology.

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Introduction

"Null Void" is a game that will blow your mind. It's a third-person platformer game that we developed using the Unreal Engine 5 game engine, Blueprint(a visual scripting system), and C++ programming language. It's a game that will test your skills and dexterity as you navigate through the various levels of this mysterious and dangerous void. This project was undertaken as a partial fulfillment of the requirements for the course "Application Development Lab" at Mymensingh Engineering College by a team of dedicated students.

The primary objective of this project was to create a game that would be both challenging and enjoyable for players. And let me tell you, we've succeeded. The game features high-quality graphics that are visually stunning and a challenging gameplay that will test your skills. But the real star of the show is the storyline, it's engaging, thought-provoking, and it will draw you into the game's world and keep you coming back for more. We wanted to make sure that "Null Void" is easy to navigate and user-friendly, so we made sure it can be enjoyed by players on Windows operating systems. We understand that some of you may be advanced players and may want more functionality, but we're confident that you'll still enjoy the game.

This project was a true team effort and we couldn't be more proud of the result. We've used our skills and knowledge of programming, game development, and project management to create a game that is enjoyable and challenging for players of all skill levels.

In conclusion, "Null Void" is a game that provides players with an immersive and thrilling experience as they navigate through a mysterious and dangerous void. It's a product of teamwork, dedication, and the use of industry-standard tools and technology. If you're looking for a game that will test your skills and keep you coming back for more, "Null Void" is the game for you.

Purpose of the Project

The main purpose of this project is to develop the skills of the team members in game development and create a challenging and engaging game for players. The project is also intended to provide an opportunity for the team members to apply their knowledge of programming, game development, and project management in a real-world setting. Additionally, the project aims to demonstrate the team members' ability to work together effectively and efficiently to create a high-quality game using industry-standard tools and technology. Furthermore, the project aims to create a game that can be enjoyed by players of all skill levels and provide them with an immersive and thrilling experience.

Description of the project

Content: "Null Void" is a third-person platformer game that immerses players in a thrilling adventure through a mysterious and dangerous void. The game features challenging gameplay, stunning graphics, and a compelling storyline.

Intended Audience: The game is intended for players of all skill levels who enjoy challenging and engaging gameplay, stunning graphics, and an immersive storyline.

Content Features: The game includes multiple levels, each designed to test the player's skill and dexterity. It also includes a variety of obstacles, enemies, and power-ups to keep the gameplay challenging and engaging. The game's graphics are designed to be visually stunning and create a captivating and immersive experience for players.

Effect/Result to be expected: Players can expect to be challenged and engaged by the gameplay, impressed by the stunning graphics, and drawn into the game's story and world. The game will also provide an opportunity for the players to test their skills, dexterity and improve their problem-solving abilities.

Platform: The game will be available for players on Windows operating systems.

Additional Features: The game also includes a simple and user-friendly interface, making it easy for players to navigate and understand the controls. The game also includes an option to save the player's progress, allowing players to pick up where they left off.

Overall, "Null Void" is designed to provide players with an immersive and thrilling experience as they navigate through a mysterious and dangerous void. The game is intended for players of all skill levels and offers challenging gameplay, stunning graphics, and an engaging storyline.

Platforms & Requirements

Platform Used:

- Unreal Engine 5
- Visual Studio 2019
- Metahuman Creator
- Epic Games
- Windows 11 Pro 64 bit

Requirement to use Game:

- Windows 10 64 bit and above
- Dual-core Processor with clock speed at least 2 Ghz
- Dedicated GPU memory 1 GB
- 4 GB Ram
- Availability of Device's Storage (1 GB) or more

Design & Methodology

Design:

The design of the game "Null Void" was carefully crafted to create an immersive and thrilling experience for players. The game's world was created with a winter atmosphere, providing players with a unique and visually stunning environment to explore. The character in the game is a custom-designed 3D third-person character, developed by the team member Shakil Anower Samrat, which adds a unique element to the game's world.

One of the key elements of the game's design is the inclusion of a pipe that moves round and round, and if it hits the character, the character will die, providing an added challenge for players. This feature is designed to test the player's skill and dexterity, as well as add an element of danger to the game.

The game's user interface was designed to be simple and easy to navigate, with clear and concise instructions. The win screen, death screen, pause screen, and main menu were all designed to be visually appealing and easy to understand, allowing players to quickly navigate through the game. The game's UI design is minimalist and user-friendly, making it easy for players to understand the controls and navigate the game.

Here are some glimpse of the layouts:

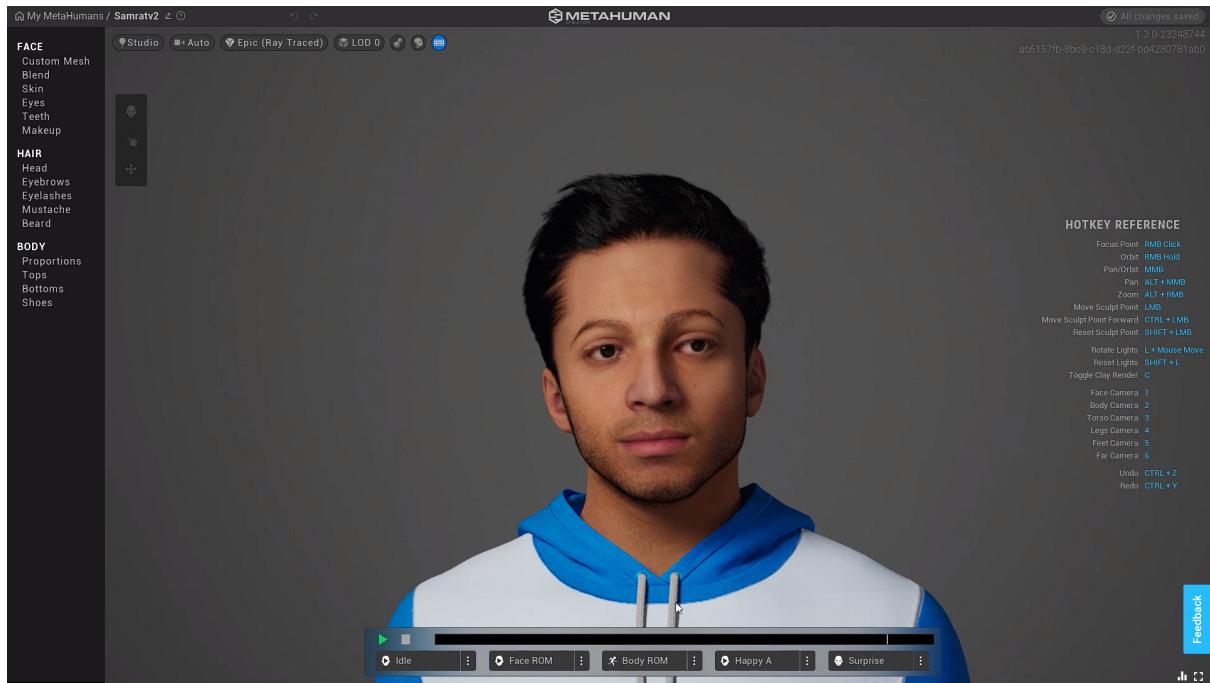


Fig: Third Person Character

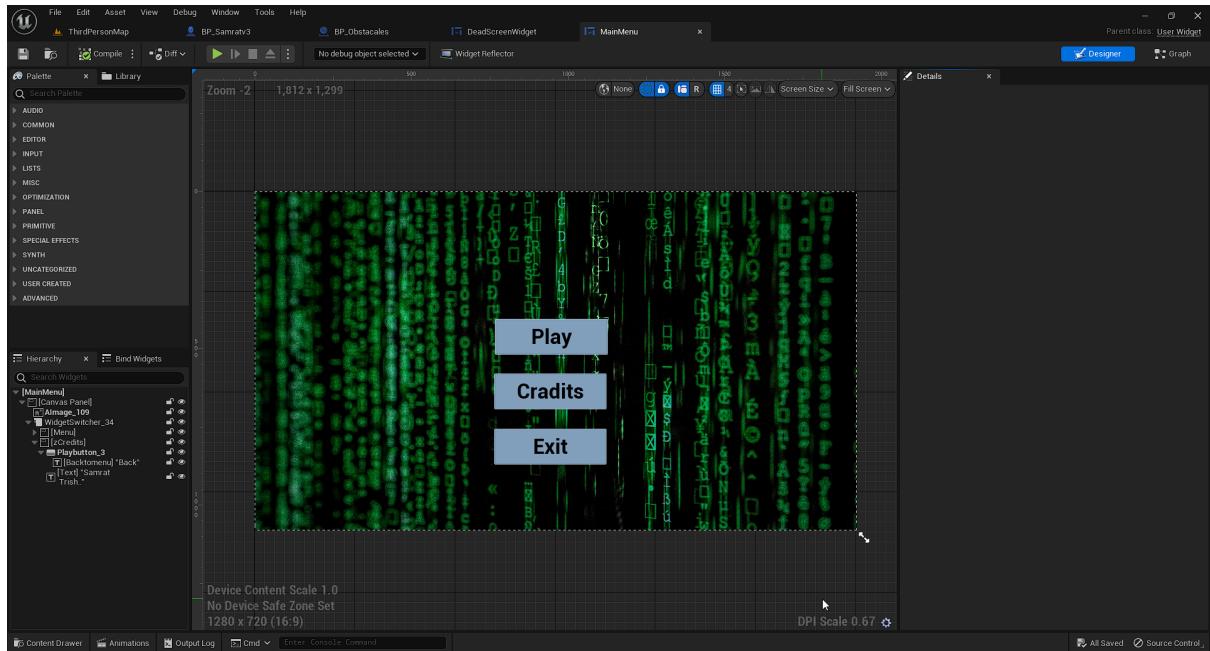


Fig: Main Menu

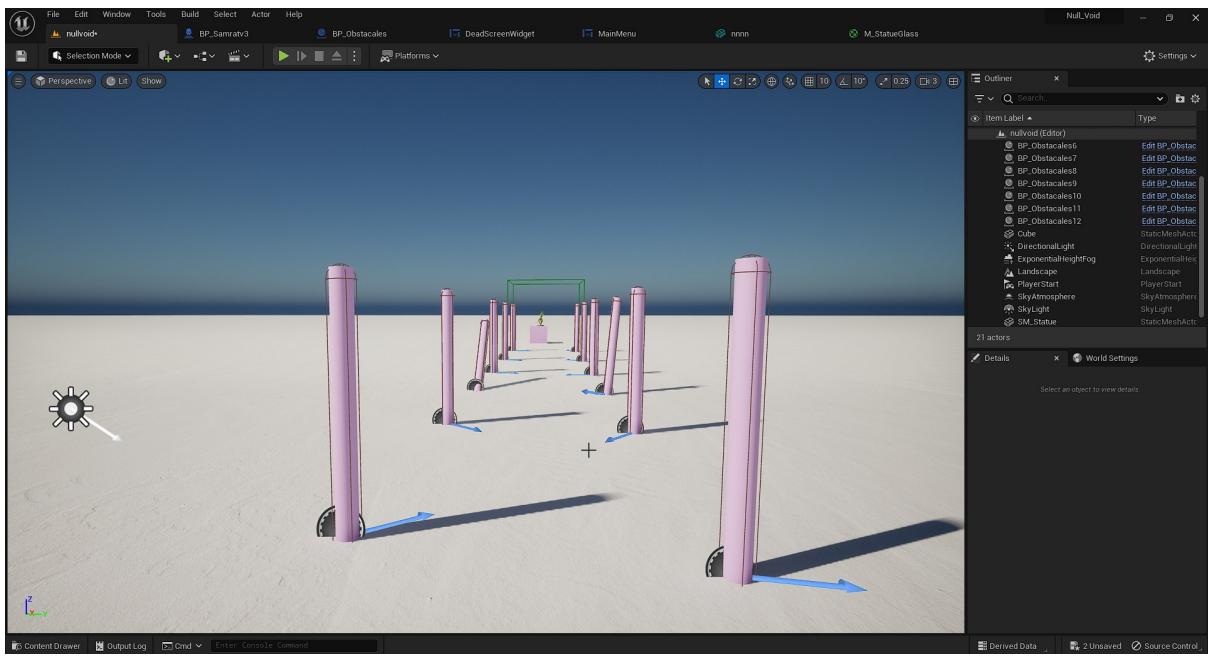


Fig: Level

This way we have designed the game. Now let's move on to the methodology part.

Methodology:

Conceptualization: The team began by conceptualizing the game, discussing ideas for the game's storyline, gameplay mechanics, and visual design. The team also researched similar games and identified what features they wanted to include in "Null Void" and what features they wanted to avoid.

Development: Once the concept was finalized, the team began the development process. This included creating the game's world, designing and implementing the game's mechanics, and developing the game's visual design. The team used Unreal Engine 5 as the game engine, Blueprint as the visual scripting system, and C++ for programming.

Here are some glimpse of Blueprint and C++ program:

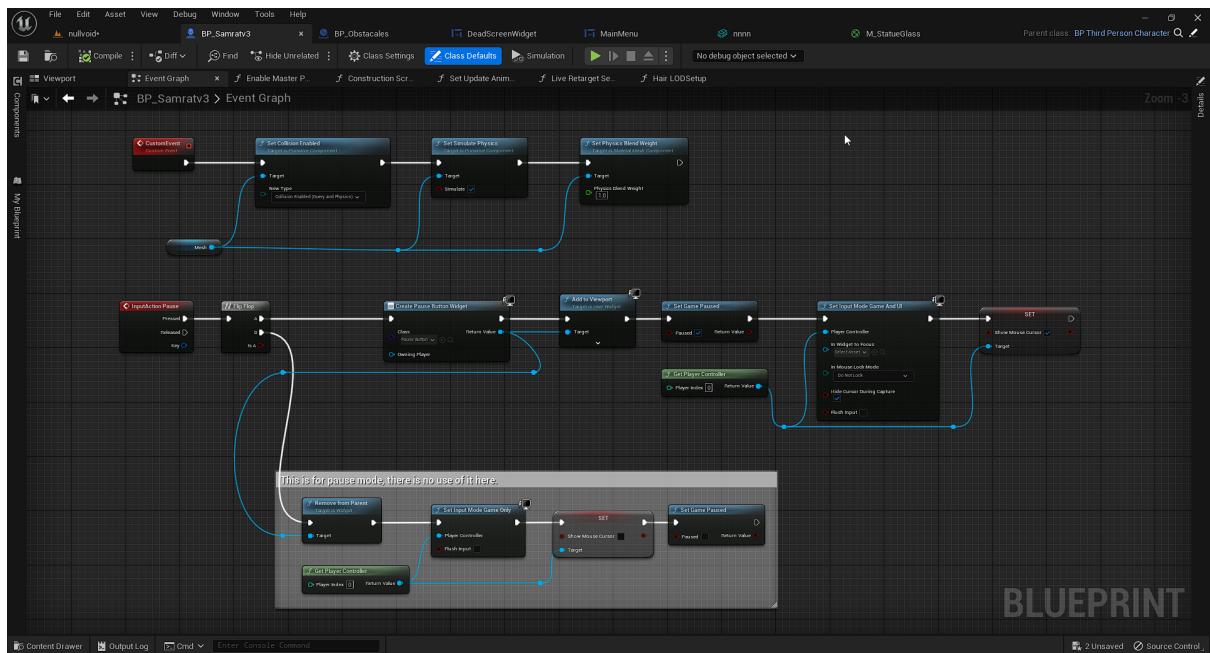


Fig: Third Person Character Pause and Death event

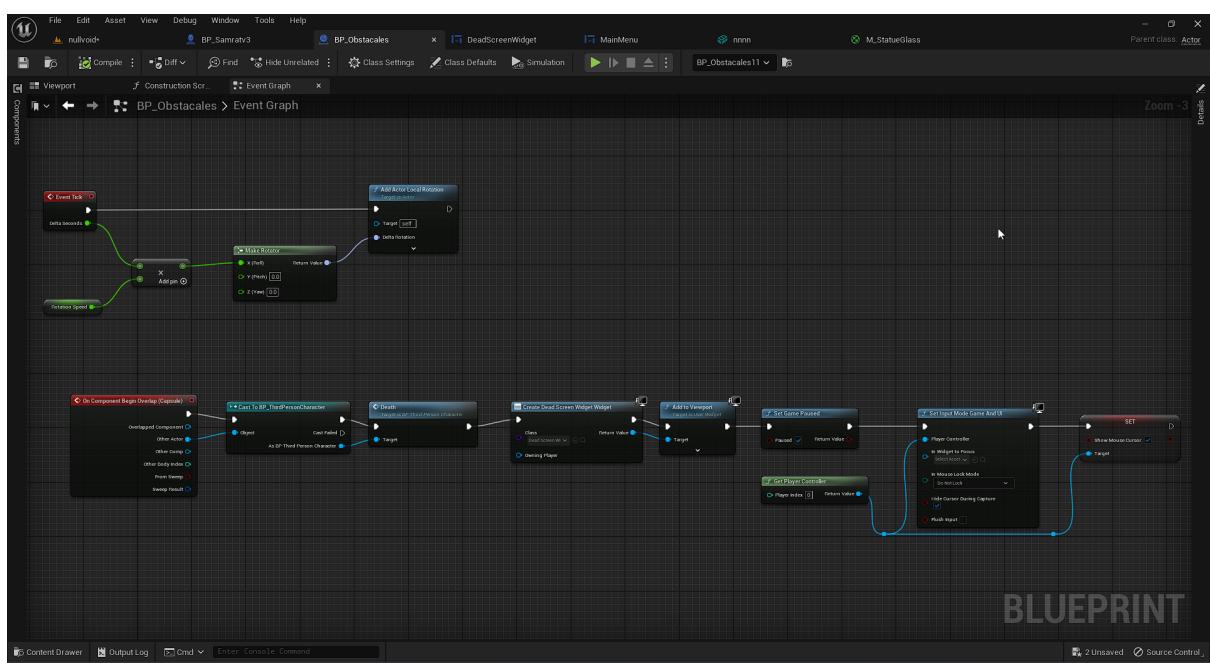


Fig: Obstacles of Blueprint

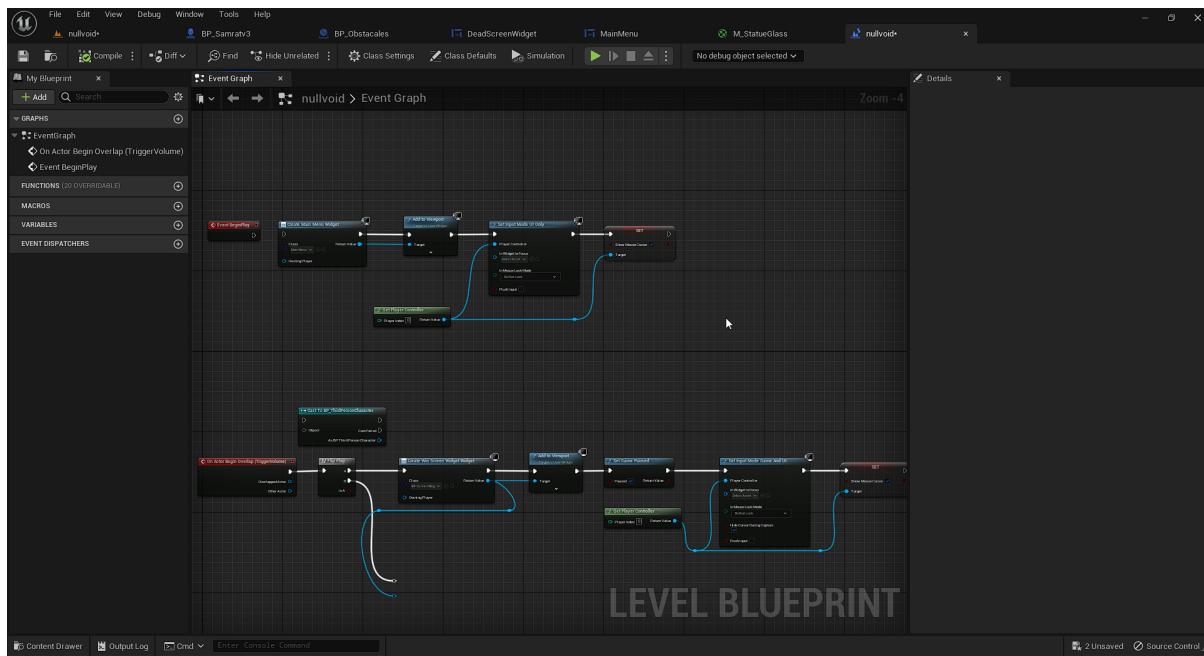


Fig: Level Blueprint

Fig: Static Mesh Component

```

1 // Generated by Unreal Engine
2
3 #ifndef BRUSH_H
4 #define BRUSH_H
5
6 #include "CoreMinimal.h"
7 #include "Object/ObjectMacros.h"
8 #include "Engine/Light.h"
9 #include "DirectionalLight.generated.h"
10
11 class UActor;
12
13 /**
14  * Implements a directional light actor.
15 */
16
17 UCLASS(FromClass=Lights, DirectionalLights, MinimalAPI, meta=(ChildCanTick))
18 class ADirectionalLight
19 : public ALight
20 {
21     GENERATED_UCLASS_BODY()
22
23 #if WITH_EDITORONLY_DATA
24     /**
25      * Editor reference to the arrow component to editor visualization arrow
26      */
27     UPROPERTY()
28     TObjectPtr<UArcComponent> ArrowComponent;
29
30     /**
31      * Editor reference to the light component to allow it to be displayed in the details panel correctly
32      */
33     UPROPERTY(VisibleAnywhere, Category="Light")
34     TObjectPtr<UDirectionalLightComponent> DirectionalLightComponent;
35
36 #endif
37
38     /**
39      * Implements a directional light actor.
40 */
41
42     /**
43      * Implements a directional light actor.
44 */
45
46 #if WITH_EDITORONLY_DATA
47     /**
48      * Returns ArrowComponent subobject
49      */
50     ENGINE_API UArcComponent* GetArrowComponent() const { return ArrowComponent; }
51
52     /**
53      * Returns SkyAtmosphereComponent subobject
54      */
55     ENGINE_API UDirectionalLightComponent* GetComponent() const { return DirectionalLightComponent; }
56
57 #endif
58
59 };
60
61 #endif // BRUSH_H

```

Fig: Trigger Volume

```

1 // Generated by Unreal Engine
2
3 #ifndef DIRECTIONALLIGHT_H
4 #define DIRECTIONALLIGHT_H
5
6 #include "CoreMinimal.h"
7 #include "Object/ObjectMacros.h"
8 #include "Engine/Light.h"
9 #include "DirectionalLight.generated.h"
10
11 class UActor;
12
13 /**
14  * Implements a directional light actor.
15 */
16
17 UCLASS(FromClass=Lights, DirectionalLights, MinimalAPI, meta=(ChildCanTick))
18 class ADirectionalLight
19 : public ALight
20 {
21     GENERATED_UCLASS_BODY()
22
23 #if WITH_EDITORONLY_DATA
24     /**
25      * Editor reference to the arrow component to editor visualization arrow
26      */
27     UPROPERTY()
28     TObjectPtr<UArcComponent> ArrowComponent;
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30     /**
31      * Editor reference to the light component to allow it to be displayed in the details panel correctly
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33     UPROPERTY(VisibleAnywhere, Category="Light")
34     TObjectPtr<UDirectionalLightComponent> DirectionalLightComponent;
35
36 #endif
37
38     /**
39      * Implements a directional light actor.
40 */
41
42     /**
43      * Implements a directional light actor.
44 */
45
46 #if WITH_EDITORONLY_DATA
47     /**
48      * Returns ArrowComponent subobject
49      */
50     ENGINE_API UArcComponent* GetArrowComponent() const { return ArrowComponent; }
51
52     /**
53      * Returns SkyAtmosphereComponent subobject
54      */
55     ENGINE_API UDirectionalLightComponent* GetComponent() const { return DirectionalLightComponent; }
56
57 #endif
58
59 };
60
61 #endif // DIRECTIONALLIGHT_H

```

Fig: Directional Light

Testing: As development progressed, the team continuously tested the game to ensure that it was functioning as intended. This included testing the game's mechanics, graphics, and overall gameplay. The team also ensured that the game was compatible with Windows operating systems.

Deployment: Once the game was fully developed and tested, it was ready for deployment. The team made the game available for download on a variety of platforms, such as Steam, and marketed it to potential players.

Maintenance: The team also provided maintenance for the game, addressing any bugs or issues that were reported by players, and updating the game with new features and improvements.

Documentation: The team also made sure to document the development process, the testing process, the issues that were encountered and the solutions that were implemented.

Result

We did it! The result of this project is a game that is nothing short of mind-blowing. "Null Void" is a third-person platformer game that immerses players in a thrilling adventure through a mysterious and dangerous void. The game features challenging gameplay, stunning graphics, and a compelling storyline.



Fig: Playing Games



Fig:Win Screen

Discussion

Developing "Null Void" was an incredible journey, but we couldn't have done it without the dedication and hard work of our team. The primary objective of this project was to create a game that would be both challenging and enjoyable for players. And let me tell you, we've succeeded. The game features high-quality graphics that are visually stunning, challenging gameplay that will test your skills, and an engaging storyline that will draw you into the game's world and keep you coming back for more.

We faced some challenges during the development of the game, but we didn't let that stop us. One of the challenges was ensuring that the game's mechanics were challenging but not impossible for players. We had to balance the difficulty of the game's levels and obstacles to ensure that players were challenged but not frustrated.

Another challenge was ensuring that the game's graphics were visually stunning while also being optimized for performance.

Overall, this project was a huge success, and we couldn't be more proud of the result. We've used our skills and knowledge of programming, game development, and project management to create a game that is enjoyable and challenging for players of all skill levels. "Null Void" is a game that provides players with an immersive and thrilling experience as they navigate through a mysterious and dangerous void. It's a product of teamwork, dedication, and the use of industry-standard tools and technology. And we can't wait for you all to play it!

Limitations of the Project

- Limited functionality: As the game is designed for players of all skill levels, it may not offer much to advanced players who may find the functionality limited.
- Compatibility: The game is currently only compatible with Windows operating systems and may not be accessible to players using other operating systems.
- Graphic optimization: Due to the limited resources and time, the game's graphics may not be fully optimized for performance on all devices.
- Multiplayer: The game currently does not have a multiplayer mode and may not provide the experience for players who prefer to play with friends or compete with other players.
- Mobile Platforms: The game is not yet adapted for mobile platforms, which may limit the accessibility for players who prefer to play on mobile devices.
- In-game purchases: The game currently does not have an option for in-game purchases, which may limit the players' ability to customize their gameplay experience.
- Leaderboard: The game currently does not have a leaderboard feature, which may limit the players' ability to compete with other players.
- Cloud saving: The game currently does not have an option for cloud saving, which may limit the players' ability to access their progress and settings from any device.

Future Scope of the Project

- Additional Levels: The game could be expanded to include additional levels and challenges, providing players with even more gameplay options.
- Multiplayer: The game could be adapted to include a multiplayer mode, allowing players to compete and collaborate with each other.
- Virtual Reality: The game could be adapted to be played in virtual reality, providing players with an even more immersive experience.
- Mobile Platforms: The game could be adapted to be played on mobile platforms, making it accessible to a wider audience.
- More enemies and Power-ups: The game could include a variety of new enemies and power-ups, keeping the gameplay fresh and engaging.
- Improved Graphics: The graphics of the game could be improved with the latest technology to enhance the gaming experience.
- Social Media Integration: The game could be integrated with social media platforms, allowing players to share their progress and compete with friends.
- In-Game Purchases: The game could have an option for in-game purchases, such as new characters, power-ups, or levels.
- Leaderboard: The game could have a leaderboard feature to show the top players and their scores, to encourage competition among players.
- Cloud saving: The game could have an option for cloud saving, to allow players to access their progress and settings from any device.

Overall, the future scope of the project is to continue to improve and expand upon the game, providing players with even more challenges, gameplay options, and an immersive experience. The addition of new features such as multiplayer, virtual reality, and social media integration will make the game even more accessible and engaging for players.

Conclusion

This project was a valuable learning experience for the team members and has resulted in a game that is challenging, engaging, and visually stunning. The team members are proud of the work they have accomplished and look forward to the future development of "Null Void" and other similar projects. Thanks for joining us on this journey, we can't wait for you all to play the game!