

Final Project Presentation

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12/15/2024

IST 402, Section 5

1. Introduction:

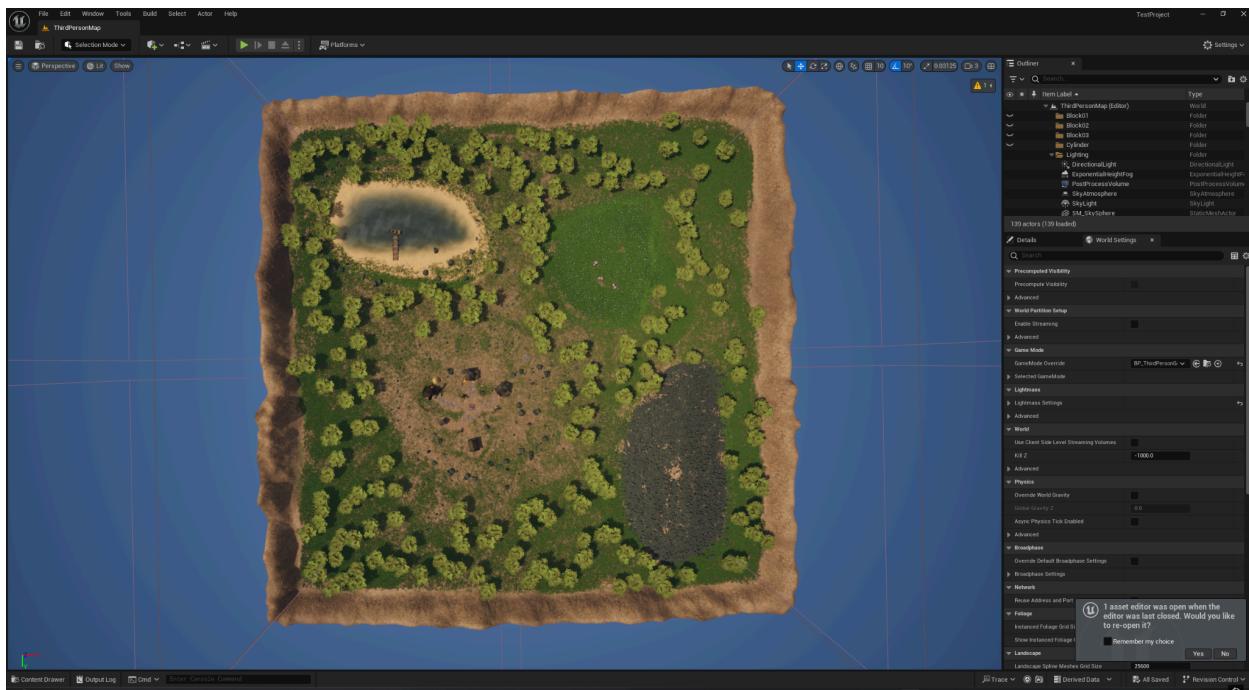
This project aimed to create an interactive 3-dimensional environment for users to explore. The target audience is broad, so controls and navigation were designed to be intuitive and accessible. Instructions at the start of the environment guide users on how to navigate the space effectively. The project's significance lies in showcasing the powerful capabilities of modern technology to create seamless 3-dimensional environments. It also highlights the diverse ways users can interact with these environments, such as through physics simulations, dynamic movements, and animations. I did not work in a team, however, the results of the project have generally been substantial. I was able to accomplish almost everything I wished to add to the environment.

2. Scene Construction:

The virtual scene is structured to ensure simplicity and user readability (1). The environment is a square layout with high walls to prevent users from falling off. It features four points of interest, each with unique interactive elements. The first is the Village, which includes small homes and various objects. Static objects in the village have collisions but cannot be moved, while dynamic objects simulate physics and can be interacted with (2). The second point of interest is the Rock Mound, a tall rock formation with a door at the top (3). The door plays an animation when the user presses E and the mound provides a vantage point to view the entire landscape. The third point of interest is Flower Hill, a colorful area with spinning pistons (4). When users come into contact with the pistons, they are rag-dolled, disabling controls for 5 seconds before respawning. Finally, the fourth point of interest is the Pond, featuring water, a

dock, and a boat (5). While the user sinks in the water due to a lack of buoyancy, the boat reacts to the user's weight and exhibits buoyancy physics.

1. Bird's Eye



2. Village



3. Rock Mound



4. Flower Hill



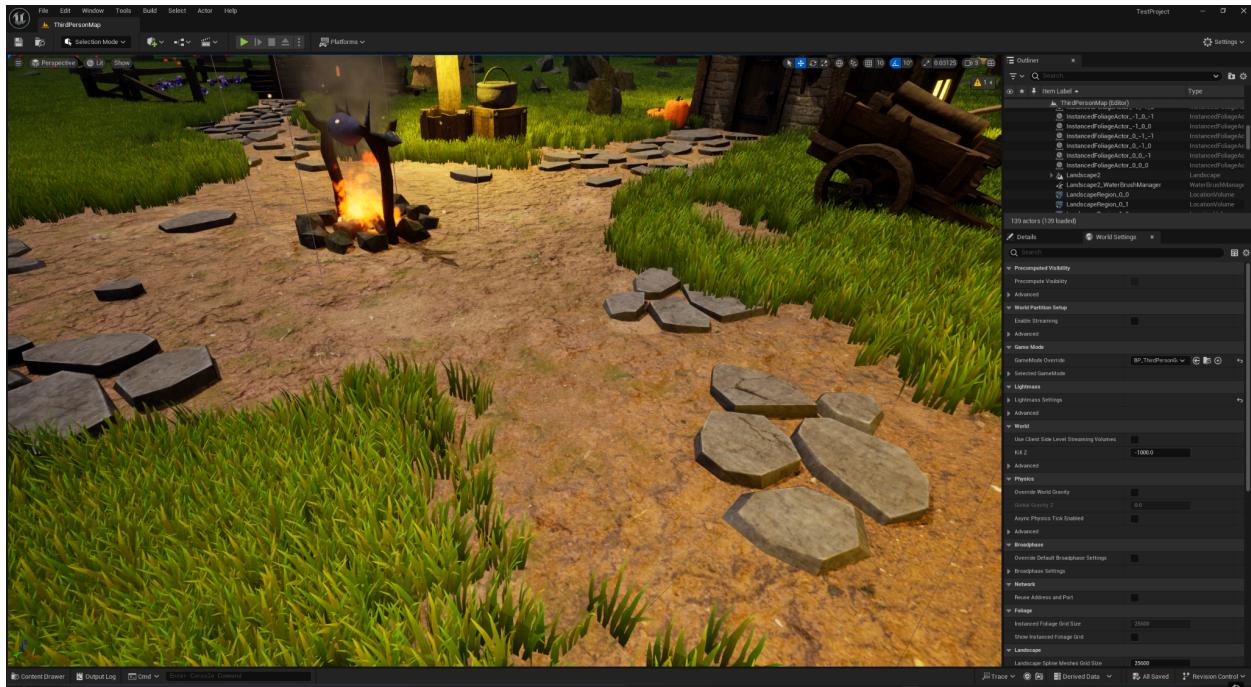
5. Pond



3. Advanced Features:

This project incorporates several advanced features to enhance the environment. Textures were used to add depth, with ground textures providing color to the walking area and sand textures indicating environmental transitions near the pond (1 & 2). Lighting was implemented using Unreal Engine's default SkyLight, strategically angled to ensure visibility, with additional lighting from assets in the Advanced Village Pack (3 & 4). Custom animations were created for the ladder in the village, the door on the rock mound, and the pistons on Flower Hill. Additional effects include pond water ripples, smoke from chimneys, and a campfire flame.

1. Dirt



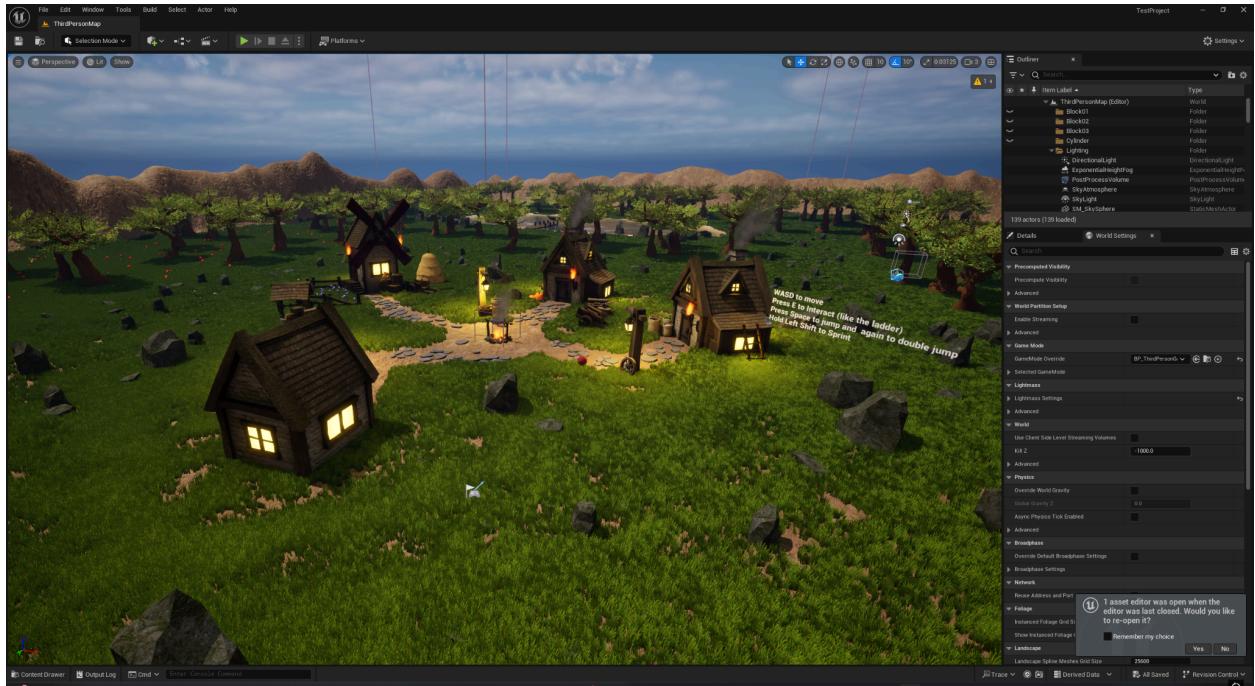
2. Sand



3. Lighting



4. House Lighting



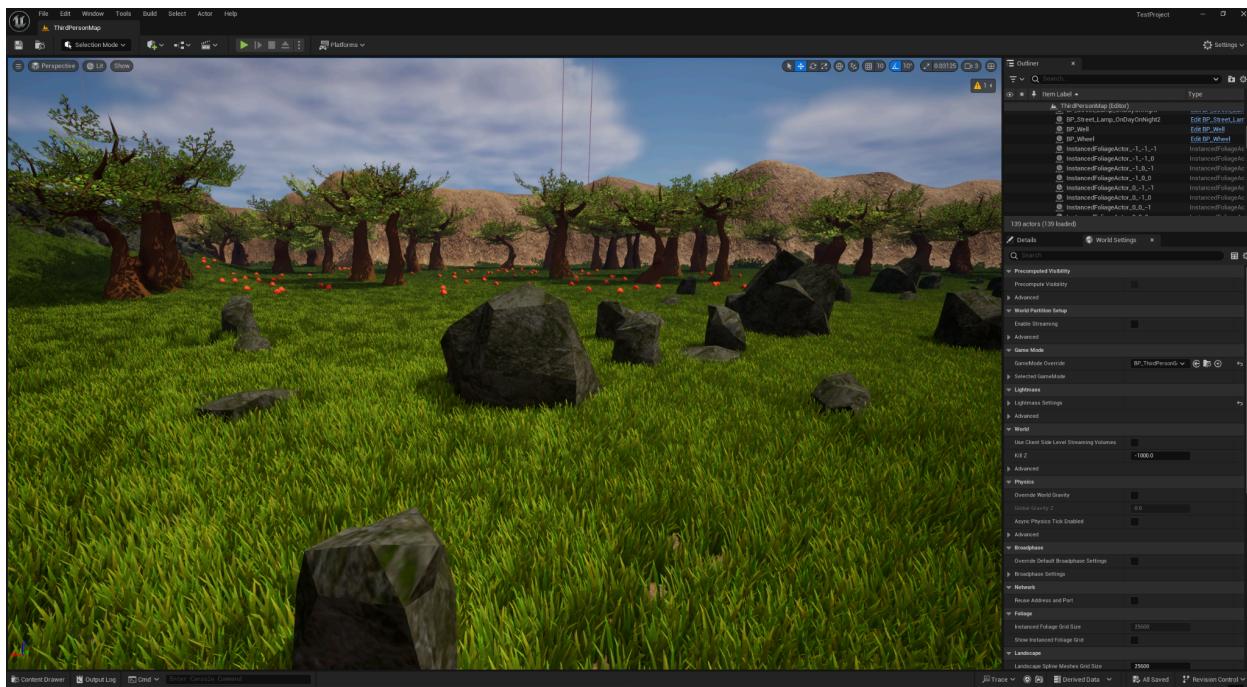
4. User Interactions:

The project provides multiple tools and designs for user interaction. Navigation is facilitated through controls such as WASD keys to move, Shift to sprint, and Space to jump or double jump, enabling users to explore the environment freely (1). For object interaction, users encounter three types of objects: static, dynamic, and animated. Static objects cannot be moved but can be climbed if accessible (2). Dynamic objects react to user actions such as kicking, running into, or jumping on them (3). Animated objects trigger animations when users press E, which can be reset by pressing E again (4).

1. Controls



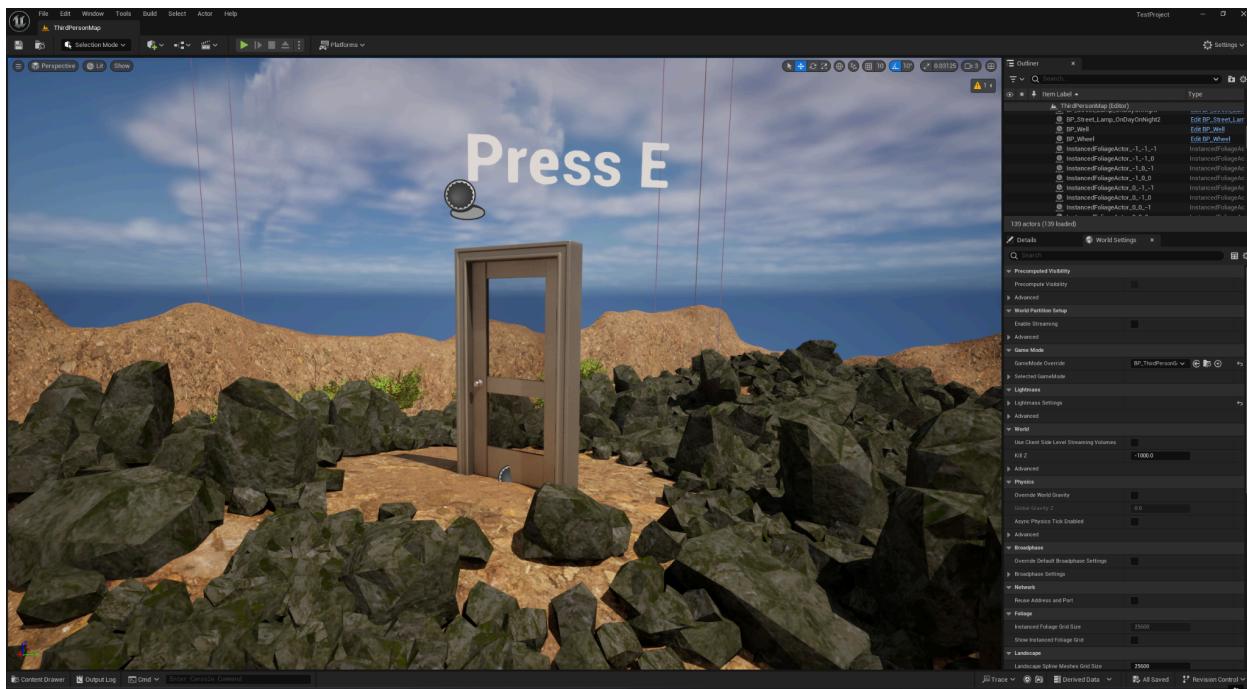
2. Static Object



3. Dynamic Object (Red Ball)



4. Animated Object



6. Tools and Resources:

The tool used for this project is Unreal Engine 5, which is an open-source video game engine made by Epic Games. The engine can accomplish many tasks such as rendering, texturing, animating, coding, and much more. I primarily used tools such as landscaping, foliage, and texturing. I did some animating and also worked often with the physics of the engine, as well as collision. The primary asset for this project was the advanced village pack from Fab, which is an online extension that contains different texture packages as well as blueprints and other creations. This pack includes houses, food, foliage, the boat, and much more. I rendered and textured some objects in the scene such as the ball and spinning pistons.

7. Conclusion:

This project successfully achieved its goal of creating an interactive 3-dimensional environment. Users can navigate and interact with objects in diverse ways, enhancing engagement. However, some goals still needed to be met due to time constraints and technical challenges, such as animations for spinning the fish at the campfire and making the boat rideable. Additionally, a planned inventory system for hidden objects still needs to be developed.

Key lessons learned include understanding Unreal Engine 5's physics system and blueprint functionality, differentiating between simple and complex collisions, and managing project scope to improve time management and efficiency. Working solo, I learned the importance of realistic goal-setting and efficient planning. This project has been a valuable learning experience, providing skills and insights to benefit future projects.

8. URL: <https://github.com/jhdouglas21/IST402-Project>

9. Group Activity Log

Team Member	Responsibility
John Douglas	Environmental Design and Interaction Programming

Date	Activity	Attendance
09/22/2024	Project Idea Discussion and Writing of Proposal	John Douglas
11/1/2024	Scene Construction	John Douglas
11/17/2024	Addition of interactable objects and animations	John Douglas
11/20/2024	Tweaking existing objects and writing Report 3	John Douglas
12/3/2024	Further Implementation of Interactable Objects Optimization of environment for better frame rate	John Douglas
12/15/2024	Writing of Final Project Presentation and Finalization of Project	John Douglas

10. References

<https://www.youtube.com/watch?v=Xw9QEMFIInYU>