CURSE
OF
RESSURECTION

[a Open world 3D RPG game]

ABSTRACT

Curse of Resurrection is a 3D open-world RPG that offers players an immersive narrative-driven experience combined with engaging archery-based combat. The game follows Erika, a former assassin turned archer, as she embarks on a perilous journey through Dering Woods to resurrect her deceased husband, Wayne. Her path is fraught with danger as she must defeat three formidable monsters—Chupacabra, Cerberus, and Windigo—before confronting Shinigami, the Death God, who demands "a soul for a soul."The game features a richly detailed world with varied biomes such as forests, mountains, caves, and ancient ruins. Utilizing an archery combat system, players must strategically engage in battles, making use of stealth, positioning, and precision. Unlike traditional RPGs, Curse of Resurrection does not include a skill tree or upgrade system, maintaining a streamlined and skill-based combat experience, Key features of the game include an AI-driven enemy system, dynamic dialogue interactions, and environmental storytelling that immerses players in its mysterious world. The AI system employs NavMesh Agents, allowing enemies to navigate and react to the player dynamically, while a custom dialogue system enables player choices to influence interactions with characters. The game's visuals and sound design enhance the eerie and haunting atmosphere, incorporating detailed 3D assets, realistic weather effects, and immersive audio cues. Performance optimization techniques, such as LOD (Level of Detail), occlusion culling, and AI efficiency, ensure that the game runs smoothly on mid-range hardware while maintaining high-quality graphics. Curse of Resurrection also incorporates a strong narrative focus, where Erika's moral choices and interactions shape the player's engagement with the world. The game's dialogue system allows players to experience deeper character interactions, providing emotional weight to the journey. With a focus on player-driven storytelling, Curse of Resurrection ensures that choices matter, enhancing the emotional depth of the journey. The game's open-world design, combined with seamless exploration and atmospheric world-building, allows players to experience a dark and mysterious adventure that keeps them engaged until the very end.

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CHAPTER1
INTRODUCTION

Curse of Resurrection is a 3D open-world RPG that blends story-driven exploration, archery-based combat, and immersive world-building. Players take on the role of Erika, a skilled archer and former assassin, who embarks on a dangerous journey through Dering Woods in search of a way to bring back her deceased husband, Wayne. However, this quest is fraught with peril, as Erika must overcome three powerful guardian monsters—Chupacabra, Cerberus, and Windigo—before confronting Shinigami, the Death God, who demands "a soul for a soul."

The game features a richly detailed open world with interconnected environments, including dark forests, treacherous mountains, hidden caves, and ancient ruins. Each area is designed to enhance atmosphere and exploration, encouraging players to engage with the world and uncover its secrets. Unlike many RPGs, Curse of Resurrection does not have a traditional skill tree or upgrade system, instead emphasizing player skill and strategy in combat. The archery-based combat system requires precise aiming and timing, with enemy encounters designed to be challenging and rewarding.

To enhance realism and immersion, the game employs advanced AI mechanics. Each enemy exhibits unique attack patterns, patrol behaviors, and reactionary movements based on Erika's actions. AI-driven pathfinding and state-based behavior models ensure that each battle feels dynamic and unpredictable. Additionally, the interactive dialogue system allows players to influence conversations and shape how NPCs respond, though the overarching story remains focused on Erika's fate.

The game's visual and sound design contribute to its eerie and mysterious tone. High-quality 3D assets, dynamic lighting, and environmental effects such as fog, rain, and snowfall create an immersive atmosphere. The sound design features ambient environmental noises, unique monster sounds, and dynamic background music, which shifts between exploration and combat phases to heighten tension.

Performance optimization is a crucial aspect of Curse of Resurrection. Techniques such as Level of Detail (LOD), occlusion culling, AI efficiency improvements, and texture compression have been implemented to ensure smooth gameplay across different hardware configurations.

Through its engaging narrative, skill-based combat, interactive AI, and atmospheric world design, Curse of Resurrection offers players a compelling and immersive RPG experience. It presents a journey of loss, sacrifice, and determination, challenging players both in combat and moral decisions. The game's emphasis on exploration, strategy, and storytelling makes it a unique addition to the RPG genre.

1.1 PROBLEM STATEMENT

In many RPG games, storytelling and character-driven narratives are often separated from the player's actions. This project aims to integrate a compelling story with engaging gameplay mechanics, focusing on archery-based combat, exploration, and meaningful choices that impact the game's world and characters. Additionally, many RPGs rely on melee or magic combat, but few emphasize archery as a primary form of combat, making this project unique in its design.

Many RPGs offer immersive worlds, but few successfully balance deep storytelling with engaging gameplay. This project seeks to develop a 3D open-world RPG that effectively combines archery-based combat, a strong narrative, and exploration within a detailed, atmospheric world. With limited resources, the game must implement optimized mechanics to ensure smooth performance while maintaining engaging combat and AI-driven interactions. By emphasizing archery as the primary combat mechanic, this project challenges conventional RPG design, requiring the player to strategize their approach to enemies and environments rather than relying on brute-force melee combat.

Furthermore, the narrative structure integrates seamlessly with gameplay, ensuring that player choices and interactions influence the world. Through a carefully crafted dialogue system, meaningful conversations drive the story forward, keeping the player immersed in Erika's emotional journey.

In many RPGs, players engage in immersive storytelling and combat. This project focuses on developing a 3D open-world RPG with archery-based combat and a strong narrative, ensuring engaging gameplay with limited resources.

1.2 OBJECTIVES

- ***Develop an immersive 3D open-world RPG centered around Erika, an archer***: The game will offer an expansive, interactive world where players control Erika in her journey to resurrect Wayne.

- ***Design an engaging combat system using bow-based mechanics:*** Unlike most RPGs that prioritize melee or magic combat, this game emphasizes long-range archery, requiring precision and strategy in battles.

- ***Implement a rich, interactive dialogue system that allows players to influence the story:*** The dialogue system will allow dynamic conversations, providing players with choices that shape interactions with NPCs like the Death God (Shinigami).

- ***Build a dynamic environment with exploration and enemy encounters:*** The open world will include diverse biomes such as forests, caves, ruins, and mountains, each with hidden details and lore.

- ***Provide a well-balanced level progression system that rewards exploration and skill improvement***: Players will be encouraged to explore, discover hidden elements, and engage in combat to progress through the story.

- ***Ensure a smooth and interactive storytelling experience where player choices matter***: Dialogue interactions and exploration decisions will create an emotionally compelling journey, reinforcing Erika's personal stakes in the story.

CHAPTER 2
REQUIREMENT ANALYSIS

Developing a 3D open-world RPG requires a combination of hardware and software resources to ensure smooth gameplay, detailed environments, and optimized AI interactions. The project demands a capable processor, sufficient RAM, and a dedicated GPU to handle rendering and physics simulations. Unity serves as the primary game engine, with C# scripting for logic and AI, and tools like Blender and Photoshop for 3D modeling and texturing. By aligning both hardware and software requirements efficiently, Curse of Resurrection delivers an immersive experience while maintaining smooth performance across different system configurations. By aligning both hardware and software requirements efficiently, *Curse of Resurrection* delivers an immersive experience while maintaining smooth performance across different system configurations. The development of *Curse of Resurrection* required careful analysis of both hardware and software requirements to ensure smooth gameplay and optimal performance.

2.1 HARDWARE REQUIREMENTS

- *Processor*: Intel Core i5/i7 or AMD Ryzen 5/7 (Required for smooth gameplay and development)

- *RAM*: 16GB or higher (To support complex assets, AI, and environments)

- *Graphics Card*: NVIDIA GTX 1660 or higher (For rendering 3D environments and shaders efficiently)

- *Storage*: SSD (Minimum 50GB available) (For fast loading times and asset management

- *Operating System*: Windows 10/11, macOS, or Linux

- *Controller Support*: Keyboard & Mouse, Gamepad Compatibility

2.2 SOFTWARE REQUIREMENTS

The software requirements ensure a smooth development workflow and immersive gameplay experience. Unity 3D is used for building the game world, scripting is handled with C#, and Blender/Maya help create 3D models for characters and environments. GitHub provides version control,

while FMOD/Audacity enhance audio effects, and Unity Physics ensures realistic interactions, such as arrow trajectory and AI movement.

- *Game Engine (Unity 3D):* Unity is used to develop the game, integrating mechanics, environments, UI, and overall gameplay structure. It provides tools for terrain editing, AI, animation, and physics to create a seamless RPG experience.
- *Programming Language (C#):* C# is the primary language for scripting interactions, AI behaviors, combat mechanics, and the dialogue system, ensuring efficient and responsive gameplay.
- *Version Control (Git/GitHub):* GitHub helps in tracking changes, managing code updates, and collaborating on the project while keeping backups of all assets and scripts.
- *3D Modeling Tools (Blender/Maya):* These tools are used to create characters, environments, and props, ensuring detailed and optimized 3D assets for the game world.
- *Sound & Music (Audacity/FMOD)*: Audacity is used for editing sound effects, while FMOD provides advanced audio integration, enhancing immersion with dynamic in-game sounds.
- *Animation Tools (Unity Animator/Mixamo):* Unity Animator manages character movement and transitions, while Mixamo provides pre-made animations for realistic character and enemy behavior.
- *Physics Engine (Unity Physics):* Unity's physics system handles realistic arrow trajectories, collision detection, and enemy AI movement, ensuring fluid combat interactions.

CHAPTER 3
DESCRIPTION OF PROJECT WORK

"Curse of Resurrection" is a 3D open-world RPG set in the eerie Dering Woods, where players control Erika, a skilled archer and former assassin. She embarks on a perilous journey to revive her deceased husband, Wayne, encountering formidable enemies along the way. The game focuses on archery-based combat, exploration, and engaging storytelling, ensuring an immersive experience. Players must defeat three powerful monsters—Chupacabra, Cerberus, and Windigo—to reach Shinigami, the Death God. With a blend of dark fantasy elements, strategic combat, and a rich environment, the game delivers a compelling and emotional adventure."

3.1 GAME CONCEPT

This project is a 3D open-world RPG set in Dering Woods, where players take control of Erika, a skilled archer and former assassin. She embarks on a perilous journey to revive her deceased husband, Wayne, facing three monstrous guardians along the way. Each guardian—Chupacabra, Cerberus, and Windigo—grows progressively stronger, forcing Erika to rely on her archery skills and strategic movement to survive.

The game emphasizes open-world exploration, where players traverse forests, caves, and ruins while encountering environmental challenges and hidden lore. A unique feature of the game is its archery-based combat system, where players must carefully aim and shoot arrows to weaken enemies. Unlike traditional RPGs with melee combat or magic abilities, Erika's skill set is focused purely on archery, making combat more precise and tactical.

Additionally, the game incorporates a rich narrative that unfolds through dialogue interactions and environmental storytelling. As Erika progresses, she meets the Demon Tree, a mysterious entity that directs her toward the Death God's temple. The game's dialogue system allows players to engage with characters, shaping their perception of Erika's journey, although all paths eventually lead to the ultimate choice—"a soul for a soul."

The world design follows a structured progression system, where each mountain represents a higher difficulty level based on the monster's strength. The environment is richly detailed with hidden secrets, skeletal remains, and dark legends, adding depth to the player's experience.

3.2 STORY AND CHARACTER

The story of Curse of Resurrection follows Erika, a once-feared assassin who abandoned her violent past after finding love. Skilled in archery, she now embarks on a perilous journey to resurrect her deceased husband, Wayne, who mysteriously died under unknown circumstances. As she ventures deep into the eerie Dering Woods, she learns that Wayne's death may be tied to the malevolent force of Shinigami, the Death God. Erika is willing to risk everything—even her own life—to bring Wayne back.

Throughout her journey, Erika encounters several key characters who helped fought, and shape her path:

- *Erika*: The game's protagonist, a highly skilled archer and former assassin. She has spent years suppressing her violent past, choosing a peaceful life with Wayne. However, tragedy strikes when Wayne dies, leaving her broken and desperate. Now, she must rely on her archery skills, survival **instincts,** and courage as she battles through deadly creatures and unearths the truth behind Wayne's fate.

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FIG:3.2.1 :Erika

- **Wayne:** Erika's beloved husband, whose sudden and unexplained death sets the story in motion. He is a kind-hearted man who brought light into Erika's dark past. Though he is physically absent from the story, his presence lingers as a driving force behind Erika's relentless quest.

FIG:3.2.2 :Wayne

- **Shinigami (Death God):** The game's final antagonist, a powerful and enigmatic deity who controls the balance of life and death. Erika's ultimate goal is to confront Shinigami, who offers a grim deal: "A soul for a soul." Erika

must decide whether to sacrifice herself to bring Wayne back or accept the reality of loss.

FIG:3.2.3 :Death god

- *Demon Tree:* A mysterious, ancient tree with a haunting presence in Dering Woods. Unlike the monsters that attack Erika, the Demon Tree serves as a guide, whispering cryptic messages that push her toward her final destination. It knows the truth about Shinigami and the price Erika must pay.

FIG:3.2.4 :Demon tree

As Erika progresses through the forest, she must defeat three powerful monsters, each acting as a guardian to the path leading to Shinigami's temple:

- **Chupacabra (First Guardian - Strong):** A terrifying, wolf-like beast lurking in the shadows of the lower mountain. It is fast, agile, and unpredictable, making it a formidable foe for Erika's first major battle.

FIG:3.2.5 :Chupacabra

- **Cerberus (Second Guardian - Stronger):** A three-headed beast guarding the middle mountain. Each head acts independently, making it an even deadlier challenge. Cerberus's brute strength and fiery attacks force Erika to adapt her combat strategy.

FIG:3.2.6 :Cerberus

- ***Windigo (Final Guardian - Strongest):*** The most dangerous of all, Windigo resides on the highest mountain before Erika reaches the Death God's temple. It is tall, skeletal, and horrifying, with deadly speed and intelligence. This monster embodies pure terror, testing Erika's skill and resilience before her final confrontation with Shinigami.

FIG:3.2.7 :Windigo

Throughout the journey, Erika's resolve is constantly tested. Will she be able to overcome the darkness, defeat these creatures, and challenge the Death God himself?

3.3 GAMEPLAY MECHANICS

The core gameplay of Curse of Resurrection revolves around open-world exploration, archery-based combat, and immersive storytelling. The game offers a dark and mysterious world where players must navigate treacherous landscapes, defeat monstrous foes, and uncover the secrets of Dering Woods.

The mechanics are designed to provide a challenging yet immersive experience, with a focus on precise combat, strategic movement, and atmospheric storytelling.

Open-World Exploration

The game features a vast open world with diverse environments that players can freely explore. Each area presents its own unique atmosphere and challenges:

- *Forests:* Dense, eerie woodlands filled with fog, hidden dangers, and scattered remains of past adventurers. These areas serve as both a battleground and a place for uncovering lore.
- *Mountains*: The player must ascend three progressively dangerous mountains, each guarded by a powerful monster. The terrain becomes more treacherous as Erika climbs higher.
- *Caves*: Dark, winding tunnels that may contain hidden paths, skeletal remains, or lurking threats. Some caves provide shortcuts, while others are dangerous dead ends.
- *Ruins*: Abandoned structures that hint at the world's forgotten history. Players may discover messages, relics, or remains that deepen the lore and provide insight into the Death God's domain.

FIG:3.3.1 :Dering woods forest

Exploration plays a key role in uncovering secrets, hidden lore, and environmental storytelling, allowing the player to piece together the fate of past travellers and the truth behind Erika's journey.

Archery-Based Combat System

Unlike traditional RPGs that rely on melee or magic-based combat, Curse of Resurrection focuses entirely on archery mechanics. This creates a unique gameplay experience that requires precision, positioning, and timing.

- *Aiming & Shooting*: The player must manually aim using the left mouse button, which switches the camera to an aiming perspective. The right mouse button fires arrows, requiring calculated shots rather than button-mashing attacks.
- *Projectile Physics:* The game incorporates realistic arrow physics, meaning players must account for distance, movement, and enemy behavior when aiming.
- *Limited Resources*: Arrows are not unlimited, adding a layer of strategy. Players must decide when to engage in combat or conserve arrows for tougher enemies.
- *Enemy Weak Points*: Some enemies have specific weak spots, requiring precise shots for maximum damage. This encourages skill-based combat rather than brute force.

No Skill Tree or Upgrades

To maintain a lightweight RPG experience, Curse of Resurrection does not include a traditional skill tree or upgrade system. Erika remains at the same strength throughout the game, placing the emphasis on player skill and strategy rather than grinding for power-ups.

- The absence of upgrades ensures that combat remains challenging, forcing the player to rely on mastery of archery mechanics rather than artificial stat boosts.
- Players must adapt to increasingly difficult enemies without relying on RPG progression mechanics, making each battle feel meaningful.

- Weapons and abilities do not change, reinforcing the game's core focus on mastering one skill set—archery.

Hidden Skeletons & Environmental Storytelling

The world of Curse of Resurrection is filled with hidden remnants of past travelers—namely, skeletons scattered throughout the environment. These skeletal remains serve both narrative and gameplay purposes:

- ***Lore Discovery***: Each skeleton represents a traveler who attempted to reach Shinigami's temple but failed. Some may have notes, weapons, or armor nearby, offering clues about their fate.
- ***Visual Storytelling***: The positioning of skeletons (e.g., slumped against a tree, arrows piercing their armor) hints at how they died, adding an element of passive storytelling.
- ***Gameplay Navigation***: Some skeletons mark hidden paths or dangerous areas, rewarding players who take the time to explore carefully and observe their surroundings.

By integrating hidden skeletons into the world, the game encourages curiosity and attention to detail, rewarding players who seek out secrets and unravel the past.

3.4. COMBAT SYSTEM

The combat system in Curse of Resurrection is designed to be skill-based, immersive, and reliant on archery mechanics. Unlike traditional RPGs that offer melee or magic-based combat, this game focuses entirely on ranged combat using a bow and arrows. Players must strategically aim, position themselves, and time their shots to defeat enemies.

Enemy Health Bars & Damage System

Each monster in the game has a visible health bar, allowing players to gauge the amount of damage dealt and the remaining enemy health.

- ***Health Bars:*** Displayed above each enemy, the bars decrease with every successful hit from an arrow.

FIG:3.4.1 :Enemy Heath Bar

- *Damage System:* Arrows deal a fixed amount of damage, meaning stronger monsters require more hits to be defeated. There is no random damage variation or critical hit mechanics, ensuring predictability in combat.
- *Difficulty Progression:* The three guardian monsters (Chupacabra, Cerberus, and Windigo) have increasingly higher health pools, requiring more hits and better strategy.

Archery-Based Attack Mechanics

The combat system is entirely dependent on archery mechanics, where precision and timing play crucial roles.

Aiming System:

- When the player holds the left mouse button, the camera shifts into aim mode, zooming in slightly to provide better targeting.
- Crosshair placement is crucial, as enemies move dynamically, requiring players to lead their shots.

FIG:3.4.2 :Aiming

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Shooting Mechanics:

- The right mouse button fires arrows.
- There is no automatic aiming or homing system, meaning every shot must be carefully planned.
- Arrows travel in a realistic projectile arc, so long-range shots require adjustments for gravity and distance.
- No Melee Combat: Unlike most RPGs, there is no swordplay or hand-to-hand combat. Players must rely solely on their bow and arrows to survive.

FIG:3.4.3 :Bow and Arrow

Combat Strategy & Enemy Behavior

Since Erika does not have melee abilities, players must use strategy and positioning to defeat enemies effectively.

Kiting & Positioning:

- Players can move while aiming, allowing them to stay at a distance from enemies.
- Keeping distance is essential, as some monsters charge or lunge at Erika if she gets too close.

Dodging & Movement:

- There is no dedicated dodge-roll mechanic, but players can sprint (Shift + W) and jump (Spacebar) to reposition during fights.
- Enemies have different attack patterns, requiring players to move carefully and pick the right moment to shoot.

Unlimited Arrows & Resource Management:

- Arrows are unlimited, so players don't worry about wasting shots.
- Some areas may have arrow pickups or fallen skeletons with supplies, encouraging exploration.

3.5 ENVIRONMENT AND LEVEL DESIGN

The world of Curse of Resurrection is designed to be expansive and immersive, featuring diverse biomes and landscapes that shape Erika's journey. The open-world environment is structured to encourage exploration while maintaining a balance between guided progression and player freedom.

- ***Dering Woods:*** The starting point of Erika's journey, Dering Woods is a dense and eerie forest filled with thick vegetation, abandoned structures, and remnants of past travelers. The trees seem alive, whispering secrets of the past. It is here that Erika first encounters the Demon Tree, which sets her on her quest toward the Death God's temple. Skeletons and old ruins hint at previous wanderers who failed their journey.
- ***Three Mountains:*** The path to the Death God's temple is guarded by three progressively dangerous mountains, each home to a fearsome guardian monster. These mountains serve as natural barriers and increase the challenge as Erika ascends.
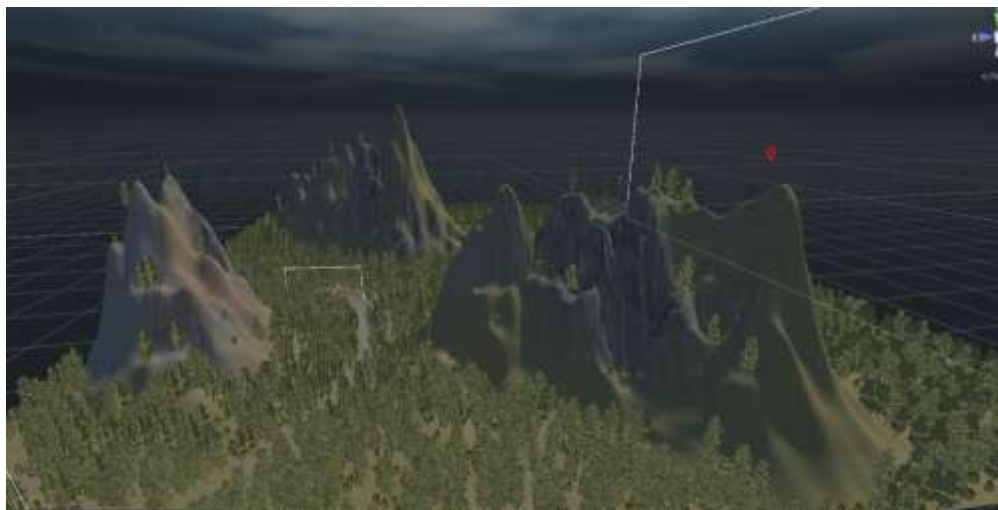

FIG:3.5.1 :Mountains

- ***First Mountain (Chupacabra's Domain):*** A rocky, uneven terrain filled with overgrown vegetation and deep crevices. Chupacabra lurks in the shadows, using the terrain to ambush Erika.

- ***Second Mountain (Cerberus' Keep):*** The environment becomes harsher, with volcanic cracks and molten lava streams running between steep cliffs. Cerberus patrols this area, testing Erika's accuracy and mobility.

- ***Final Mountain (Windigo's Peak):*** An icy, lifeless landscape covered in snow and mist. Windigo, the deadliest of the three, uses the blizzard to disorient Erika, making combat even more intense.

- ***Death God's Temple:*** The final location in Erika's journey. The temple is an ancient ruin, floating on the edge of reality between life and death. It is filled with dark energy and cryptic symbols that foreshadow Erika's inevitable sacrifice. The architecture is grand yet decayed, representing the Death God's indifference to mortal struggles. Inside, Erika faces her final trial—negotiating with Shinigami, the Death God, who demands the ultimate price.

FIG:3.5.2 :Demon god's Temple

- ***Ruins & Caves:*** Throughout the game world, hidden caves and ruins provide additional depth to the environment. Some caves contain echoes of past adventurers, with skeletons clutching old notes detailing their failed attempts.

Ruins scattered across the land tell a silent story of forgotten civilizations, and some may contain minor rewards, such as arrows or ancient texts that give insight into the game's lore,The environment plays a crucial role in the game, with each location presenting different challenges, encouraging exploration, and immersing the player in Erika's dark and emotional journey.

3.6 AI & NAVIGATION

The AI system in Curse of Resurrection is designed to create a challenging and dynamic gameplay experience. Each enemy type uses NavMesh Agents for pathfinding and reacts differently to Erika's movements and attacks, adding depth to the combat system.

Enemy AI Behavior:
- ***Chupacabra:*** Relies on stealth tactics, hiding in shadows and attacking when Erika least expects it.
- ***Cerberus:*** Actively patrols its territory, using its three heads to detect threats from different angles.
- ***Windigo:*** Uses the blizzard as cover, stalking Erika and launching devastating surprise attacks.

Navigation System:
- AI-controlled enemies dynamically track and follow Erika based on sight and sound detection.
- Enemies can chase, retreat, or reposition depending on Erika's actions.
- If Erika hides or breaks the line of sight, some monsters will temporarily lose her trail, encouraging strategic stealth gameplay.

To control enemy behaviors, empty GameObjects were used to define different AI states:
- ***Patrol State:*** The monster roams around its designated area.
- ***Idle State:*** The monster remains stationary, waiting for a disturbance.

- **Chasing State:** When Erika is near, the monster detects her and begins pursuit.
- **Attack State:** When Erika is too close, the monster starts attacking. Each monster has unique attack styles, requiring players to adapt their strategy for each encounter.

FIG:3.6.1 :Enemy AI Behavior

3.7 DIALOGUE SYSTEM

The dialogue system in Curse of Resurrection is implemented using Unity's UI system and C# scripting, allowing for seamless interactions between Erika and NPCs.

- **Trigger-Based Conversations:** Dialogues initiate when Erika enters a trigger zone near an NPC.
- **Dynamic Dialogue Choices:** Players can select different responses, affecting how characters interact with Erika.
- **Branching Conversations:** Some dialogues include multiple options, though the game follows a single main ending.
- **TextMeshPro Integration:** Ensures clear, high-quality text display for dialogues.

FIG:3.7.1 :Dialogue system

To enhance immersion, the dialogue system also includes:
- Cinematic camera shifts during key conversations.
- Subtle facial expressions and animations for NPCs.
- Sound effects for dialogue transitions, making interactions feel natural.

This system makes player interactions meaningful, driving the story forward while keeping gameplay engaging and immersive.

3.8 ASSETS USED & TECHNIQUES

To bring Curse of Resurrection to life, a variety of assets and techniques were employed to enhance the visuals, sound, and gameplay mechanics:
- *3D Models*: Characters, monsters, and environments were designed using Blender and imported into Unity.
- *Textures & Materials*: High-quality textures were applied to enhance realism, using Unity's Standard Shader.
- *Particle Effects:* Used for fire, mist, blizzards, and magical auras to improve the atmosphere.
- *Animation System:* Unity's Animator component was used to create smooth character movements and attack animations.
- *Sound Design:* Audacity and FMOD were used for background music, enemy roars, and environmental sounds.

- *Lighting & Post-Processing:* Unity's Post-Processing Stack was utilized to achieve cinematic visuals with realistic lighting, bloom, and depth of field.
- *Physics Implementation*: Unity's Physics Engine was used for realistic arrow trajectories and enemy hit reactions.

These techniques and assets ensure that Curse of Resurrection delivers an engaging visual and auditory experience, maintaining high performance while offering a detailed and immersive world.

3.9 VISUAL & SOUND DESIGN

The visual and sound design in Curse of Resurrection plays a crucial role in enhancing the game's immersive atmosphere. The world is crafted with detailed 3D assets, dynamic lighting, and carefully chosen textures to create a sense of realism and mystery.

Visual Design:
- The environment features dense forests, dark caves, and eerie ruins, all designed to evoke a haunting yet beautiful setting.
- Weather effects such as fog, rain, and snow enhance immersion and add variety to different locations.
- A semi-realistic art style is used, ensuring that the game maintains a balance between fantasy and realism.
- Post-processing effects like bloom, ambient occlusion, and depth of field create a cinematic experience.

Sound Design:
- Ambient sounds such as rustling leaves, distant animal cries, and the howling wind bring the world to life.
- Character voice effects and monster growls add depth to encounters and make interactions more engaging.
- Each monster has unique sounds for different states, such as when they take damage or die, making combat feel impactful.
- The Demon Tree features deep, eerie voice effects and branch-shaking.

3.10 Game Architecture

The architecture of Curse of Resurrection follows a modular and layered design, promoting maintainability, performance, and scalability. At the core of the system is the Game Manager, which oversees key game states such as loading, saving, scene transitions, and player progression.

The Player Controller module handles all player-related inputs and interactions, including movement (WASD + Shift for sprint, Space for jump), archery mechanics (aim with left mouse button, shoot with right mouse button), and camera switching during aiming. This component communicates with the Combat System, which determines arrow physics, hit detection, damage calculation, and enemy responses. The AI System is built using Unity's NavMesh Agent technology. It manages enemy navigation, patrolling, and attacking behaviors. Each enemy is tagged appropriately and interacts with the player based on distance and line of sight. This system is performance-optimized by activating only nearby AI instances.

The Dialogue System is built using the Dialogue Editor asset. It enables dynamic conversations with different NPCs such as the Demon Tree and Death God, and supports branching dialogues that adapt based on player choices. The Dialogue Manager is triggered through collider detection and manages which conversation starts based on the interacting NPC.

The Environment & Level Design module utilizes Unity's Terrain Editor, combining forests, ruins, and temples to form an open-world layout. Lighting, weather effects, and audio cues are managed under the Visual & Sound System, which uses post-processing, baked lighting, and audio zones for immersive atmosphere control,the UI System integrates TextMeshPro for all in-game text displays including dialogues, instructions, and health bars. It communicates with the Game Manager and Dialogue Manager to update based on game events.

Finally, Optimization & Performance Management involves techniques like Level of Detail (LOD), occlusion culling, texture compression, and script management to ensure smooth gameplay across varied hardware specifications.

This layered architecture supports a clean separation of concerns, ensuring that each subsystem operates independently while contributing to the cohesive functionality of the game.
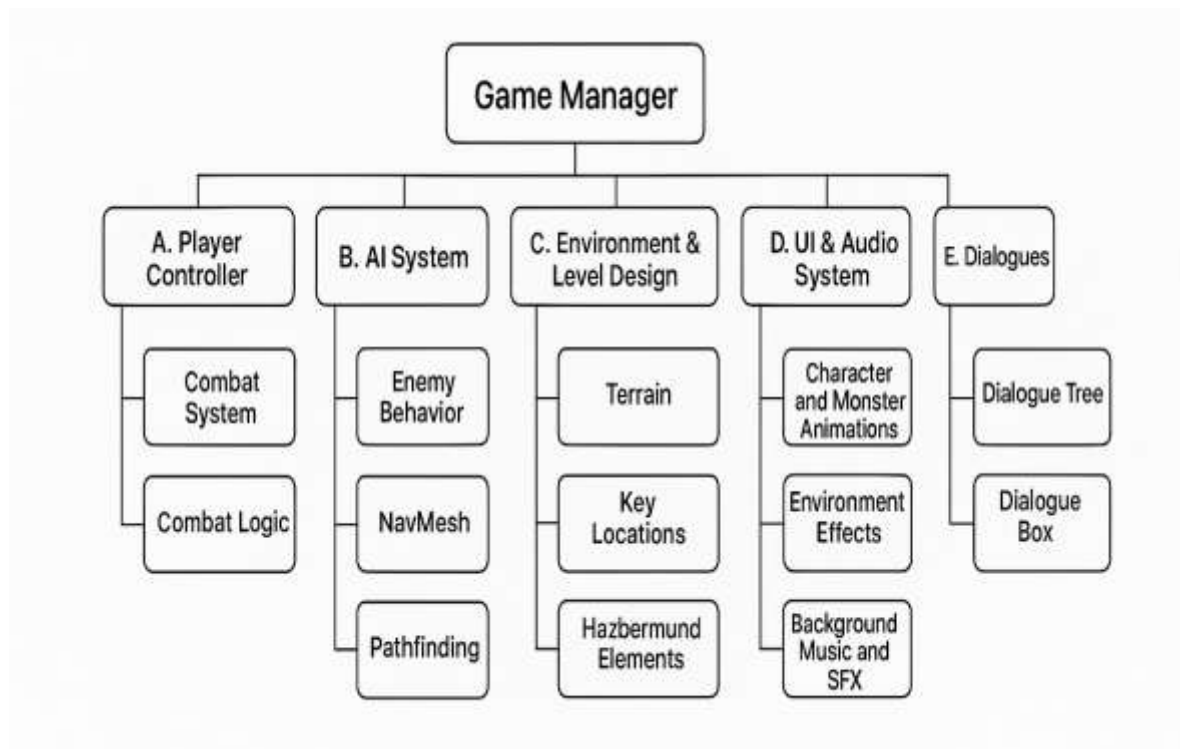

FIG:3.10.1 :Game Manager

The Game Manager Flow Chart visually outlines the architecture of the Curse of Resurrection RPG game. At the core is the Game Manager, which coordinates various subsystems. The Player Controller handles combat mechanics and logic, while the AI System manages enemy behavior using NavMesh, pathfinding, and attack logic. The Environment and Level Design section includes terrain, biomes, key locations, and hidden elements that shape the world. The Visual and Sound System adds immersive animations, effects, and background audio. Lastly, the UI System supports player interaction through elements like health bars, dialogue boxes, and prompts—ensuring smooth and engaging gameplay.

CHAPTER-4
RESULT AND DISCUSSION

The development of Curse of Resurrection successfully implemented the core gameplay mechanics, including open-world exploration, archery-based combat, AI-driven enemy behavior, and an interactive dialogue system. The game's environment, designed with realistic biomes, dynamic lighting, and immersive sound effects, effectively enhances the player's experience. Through rigorous testing, the game maintained a stable performance across various hardware configurations, ensuring smooth gameplay with an average FPS of 50-60 on mid-range systems.

The combat system was refined to balance difficulty and player engagement, with monsters reacting dynamically to Erika's movements. AI behaviors were implemented using NavMesh Agents and state-based decision-making, allowing enemies to patrol, chase, and attack based on player proximity. The dialogue system successfully enabled interactive conversations, adding depth to the narrative. However, an initial challenge in managing multiple NPC dialogues was resolved through optimized event handling.

The discussion of the results indicates that the game mechanics, AI behaviors, and world-building align well with the intended immersive RPG experience. While the project achieved its primary objectives, future improvements could include enhanced enemy attack patterns, additional side quests, and an expanded open world to further enrich gameplay. Overall, Curse of Resurrection demonstrates a well-executed blend of storytelling, combat, and exploration, providing a compelling player experience.

Overall, Curse of Resurrection achieved its primary objectives of delivering a compelling narrative, immersive world-building, and engaging combat mechanics. While the game successfully executes its core design vision, potential future improvements could include expanded questlines, additional enemy types, and enhanced combat mechanics.

4.1 PERFORMANCE ANALYSIS

Performance optimization is crucial for ensuring smooth gameplay in Curse of Resurrection, especially given its open-world design and real-time AI interactions. Several strategies have been implemented to maintain an optimal balance between visual quality and performance. its primary objectives of delivering a compelling narrative, immersive world-building, and engaging combat mechanics The project demonstrates a well-balanced fusion of gameplay, storytelling, and technical execution, making it a solid foundation for further development or future expansions.

Optimization Techniques:

- *Level of Detail (LOD):* Lower-poly models are used for distant objects to reduce rendering costs.
- *Occlusion Culling*: Objects that are not visible to the camera are not rendered, reducing unnecessary processing.
- *Texture Compression*: High-resolution textures are compressed to improve loading times and memory usage.
- *AI Optimization*: Instead of continuously processing AI for all enemies, only nearby monsters are actively running AI scripts.
- *Efficient Lighting System*: The game uses baked lighting where possible, reducing the strain of real-time lighting calculations.

Testing & Performance Metrics:

- FPS (Frames Per Second) benchmarks were conducted in different areas:
  - *Dering Woods*: ~60 FPS (optimized for open-world movement)
  - *Battle Areas*: ~50-55 FPS (intense AI and combat calculations)
  - *Death God's Temple*: ~55-60 FPS (detailed environment but optimized lighting)
- The game runs smoothly on mid-range hardware (e.g., GTX 1050 Ti, 8GB RAM) while delivering higher performance on high-end GPUs

CHAPTER-5

CONCLUSION

The development of Curse of Resurrection has successfully brought together engaging storytelling, immersive gameplay mechanics, and optimized performance to create a compelling RPG experience. By focusing on archery-based combat, open-world exploration, and a strong narrative, the game provides players with a unique and emotionally driven adventure, One of the key strengths of the project is its seamless integration of gameplay and storytelling, ensuring that every player action has a meaningful impact on Erika's journey. The carefully crafted environment, dynamic AI interactions, and rich soundscape enhance immersion, making the world feel alive. The use of post-processing effects, detailed textures, and unique monster behaviors adds depth and variety to the player experience.The game's AI and navigation systems create engaging encounters, encouraging players to think strategically in combat. Additionally, performance optimization techniques such as LOD, occlusion culling, and AI state management ensure that the game runs smoothly across different hardware configurations, making it accessible to a broader audience, Overall, Curse of Resurrection stands as a well-balanced RPG that successfully blends visual storytelling, fluid combat mechanics, and a captivating atmosphere. The project has demonstrated effective use of Unity's tools, scripting, and AI systems to achieve a polished and immersive gaming experience. Future expansions could include additional character interactions, side quests, or multiplayer elements to further enhance the gameplay depth and replayability, Through the use of Unity's game engine, C# scripting, AI navigation, and dialogue systems, the project achieved its goal of delivering an engaging and interactive experience. The foundation laid by Curse of Resurrection demonstrates the capabilities of open-world RPG development and serves as a strong starting point for further innovation The integration of 3D assets, environmental storytelling, and dynamic sound design played a crucial role in shaping the game's atmosphere, ensuring that players feel connected to the world around them With a strong foundation in place, this game serves as both a technical and creative achievement, showcasing the potential of story-driven RPGs with unique combat mechanics.

5.1 FINAL OVERVIEW

The development of Curse of Resurrection has been a challenging yet rewarding journey, bringing together elements of storytelling, exploration, combat mechanics, and AI-driven gameplay into a cohesive open-world RPG experience. The game successfully immerses players in a dark and mysterious world, guiding them through Erika's emotional quest to resurrect her husband while facing formidable enemies and uncovering hidden truths.

Through the use of Unity's game engine, C# scripting, AI navigation, and dialogue systems, the project achieved its goal of delivering an engaging and interactive experience. The integration of 3D assets, environmental storytelling, and dynamic sound design played a crucial role in shaping the game's atmosphere, ensuring that players feel connected to the world around them.

While the project met its primary objectives, it also highlighted areas for potential expansion, paving the way for future improvements. The foundation laid by Curse of Resurrection demonstrates the capabilities of open-world RPG development and serves as a strong starting point for further innovation. With additional content, refined mechanics, and expanded storytelling, the game has the potential to grow into an even more immersive and memorable experience for players.

5.2 FUTURE WORKS

While Curse of Resurrection has successfully implemented its core mechanics and storyline, there are several areas where future improvements and expansions could enhance the gameplay experience. One potential direction is the addition of side quests and optional storylines, allowing players to explore more of Dering Woods and uncover hidden lore. Expanding the dialogue system with branching choices and consequences could also deepen player engagement, making interactions more impactful. By incorporating these features, Curse of Resurrection has the potential to evolve into a more expansive RPG.

Enhancements to the combat system could include new enemy behaviors, varied attack patterns, and advanced AI strategies, making battles more unpredictable and rewarding. Introducing different types of arrows, such as fire or poison-tipped arrows, could give players more tactical options during combat. Moreover, adding character progression elements, such as minor skill upgrades or equipment enhancements, could provide a sense of growth while maintaining the game's core design of skill-based combat.

From a technical standpoint, improving visual fidelity through enhanced lighting effects, improved texture details, and advanced environmental animations would further immerse players in the game world. Multiplayer or co-op modes could also be explored in future iterations, allowing players to embark on the journey together. Additionally, further performance optimizations and compatibility testing across different platforms could expand the game's reach to a broader audience.

From a technical perspective, expanding the game to other platforms, such as consoles and VR, would allow for a broader audience. Future updates could also focus on multiplayer or co-op modes, where players can team up to take on monsters together or engage in PvP battles. Performance optimizations, including further AI efficiency improvements, GPU optimizations, and reduced load times, would help ensure a smooth experience on different hardware configurations. By incorporating these features, Curse of Resurrection has the potential to evolve into a more expansive RPG, offering a richer gameplay experience, deeper storytelling elements, and increased replay value.

Lastly, the addition of procedurally generated content, such as random monster encounters, hidden treasure locations, and dynamic weather systems, could make each playthrough unique. This would increase the game's longevity, encouraging players to revisit the world of Curse of Resurrection and discover new challenges. By implementing these improvements, the game can evolve into a richer and more immersive RPG, offering players a deeper, more interactive, and highly replayable experience.

CHAPTER 6
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