# CODERSNEXTDOOR

**PROGRAM TITLE**

**Advanced Diploma in Information and Communications Technology - PBDE401**

**&**

**Bachelor of Information and Communication Technology - PBDV301**

**Module: Platform Based Development**

**Game Development Project**

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1. **Game Overview**

**Storyline**

The Zombie Survivor FPS Game takes place in a world devastated by a zombie outbreak. You play as a survivor who must navigate through dangerous environments, scavenge for resources, and fight off hordes of zombies. Your goal is to find a haven and uncover the truth behind the outbreak.

**Key Features:**

* First-person shooter (FPS) gameplay with intense zombie combat.
* Open-world exploration in a post-apocalyptic setting.
* Engaging storyline with immersive missions and quests.
* A diverse range of weapons and equipment to aid in your survival.
* Realistic zombie AI and behavior, providing challenging encounters.
* Dynamic day-night cycle and weather effects.
* Character progression and skill development system.
* Single-player and multiplayer game modes.
* Atmospheric sound design and eerie soundtrack.

1. **Gameplay Mechanics**

**Player Character**

* Perform actions such as running, jumping and shoots.

**Weapons and Equipment**

* Access a wide array of weapons, ranging from pistols and shotguns to assault rifles and melee weapons.
* Collect and manage ammunition, medical supplies, and other essential items.
* Upgrade and modify weapons to enhance their performance.
* Utilize traps and explosives to strategically deal with hordes of zombies.

**Zombie AI and Behavior**

* Zombies exhibit realistic behavior, including wandering, attacking, and searching for prey.
* Advanced AI algorithms provide challenging and dynamic encounters.

**Health**

* Manage your character’s health level.
* Use medical supplies to heal injuries and cure infections.

1. **Controls**

The following are the default controls for the Zombie Survivor FPS Game. These can be customized in the game settings.

* **Movement:**
* W, A, S, D: Move forward, left, backward, right.
* Spacebar: Jump.
* Left Shift: Sprint.
* Left Ctrl: Crouch
* **Combat:**
* Left Mouse Button: Fire weapon or perform melee attack.
* Right Mouse Button: Aim down sights.
* R: Reload weapon.
* F: Interact with objects.
* Q: Switch weapons.
* G: Throw grenades or place traps.
* Mouse Scroll: Change weapons.
* **Other:**
* Tab: Open inventory.
* M: Open map.
* Esc: Pause menu.

1. **Games Modes**

**Single Player**

You embark on a solo journey through the post-apocalyptic world in single-player mode. Experience the immersive storyline, complete missions, and face the zombie menace alone.

**Multiplayer**

Engage in cooperative or competitive gameplay with friends or other players online. Team up to survive together or challenge each other in various multiplayer game modes, such as team deathmatch or survival mode.

1. **User Interface**

The user interface (UI) provides important information and tools to aid in your survival. It includes elements such as:

* Health bar.
* Weapon and ammo display.

1. **Mission System**

The game features a mission system that guides your progress through the storyline. Missions may include objectives such as rescuing survivors, gathering supplies, clearing areas of zombies, or investigating specific locations. Completing missions rewards you with experience and progression in the game world.

1. **Game Environment**

**Locations**

Explore a variety of locations, including abandoned mines, town. Each location represents its own challenges, resources, and secrets to discover.

**Interactive Elements**

The game environment is filled with interactive elements that enhance gameplay and provide strategic opportunities. These include:

* Barricades and obstacles to block zombie movement.
* Doors that can be opened or closed.

1. **Sound Design**

The Zombie Survivor FPS Game features an immersive sound design to enhance the gameplay experience. The audio elements include:

* Realistic zombie sounds and growls.
* Ambient sounds, such as creaking doors and howling sounds.
* Weapon sound effects.
* Eerie background music intensifies during intense encounters.

1. **System Requirements**

To enjoy the Zombie Survivor FPS Game, ensure that your computer meets the following minimum system requirements:

* Operating System: Windows 10, macOS, or Linux.
* Processor: Intel Core i5 or equivalent.
* Memory: 8 GB RAM.
* Graphics: NVIDIA GeForce GTX 760 or equivalent.
* DirectX: Version 11.
* Storage: 30 GB available space.
* Internet connection for multiplayer mode.

**Design Engine Choice**

The Zombie Survivor FPS Game is developed using the Unity game engine. Unity offers a comprehensive set of tools and features suitable for creating immersive first-person shooter experiences. Its robust 3D rendering capabilities, physics engine, and multiplatform support make it an ideal choice for this project.

**Design Choices**

**Level Design**

Careful level design plays a crucial role in creating an engaging and immersive gameplay experience. The game will feature meticulously crafted environments, balancing exploration, combat encounters, and mission objectives to maintain player engagement.

**Weapons and Progression**

A diverse range of weapons will be available to players, each with unique characteristics. Balancing their performance and designing a progression system that allows players to unlock and upgrade weapons adds depth to the gameplay, rewarding players for their progress.

**Zombie AI and Behavior**

Implementing realistic and challenging zombie AI is essential for creating intense and suspenseful encounters. Different types of zombies with varied behaviors, strengths, and weaknesses will add depth to the gameplay experience, requiring players to strategize and adapt their tactics.

**Atmosphere and Sound Design**

Creating an immersive atmosphere through lighting, weather effects, and sound design will enhance the horror and tension of the game. The combination of eerie background music, realistic zombie sounds, and environmental effects will contribute to the overall immersion and player engagement.

**Technical Implementation**

**Character Controller**

A responsive and smooth character controller system will be implemented to ensure seamless player movement, aiming, and interaction with the environment. The controller will provide precise control and fluid gameplay mechanics, enhancing the overall player experience.

**AI Behavior**

Sophisticated AI algorithms will be developed to control zombie behavior. This includes pathfinding, group coordination, and attack patterns. Implementing intelligent and reactive AI will create challenging and dynamic encounters for players.

**Physics Environments**

Physics systems will be integrated to handle object interactions and realistic effects when zombies are killed. This will add a sense of realism and immersion to the gameplay experience.

**Multiplayer Networking**

Efficient networking solutions will be implemented to support multiplayer gameplay. Synchronized zombie AI, player interactions, and server management will be key aspects to ensure smooth and enjoyable multiplayer experiences.

**Challenges**

Developing the Zombie Survivor FPS Game presents several challenges that require careful attention and problem-solving:

* **Performance Optimization**: Balancing visual quality and performance, particularly with large open-world environments and hordes of zombies, will require optimizing rendering, AI, and physics systems to ensure smooth gameplay.
* **Balancing Difficulty**: Achieving the right balance of challenge without becoming frustrating or too easy requires fine-tuning enemy AI, player abilities, and resource availability.
* **Bug Testing and Quality Assurance**: Rigorous testing and debugging are essential to identify and fix issues related to gameplay mechanics, AI behavior, network synchronization, and overall stability.
* **Narrative and Mission Design**: Crafting a compelling storyline and engaging missions that maintain player motivation and immersion will require creative and iterative design approaches.
* **Player feedback and Iteration**: Gathering player feedback and iterating on game design based on user experiences will be crucial for refining gameplay mechanics, balancing, and overall player satisfaction.