Design Document

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2D Shooter

Genre and Subgenre Analysis:

The game I am creating falls under the genre of "top-down shooter" and can be further classified as a "roguelike action game." I took a look at “Design and development of top down 2D action-adventure video games with hack & slash and bullet hell elements” by Estradera Benedicto where many elements of top down 2D shooters are discussed. The conventions, characteristics, and tropes of this genre include:

- Top-Down Perspective: The game is presented from a bird's-eye view, allowing players to have a full view of the level and enemies.
- Shooter Mechanics: The core gameplay revolves around shooting enemies using various weapons. The player must aim and shoot accurately to defeat enemies and progress through the levels.you
- Progressive Difficulty: The game features multiple levels that become increasingly challenging as players advance. This difficulty curve is achieved by introducing more enemies, harder enemy types, and potentially altering level layouts.
- Permadeath: When the player dies, they restart the current level. This feature adds a sense of tension and encourages players to be cautious and strategic in their gameplay.
- Random Generation: The levels in the game are procedurally generated, providing a unique experience with each playthrough. This adds replayability and keeps the game fresh and unpredictable.
- Loot and Power-ups: Enemies drop weapons and items when defeated. The player can pick up these items to gain new weapons, ammo, or health-restoring items. This adds a strategic element as players must decide which items to prioritise based on their playstyle and the situation.

Core Systems and Mechanisms from "Enter the Gungeon" and "Nuclear Throne":

- "Enter the Gungeon" and "Nuclear Throne" are influential games in the top-down shooter genre and provide inspiration for my prototype/game. Some core systems and mechanisms from these games include:
- Diverse Weaponry: Both games feature a wide range of unique and creative weapons, each with its own strengths and weaknesses. This variety encourages experimentation and allows players to find weapons that suit their playstyle.
- Boss Battles: The games include challenging boss encounters at the end of each level or as special encounters. These boss fights often require different strategies and offer exciting and intense gameplay moments.
- Character Progression: Players can unlock and play as different characters with unique abilities and playstyles. This adds depth and variety to the gameplay experience, allowing players to find their preferred character and playstyle.
- Environmental Interactions: The levels in these games often have interactive elements such as explosive barrels, traps, or destructible objects. Players can use these elements strategically to gain an advantage or defeat enemies.
- Unlockable Content: Both games offer a progression system where players can unlock new weapons, characters, and other content as they play and achieve certain objectives. This provides long-term goals and rewards players for their achievements.

Hypothesis/Interrogation/Design Goal:

By understanding the genre conventions and studying games like "Enter the Gungeon" and "Nuclear Throne," the design goal is to create a top-down shooter with progressively challenging levels, diverse weapons, and strategic gameplay elements. The aim is to provide an engaging and replayable experience that rewards skill and encourages experimentation with different weapons and tactics. The hypothesis is that by incorporating these elements, the game will appeal to fans of the genre and provide a satisfying and challenging gameplay experience.

Design Notes & Process:

Design Flow:

- Start each level with a pistol and gradually introduce new enemy types and more challenging level layouts:
    - At the beginning of each level, the player starts with a basic pistol as their default weapon. This allows them to engage in combat right from the start.
    - As the player progresses through the levels, new enemy types are introduced gradually. These enemies may have different attack patterns providing increasing challenges to the player.
- Enemies drop their weapons upon defeat, allowing the player to pick them up and use them:
    - When the player successfully defeats enemies, they drop their weapons as loot.
    - The player can then pick up these dropped weapons and switch to them, providing different playstyles and strategies.
    - This system encourages players to engage in combat and defeat enemies to acquire new weapons, adding depth and variety to the gameplay experience.
- Incorporate a variety of weapons with unique characteristics and playstyles, such as pistol, shotgun, and machine gun:
    - The game features a diverse range of weapons, each with its own unique characteristics, strengths, and weaknesses.
    - This variety of weapons allows players to experiment with different play styles and strategies, catering to individual preferences.
    - For example, the pistol may offer accuracy and precision, the shotgun provides wide-spread damage at close range, and the machine gun offers a rapid-fire rate with sustained damage output.
- Include ammo pickups that replenish the player's ammo for all weapons:
    - Throughout the levels, ammo pickups are strategically placed or dropped by enemies.
    - Collecting these pickups replenishes the player's ammunition for all their weapons.
    - This system ensures that players can sustain their firepower and continue using their weapons effectively without running out of ammo, adding a resource management aspect to the gameplay.

- Add bandage items as pickups to restore the player's health:
    - To aid the player's survival during intense encounters or after taking damage, bandage items are placed as pickups in the game world.
    - When collected, these bandages restore the player's health, allowing them to recover and continue playing.
    - The inclusion of bandage items provides a strategic decision-making element, where players must determine the optimal time to use them to sustain their survival in challenging situations.
- Implement screen shake to provide feedback and enhance the visual impact of shooting and getting hit:
    - Screen shake is used as a visual and sensory feedback mechanism to enhance the impact of shooting and getting hit.
    - When the player fires a weapon or gets hit by enemy attacks, the screen shakes momentarily, adding a sense of weight and impact to the actions.
    - This feature not only provides feedback to the player but also adds a visually dynamic and immersive element to the game, heightening the overall experience.

System Structures:

- Player:
    - The Player system handles the movement of the player character, allowing them to navigate the levels and avoid enemy attacks.
    - It manages the shooting mechanics, including aiming, firing projectiles, and calculating damage to enemies.
    - Health management is another important aspect of the Player system. It keeps track of the player's health points, deducting them when the player takes damage from enemies or hazards, and triggers appropriate actions when the player's health reaches critical levels, such as triggering game over or consuming bandage items for healing.
- Enemies:
    - The Enemies system is responsible for implementing different enemy types with their unique behaviours, attack patterns, and health levels.
    - Each enemy type will have specific attack types to create diverse and challenging encounters.
    - The system handles enemy AI, determining how enemies navigate the level, target the player, and utilise their attacks or special abilities.
    - It also manages enemy health, tracking their remaining health points, and triggering appropriate actions upon their defeat, such as dropping weapons or ammo pickups.
- Weapons:
    - The Weapons system focuses on creating weapon classes with distinct characteristics.
    - Each weapon class, such as pistol, shotgun, and machine gun, is defined with its own attributes, including damage, fire rate, and recoil.
    - The system handles the mechanics of firing projectiles specific to each weapon class, such as bullet trajectories, spread patterns for shotguns, or continuous streams of bullets for machine guns.

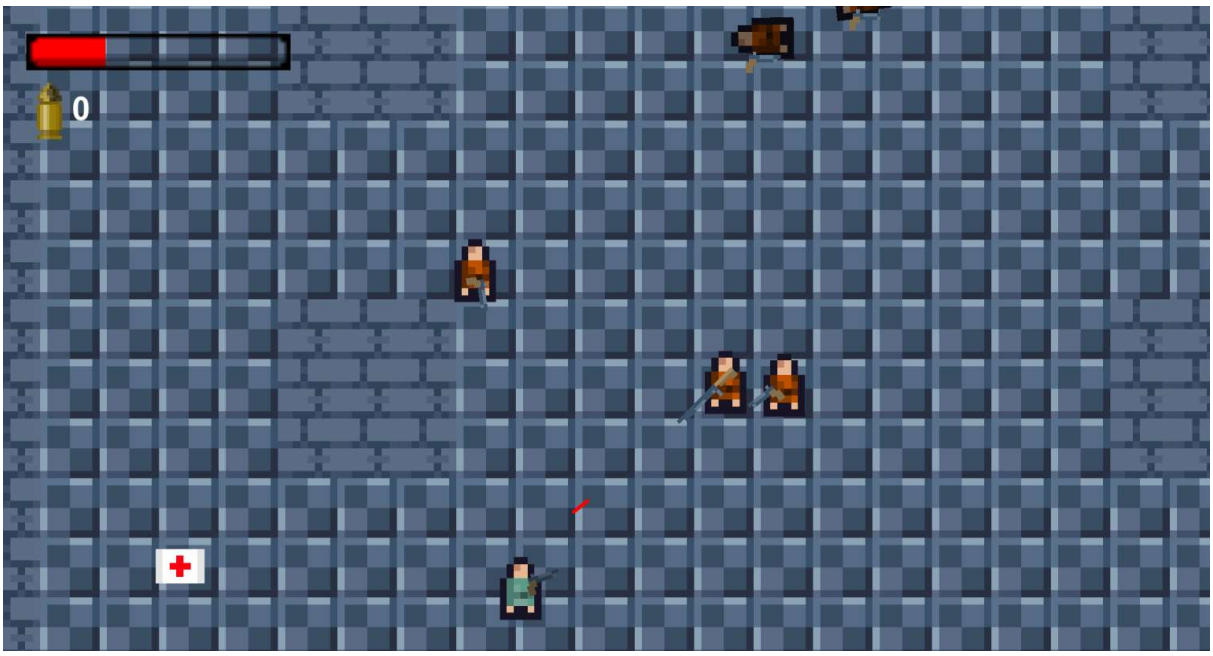
    - It also manages the interaction of projectiles with enemies, calculating damage inflicted and triggering appropriate visual and feedback upon hit detection.
- Pick-ups:
    - The Pick-ups system designs pickups for ammo and health restoration to enhance the player's capabilities.
    - Ammo pickups are created and placed in the game world. The system manages their spawning, placement, and collision detection with the player character.
    - Health restoration pick-ups, such as bandages, are implemented as pickups that the player can collect. The system handles their spawning, placement, and triggers the appropriate actions to restore the player's health upon collection.
    - The system ensures that the pick-ups provide the intended benefits to the player and interact appropriately with the player's inventory and health management systems.

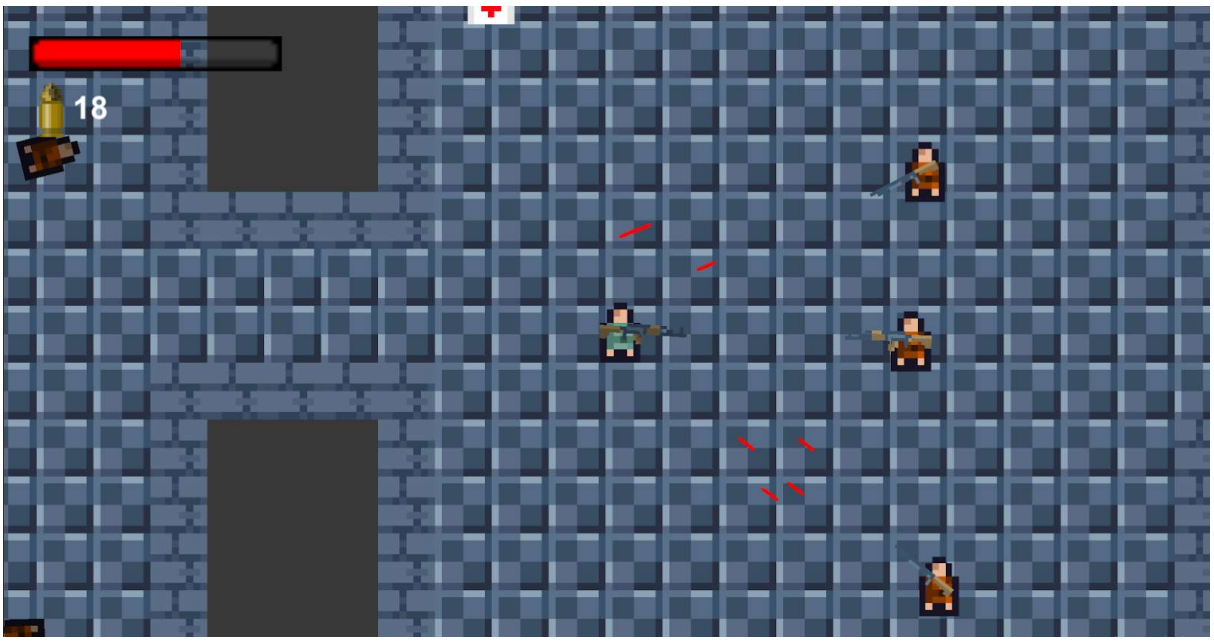
Value Chains:

- Defeating enemies rewards the player with weapons and ammo:
    - When the player successfully defeats enemies, they are rewarded with dropped weapons.
    - The player can pick up these weapons and switch to them, expanding their arsenal and providing different playstyles and strategies.
    - Additionally, enemies also drop ammo upon defeat, which allows the player to replenish their ammunition for all weapons.
    - This value chain encourages players to engage in combat, defeat enemies, and collect weapons and ammo to enhance their effectiveness in subsequent encounters.
- Ammo pickups enable the player to continue using their weapons effectively:
    - Throughout the game levels, ammo pickups are scattered or dropped by enemies.
    - By collecting these pickups, the player can replenish their ammunition for all weapons in their possession.
    - This value chain ensures that players can sustain their firepower and continue utilising their weapons effectively without running out of ammo.
    - It adds a resource management aspect to the gameplay, requiring players to strategically collect ammo pickups to avoid being left defenceless.
- Bandages provide healing to keep the player alive during intense encounters:
    - In challenging situations or after taking damage, the player can find and collect bandage items.
    - These bandages restore the player's health, allowing them to recover and continue playing.
    - The value chain here emphasises the importance of managing the player's health and making strategic decisions about when to use bandages to sustain their survival during intense encounters or when facing powerful enemies.
- Progressing through levels unlocks more challenging enemy types:

- As the player advances through the game levels, they unlock new areas and encounter more challenging enemy types.
- This value chain rewards the player's progression and skill by gradually increasing the difficulty and providing new gameplay challenges.
- The introduction of tougher enemies adds variety and keeps the gameplay engaging, requiring the player to adapt their strategies and utilise their acquired weapons and ammo effectively.

Ideal Screenshots:





Design Process:

The design process involves iterative development and playtesting to refine and balance the gameplay mechanics. Feedback from playtesting is crucial in identifying areas that require improvement, such as enemy behaviour, weapon balancing, or level design. Changes and adjustments are made based on the feedback received, aiming to create a challenging yet enjoyable experience for players. The decision-making process revolves around ensuring that each element, from enemy types to weapons and pick-ups, contributes to the overall gameplay experience and aligns with the design goal of providing a satisfying top-down shooter with progressive difficulty and strategic depth.

I began by planning and organising the design of my game systems using spreadsheets. Then I created a framework for the game and implemented all main mechanics, including setting up the player character, and implementing essential mechanics such as movement, shooting, and health management. This step involved coding the core systems that would drive the gameplay experience and ensure the game was functional.

During the implementation of different weapon types, I encountered difficulties with coding the player's gun rotation and accurate firing mechanics. However, I was able to overcome these challenges and find solutions that allowed the player's gun to rotate correctly and fire accurately. This highlights the iterative nature of the design process and the need to troubleshoot and refine mechanics to ensure they function as intended. Once the main mechanics were in place, I focused on level design. I sourced a tileset from the internet, which provided the visual assets necessary for creating the level layouts. Using the tileset, I constructed the levels, including walls, and other environmental elements to create engaging and varied gameplay spaces.

After creating the level layouts, I proceeded to populate them with enemies and items. Enemies were strategically placed within the levels, considering factors such as difficulty progression, enemy behaviour, and potential challenges for the player. Items, including ammo pickups, and health-restoring bandages, were also positioned in a way that incentivizes exploration and provides opportunities for the player to enhance their capabilities. Once the core gameplay elements were implemented, I began playtesting the game to assess its balance and overall experience. Based on my experience from playtesting, I iterated on various aspects of the game, such as tweaking health and damage values, adjusting the number of enemies in each level, and fine-tuning the difficulty curve. This iterative process allowed me to refine the game's mechanics and ensure a satisfying and balanced gameplay experience.

Reflection

I encountered both challenges and rewarding moments throughout my games development. The initial stages involved planning and organising the design of game systems based on the genre conventions and influences from games like "Enter the Gungeon" and "Nuclear Throne."

One of the significant challenges I faced during implementation was coding the player's gun rotation and accurate firing mechanics. Achieving smooth and precise aiming mechanics required careful consideration of the player's input, as well as determining the correct angles and trajectories for projectiles. It took some time and experimentation to find the right solutions, but ultimately, I overcame these challenges and managed to implement accurate gun rotation and firing mechanics. This experience taught me the importance of perseverance and problem-solving skills in game development. Another aspect of the development process that required careful attention was level design. Constructing engaging and varied gameplay spaces using the sourced tileset was both exciting and challenging. It required thoughtful consideration of enemy placement, environmental elements, and difficulty progression. I had to ensure that each level provided a suitable challenge for

players while maintaining a fair and enjoyable experience. This process allowed me to develop a strong understanding of level design principles and the impact it has on the overall gameplay experience.

Playtesting played a crucial role in refining and balancing the game's mechanics. Feedback from playtesters helped identify areas that required improvement, such as enemy behaviour, weapon balancing, and level design. Incorporating this feedback and iterating on various aspects of the game allowed me to create a more satisfying and balanced gameplay experience. It emphasised the importance of user testing and incorporating player feedback to make informed design decisions. Throughout the development process, I constantly learned and gained new insights. I acquired a deeper understanding of the genre and subgenre analysis, learning how to implement key mechanics such as progressive difficulty and the strategic element of loot and pick-ups. Studying influential games like "Enter the Gungeon" and "Nuclear Throne" provided valuable inspiration and guidance in designing diverse weaponry and character progression.

Managing to achieve my original design goal and hypothesis was a gratifying experience. The game successfully delivered a top-down shooter with progressively challenging levels, diverse weapons, and strategic gameplay elements. The incorporation of roguelike elements, such as permadeath ensured an engaging experience with each playthrough. The feedback I received from playtesters indicated that the game appealed to fans of the genre and provided a satisfying and challenging gameplay experience, validating my design goal and hypothesis.

The process of making this game was filled with challenges, learning opportunities, and rewarding moments. From planning to iterative development and playtesting, I managed to overcome obstacles and refine the game's mechanics. I learned valuable lessons in problem-solving, level design, and incorporating player feedback. Ultimately, the game achieved its design goal and hypothesis, providing an engaging and replayable experience that rewards skill and encourages experimentation. The knowledge and experience gained from this project will undoubtedly contribute to my growth as a game developer and inspire future projects.

Reference List:

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