SA presentation (systems analysis)

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Levels: Introduction

The Level Layout System is a core feature of our game that determines how players navigate through each stage. It includes terrain design, enemy placements, platform arrangements, and interactive elements such as traps, moving platforms, and collectibles.

This system ensures that each level provides a balanced mix of challenge, flow, and exploration

Levels: Priority

The Level Layout System is a top-priority feature in our platformer game. Since platformers are inherently built around movement, jumping, and interaction with the environment, level design directly impacts gameplay quality, difficulty balance, and player retention.

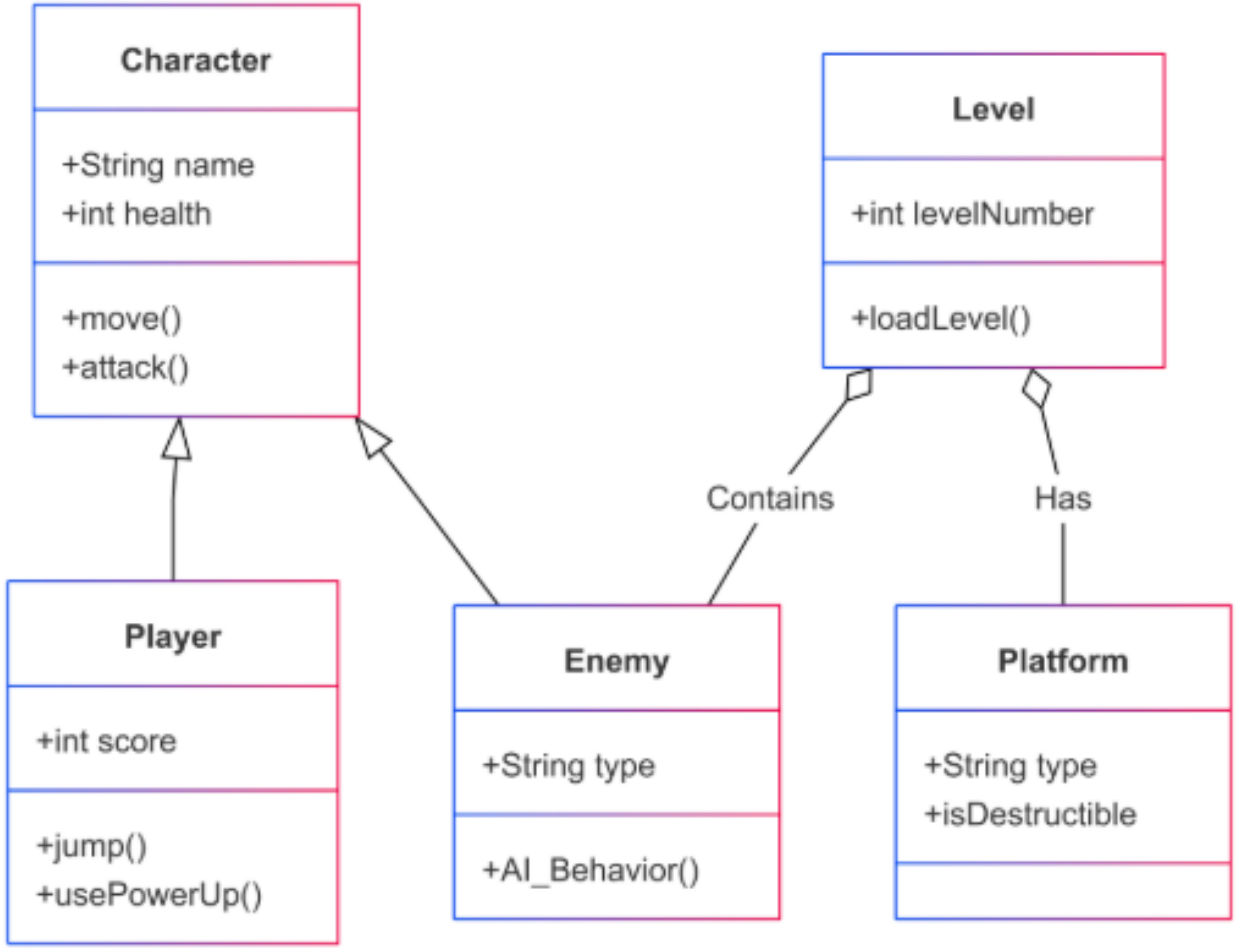
Why It's a High Priority:

1. Core Gameplay Foundation – The level layout dictates how players experience movement, combat, and exploration. Poor level design can break the game.
2. Difficulty Balancing – Ensures smooth progression from beginner-friendly areas to challenging sections without frustration.
3. Player Engagement & Replayability – Well-designed levels encourage players to revisit for speedruns, secrets, or alternative paths.
4. Integration with Other Features – Directly affects enemy placements, power-up distribution, and narrative elements, making it a central system.

Levels: Global use cases

1. Guiding the player
    - Early levels such as the tutorial teach mechanics. While later levels are designed to test the players skills
2. Pacing
    - Well-designed layouts create fast paced sections and slower safe zones
    - Vertical vs. horizontal layouts affect movement speed and flow of the level
3. Obstacles
    - Jumping puzzles, enemy placements, and environmental hazards create obstacles that force the player to adapt their strategy in real time
    - Some layouts should focus on precision, while others emphasize reaction time or strategy.
4. Interactive Environments
    - Moving platforms, destructible terrain, or gravity shifts
    - Environmental storytelling (e.g., ruins, factories, forests) adds depth to the world.

Levels: Class Diagram



Levels: Complexity

1. The Level Layout Design System is a moderate-to-high complexity feature compared to other aspects of the game.
    - Its complexity arises from the need to balance level design, player progression, environmental storytelling, and interaction with other gameplay mechanics.
2. Key Factors Affecting Complexity:
    - Manual vs. Procedural Design – Hand-crafted levels require design iteration, while procedural generation demands complex algorithms.
    - Interactive Elements – Moving platforms, breakable terrain, dynamic physics objects, and environmental hazards increase complexity.
    - Testing & Iteration – Requires extensive playtesting to ensure flow, fairness, and fun.

Levels: Overall

1. The Level Layout Design System is one of the most critical and complex features.
2. Second only to core movement mechanics and AI behavior.
3. While not as technically demanding as AI, it requires extensive work and refinement to create a polished experience.