

Game Design Document (GDD)

Game Overview

Title: Infinity Realms

Genre: Single-player Offline RPG / Action / Bullet-Survivor / Hack and Slash

Engine: LÖVE2D (Lua)

Core Loop: Survive endless waves of enemies in an arena. Collect loot. Upgrade your character infinitely through a procedurally expanding skill tree. Progress through Realms that scale in difficulty.

Main Features:

- Real-time movement and magic combat
- Infinite skill tree with exponential scaling
- Upgrade nodes categorized as Offense, Defense, Support
- Node progression unlocks new nodes (after level 5)
- Bonus logic levels on maxed nodes (level 10 gives +3)
- Soft-cap scaling formula: $\text{value} = \text{base} * (1 - \text{falloff}^{\text{level}})$
- Persistent character development (not roguelike)

Core Systems

Combat System:

- WASD to move, Mouse to shoot magic
- Basic attack: projectiles
- Cooldown reduced by upgrades (CDR)
- Damage increased by upgrades (DMG)

Upgrade System:

- Nodes scale with total level: $\text{base} * (1 - \text{falloff}^{\text{level}})$
- 3 categories: Offense, Defense, Support

- Each node has maxLevel = 10
- At level 5: expands new node from same category
- At level 10: adds +3 virtual levels to effect

Realms:

- Each realm increases enemy stats by +25 percent per level
- Boss appears after 100 kills
- After boss, player may choose to advance
- T and Y to travel realms
- R opens realm list (UI)

Loot and Crafting:

- Gold (50 percent chance)
- Essence Tier 1 (5 percent chance)
- Essence Tier 2 (2 percent chance)
- Craft 5x Essence T1 into 1x T2 with key 'C'

HUD and UI:

- Toggle Inventory: Tab
- Toggle Upgrade Tree: M
- Toggle Realm List: R
- Camera movement in tree: Arrow Keys