# Pixhell

Mid-Term Project Presentation and Report
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# Problem Statement

- Create a bullet-hell esque roguelite where the game feels intelligent.

- Why? Most bullet-hells are focused on swarms and chaos

    - Focus on intelligent enemies with player agency rather than swarms

    - Still maintain "strength through upgrades"

- Enemies work together with one another and are aware of their surroundings

- Each level has unique mechanics and enemy AI

- Unique challenge allows for replayability with variety in characters and upgrades

# Architecture

- Scenes
  - Custom scene for each map + menu
- UI Management
  - Manage scene shifting + menu shifting with buttons + Display different HUDs
- Player Data Storage
  - Load + Save player data with multiple gameplay saves
- Item Registry
  - Store Item functionality with scripts + link to asset art
- Assets
  - Visuals/Animations
- Game logic
  - Damage + stat upgrade + inventory + shop

# Node Web
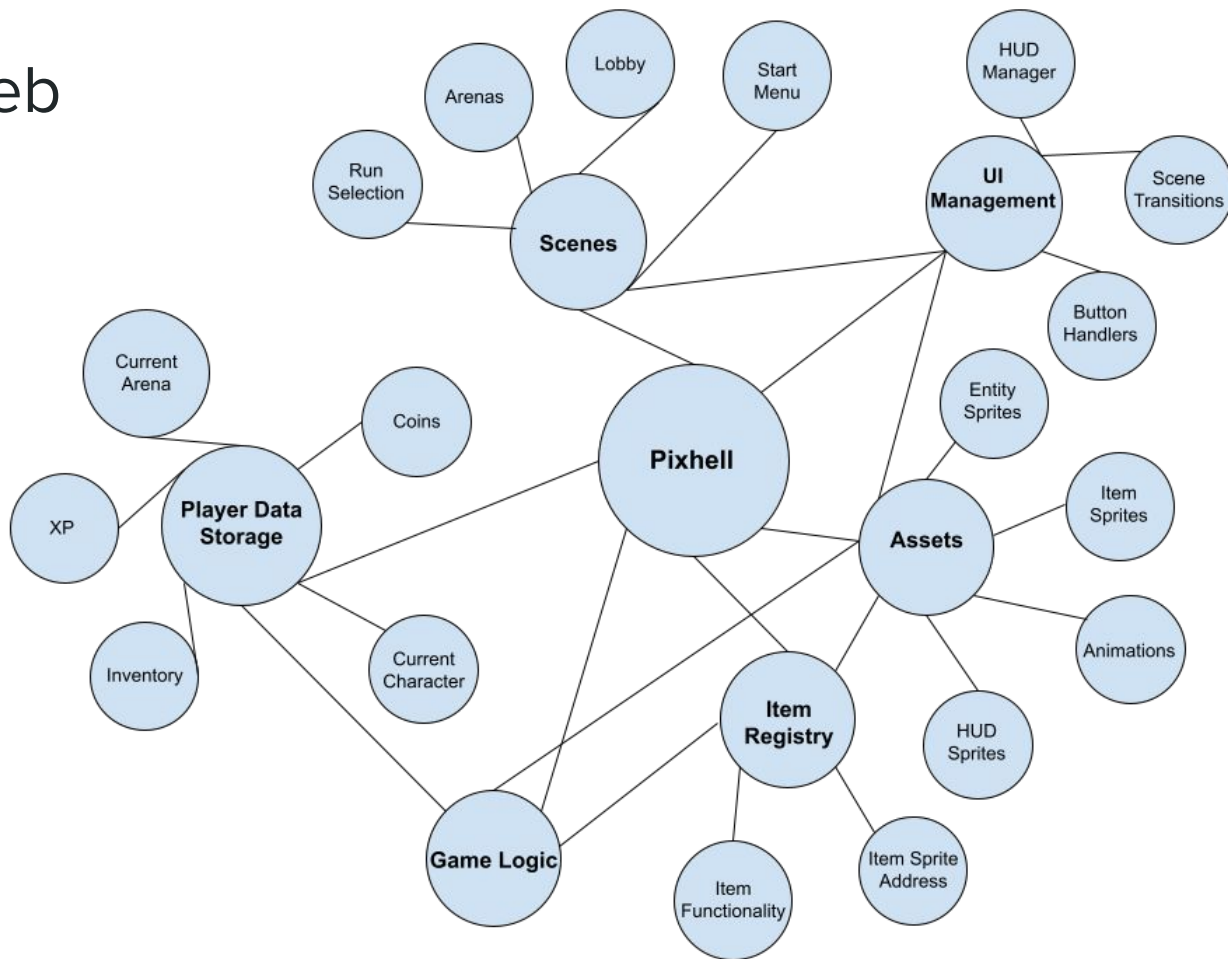
# Design

- What exactly are we trying to 'fix'?
- Dante's Nine Circles of Hell
  - Each circle will have a distinct visual identity, enemy patterns, and environmental hazards
  - Backgrounds (scenes) and foreground elements will be similarly themed
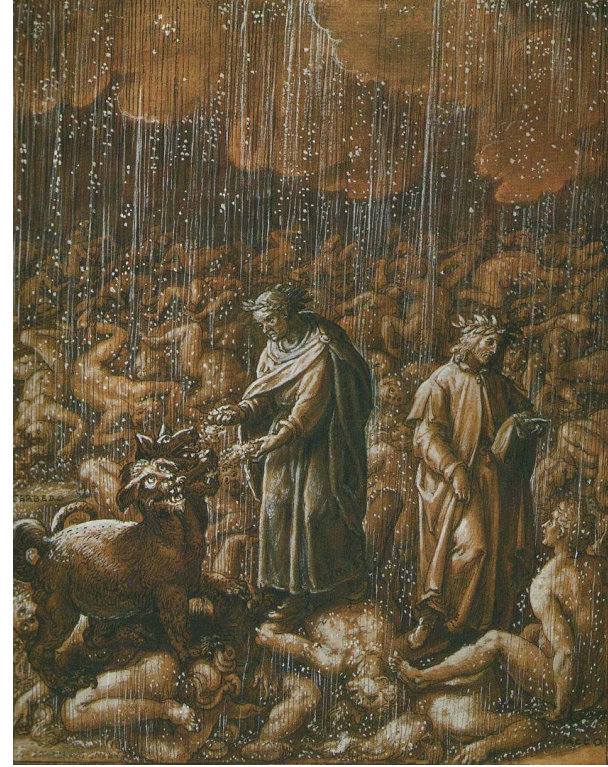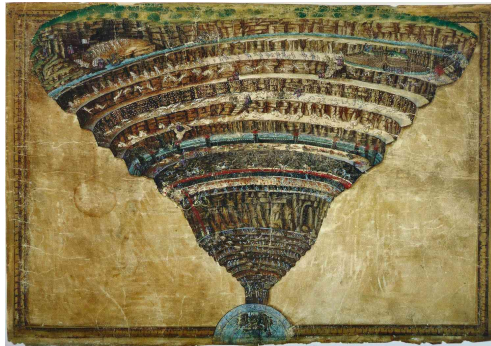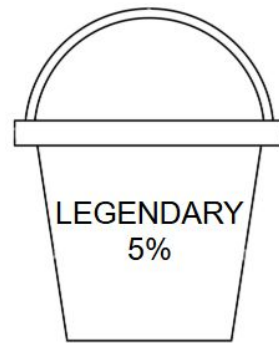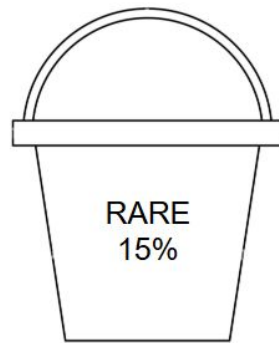
# Algorithms

**Smarter Enemy AI:**

- Considers health, type, player position, and other enemies
- Allows player to strategize
- Makes game more difficult and unique
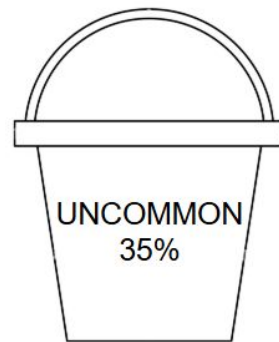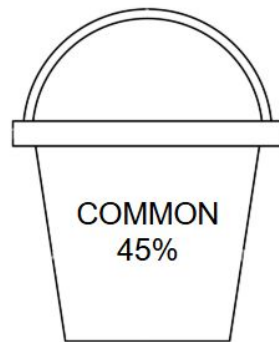
**Upgrade Algorithm:**

- Upgrade drops using a bucket system
- No duplicate of the same upgrade
- This ensures balanced upgrade selection

COMMON
45%

UNCOMMON
35%

RARE
15%

LEGENDARY
5%

# UI

- Health Bar
  - Both on enemies and Playable character
  - Shows how much more damage you can take and how much more you have to deal
- Abilities
  - Shows cooldowns for reuse
  - Shows ability levels
- Currency and level
  - Displays what level you have reached and how close you are to leveling up
  - Shows xp amount and currency amount
- Shops
  - Mid level and after each round
  - Allows for purchasing upgrades for the playable character

# Testing Plan:

- Potential issues:
    - Unintended effects when adding different item/map effects
    - Player effects not properly affecting enemies
    - UI or visual elements not fitting screen properly
- Testing Map with:
    - Enemy entities
    - Player character
    - Custom item pickup
- See how different features interact
- For features outside of gameplay (menu, UI, title screen)
    - Isolate feature
    - Small adjustments to see what works
    - Test in larger group
- Roll out features gradually to avoid large issues
- Test each map with only player character before adding enemy spawns

# Thank you for listening!

The goal of this assignment is to lay out your **project plan**. In other words, describing **exactly** what you will do for your class project. **It is not a proposal.** It is not a general idea of a problem you will work on. It is a write up and presentation of **exactly the problem you will solve**, **how you will solve it**, **how you will test your solutions**, and **what you expect to find**. The perfect project plan is essentially your final report, except instead of *"we did such and such*" it is allowed to say "*we will do such and such*" and instead of "*the evaluation showed that*" it is allowed to say "*the evaluation will show either this or that*". The final report will necessarily change some, as you carry out the work and discover issues and interesting problems you did not anticipate, but the smaller these changes are, the better.

The mid-term project plan (both, write up and presentation) has to include the following:

1. What problem(s) are you solving? This should also include motivation for why this problem is worth solving. This will be a short recap of your project idea presentation.
2. How your solution will solve the problem(s). **This should convince the audience that the solution will actually have a good chance at being successful.** For example**, describe the architecture and design you have decided to use, algorithms you will implement, and UI of the product,** etc. along with the **rationale behind selecting them**.
3. How will you test your solution. In other words, how will you prove, demonstrate, or argue that your solution solved the problem? What dataset will you use? What metrics will you consider?

**There is no max limit on the number of slides, so please make sure you have rehearsed your presentation to fit in 10 min.**