

Project 2 Design Document

Brian Hong, Jared Kungas, Ming Xia, Nick Schlecht

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1 Game Overview

This game is a top-down dungeon crawler very similar to the classic arcade game Gauntlet. The player controls one of four classes each of which has its own attack and special ability. The goal of the player is to fight their way through the dungeon and defeat the final boss. There are a total of 10 levels with a boss appearing at level five and the final boss being at level 10. Each level has various enemies with unique AIs trying to stop the players from reaching the exit. Defeating an enemy gives gold which can be used to purchase power-ups at the shop which appears after every three levels.

1.1 User Interface

The game is playable as a single-player game or as a co-op game with up to 4 players over a network. The game will be tile-based with a top-down view. There will be a scrolling screen, meaning that the player only sees a portion of the world at any given time. Movement will occur only in the ordinal directions and is controlled using the WASD keys. Basic attacks can be used with the space bar and special abilities are used with the left shift key.

1.2 Entities

- Player – One of four classes that the player controls. Each class has its own attack and special ability. They will also have different stats tailored to their play style.
- Enemies – Various entities that try to kill the player. There will be various different attacks and behaviors for different enemies.
- Walls - Barriers that block the movement of the player and enemies.
- Power-ups – Permanent and temporary power-ups will be scattered around levels to help players. Power-ups can also be found in the shop, where they can be purchased by players with the in-game currency.
- Projectiles – Certain classes and enemies will use projectiles to attack. When an entity (either the player or an enemy) is struck by an opposing entity's projectile, the projectile will be destroyed and the struck entity will take damage.

1.3 Interactions

The possible interactions in our game can be split up into four different categories:

1. Movement collisions – These deal with entities sharing the same position. In our game, multiple entities cannot occupy the same space, so any movement that would violate this rule is not allowed.
2. Item pickups – When the player collides with an item, such as a power-up, they will pick it up. The item is destroyed and the player's state is updated based on which item was collected.
3. Damage-dealing interactions – These occur when one entity damages another. Damage can be dealt either through melee or ranged attacks, and can only be dealt to opposing entities. There will be no "friendly fire" damage.
4. Shop transactions – Before each boss, players will have the opportunity to purchase power-ups from a shop. For these interactions, the player loses gold but gains a power-up in exchange.

1.4 What Makes this Interesting

This idea is interesting because it takes the premise of the game *Gauntlet* and expands upon it. The player is given a change of pace from typical dungeon crawlers by adding boss levels with their own special mechanics. Different classes each with their own ability gives the player some choice over how they want to play the game. We think that the combination of interesting boss mechanics, different playing styles, and the addition of various power-ups will make the game fun to play.

2 Development Strategy

We will be starting from scratch using Slick2D. Development for our game will work in a few steps. The initial development phase where we create the core platform will be a collaborative effort of all four members. This is so that everyone has an understanding of how the game works prior to beginning development on other tasks. After that, we will use an issue tracker to assign tasks to members. Every week, we will meet to identify and assign development tasks. These meetings will also allow members to give status updates and potentially brainstorm solutions to issues they've faced. Communication will primarily occur on Discord.

Below is a table with general categories for tasks each member will perform, but this might change during development.

Team Member	Tasks
Nick	Art / Sound / Level Design
Ming	Art / Networking / Art / Enemy AI / Level Design
Jared	Art / Networking / Enemy AI / Level Design
Brian	Collision Detection / Level Design

2.1 Milestones

We have decided on two milestones prior to the project showcase on December 8th:

- **November 15** – We will have one player class on a flat debug map that the player can move around on with WASD. For this milestone, everyone will be contributing equally to the creation of the base of the game. If people are waiting on a certain task to be completed, additional tasks that can be completed concurrently, such as creating art assets, will be assigned to them.
- **November 28** – For this milestone, we will have three levels, at least two power-ups, and one boss completed. After the previous milestone, development should be able to split into the second part of the strategy. Tasks will be assigned to people loosely based on the table above.

3 High Bar

1. Mouse controls - The player's attacks will move in the direction of the cursor. Since movement is only in the ordinal directions, attacks will be made in the nearest ordinal direction.
2. Additional levels - Extra levels that will be more complex than the original levels.
3. Additional classes - More classes each with their own unique attacks and special abilities.
4. Additional power-ups - More power-ups that can be more complex to implement such as a power-up that changes the attack or skill of a class.
5. Currency sharing - Allow players to give gold to each other at the shop to add a cooperative element.
6. Critical hits - An extra stat which gives the player a chance to deal increased damage.
7. Level Editor - An interface which lets the player create their own levels.

4 Draft Complexity Rubric

The points listed below represent what we expect to receive if we accomplish our Low Bar Checklist. High-bar items might add additional points to some of these items.

- Scrolling World (20) – The game will have a scrolling world.
- Realtime Game (15) – The game will operate in real time.
- Multiplayer (10) – The game is playable with 1-4 players.
- Multiprocess (50) – The game will be split into client and server processes.
- Power-ups (10) – There will be basic power-ups that change the players' and enemies' states, such as invincibility and freezing enemies.
- Art (10) – The game will have basic art assets with animations for player and enemy actions. However, none of us have much experience with game art, so we only expect 10 points here.
- Rich Behavior (10) – Different types of enemies will behave and react to the game state in different ways. We believe that the variety of enemy behavior will be enough to earn 10 points for rich behavior.

These add up to a total of 125 points.

5 Low Bar Checklist

1. Four classes – There will be four classes, each with their own unique attack and skill. Although the names are subject to change, the class archetypes will be as follows:
 - a. Wizard (short range)
 - b. Warrior (melee)
 - c. Sniper (long range)
 - d. Shaman (healer)
2. Ten levels – The game will have ten levels. As the player progresses, the enemies will get harder and the floor layout will become more complex.
3. Various power-ups – There will be permanent and temporary power ups. Permanent power ups will increase the stats (attack, health or movement speed) of the player while temporary power ups will be stronger, but time limited power ups such as invincibility or freezing enemies.
4. Entity detection – enemies will start following and attacking players when they get close enough.
5. Boss levels – A boss will appear after every five levels. Bosses will have their own unique attack patterns.
6. Networked multiplayer – the game will be playable with 1-4 players over a network.
7. Collision detection – When entities collide,
8. Scoring system (tracked on a per-player basis).
9. In-game currency – enemies will drop gold when killed, which the player can use to buy power-ups at the shop before each boss fight.