

CIS*4820 Project Proposal – *Cursebound - Revised*

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Revisions From A3

Overall, there were generally very minor changes from the original A3 submission. These changes include the following:

- Downsize of game level layout – the original design as submitted in A3 would have taken far too long to play through for the purpose of a mini game. This map still maintains 3 boss rooms and this decision was made for balancing. Even with these changes getting to the final room would still take a couple attempts likely.



- Each room now only spawns a single enemy type – This was another balancing decision because fighting against ranged and melee enemies in the same room made the game far too difficult.
- Final boss is now just 2 of the mini boss with a massive difficulty spike – In my original A3 I wasn't sure how complex the final boss would actually be with project scale considerations. My original plan from A3 was to just have a mini boss with increased difficulty. To increase the difficulty further, there is now 2.
- Added dynamically blended animations for the player character – One of the biggest time sinks, the result is well worth it. The attack animation from Mixamo were standing only and since the player had to attack while moving I had to create an animation mask on the model's bones for just the upper body, then set the Attack animation to play through that mask. For the movement animations I wasn't a fan of how abrupt the transitions were so I am now using a blend tree for those.

- Added health bars for enemies – This was originally a stretch goal, and I am pleased I was able to implement it in a way that looks fantastic. When the enemy takes damage there is actually an animation that plays as the health reduces to prevent abrupt changes in %.
- Added floating damage numbers – Since everything in the game is based on multipliers and stat increases, in testing I found it really difficult to track how much damage was actually being dealt. After picking up the +0.2x damage up, did it make a difference? With the damage numbers there is now a satisfying way to see the roguelike progress being made. These numbers are also animated.
- Multiple spell types – For the ranged enemy rather than using the same spell the player uses I created a spell scriptable object which means if I wanted to keep expanding this project there is no limit to the spells I can create. Both spells currently in the game have different statistics, models, and animations.
- A game of stats – This was originally apart of the A3 concept for the game, having everything based around stats, modifiers, and multipliers. I was worried; however, this would be difficult component to implement. I am proud to say that this was implemented and is better than I could have imagined. Rooms that spawn enemies have a modifiable difficulty multiplier accessible from the GameObject inspector, by changing this value it scales the overall health and damage of all enemies that spawn in the room. All player stats are based on stat increases and multipliers as well, permanent increases available from the on-player death shop, and temporary massive stat ups available by beating the optional bosses. These temporary stat ups are removed on player death.

Enjoy the game!

Game Idea

My vision for this game is a roguelike, third-person, dungeon game with magic combat. The player, a powerful wizard, has been cursed to forever battle in the dungeons beneath the Emperor's keep. The only hope for the wizard is to survive long enough to confront his captor, but it seems death always comes, nevertheless. Their curse prevents their escape, even death offers no release. Some of the enemies the wizard slays on their journey seem to drop imbued metal and upon the wizard's death, this material fuses with their spirit. Once enough has been fused, it can offer the wizard powerful permanent upgrades improving their chances of survival for future attempts. On their journey, they may encounter strong beings that once killed release their magical ability offering the player a significant boost to a random stat for the remainder of their current attempt.

Gameplay loop overview

Each room where enemies will spawn will have a spawn point object. Once an attempt is started, a script will iterate over all objects with the spawn point tag and call each object's enemy spawning script. This script will have a public variable to represent a difficulty modifier. This modifier will act as a multiplier for enemies spawned, health of those enemies, and damage output. The enemies will be spawned based on the location of the spawn point object, then they will patrol the room so when the player reaches it they will be in random positions. Implementing enemy spawning in this manner means the difficulty will scale with progress, encouraging the rogue-like progression.

The player will spawn in a dedicated starting room.

As a stretch goal, this room would allow to player to equip which two spells they wish to take for the next attempt. My hope is to have a variety of spells available to the player, which are unlocked as random drops from defeating the Fallen enemy type. The player will start with a general damage spell, but my hope is to at least implement an AoE and healing spell.

Once the player leaves this starting room, the attempt has begun. As the player ventures through the dungeon, each room will contain a random enemy type, and no two attempts will be exactly the same. The number of enemies in each room, and enemy type will be random. As these enemies are killed, they will drop imbued metal, which serves as a level up mechanic. Until the player dies in this attempt, the metal has no effect. Since this metal is not really a powerup and has no effect until the player can purchase upgrades after death, the metal will be automatically added to the player's balance.

Eventually, the player will encounter a room with a boss enemy type, these enemies will be much stronger, and have multiple attacks. If the player manages to defeat them, they will drop a powerup which will massively increase a random stat for the remained of the run. This will hopefully promote the player to have a sense of risk vs reward. Naturally, these enemies could very well end an attempt early, but vanquishing them could net significant progress. The rooms the Fallen spawn in will be pre-set, and will be optional, unlike progress through the standard rooms. The power ups these enemies drop will have to be interacted with by the player to activate. These enemies will also drop increased quantities of upgrade material.

Each standard room will have one of two enemy types. The Cursed, which are standard melee enemies. The Clergy, standard ranged enemies. Depending on how this plays, it might make sense to include mixes of the two enemies to vary it further.

Once the player eventually dies, a UI window will appear allowing them to spend the earned imbued metal for permanent stat increases. Once they exit this window the player will respawn at the starting location, ready for another attempt.

After repeat attempts collecting imbued metal, they should have enough of a stat increase to reach the final room, which will contain the Emperor. The current plan is to have this final boss have the same behaviours as the bosses, but stronger with a different character model and animation pack.

There will be a UI element for health and mana, both of these will recover over time, which can be upgraded with imbued metal. If it is not beyond what's achievable for this project, I would also like to implement health bars for the enemies.

Goals

Musts

- Magic Combat, projectile based collision detection
- Enemy spawn points with a difficulty modifier
- Random enemy type in each room
- Boss enemy drops stat powerup
- All enemies drop the upgrade material (XP)

- On player death, UI window appears allowing the player to spend earned points permanently increasing stats
- Mana system that limits how frequent spells can be cast
- Implementing the multiplier based stat system
- Melee enemy
- Ranged enemy
- Boss enemy with at least two attacks
- Health UI element
- Mana UI element

Stretch

- AoE enemy
- Tank enemy
- Lore
- Multiple spell types
- Ability to choose two spells from a list before the run starts
- Inventory system with item improvements
- Multiple types of Boss enemy
- Enemy health bars

Game Level Layout

Unlabeled rooms will contain some random standard enemy. Depending on how well this map plays, it may be changed later in development.

and if multiple spell types can be implemented in the time frame, the right mouse button will trigger a different spell.

Abilities

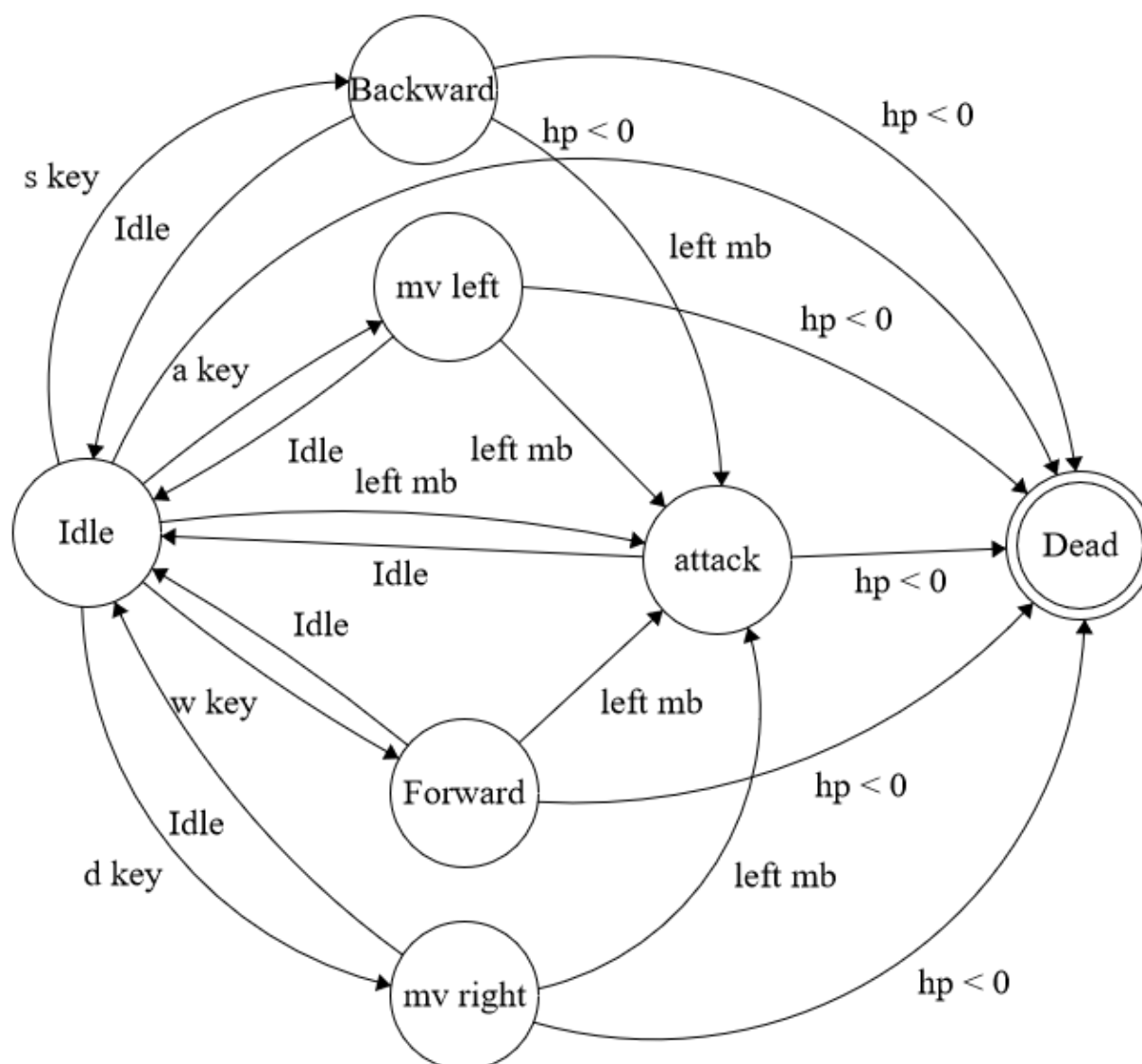
Attack - This ability will spawn a circular projectile object. This will be based upon the projectile examples from lecture 7a.

Upgrade – Upon player death, they will be presented with a UI menu allowing them to spend imbued metal for permanent upgrades to stats.

Player Stats

- Total Health
- Health recovery speed
- Total Mana
- Mana recovery speed
- Upgrade material drop quantity multiplier
- Damage output multiplier

Animation state machine



With the hopes of implementing an orbit cam, there will likely needed to be animations for moving left and right if that's not the direction the player is facing.

Death resets the cycle and for the purpose of the state machine is the final state. All animation states except for dead will return to idle after no input and animation has completed. These animations have already been found on mixamo.com – a free library of motion captured animations and characters for game engines. Other asset for this game I hope to find on itch.io, and the dungeon asset pack has already been found.

The players character model will use Mixamo's magic locomotion pack and magic spell pack.

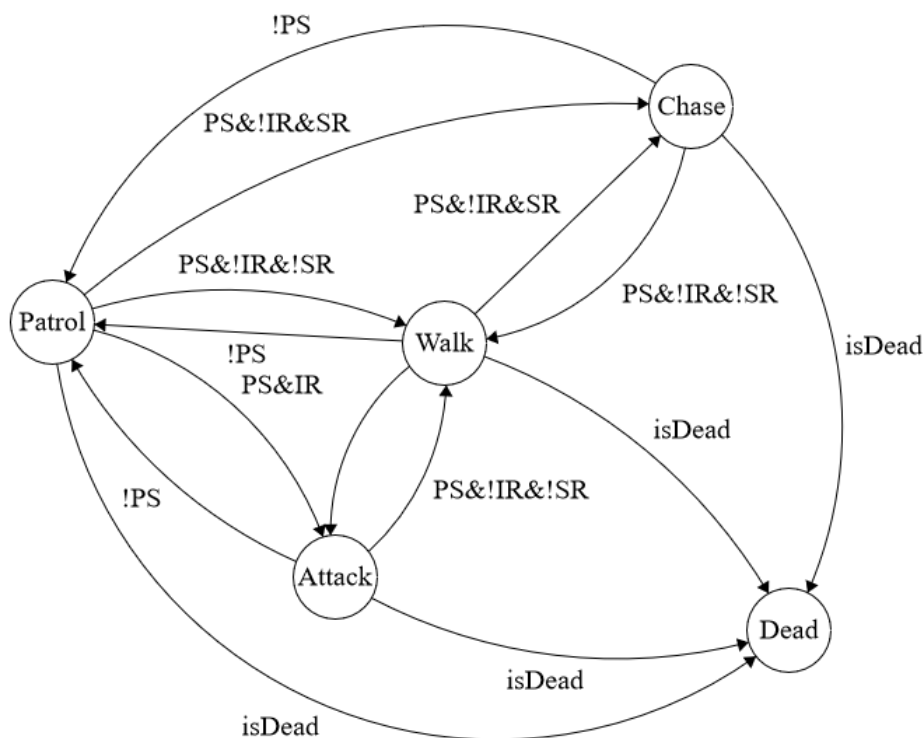
Enemies

The Cursed (Standard melee enemy)

- Medium health
- Medium damage melee attack
- Very similar overall behaviour to A2 AI

Once spawned into a room, this enemy will patrol to randomize their positioning before the player reaches them. This enemy will run at the player once the player is within the fov range, and once in attack range, will slow to a walk before trying to melee attack the player. If the player tries to run away, these enemies will chase after them and will continue to do so until they die. On death, this enemy will drop some quantity of imbued metal, this quantity can be modified by the multipliers in player stats.

Behavior FSM



Reductions to save space

PS = PlayerSeen

IR = InRange

SR = ShouldRun

Animations

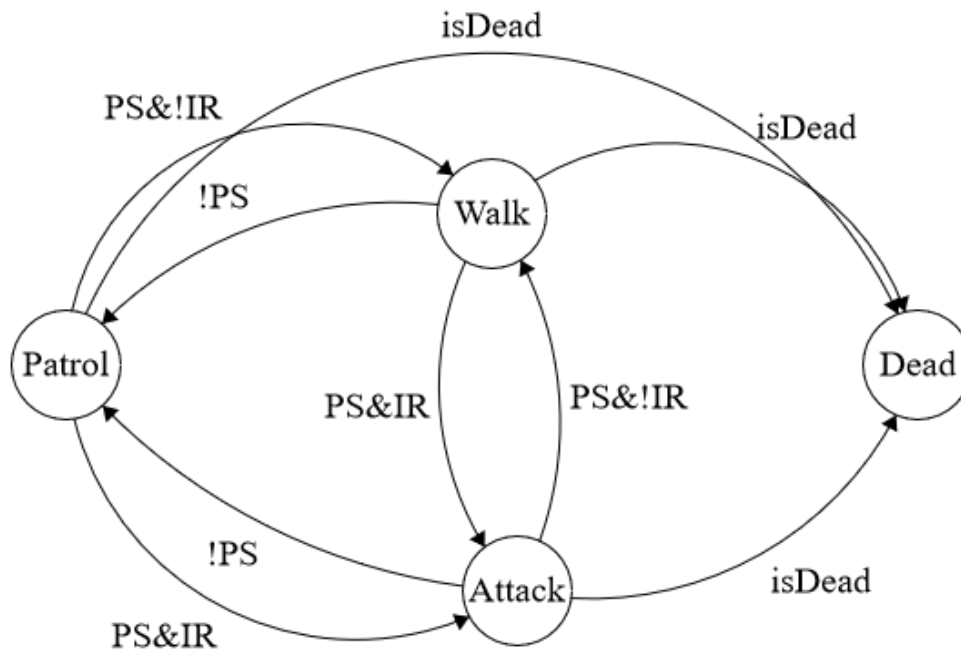
All animations will be from Mixamo's animation packs. Patrol and Walk will be a simple walk animation. Chase will be a run animation. Attack will be the melee attack animation in the creature NPC animation pack.

The Clergy (Standard range enemy)

- Low health
- Stays at range from player
- Medium damage projectiles

Once spawned into a room this enemy will patrol to randomize their positioning before the player reaches them. This enemy will only walk until they are within attack range of the player. These enemies will do their best to maintain this distance from the player. Once they are at distance they will throw projectiles at the player. On death, this enemy will drop some quantity of imbued metal, this quantity can be modified by the multipliers in player stats.

Behaviour FSM



Reductions to save space

PS = PlayerSeen – Player is within FOV range

IR = InRange – Player is located within the attack band. Ie, player is 5-10m away.

Animations

All animations for this enemy will be from Mixamo and the magic spell and locomotion packs. These packs offer a wide variety of animations for any of their characters. Patrol and Walk will be a simple walking animation; Attack will be the 1h magic attack animation. This pack includes a death animation as well.

The Fallen (Boss Enemies)

- High Health
- High Damage
- Spawn only in set rooms, only one spawn

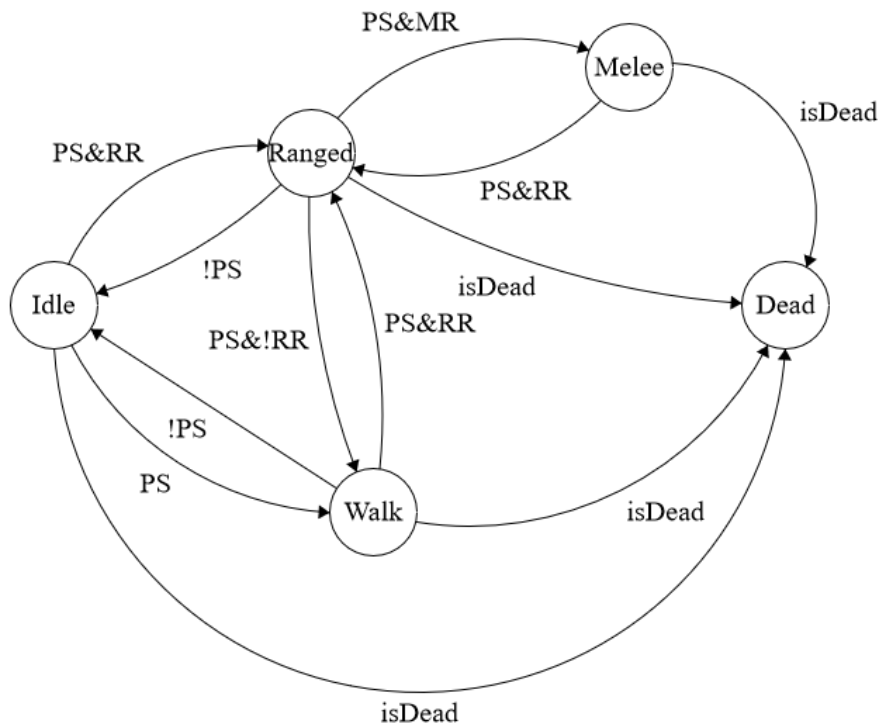
These enemies will function as a hybrid between the ranged enemies and melee enemies. Once the player is within the boss's fov range, the boss will attempt to attack the player at range with projectiles. These projectiles will move faster and hit harder than the standard ranged enemies. Once the player moves within the boss's melee range, the boss will try and strike the player with a powerful melee blow.

There will be 3 of these bosses located in the dungeon in pre-set rooms. Each boss will be more challenging than the previous.

If the boss is killed, their death animation will play and a new game object will spawn, and when the player character collides with it, they will be granted an attempt limited powerup. The effects of this power up increase a single player stat by a significant amount.

Once the player is within the attack range, it will not stop attacking the player. Based on how far away the player is it will either use ranged or melee but there is no buffer between these ranges. This should amp up the intensity of the fight, otherwise it would leave too big of an opening where the player could stay in the buffer zone and not get attacked.

Behaviour FSM



Reductions to save space

PS = PlayerSeen – Player is within FOV range

RR = RangedRange – Player is within the attacking radius but too far for melee attack

MR = MeleeRange – Player is within the attacking radius and is close enough for melee attack

Note – If the player is seen and goes outside of the attacking radius, they will walk towards the player to get within the attacking range.

Animations

I intend to use mixamo's 'creature animation pack' This pack includes 19 animations that can be applied to any of the characters mixamo offers. This includes a basic walking, death, and melee attack. If there is time, I hope to include additional animations like taunt, but this is not required for the game to function. For the ranged attack I intend to use the 1h magic attack animation from mixamo.

Other Game Entities

Triggers

On player death – Open upgrade UI to allow purchasing of stat upgrades then player respawn

Health & Mana Bar

Enemy Health Bar (Stretch Goal)

On attempt start – Spawn enemies

Depending on how visibility to player ends up working in a dungeon setting, I may have to create a trigger for when the player enters a room. This trigger would be equivalent to PlayerSeen but restricts the vision until the player actually enters the room.

Power-ups

The bosses will have a drop table and select one of these powerups at random to apply to the player once the powerup game object has been interacted with. An asset pack has been found on itch.io which should provide different game objects for each powerup.

Max Health Up – Increase max health reserves

Health Regen Up – Improve health recovery time

Max Mana Up – Increase max mana reserves

Mana Regen Up – Improve mana recovery time

Damage Output Up – Significant damage increase

Imbued Metal Drop Multiplier – Great powerup for long term gains. Offers the player a significant upgrade to quantity of upgrade materials earned through fighting common enemies