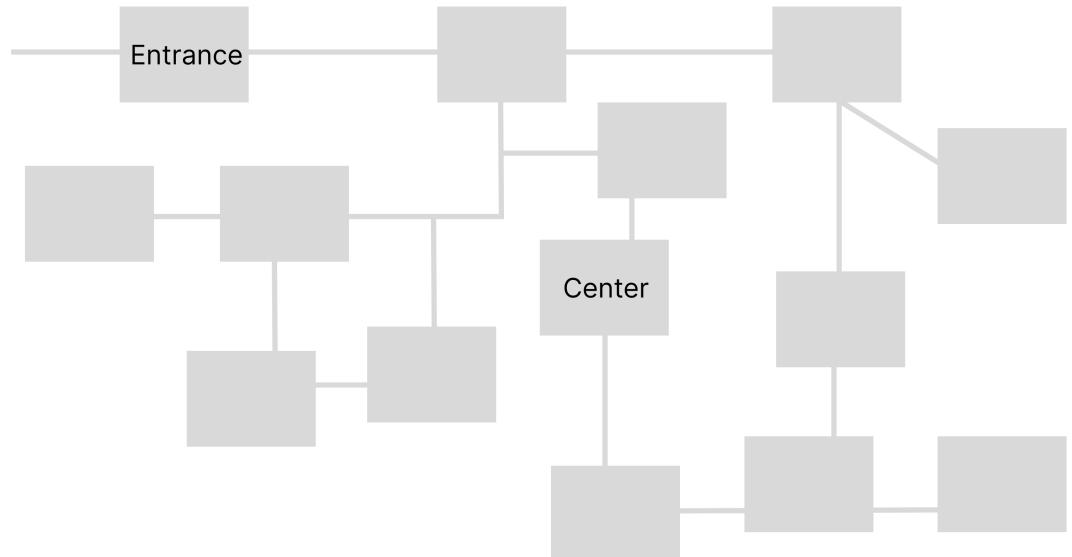


Core Concept

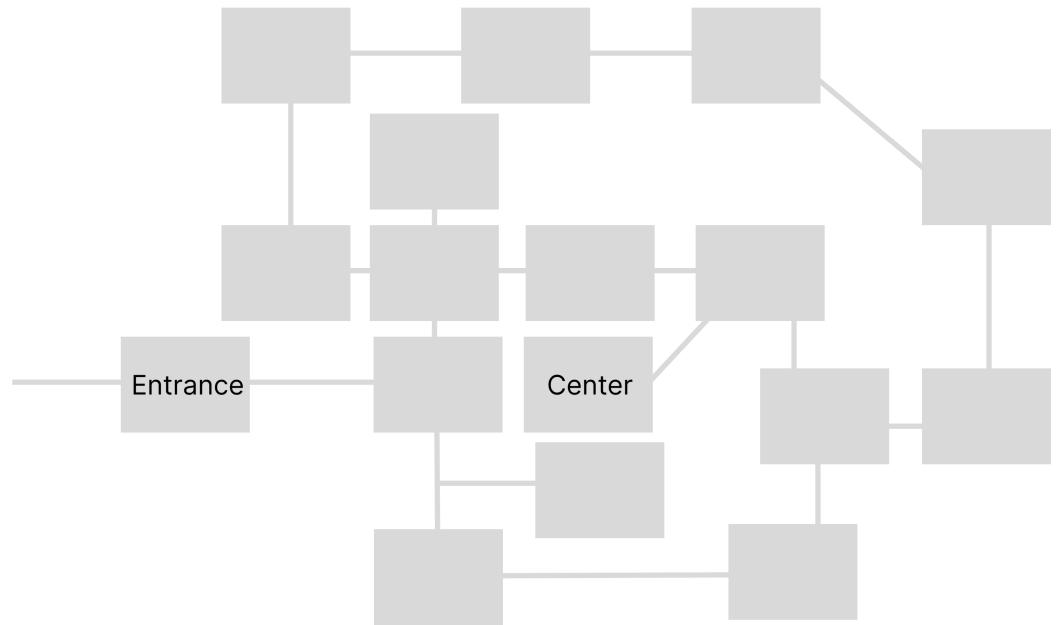
We are making a roguelike, with a procedurally generated world. The game will involve the player navigating a maze with the goal of reaching the centre of the maze and defeating the final boss in the centre. The game is based on Ancient Greek Mythology. Specifically, the story of Daedalus' Labyrinth and Theseus' journey into the Labyrinth to defeat the Minotaur at the centre of it. The player will play as Theseus with the main objective of traversing the maze and defeating the Minotaur, located in the central room of the maze.

Game world

The maze (game world) will be procedurally generated to allow for increased replayability as each playthrough will have a different layout of corridors and rooms and a differing number of possible solutions to any single maze.



(Fig 1: Maze example)



(Fig 2: 2nd maze example)

Figures 1 and 2 show how the procedurally generated game world could differ in different runs with a different number of solution paths.

Rooms

When generating rooms for the maze, the layout and room types will be randomized, except for the first room always being the entrance and the final room of the game world being the centre room.

Entrance	Basic Arena	Advanced Arena	Basic Puzzle
<ul style="list-style-type: none"> Tutorial room Basic enemies Basic mechanics available to player Acts as a safe space to teach player core mechanics and introduce core game loop 	<ul style="list-style-type: none"> Large group of simple enemies with little variation in enemy type Rewards from completing room are minimal as room is not difficult to beat More common near entrance room 	<ul style="list-style-type: none"> Waves of enemies of increasing difficulty, peaking with mini boss on final wave Rewards from completing room are very strong as room presents significant challenge to player More common near centre room 	<ul style="list-style-type: none"> No enemies present in room Puzzle will be simple physics based puzzle Rewards from completing room are minimal as puzzle solution is easy to find More common near entrance room
Advanced Puzzle	Arena Puzzle Combo		Centre
<ul style="list-style-type: none"> Small amount of enemies present in room Puzzle will be complex, where solution will require a mixture of mechanics available to player Rewards will be very strong as puzzle should be challenging to complete More common near centre room 	<ul style="list-style-type: none"> Puzzle will require player to use enemies that spawn in room Enemies will keep spawning until player finishes puzzle Upon puzzle completion player will have to defeat mini boss to finish room Rewards will be the greatest in the whole game with the strongest items, buff and most amount of currency Maze should only contain 1 – 3 of this room type 		<ul style="list-style-type: none"> Final room in the maze Player is required to complete this room to finish the game Room will consist of final boss of the game Boss will have a bespoke move set with the player requiring to use all game mechanics to beat the boss Reward will be the player beating the game

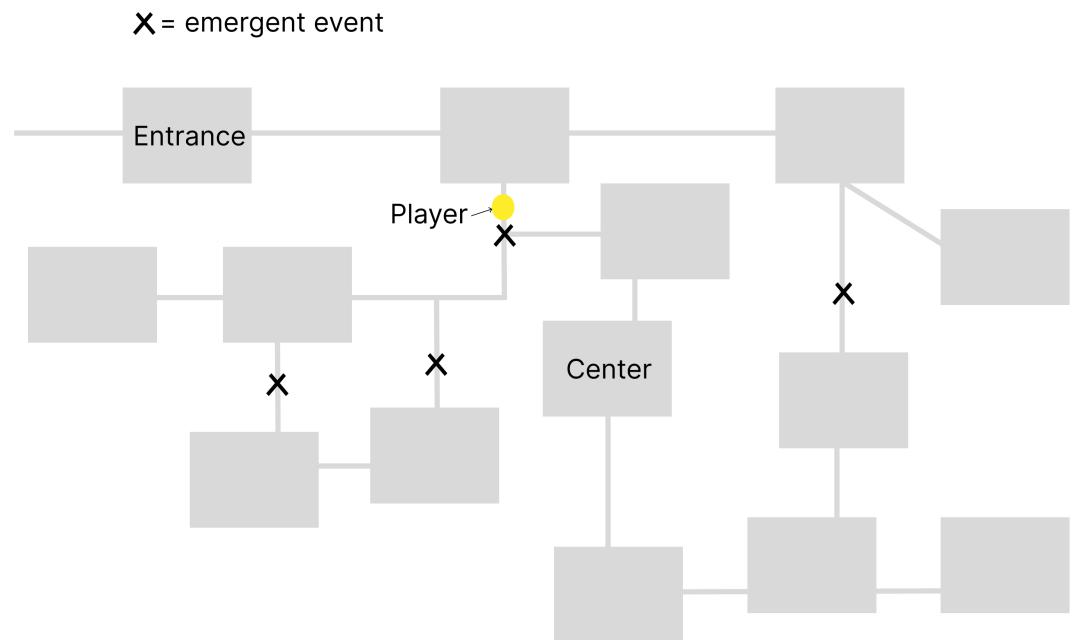
Room Types

(Fig 3: Possible room types)

The rooms act as the core game loop with the player needing to either clear the room of enemies or complete a puzzle in the room or a combination of both, to complete the room.

Corridors

The corridors are connections between the rooms of the maze and act as a calmer part of the game where the player will be able to buy gear at a shop and decide where to go next in the maze.



(Fig 4: Maze with emergent events and player)

Some corridors will have emergent events present depending on the type of corridor. Corridors that have emergent events present will be decided as part of the procedural generation of the game world.



(Fig 5: Corridor types)

Ambush	Bargainer NPC	Trickster NPC	Ambient
<ul style="list-style-type: none"> Player gets ambushed by 1-3 enemies 2 options, fight or flight Fight: Some probability of winning fight based on your strength and enemy strength Flight: You escape the ambush but you lose some health 	<ul style="list-style-type: none"> Player encounters Bargainer NPC Bargainer offers an item in exchange for an item in players inventory (same item type) Player can either accept trade or not 	<ul style="list-style-type: none"> Player encounters Trickster NPC at a T junction or crossroads Trickster tells player that going down this path leads to the centre (it has some chance of being the truth or a lie) Player can either go down that path or ignore the NPC 	<ul style="list-style-type: none"> Players receives a text popup Can be something that gives player hint about where centre is Could be just something to build tension or build ambiance e.g." You hear a loud roar that shakes the maze walls"

(Fig 6: Emergent event types)

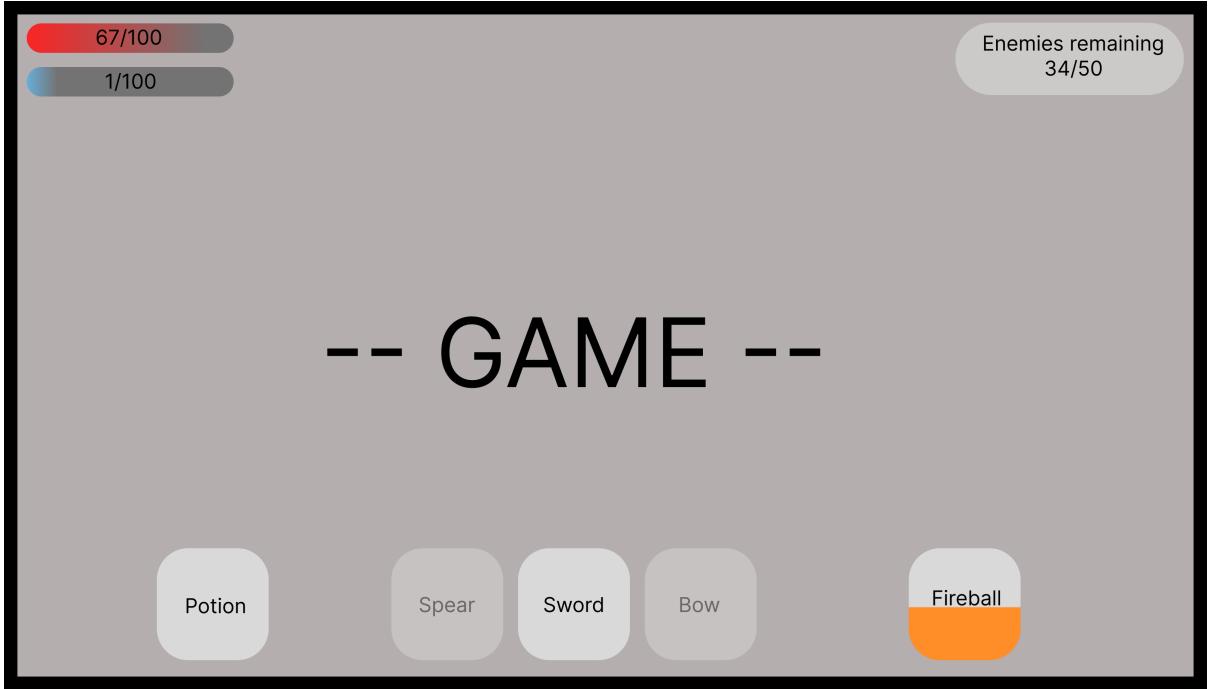
MDA Analysis

Mechanics

Mechanic	Keyboard/Mouse Input
Move	W, A, S, D
Look / Aim	Mouse
Dash	Spacebar
Use Weapon	Left Mouse Button
Switch Weapon	1, 2, 3 Keys / Mouse Wheel
Use Ability/ Interact	E Key
Use Item	Q Key
Pause	Esc Key

(Fig 7: Control Mappings)

The player can move in all directions in the 2D plane. The player can also dash in any direction. The player can use a variety of melee and ranged weapons at their disposal to defeat enemies. There are enemies, of different types, which can hurt and kill the player. The player loses the game if they die, otherwise if they complete the final objective of defeating the final boss then they win. There will be a health system where the player loses health when hit by an enemy. There will also be a stamina system which stops the player from constantly repeating the same move.



(Fig 8: Example HUD)

The player will be made aware of important information such as health, stamina, weapons available, items available, abilities available and number of enemies remaining via minimalistic HUD (see fig 8). Abilities would have a cooldown before being able to be used again, this would be shown to the player by the colour of the UI element “filling” with a colour until full and therefore ready to use again. Weapons with a high attack power such as mace will also have a cooldown, to ensure the game maintains a high level of difficulty regardless of the weapons/abilities unlocked by the player.

The selection of weapons/abilities available should allow for a large pool of unpredictable playstyles for the user to choose from. Rewards should not make the game extremely easy for the player but instead provide them with new, fun ways to approach difficult combat.

Dynamics

Players will use their extensive arsenal of weapons/abilities to defeat different enemy types. Some weapons will be more effective in defeating different enemy types than others. After clearing each room, the player is given a selection of abilities to choose from. The ability chosen will impact the player experience from then on, as it may help them to succeed easily against certain enemies whilst potentially hindering them against others. This essentially allows the player to engineer their own playing experience, as they are free to decide the techniques

they will use to overcome enemies.

Basic <ul style="list-style-type: none">• Most common enemy type• Basic melee attack• Low health• Low damage• Spawns in basic arena, puzzles rooms and spawns as part of larger horde in advanced arena and combo room	Tank <ul style="list-style-type: none">• Uncommon enemy type• Strong ground pound area of effect attack• High health and damage• Very slow movement speed• Spawns rarely in basic arena• Spawns as part of larger horde in advanced arena and combo room	Mini <ul style="list-style-type: none">• Uncommon enemy type• Poison attack which can stack causing health loss on successive hits• Low health and damage• High movement speed• Spawns rarely in basic arena• Spawns as part of larger horde in advanced arena and combo room
Mini Boss <ul style="list-style-type: none">• Rare enemy type• Multiple melee and ranged attacks• High health and medium damage• Spawns as part of final wave in advanced arena and combo room	Final Boss <ul style="list-style-type: none">• Final enemy in game, defeating this enemy is final objective of the game• Wide range of attacks with unique status effects• Super high health and medium damage• Spawns in centre room	Ranged <ul style="list-style-type: none">• Uncommon enemy type• Ranged projectile attack• Low health and high damage• Spawns occasionally in basic arena• Spawns as part of larger horde in advanced arena and combo room
9: Example enemy types)		(Fig

Aesthetics

Aesthetics will share similarities with Hades (2020), as both use Ancient Greek mythology as the basis of their themes.



10: Hades Aesthetic)



(Fig 11: Hades Aesthetic)

When decorating our game world, we will use ancient Greek style architecture and decor similar to Hades (see Fig 9 and Fig 10). Unlike Hades, our game will be 2D and use pixel art. Information will also be displayed to the user using aesthetics. For example, enemies should look menacing to increase the feeling of danger.

The game starts with the player exploring and discovering their abilities and objective. As they progress the game or lose health, the game will get more tense and exciting. The core game loop is fast paced to increase tension. Many rooms will host large hordes of monsters, requiring the player to be locked in the moment the game begins. The intention is for the player to feel a great sense of danger when clearing rooms, to contrast the safety of the corridors. However, the player should never feel that the game is unfair.

Game loops

Core loop

- Situation: Player is in a room with some number of enemies
- Action: Player must defeat enemies in room
- Reward: Player receives some loot which could be buff, currency, or new tools

Map Loop

- Situation: Player must traverse a maze of rooms to reach the centre of the maze
- Action: Player chooses a path to follow in maze trying to reach middle of maze
- Reward: In between levels i.e corridors between rooms, player can spend currency earned in the shop

Shop Loop

- Situation: Player has multiple options to select from depending on amount of currency. Options being stronger but temporary buffs and strong unique tools
- Action: Player buys what they can afford/want
- Reward: Player receives items/buffs that they buy

Emergent Activity Loop

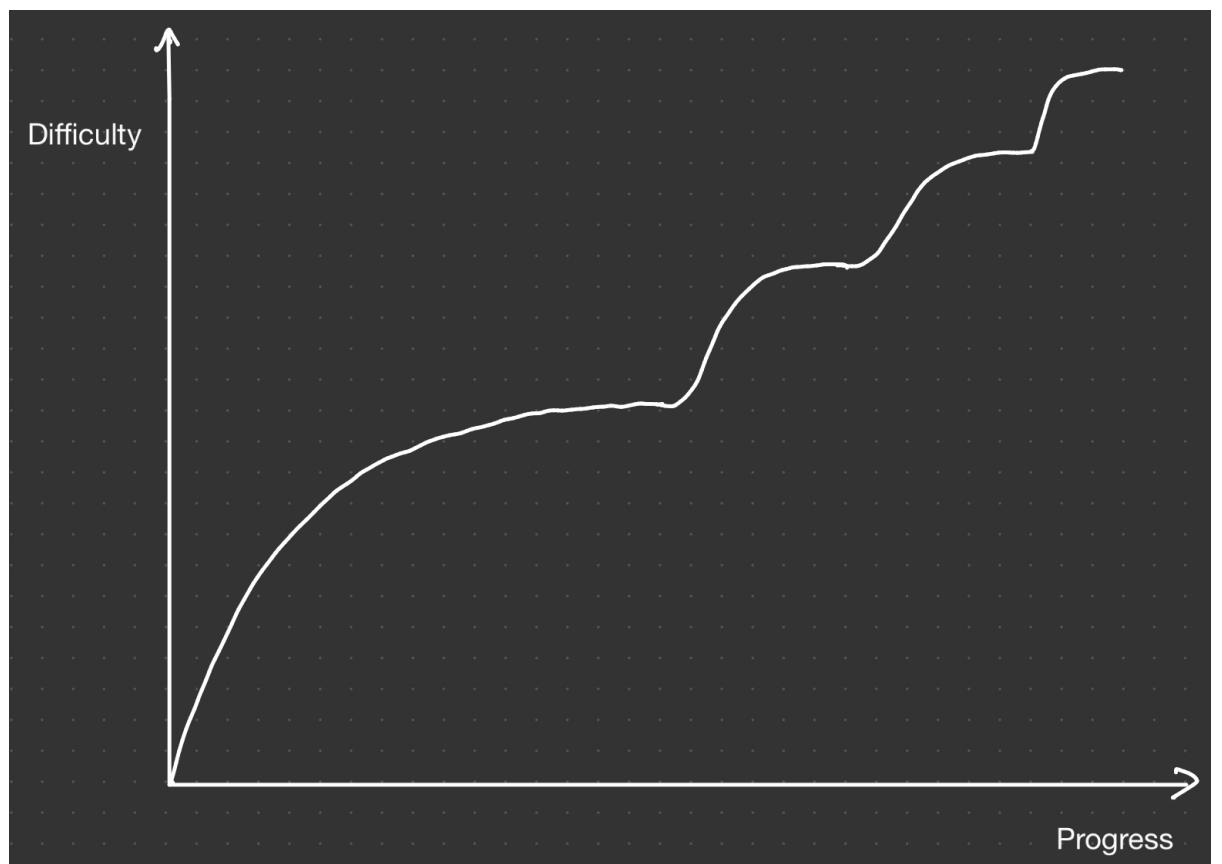
- Situation: Player is presented with some options on how to go about an event e.g fight or flight or buying an item from an emergent NPC
- Action: Player chooses an option to tackle the event
- Outcome: Player receives unique item/buff or debuff

Win condition loop

- Situation: Player must beat minotaur and then escape maze in time limit
- Action: Player must exit maze before time runs out
- Reward: Win game

Difficulty

The closer you get to the centre, the harder it gets. The game will first ease the player in, as the initial tutorial will introduce the player to basic combat and enemies. The player can then familiarise themselves with the game loop through the basic arenas and puzzle rooms, which will gradually increase in difficulty until they get to advanced rooms, where waves of enemies will get stronger and puzzles will get more complex. However, this will be met by greater rewards allowing the player to keep up with the increased difficulty. The rooms will then combine combat with puzzles allowing for an even greater challenge, before reaching the final boss, which should be extremely difficult to defeat.



(Fig 12: Difficulty Curve)

Technicalities

Feature Set

- Procedurally generated game world
- Player movement with dashing ability
- Melee Combat
- Melee Weapons
 - Sword
 - Spear
 - Shield
 - Mace
- Ranged Combat
- Ranged Weapons
 - Bow
 - Crossbow
 - Slinger
 - Spear
- Items which grant buffs
- Abilities which help player defeat enemies
- Enemy types
 - Basic
 - Horde
 - Flying
 - Tank
 - Mini
 - Ranged
 - Mini Boss
 - Final Boss
- Arena Room
- Puzzle Room
- Emergent Events
- Currency

- Shop
- Health
- Stamina
- Permadeath
- Map

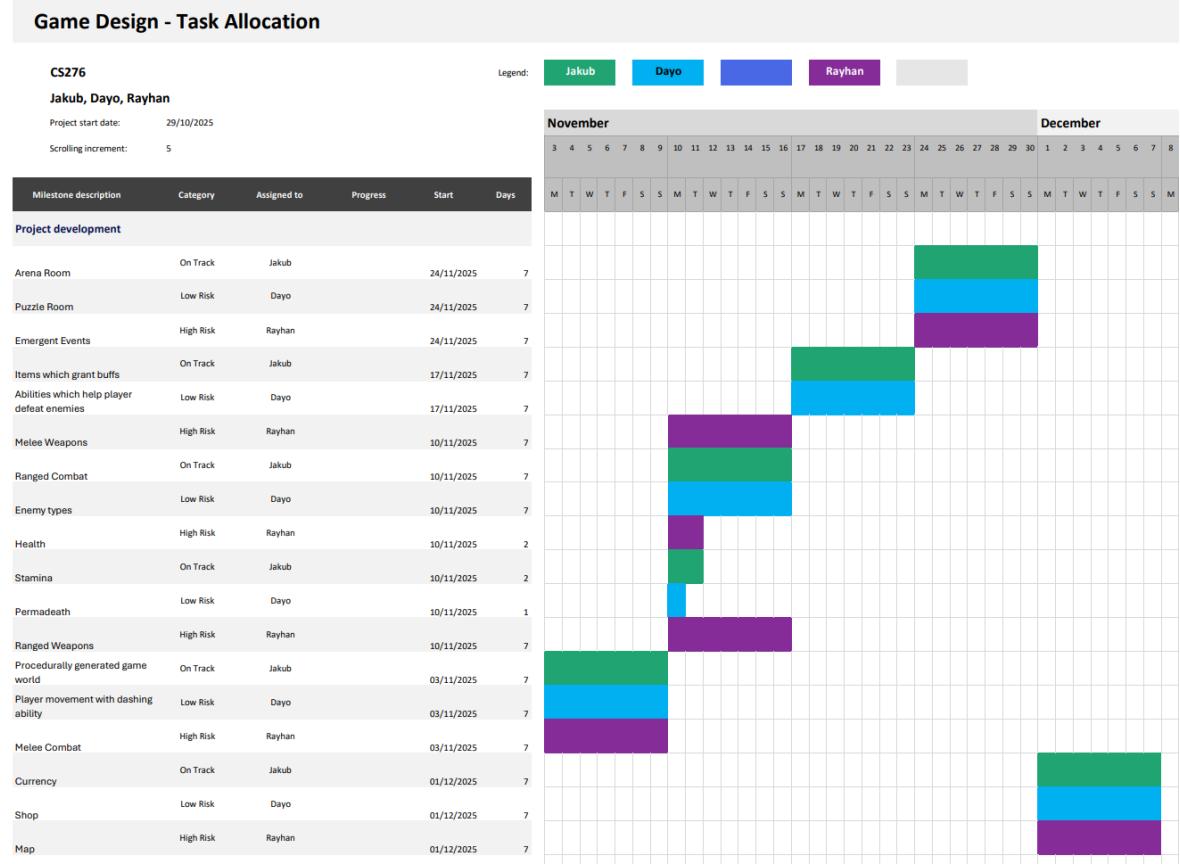
Challenges

An important feature of our game is the ability to use an extensive arsenal of weapons/abilities. This will require a script responsible for recording the player's current weapon/ability, as well as information about each of the weapons the player has available such as:

- The weapon's durability
- The weapon's attack damage/cooldown
- Reference to the weapon's sprite

The information about the player must also be stored between scenes, adding to the level of complexity. We must also ensure that the player is not offered a reward that they have already received, so we need to store all the player's previous choices.

Task Allocation



(Fig 13: Task Allocation and Timings)