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# Procedural Level Generation and VR - Functional Requirements

## Scenario

This software is going to be a prototype / tech demo of procedural level generation and virtual reality, it is not a fully featured or polished game. The game is set in a dungeon / crypt with a high fantasy theme, populated by different enemies. The player is a mage that is equipped with a set of spells to eliminate the occupants, combinations of these spells should hopefully create interesting synergies and emergent gameplay. There is no specific objective of the game except to explore the dungeon and survive. Procedural generation is going to be used to build the levels, with the goal of including more variety in the experiences.

## Target Market / Use Cases

The software's main audience / users will be people or organizations who want to test the technology used in the demo / prototype. Game developers are always looking for unique selling points for their games, this demo would be a great way to let people experience such features. A secondary audience would be using the game for entertainment purposes, although this is the secondary goal, it is the most likely scenario as there are lots more gamers than game developers. A third but unlikely scenario would investors who want to take the prototype and then turn it into a fully featured game.

Given its long history, procedural generation is not a common tool used by game studios in games, this software could be used to demonstrate the power of such techniques and to facilitate their use in the field of game development.

Virtual reality is a common emerging technology that has yet to be fully embraced by the bigger video game market, potential users of this technology may test Virtual reality headsets with this demo and then make informed decisions about whether to invest in a virtual reality project.

As a means for entertainment this demo would provide a limited amount of playability to most users, as it will not come with all the quality of life features that a published game would, causing frustration. Furthermore, most users would likely find the game uninteresting or boring as there is no progression in the game or further end goal, it may also be unintuitive and hard to work out how to play without someone helping them.

## Objectives / Rules

There is not specific goal with the demo, it is a kind of sandbox where the player can decide what they want to do, but the underlying goals are to explore the dungeon and survive. The game will end when either the player kills all the enemies within the level, or the player dies, the players dies when their health reaches zero. The player will be limited at how fat they can cast spells this is to balance the game. The enemies will also be limited in the move speed and attack rate, this will also help with balancing.

## Functionality

The primary functionality of the software is to generate and populate a level, a level will consist of several rooms connected by hallways/corridors. The rooms will be filled with enemies and props for the player to interact with. A room must have an entrance so that I can be connected to rest of the level, and sometimes it may have one or more exits which will connect to more rooms. When the player starts the game, they will be able to customise the number of rooms they want in the dungeon, this will determine the size/ length of the level.

The player is equipped with spells in order to kill enemies, these spells must feel impactful to use, this can be achieved with sounds and particle effects. Spells can either be offensive, defensive, or utility, the player can decide how they want to use them. Offensive and defensive spells must be able to apply effects to enemies or

the player such as removing health or effecting move speed. Utility spells will offer unique functionality that doesn't always apply to combat. They only required spells in order to play a level will be one offensive spell and a teleport spell. They teleport spells will allow the player to move great distances and move around the level.

Enemies must offer a challenge to the player, they must be able to hinder the progress of the player by causing damage or making it difficult to fight other enemies. They way that the enemy causes damage to the player is not pre-determined but it will be a mixture of ranged projectiles or melee attacks. Enemies also add to the theme of the game, so their appearance need to be in line with a high fantasy setting.

User Experience

When the user is playing the game, they will interface with it using a virtual reality headset and controllers. They will be able to look around the environment by turning their head which will translate into the game. They can also move a small amount in game by walking around in there play space, however this is limited to the size of the play space. The player will be holding a controller in each hand, which represents the hand within the game, they will use these controllers to aim and fire spells, to navigate the level, and to interact with menus.

There will be two state within the game, the main menu and the dungeon level. The main menu will allow the player to transition to the dungeon level state via a UI interaction, it will also inform the player how to play the game via the same menu with text and illustration. The Dungeon Level is the primary state of the game, it is where the user will spend most of their time. There will be a limited user interface to allow the players to select spells, this will be in the form of a 3D menu attached to the controller, there will also be a pause menu so the player can go back to the main menu state. The amount of UI is going to be limited to increase immersion.