

# Game Design Document

## Objectives

Design a new mechanic for the game. Build a level that pushes a core mechanic, the jump, to its limit.

## Core Mechanics

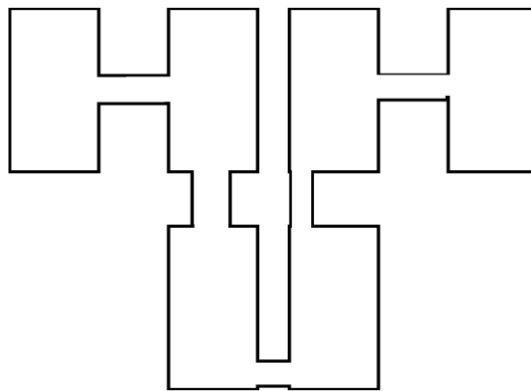
The Player can move in all directions using the keyboard as input. The WASD keys control the movement, while the Space Bar makes The Player jump.

## Creative Process

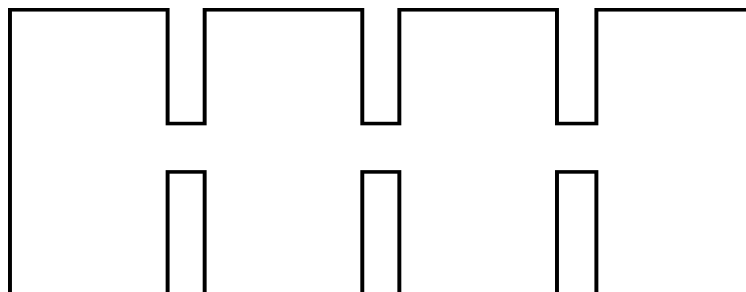
The Concept for the new mechanic comes from pushing the core mechanics to the limit. For this, a tutorial level was designed. In this level, The Player would be challenged through different rooms, getting progressively harder at each room The Player clears.

### The Level

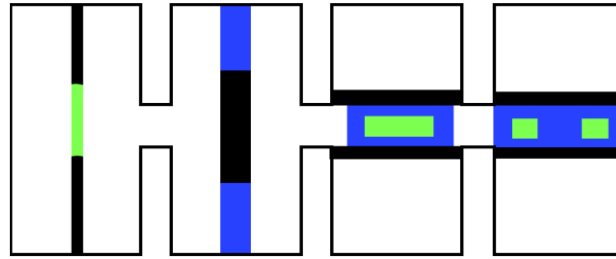
Initially, The Level would contain six rooms with hallways connecting each one like a maze.



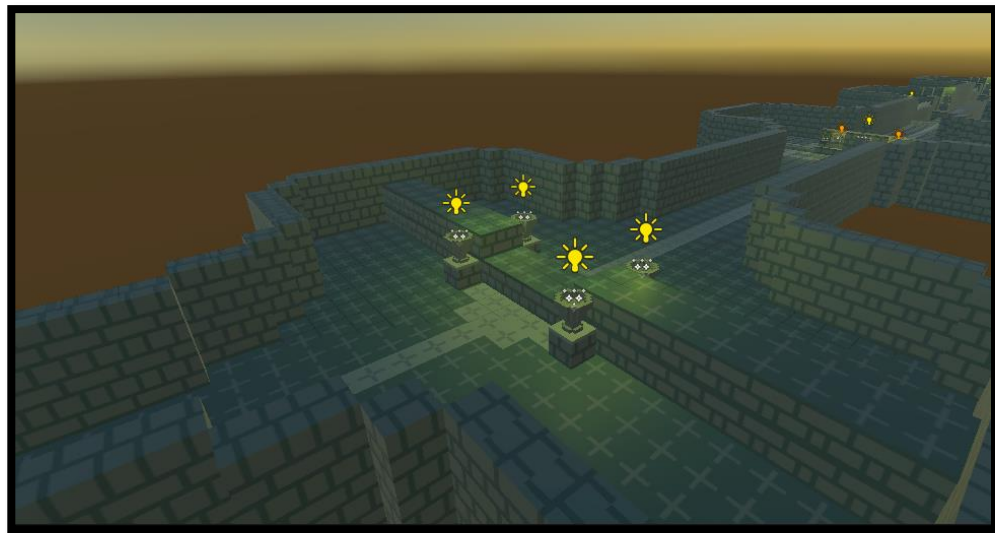
But, because of the way The Camera is positioned in the scene, sometimes a wall would be between it and The Player. That problem could be solved by changing The Camera angle to a Top-Down view of The Player, but in the documentation provided, it was not clear if other Camera parameters could be changed besides the distance from The Player. That is why the design of The Level changed to a straight line with only four rooms.



In each room, The Player is challenged to jump through a series of obstacles, from bumps to pits where the player can fall in.

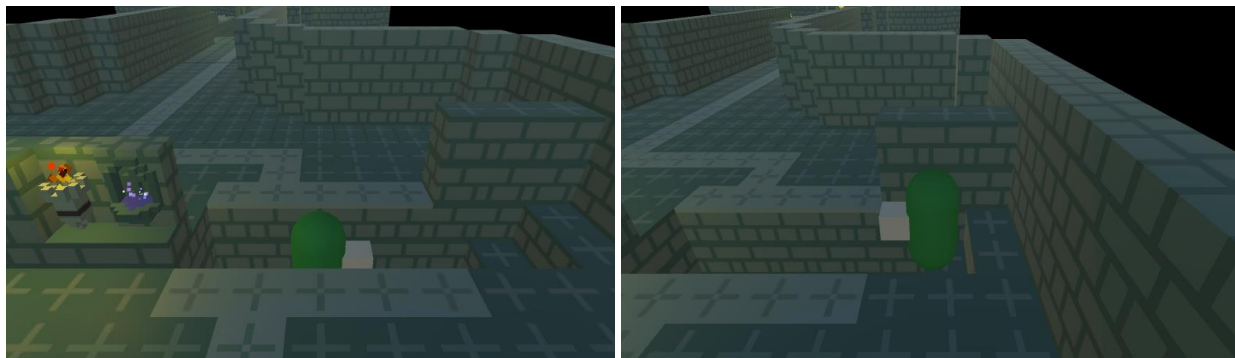


- Wall
- Bump
- Pit

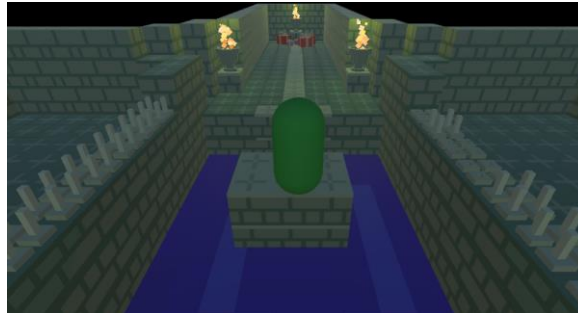


### Gameplay

During the gameplay, as this level was designed to be a tutorial for jumping, there is no punishment for failing the challenge, in some rooms, for example, if The Player fails the jump, there is always a stair nearby for The Player to try again. There are white blocks on the floor to guide The Player through the challenges.

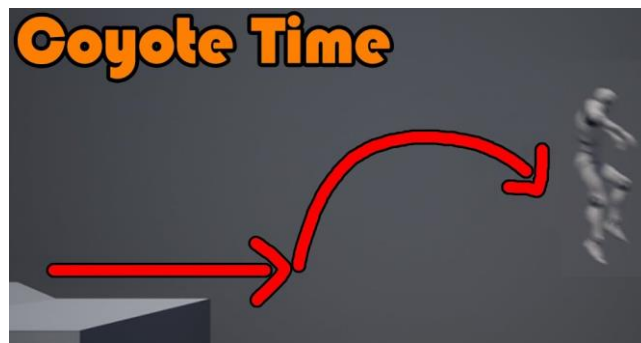


In the last room, the player is challenged to jump a barely possible gap on the floor. The Player must time its jump until the last second for it to reach the finish, otherwise, The Player will fall into the pit and will have to try again.



### Solving a Problem with a New Mechanic

During the Level, if The Player fails the jump because he tried to do it too late, he will fall into a pit and be challenged to try again. Sometimes, this can be frustrating and damage the flow of the game, for that, I propose that a new mechanic should be added called "Coyote Time". This mechanic will let the player jump even if he is not on the floor for a brief period of time, as illustrated:



This mechanic, when applied correctly, can help players from any skill level, ranging from amateurs to experts. It works invisibly, some players will not even notice this help they are getting, helping with the immersion and the flow of the game.

### Balancing

When not balanced correctly, the "coyote time" can remove the punishment for failing challenges, and that is what we want to avoid, for that, the mechanic should have two parameters for balancing, the **Time** after the player left the floor, and the **Jump Height**. Initially, I propose the value of **Time**: *0.1s* and **Jump Height**: *0.8*. The value of the **Jump Height** will not be 1.0 as normal, because The Player must be punished a little for missing the timing, but not enough to make it fail.

### Other Elements

Changing The Camera angle would help the game performance, because it is a straight line, from the start, the game has to render all the elements, from the first to the last room, this Top-Down vision could help with room diversity, as stated above, sometimes a wall would get between The Player and The Camera, making the gameplay harder. If The Camera angle can't be changed, another solution could be implementing a fog that would lower the view distance, helping with the game performance and immersion, as The Player would look for the torches and floor to guide itself.