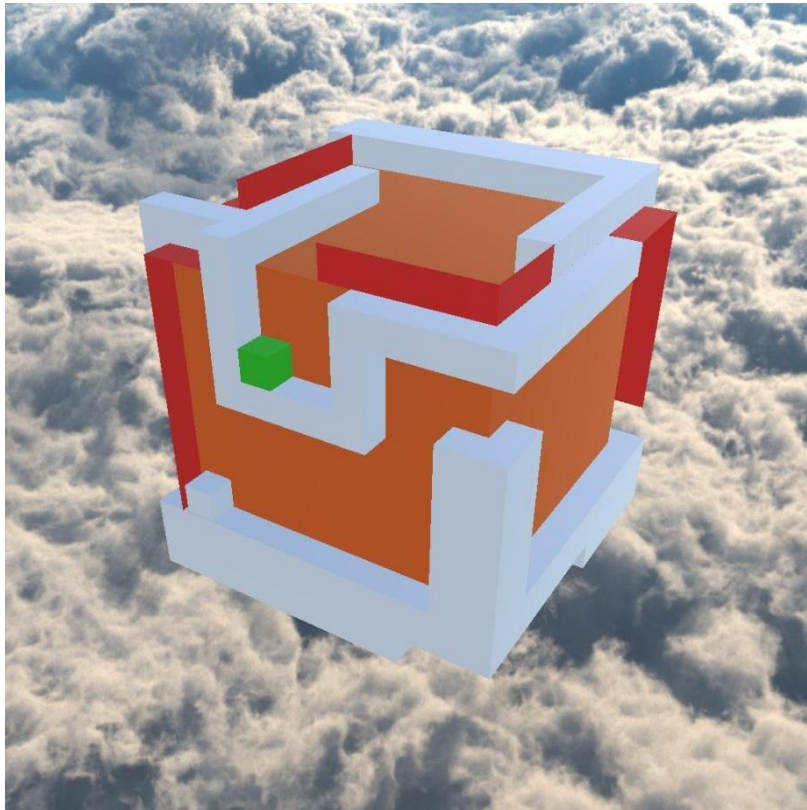# Maze Cube

Game Design Document

Introduction

In this first section we will discuss the fundamental idea of the game and then set out the following sections and what will be discussed within them.

The name of the game will be Maze Cube (this is a working title), with the main goal of the game being to get from one point of the cube to another via traversing the surface of the cube, avoiding obstacles, and overcoming areas that will prohibit certain gameplay mechanics from being available to use. Therefore, the game will fit into that of the puzzle game genre and should start from rather simple gameplay and progress through ever increasing difficulty. New gameplay mechanics and rules will be introduced to the player gradually, allowing them to be accustomed to them, and these will then be added to older existing mechanics and rules helping to gradually increase the difficulty and complexity of the puzzles.

In the coming sections the game idea will be discussed further in several aspects, this will begin with a description, then move onto gameplay, and finally mechanics, assets, and UI. The description section will contain unique selling points, target audience, key features, and key components. In the gameplay section key gameplay features, genre, platform, some UI features. Mechanics, assets, and further UI details can be found in the final section.

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Description

In this section, the game idea will be discussed as well as a reflection on these topics, unique selling point, target audience, key features, key components.

Unique Selling Point

The main selling point should be that it is taking physically maze games and turning it into a computer version that allows for rules and abilities that help and hinder progress, so that it is not a game that is a simple A to B game but one that challenges players to overcome rules and additional obstacles that would not be found in most traditionally physical puzzle games. For instance, gravity will always point in the same direction within the real world, this can be set to whichever direction the game likes, the game can also make materials behave in a way that physical materials cannot behave like.

Target Audience

The main audience should be aimed at those that like puzzle solving, be that in a casual sense or a game that people play often. The game should be made as accessible as it can to people of all age groups though young adults and older will be the prime target.

Key Features & Components

Player's character shape determines abilities and makes other activities more difficult, giving new ways to play and more challenges for the player. The player must also navigate obstacles with objects that slow their progress in completing the puzzle, be that their shape, whether a surface prohibits abilities, or gravity's direction are changed.

Boundaries will be present, and these tell the player where they can move to, some will hint at the direction a player must go to win while others cannot be crossed and will send the player back to the start or a checkpoint.

Game world is a cube and the player's character is a shape (typically another cube) moving around this world trying to get from the start point to the end point. The cube will mostly be made up of walls that need to be navigated to complete the puzzle.

Lives count and a timer will also be present, acting mostly to allow players to compare themselves against other players, though this may become a possible utility at some point to provide extra challenge to players.

Gameplay

In this next section, gameplay components will be discussed and receive a reflection on the following key gameplay features, genre, platform, UI.

Key Gameplay Features

The main gameplay features are the four-movement mechanics (left/right, jump, rotate, flip), along with peaking at neighbouring sides, switching players character, surfaces prohibiting game mechanics, and the direction of gravity.

The movement mechanics are discussed later within this document, but the main goal is to provide enough simple movements that the player can use to find a solution to the maze. Two of these directly move the player's character from their input while the other two indirectly affect this with game world gravity.

The peak options allow players to quickly glance at the new sides to see what is to come and plan a strategy on how to solve the coming side.

Having the character switch would be to add new abilities for the player to use but also make the game more challenging to complete. An example of an ability might be the shape does not get affected by surfaces that prohibit other mechanics but cannot move around as easily and can only rely on gravity to move.

The prohibiting of game mechanics given whatever surface the player may find themselves on allows for cubes that were once easily solved to then needing to be solved in a completely new way. An example might be that a puzzle cannot be solved with jumping, or that gravity works in a new direction once that surface has been touched. This last point also picks up on the direction of gravity being changed to make a puzzle more challenging to solve.

All of these should combine to give the player a fun gaming experience, one that should take what has been previously learnt to build upon but also change in a way that completely changes the dynamics of the game within select levels.

Genre

The genre for this game will be that of a puzzle game. These are typically a form of relaxation for those that play them so there needs to be a balance between being a challenge and ability, as too much of either could lead to a player being overwhelmed or bored and both must be avoided if players are to spend a long time playing our game. Within the genre plays should always be built out from simple ideas that then layer into something complex (or at least something that will provide a challenge to players) no one would play these types of games if the goal were too difficult to achieve (for many people) though there are some that gain satisfaction from completing something difficult and a balance must be found between these two types of individuals.

Platform

The game will likely be released on Microsoft Windows along with other OS systems at a later date such as macOS. This will cover a large part of the market of people that play puzzle games, with this possibly being the preferred way to play by many would-be players. Due to the game's simplicity, the game will likely be adapted for the mobile gaming market also. These both (pc and mobile gaming) will provide the widest availability to players so that they can play pretty much anywhere, though it is likely saved files would not be cross platform though this option should be explored as a possibility.

UI

The UI should be kept as minimal as possible, this is to help the player focus on solving the puzzle rather than being bombarded by a large amount of information. There needs to be a balance between providing the player with as much relevant information as possible, while also hiding as much non-immediately necessary information as possible (but should also be one to two at most button clicks away). Things that would be considered key are controls, lives used, as well as a timer, whereas rules and what mechanics do can be hidden along with the menu items. Another thing that the UI should do is have a minimalist design with a simple colour palette that is easy for players to view (so no clashing colours, bright colours, or ones that do not encourage relaxation or focus). A combination of all of these will allow the player to engage fully with the puzzle solving aspect of the game or at least should get them to this state.

Detailed Mechanics, Assets and UI

In this final section, details on key mechanics, assets within the game world, and UI components will be given.

Mechanics

There will be four main movement mechanics within the game available for the player to use at any time after the tutorial. These mechanics are:

- Directional movement left and right.
  - Simple movement implementation.
- Directional movement upwards (e.g., jumping).
  - Simple up force and check if the player is on the ground (or another walkable surface).
- Rotating the game world clockwise or anticlockwise by 90°.
  - All game objects rotate around a centre point.
- Flipping the game world upside down (or rotating the game world by 180°).
  - Again, all game objects rotate around a centre point.

The first two should be assigned to keys near the player's left hand to minimise the need for their hand to move around the keyboard, the latter two should be included within the UI and selected with the mouse.

There will also be an option for players to peak at adjacent sides of the cube, this will also be found within the UI and should move the angle at which the camera views the game world cube so that another side is available for the player to see.

Assets

There will be the player's character which will have a cube shape (other shapes should be added at later stages of development, these shapes should add abilities, make the maze more difficult to solve, or be a combination of these). The cube (or the game world itself) will be made up of simple shapes these being:

- the base cube, to act as an object wall will be attached to.
- the walls, these are to create obstacles for the player to navigate.
- and the boundaries, which should be crossable if green and non-crossable if red or blue (where red is the exact opposite of red and blue being a laser, both will have the same effect of resetting the level or sending the player back to a checkpoint).

Other assets such as artwork and music should have a minimalist design, this is to help the player focus on the puzzle or get them to focus on solving the puzzle.

UI

The UI like the artwork and music should have a minimalist design, again this is to focus the players attention on the maze. The UI should pack as much useful information to the player as possible but also hide information the player may not need access to immediately. A quick mock-up on the UI is provided (found below) and elements of this are explained alongside this.
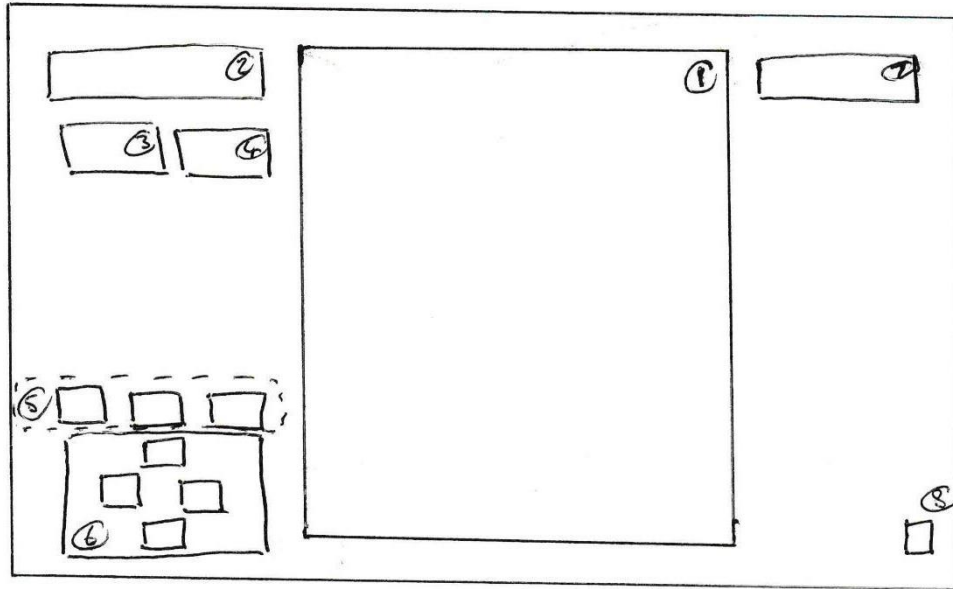
This is the main UI mock-up, below are a description of the elements involved within the image:

1. This space allows the players to see the game world and the effects of actions taken on the game world.
2. This displays the current level that the player is on.
3. This will show the number of lives taken so far in the game.
4. This will display the time taken so far to complete the puzzle.
5. These will be the rotate mechanics and the flip mechanic buttons, to minimise remembering of multiple keys.
6. These will be the peak option buttons; the player can look at adjacent sides of the cube.
7. This will be the main menu, options, reset, level select, exit game, and so forth can be found here.
8. This will give a tooltip that displays current rules and mechanics available to the player and if there is anything within the scene that may affect these rules and mechanics.