Game Physics
Assignment Sheet 3

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SS 23
Deadline: **11/05/23**

In this assignment, you will use your new knowledge of Godot to build a simple Maze game. This game incorporates several of the features we will eventually implement in our own physics engine, such as contacts and friction. You are free to extend the basic concept of the game with any features that you want to implement, but you should make sure that you have the basic game up and running first.

You must present your findings on the day of the deadline. The presentation should be no longer than 6 minutes. Please prepare the presentation well, so that you may present your results in a structured and timely manner. As in the previous assignment, you must hand in your source code in `moodle`.

Assignment 1 - Maze

In this exercise, you will be tasked to build a digital version of the "Maze" children's toy that was previously presented in our sessions. See figure 1 for a screenshot of a basic version of this game.

The game works as follows:

- In the traditional version, the only controls you have as a player is the ability to tilt the board. That is, the rotation of the board along two perpendicular axes that lie in a plane.
- By tilting the board, you indirectly accelerate a ball, which moves on the board. Your goal as a player is to get the ball from the starting position to the goal area. In order to do so, you must move the ball through a maze, which additionally contains various obstacles such as holes in the board.

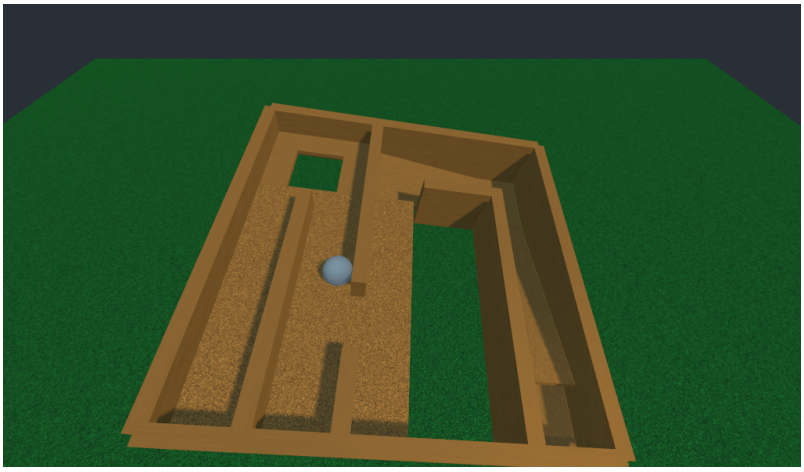

Figure 1: How a basic maze game might look like. The player must tilt the maze in order to move the ball from its starting position to the goal position, avoiding obstacles along the way.

The following exercises have you implement the basic components of the game, but you are encouraged to be creative and add additional game mechanics or features as you see fit. You are expected to use online resources such as Godot's documentation, tutorials/blogs or other forums in order to figure out how to implement features needed for your game.

a) Set up a simple board (at this point it may be just a flat surface). Implement functionality to tilt the board upon user input. Explain how you solved this problem.

b) Design a maze and add a ball to your game. Detect when the ball reaches the goal area.

c) (Optional) Extend your game with interesting game mechanics. Below we present some ideas, but they are merely suggestions. Be creative!

- Jumps
- Multiple floors
- Multiple levels
- Timing and a highscore list
- Incorporate ball (pin) joints or some of the constraint functionality we have implemented in previous exercises