

Maze Daze: Drive

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Abstract— Car games have already been people's all-time favorite and what's better than a brand-new car puzzle game based upon a fresh and unique idea that would drive you nuts! Introducing 'MAZE DAZE: DRIVE', a game where you have got the keys to every car around you.

MAZE DAZE: DRIVE is a three-dimensional simulation game entirely made to outsmart human intelligence. The main concept of this game is that it challenges natural intelligence with itself. In expansion to the mentioned above, this execution file is made to counteract human intelligence by mimicking its actions by the virtue of its inputs and completely mirroring them. The player's only way out is to tackle its own moves that make the other cars get out of the way and reach the destination. With the increase in levels, the complexity and difficulty to proceed increase with a great amount which, as a result, reduces your very chances to win. But to keep things interesting, each level may have something that might help you to win or help you to lose as soon as possible.

Keywords: Maze Daze, Drive

I. INTRODUCTION

Maze Daze: Drive in simple words is an intermix of a simulation, puzzle and a car controlling game that is designed to play with the user's mind. Though there aren't many applications or games that illustrate the concept of both simulation and puzzle, Maze Daze is an exemplary exception - the user is its biggest enemy.

To shed some more light on the aforesaid, here is the detailed explanation of 'what' maze daze is. The concept of Maze Daze is as simple as its name that is to daze through the maze, a puzzle designed environment which is created to challenge the mental capacity of the individual. As easy as that might seem, there are certain obstacles, difficulties and challenges that the car driver will face, unboxing new puzzle maps, situations and challenges with each level.

II. OBJECTIVES AND AIM

Maze Daze is, as said before, unique because your input is the user's own enemy. This is because all the enemy vehicles (primarily cars) will also operate on the same input that will be provided by the user to the player's car. Thus, the user will have to manipulate its own input so that the enemy vehicles can be placed in a situation where they possess no threat or can cause no hindrance in the way of the player's car to the destination point.

Other than the enemy vehicles being the major problem, the map itself is not an easy course to complete. The maps for the various levels are designed in forms of puzzles so that the user will have to develop and find a perfect set of inputs or instructions to the player car in order to win. The map is also loaded with various objects (like red cones, street

lights, road dividers etc.) that may or may not cause trouble or benefit your gameplay.

The main objective of this game is to succeed in every level or stage of the game and clear all the levels. However, the objectives for each level of this game is divided into two categories based on their priorities. These are:-

A. Primary Objectives –

These objectives are not only essential but are compulsory to achieve in order to get ahead in the game. Failure in achieving these objectives at each level will result in the failure in accomplishing the target will lead to attempting the level again.

The primary objectives of this game are:-

- 1) Reach Destination cube
- 2) Keep the health bar above 0%
- 3) Keep fuel bar above 0% (if provided)
- 4) Do not hit an enemy car

B. Secondary Objectives –

These objectives are not primary because unaccomplishment of one or more objectives doesn't result in the failure of completing the level. However, these objectives certainly possess a great role in the flow of the game. These objectives will increase the probability of completing the level, thus the fulfilment of these objectives will produce better results. Again, these are neither compulsory objectives nor they are necessary to be completely achieved.

The secondary objectives of this game are:-

- 1) Avoid obstacles (like walls, traffic cones etc.)
- 2) Get as many boosters as possible
- 3) Avoid liabilities

III. DESIGNING

Designing of this project has been the longest part of this application. From making the very basic objects to assembling them, giving them functionalities and their purposes to writing complex code for implementing the logic of the game, this whole application had been making a consistent development in its designing phase.

If we categorize the entire designing process in accordance with the time it was created, the essentiality of it and its development, we will have the following:

A. Car Control

Designing the basic car control including assigning inputs, setting values of input.

B. Basic Physics and Colliders –

Includes implementation of Vehicle physics phenomena like collisions, change in directions, displacement from mean position etc of various movements of the player's car, enemy cars and the other peripheral objects.

C. Collision Trigger of Destination Cube and Car –

Creating events and defining the happenings like Level Complete/Restart Level Animation etc after the successful completion of the level whenever the player's car will collide with the destination cube.

D. Game Logic –

Developing logic behind various collision possibilities like player-enemy collision or player-destination box collision and defining the events of these collisions.

E. Timer –

Placing a timer in a number of levels to introduce another variable in the gameplay to increase difficulty. The timer keeps check of the condition that the level should be completed within the time mentioned.

Once the design of implementation was ready, we started implementing. It is good to create an application feature by feature.

IV. FUNDAMENTAL CS FILES

The implementation of this game has been done by creating and using the following file whose tasks and functionalities are explained as well.

A. Car Controller File –

Major file converting input into an output - *CarController.cs* is our major file which is supposed to handle all the user's input and instructions and carry them out to the input manager where they get converted into the desired output. In this particular game, the keyboard is set to use for the movement of the player's car. The user can choose between the two predefined sets of keys for the input which are 'arrow keys' and 'WASD keys'.

The input is divided into two based on the direction of the acting input. These are horizontal input and vertical input. Arrow key up, arrow key down, key S and key W are set for vertical input and arrow key right, arrow key left, key A and key D is set for the horizontal input. Both types of inputs are handled differently.

For the vertical input, we have used a private float variable 'forward' which is being used to implement the *Input.GetAxis* function. This function changes its value and the changed value is correlated to the car's speed in the forward or backward direction. Similarly, we have also used different variables for vertical input, wheel motor torque and wheel steer angle.

B. Player Collision File-

This Script is basically detecting collision between player and enemy car. Thus the events to be executed post the happening of the collision is defined in this particular file.

It will also detect if the player has fallen down outside the map or not. This can be seen in some levels where the player's car is not bound by the obstacle walls at some particular point and can move farther than usual.

Collision detection can easily be achieved by using the trigger and Tag method in unity. The trigger and tag method are predefined methods in Unity where we attach the trigger to the collision and the tag is used to identify the objects which have collided.

C. Destination File-

Here we basically check if the destination/objective cube is collided by player or enemy which is directly going to result in the completion of the level. If the collision between the destination cube and player's car is found, the level is declared clear, else if the same cube gets in a collision with the enemy car, the level is declared lost. Until any of these happens, the level continues to exist in an uncompleted state.

To provide visual clarity about the objective, the destination cube is designed to glow and rotate in a particular axis at its mean position. indicating that the particular cube is to be collided with in order to win.

V. FUTURE SCOPE

Though this application is a complete success so far and is potent enough to be used by anyone, there is always a scope for adding more and making the application better and better. With newer ideas to be added and enhance the existing game, we have been working on some major ideas that will be implemented in the newer versions of the application.

The future scope of this game contains:

- 1) Saving success made in the levels.
- 2) Sign in and profile
- 3) Multiplayer mode and scoreboard
- 4) Better sound effects and graphics

VI. FEATURES IN UPCOMING UPDATES

A. Introduction of Multiplayer Mode-

Users will be able to compete with other users of the application by the new modes to be introduced in the game that may set competition on the basis of the time limit, course completion or other variables.

B. Complaint, Feedback or Query Section-

As developers, we are keen to learn more about what the user wants, expects or desires. Thus we would also like to receive the same through our application itself. Soon to be introduced is a new section in the gameplay menu where we gladly accept all complaints, feedbacks, queries or suggestions to make this application better.

C. Improvement of Existing Application-

We are also looking forward to enhancing the gaming experience for the current users as well and thus we will be trying our best to not just add new features but to upgrade the existing ones. Better graphics, sound effects and animations are on their way to make it through the development and testing process and will be included soon.

VII. CONCLUSION

Though the purpose of Maze Daze: Drive was to satisfy the need of entertainment and amusement for the user, Maze Daze has also proved itself to be a worthy compact application for the purpose of cognitive mental simulation and training. With the challenging levels offered by it, one can develop critical thinking and control.

Maze Daze thus can be used as a good example to explain this new field of the puzzle -simulation games and

introduces a very new concept in the universe of gaming. Maze daze is both a puzzle and a car driving game as it gives the pleasure of both and with upcoming updates, the application will be able to offer more and better results.

As for now, the software application has successfully accomplished all of its targets. It is now a complete gaming product that can be used by any individual who would like to challenge themselves with a much exciting game.

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