

Developer Diary

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1 Introduction

The contents below are a Developer Diary meant to facilitate a record of my design decisions throughout my game development. As I developed the game from the design document given to me, I ran into a few "practical" and "implementation" problems which I addressed either myself or by reaching out to the design documents author for clarification and design change requests. In order to address issues at a consistent rate I categorised the design elements into four broad sections: Menus & UI, Theme & Assets, Level Design & Difficulty, and Collectables & Power-Ups. For the dates when I did talk to my designer I have put under the headings of each section the days we talked.

2 Menus & UI

Date: 15/11/2020 & 26/11/2020

2.1 Main Menu

The main menu is setup in a similar fashion to the request made by the designer with only a minor change. I have decided to replace the "How To Play" section as a subsection of the Options menu. This was done in order to conserve screen space and not overwhelm the user with too many options at the main menu. The Main-Menu consists of the follow:

- Play
- Multiplayer
- Highscore
- Options
- Quit

Highscore - When creating the Highscore table the designer imagined a leaderboard scenario. I have achieved this by using a HighscoreManager script. This script used the inbuilt PlayerPrefs functionality for persistent data and combined it with JSON Utility to list multiply scores, as the PlayerPrefs has no list functionality. This was achieved with the help of a youtube video [1].

Options - The options menu allows the user to control the music volume and the sound effects volume. I controlled the various audio components by creating a Sound and AudioManager script. Then I made an AudioManager which decided on the mixer groups each audio clip belonged to. I made two audio mixer groups: Music and SFX (Sound Effects). I implemented the "How To Play" display as a button subsection of options. [2].

2.2 Pause Menu

The pause menu stays true to the designers request as a simple 3 button menu: Resume, Options, Quit. Theses are all self explanatory with the Options button displaying the same Options menu presented in the Main Menu screen.

2.3 UI Elements

In the UI elements I delievered a consistent experience in the follow ways:

- **Font:** For all text in the UI I used a font called PressStart2P [3] downloaded from from google fonts. It has a retro game style that I felt fits perfectly into the theme of the game.

- **Color:** I used a TextMeshPro utility called Color Gradient. This allowed me to add a smooth color gradient to all my text components. This was helped with the aid of a youtube video by a developer called Brackeys [4].
- **Game Layout** Talking to the designer we agreed that during the game-play scene the players screen shouldn't be overloaded with too much UI in their HUD. This led to a new design in which the layout of the game HUD would only consist of the players score (calculated by their distance) and the countdown timer (time they have left to reach the next checkpoint).

3 Theme & Assets

Date: 15/11/2020

In the design document the designer had the original idea of a person character running along a road. I reached out to the designer and through conversation we agreed that a car was better suited to the task as it didn't require large animations for a smooth gameplay experience.

I used various assets found at KenneyAssets [5] to get my player car, scenery buildings, road assets, and obstacles for game, giving the player experience a consistent theme and feel.

4 Level Design & Difficulty

Date: 26/11/2020 & 29/11/2020

4.1 Road Manager Script

In researching the development of the game level I decided to create a Road_Manager script. This would keep track of the road tiles and would spawn them as the player movement throughout the world and delete old road tiles out of scope. The Road_Manager script would spawn a checkpoint tile after a certain distance by the player had been reached and the same rule applied for the powerup tile. Talking to the designer about the difficulty of making rails for the roads we came to the agreement to scrap the idea and instead create an increasing number of obstacles spawning into the level as the player progressed.

I made two types of obstacles: barricade and a traffic cone. These spawned with the road tiles and have a varying degree of occurrence on the road. When hit they produce an audio clip, are destroyed and the players speed is reduced to a minimum speed.

4.2 Countdown Timer

In order to create more difficulty for the player the design asked for a countdown timers. I created a countdown timer that would countdown every 1 second. It would then reset the timer based on a checkpointCounter passed with increasingly less time after each checkpoint pass. If the player did not reach a checkpoint before the timer hit 0 it would trigger the game over event [6].

5 Collectables & Power-Ups

Date: 29/11/2020

5.1 Coins

I created a coin object that will spawn into the world with the road tiles. The coin will continuously spin on its axis and if the player collides with the coin they will collect it and it will produce a audio clip. A further functionality in the future may be introduced to allow these coins to have a buying functionality.

5.2 Power-Up

I created a red capsule which acts as the "apple" power-up the designer suggested. I did however change its functionality. It now increases the players speed x2 and also allows the player to hit obstacles without a slow down penalty for 10 seconds.

6 References

- [1] *Highscore*; CodeMonkey;
- [2] *AudioMixer*; Unity.Docs;
- [3] *Google Fonts*; Google;
- [4] *Menu Design*; Brackeys;
- [5] *Kenney Assets*; Kenney.nl;
- [6] *Countdown Timer*; Partum Game Tutorials;
- [7] *Unity Docs*; Unity.Docs;