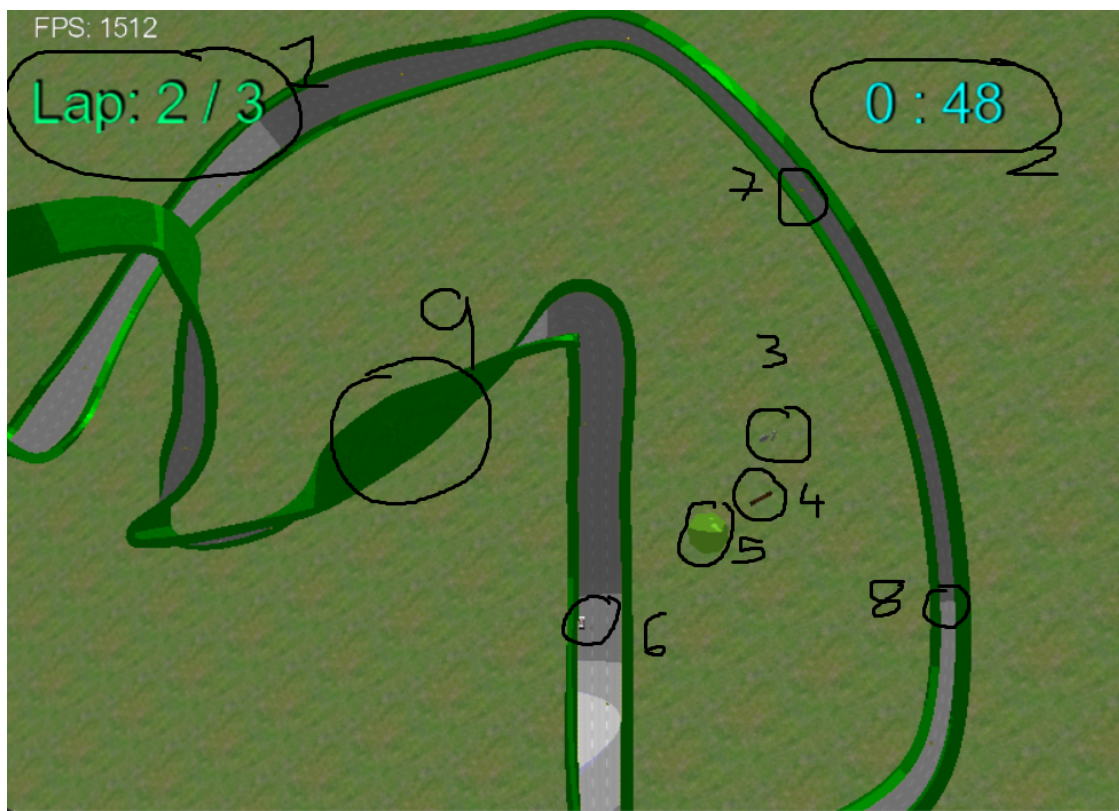


Overview

The idea for the game was to create a time trial racing game where the player has to complete the level as quickly as possible while avoiding obstacles. And collecting speed pickups.

Controls

ACTION	INPUT
Left	A
Right	D
Pause	6
Change to nightmode	9
Change camera angle	0



1. Lap display (2D HUD)
2. Timer (2D HUD)
3. Street light (mesh)
4. Bench (mesh)

Overview

5. Tree (mesh)
6. Car that the player controls (mesh)
7. Yellow pickup (cube that I made)
8. Grey tetrahedron to represent a metal spike (tetrahedron that I made)
9. Catmull rom track

TEXTURES

- This was used for the tetrahedron <https://opengameart.org/content/paper> Opengameart.org by user darkwood. It is under the Public Domain License. Retrieved May 13th, 2023.
- This was used for the cube powerup <https://opengameart.org/content/4-cartoony-terrains-textures> found on opengameart.org author is danimal public domain license May 13th, 2023.
- This was used on the outside of the catmull rom <https://opengameart.org/content/grass-1> found on opengame.org by stereoscopic May 13th, 2023.

MODELS

<https://sketchfab.com/3d-models/ambulance-car-low-poly-25392b75045946f7a4c9a03e3bea969e> - found on sketchfab may 13 2023 by Jasmin Daniel CC Attribution Creative Commons Attribution

<https://sketchfab.com/3d-models/street-light-b7dfecfd2dd34a5d8a67bf3e48666105>
Found on sketchfab may 13 2023 by Algirdas Lalys CC Attribution Creative Commons Attribution

<https://sketchfab.com/3d-models/low-poly-bench-3-4408281074eb4c30afafd96c7c421193>
Found on sketchfab may 13 2023 by JustBlender CC Attribution Creative Commons Attribution

<https://sketchfab.com/3d-models/low-poly-tree-6d986e0b24b54d85a5354e5cac6207a1>
Found on sketchfab may 13 2023 by Kotzuo CC Attribution Creative Commons Attribution

Route and camera

Route: Following the coursework instructions, I created a route using the Catmull Rom spline code we were shown in class. In order to achieve more complex geometry, I also set custom up vectors at each of my control points using vector mathematics. Using these up vectors along with the TNB method, I was able map out offsets at each of my centreline points, allowing me to create boundaries for my track with openGL primitives.

Camera: there are 3 new camera angles in the game using the tnb frame which is made in the update function according to the distance the player has traveled. The third person view is the default, as the camera travels behind the player along the track. It does not strafe with the

Overview

player, though. The second view is first person. I position the camera on the hood of the car for this. The third view I implemented was a top down view.

Basic objects, meshes, and lighting

Basic Objects: for the basic objects I created a tetrahedron and a cube each one was made following a tutorial on youtube.

Meshes: I found all my meshes on sketchfab and then added them to blender to adjust there orientation

Lighting: there are three lights in the game, the world light, and two car headlights. The headlights are on the front bonnet of the car, the lights are rendered with a yellow tint. I altered the Blinn Phong Model for the spotlights to help show the car headlights.

Head's up display (HUD), gameplay, and advanced rendering

The game renders the HUD twice, one black and one in color but slightly shifted this is to make the text look like it has a shadow.

The gameplay aspect for the game is to turn left or right to avoid the tetrahedrons and collect power ups, and you are supposed to finish the game as quickly as possible.

For the advanced rendering technique I added a toon shader into the game named sphere shader and you can activate the shader and it creates a black and white cartoon effect for the game. Also the standard shader was modified to have a cartoon effect too when the player uses the lights it gives a cartoon effect.

Conclusion

Overall the game function well and anyone can complete it, however I could have managed my time better as I was having trouble adding a wobble effect to the game, I could have also expanded on the track and made it more complex for the player. Possibly could have added multiple power ups instead of just one.