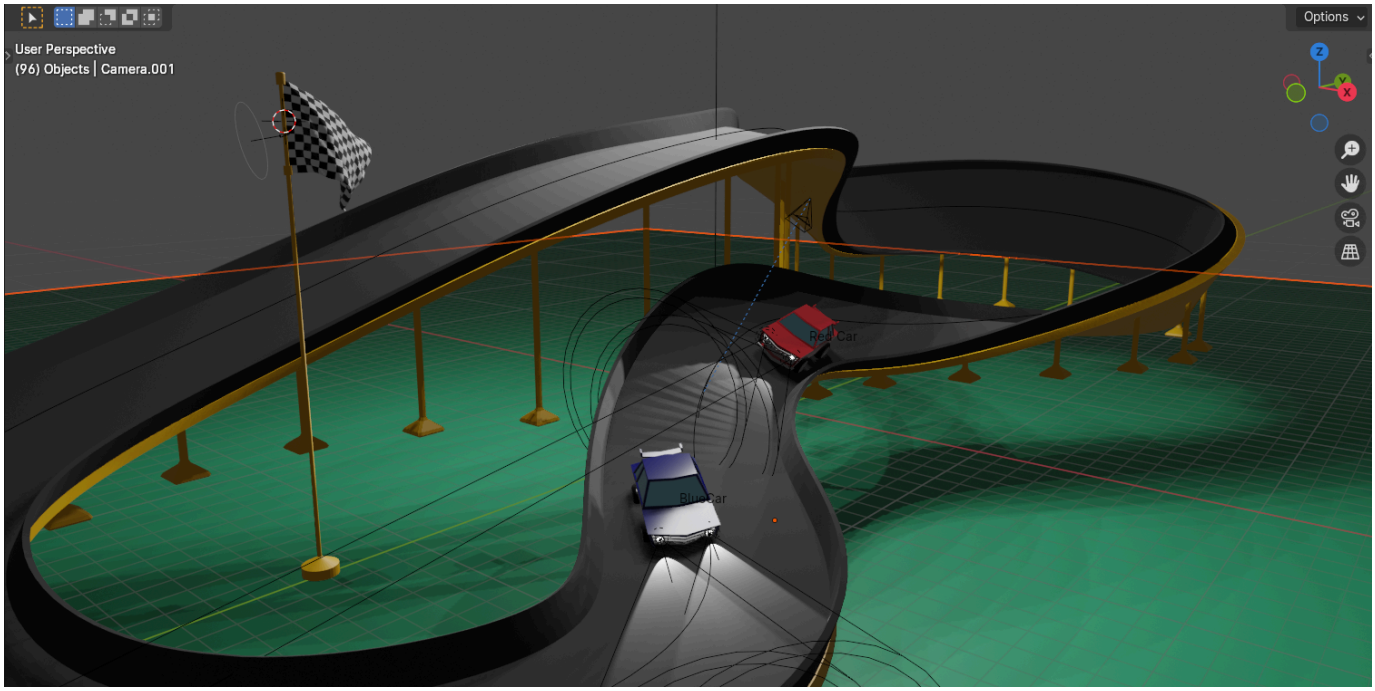
# CG Final Project (2024)

Submitted by:
1. Rayaansh Yadav (2021UCP1200)
2. Vivek Dhanda (2021UCP1118)

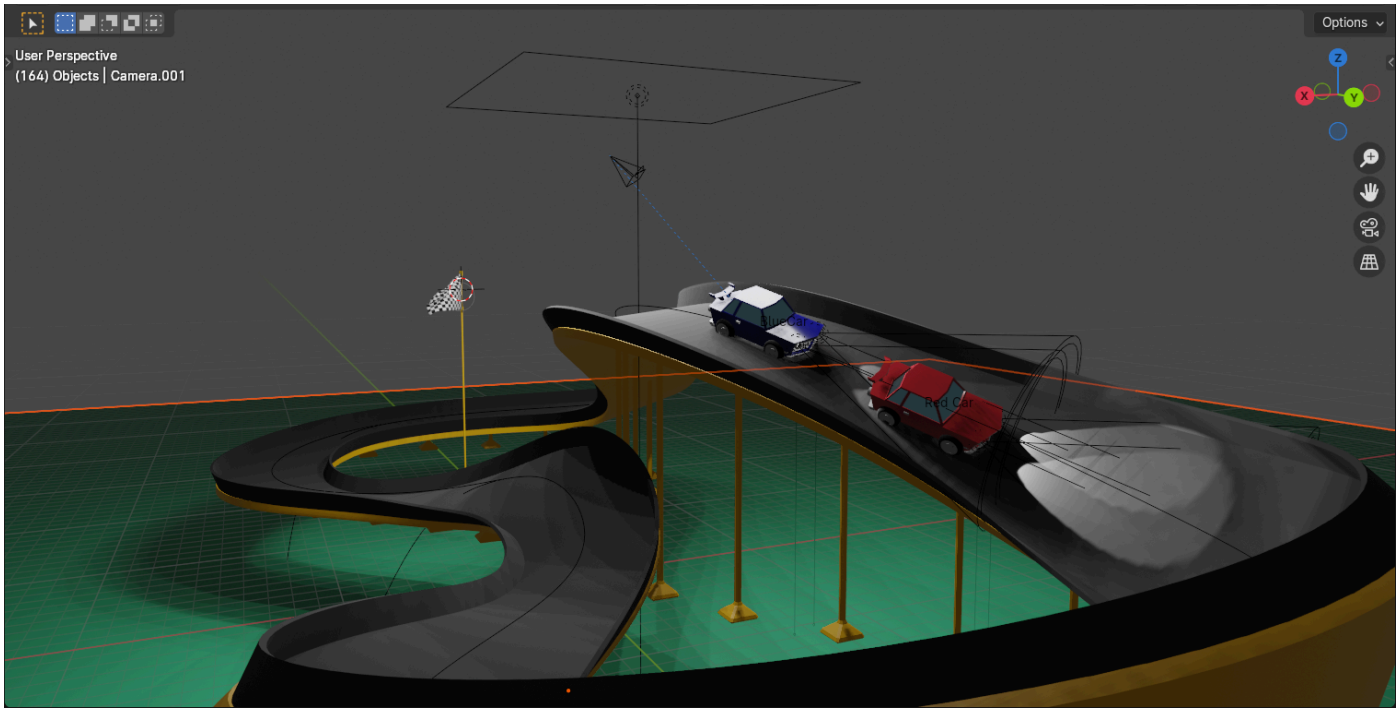
## Final Scene Submission:



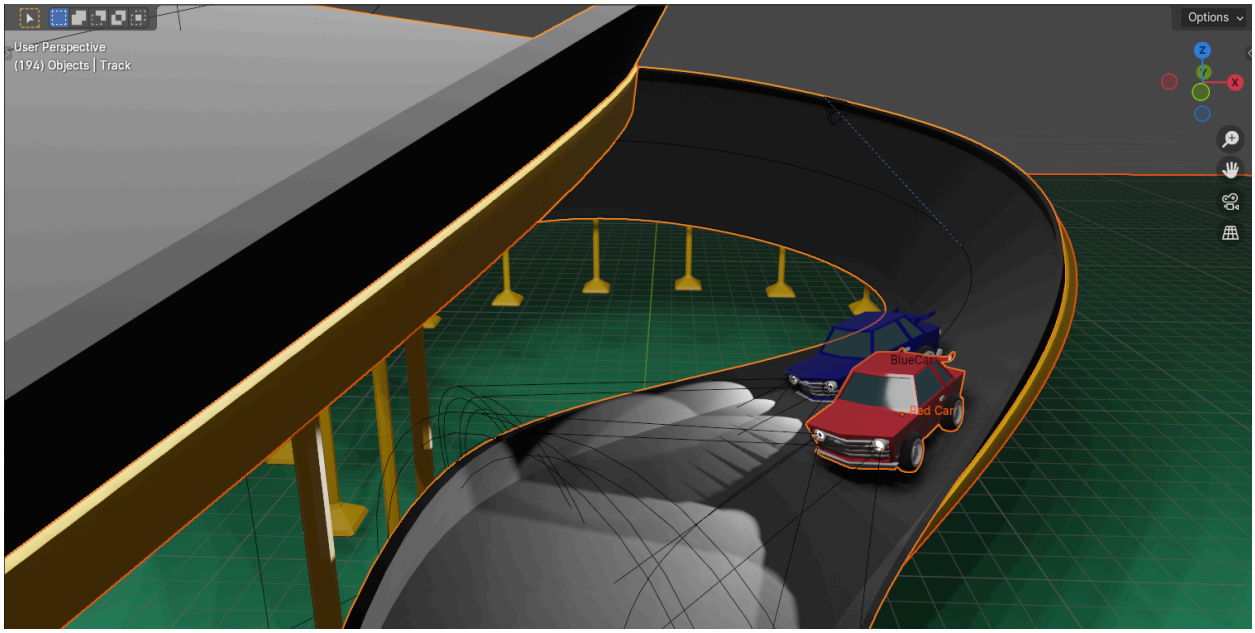

## Inspiration:

My childhood love for Hot Wheels, Fast and Furious movies, and Need for Speed games ignited my passion for speed and competition. Drawing from these influences, I crafted a race scene animation in Blender that captures the adrenaline-fueled excitement of high-speed pursuits.
From the gravity-defying stunts of Hot Wheels to the intense action of Fast and Furious, and the thrill of Need for Speed, this project is a homage to the exhilarating world of automotive entertainment that shaped my love for racing.

**P.S**: I know I should have rendered a ferrari, porsche or a mustang maybe but anyways….



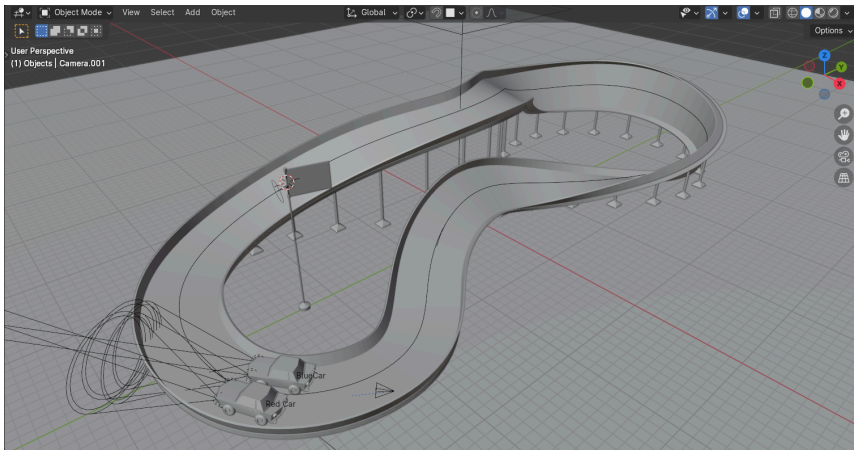

**Github Link :** https://github.com/rnv10/Blender-Car-Animation

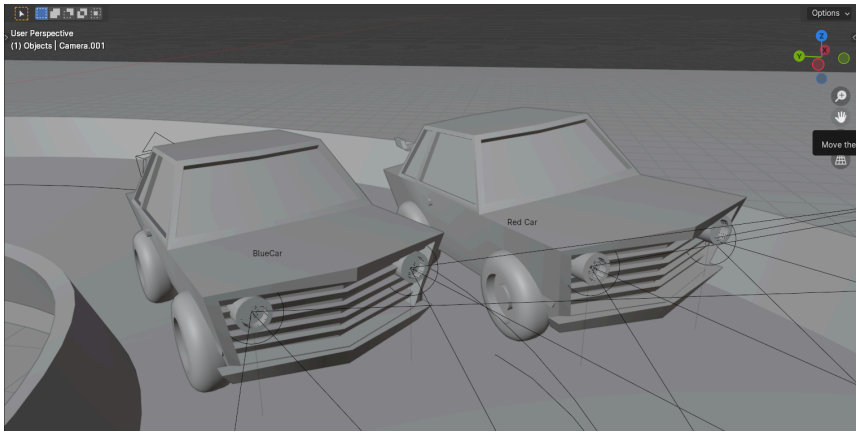



**Member Duties:**

1. Rayaansh: Responsible for Cars and Animations.
2. Vivek: Responsible for Track and Flag.

**Solid Preview:**




Used Lowpoly animated cars and flag assets from:
https://www.turbosquid.com/3d-model/animated/low-poly/car
https://free3d.com/3d-models/lowpoly-blender-cars

## Procedure:

In the process of designing the car for the animation, various Blender tools and techniques were employed to achieve the desired results:

Car Metal and Auto Smooth Modifier: To create the car's metallic body, Blender's modeling tools were utilized to sculpt the general shape. The Auto Smooth modifier was applied to ensure that edges appeared smooth while preserving sharp angles where needed, mimicking the sleek appearance of real car bodies.

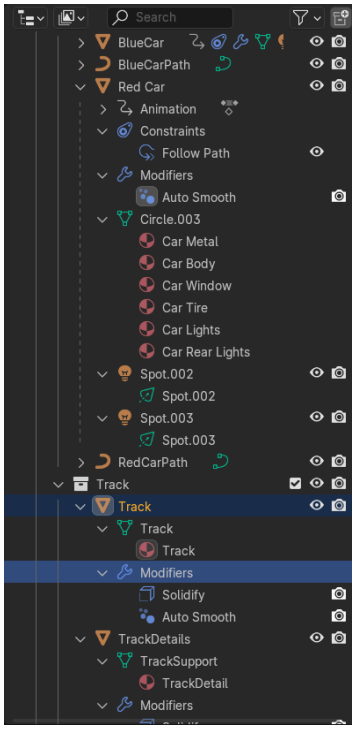
Car Body and Window: Blender's modeling capabilities were utilized to shape the car's body and windows. Using techniques such as extrusion, scaling, and

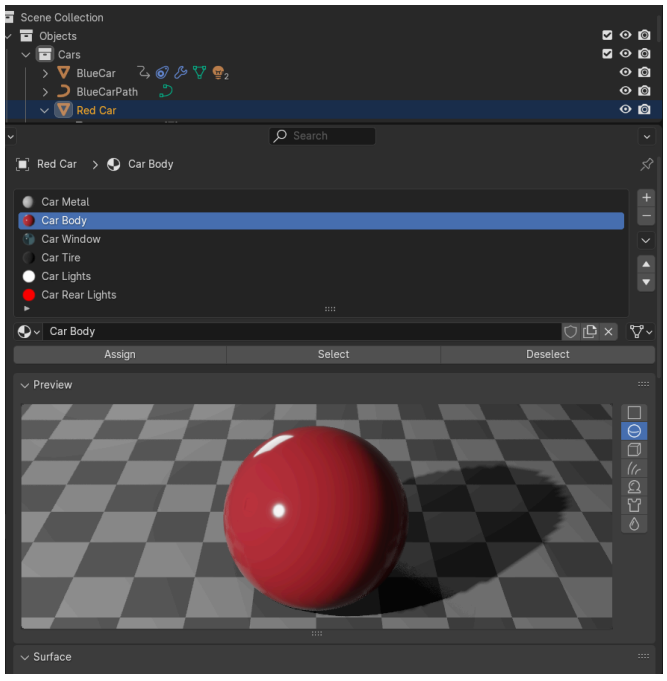
subdivision, the contours of the vehicle were refined to achieve a realistic appearance. The window areas were carefully crafted to maintain transparency and reflectivity, enhancing the overall visual appeal of the car.

Car Tire: Blender's modeling tools were employed to create the tires of the car. Techniques such as loop cuts, proportional editing, and subdivision surface modifiers were used to shape the tires and add details such as treads and sidewall markings, giving them a lifelike appearance.

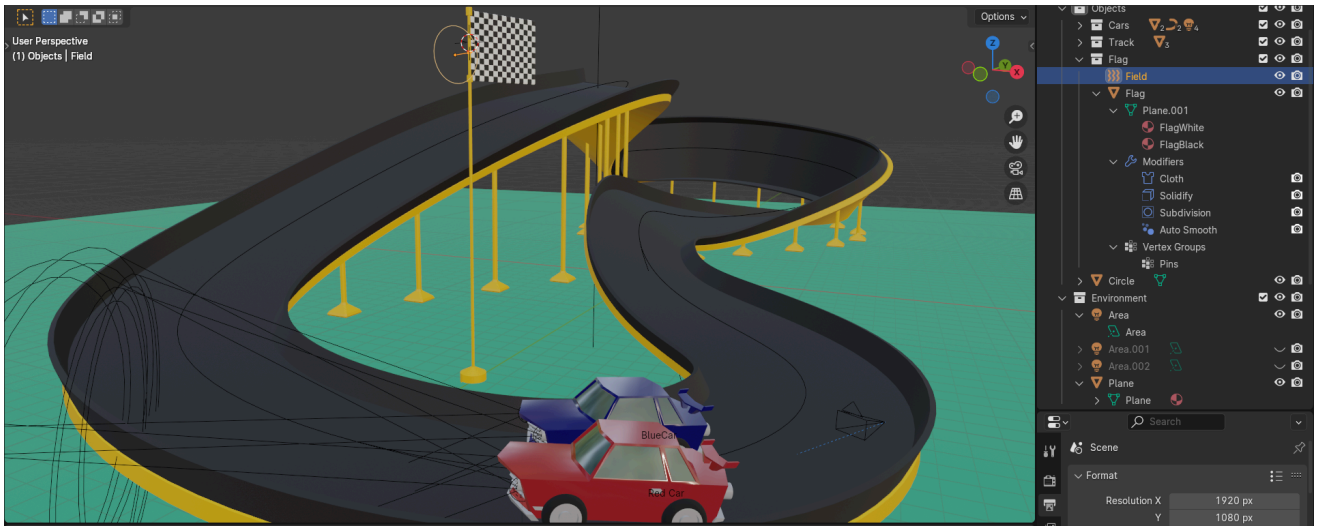
Car Lights and Rear Lights: Using Blender's lighting features, spotlights were positioned to simulate the headlights and rear lights of the car. By adjusting parameters such as intensity, color, and falloff, realistic lighting effects were achieved, enhancing the visual impact of the animation.

Follow Path Constraint: To animate the movement of the car along a designated path, Blender's constraint system was utilized. A Follow Path constraint was applied to the car object, allowing it to automatically follow the specified path while maintaining its orientation and speed, facilitating smooth and controlled motion throughout the animation.



**Material Preview:**




Cloth Modifier: The Cloth modifier was applied to the flag mesh, allowing it to behave like a flexible fabric. Parameters such as stiffness, damping, and tension were adjusted to control the material's elasticity and response to external forces.

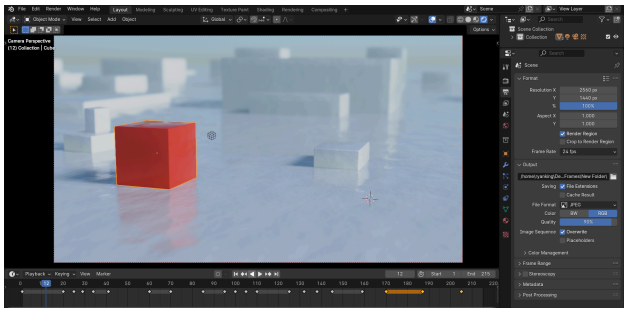
Solidify Modifier: To give the flag thickness and volume, the Solidify modifier was utilized. This added depth to the flag, making it appear more substantial and realistic.

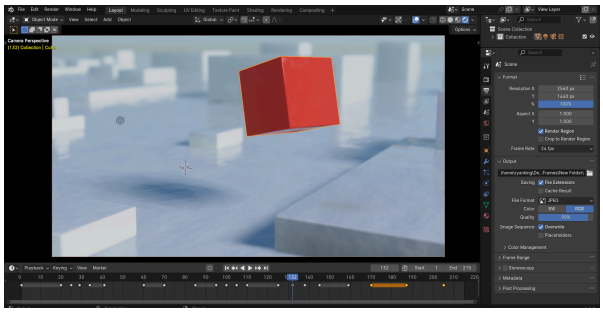
Subdivision Modifier: The Subdivision modifier was employed to smooth out the flag's surface and enhance its overall appearance. By subdividing the mesh, finer details and smoother curves were achieved, resulting in a more polished final result.

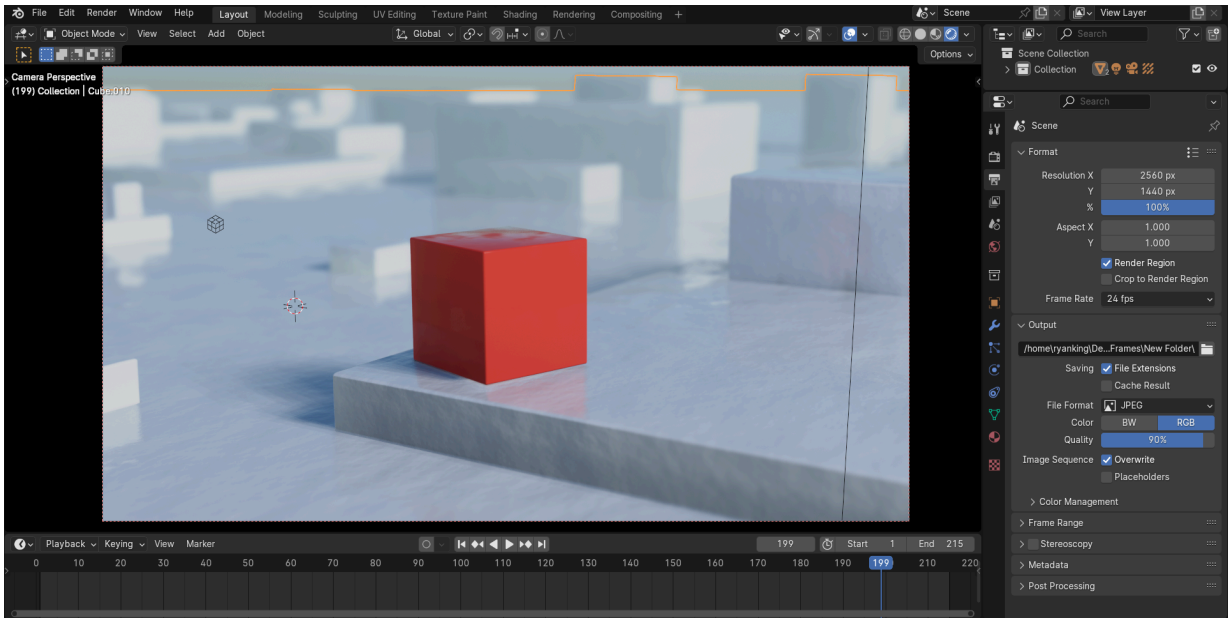
Auto Smooth: The Auto Smooth feature was enabled to automatically smooth out sharp edges while preserving creases and defined angles on the flag. This helped maintain the flag's natural look while preventing it from appearing overly rigid or artificial.

Animation: Keyframe animation was used to animate the flag's movement, simulating the effect of it waving in the air. By animating the position, rotation, and scale of the flag over time, dynamic motion was created, adding realism and depth to the scene.

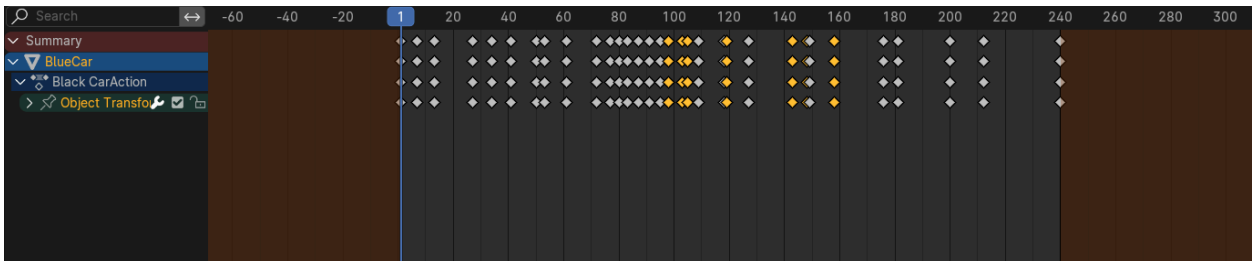
**Animation:**
Followed a YouTube tutorial for better understanding of how to incorporate animation using key frames:
[Droplink]





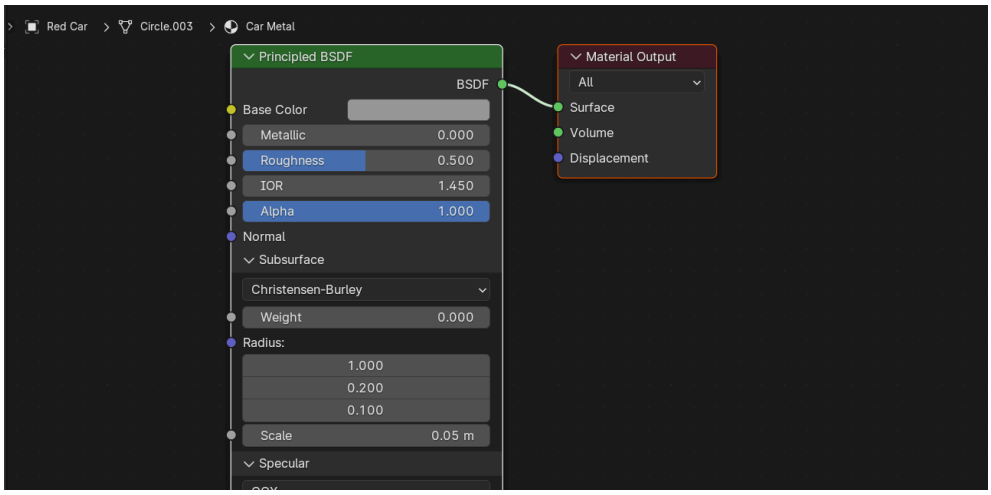


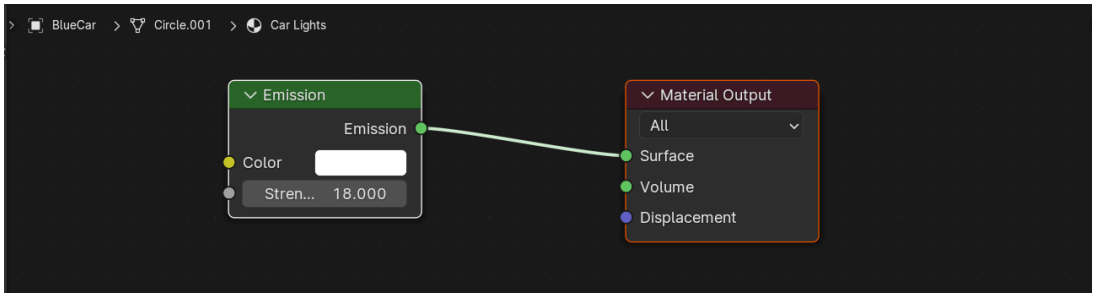
HDRIs taken from: https://polyhaven.com/hdris




Keyframes added for scale,transform and rotation of the cars

**Shader Nodes:**

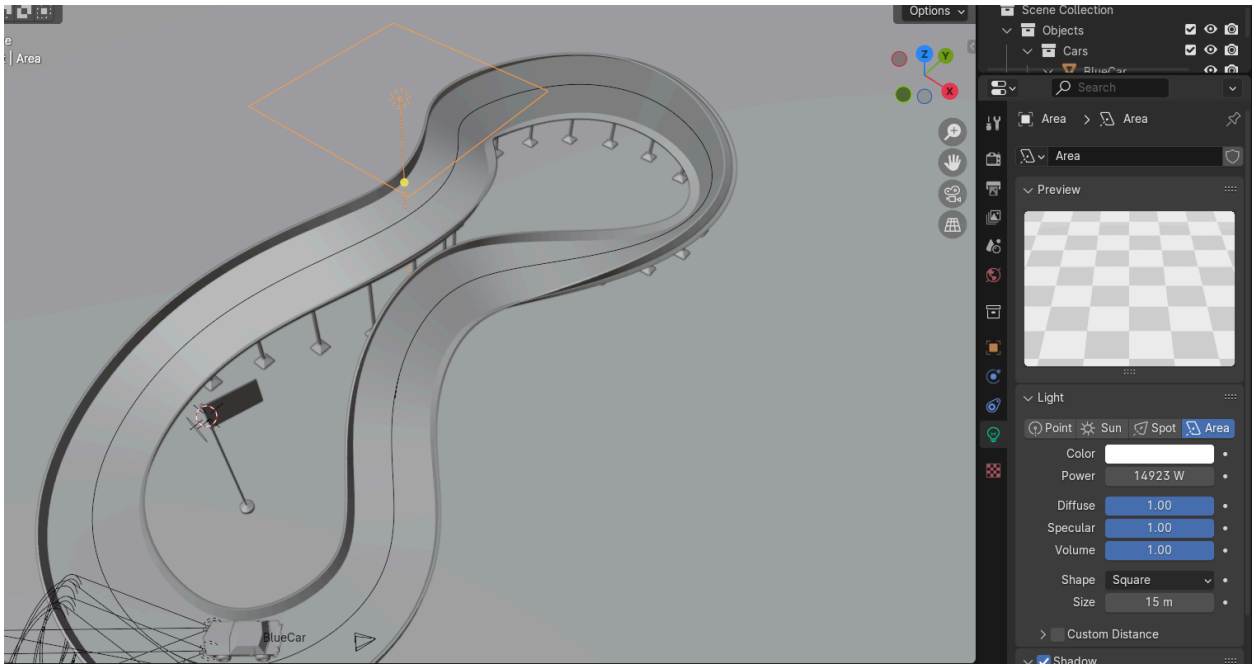



The Principled BSDF (Bidirectional Scattering Distribution Function) is commonly used as a versatile and powerful shader for creating realistic materials. The Principled BSDF combines multiple shader properties into a single node, simplifying the material creation process while offering a wide range of controls for fine-tuning.
When the Principled BSDF node is linked to the Surface input in the Material Preview, it effectively tells Blender how light interacts with the surface of the object. The Surface input represents the outer layer of the material, defining its appearance when illuminated by light sources in the scene.

The Emission shader is commonly used to create light sources or objects that emit light.
Light Source Simulation: Car lights, such as headlights and brake lights, emit light in the real world. By linking the Emission shader to the Surface input, Blender simulates this behavior, allowing the car lights to emit light within the 3D scene. This creates a realistic effect that accurately represents how car lights illuminate their surroundings.

## Lighting:




One Area light used over the top. Could have made the lights more cinematic but we were honestly kinda sleepy by then :)

# THAT WAS IT !

# THANKS

You've reached the end of this report.Now go treat yourself to a well-deserved snack or a dance break. You've earned it!