Test Task: Development and Integration of a Vehicle Telemetry System in Unity

Background

In this test assignment, you are tasked with the development of a Vehicle Telemetry System using Unity. You will be supplied with a set of prebuilt assets, which include various vehicle models and road structures, as well as the Vehicle Physics Pro (VPP) package. Your responsibilities extend beyond the mere extraction and management of vehicular metrics. Specifically, you will need to create a visually cohesive scene that includes a base road and a functioning vehicle using the provided assets. Additionally, you are expected to customize the settings of the Vehicle Physics Pro package to suit one of the supplied vehicle models.

Requirements

1. **Time Constraint**: This test assignment should be completed within a time frame of 8-10 hours
2. **Version Control:** Maintain a private GitHub repository, committing at each critical stage of development
3. **Project Initialization:** Download and import the provided asset packs and Vehicle Physics Pro package into a new Unity project. Establish a base road and customize the VPP for one of the included vehicle models
4. **Parameter Extraction**: Create a class or manager to extract and monitor the following metrics:
    a. **Vehicle Velocity:** Retrieve the current traveling speed of the vehicle, measured in kilometers per hour (km/h)
    b. **Engine Rotations:** Capture the engine's revolutions per minute (RPM) to understand its performance rate
    c. **Engine Status:** Determine whether the vehicle's engine is currently activated or deactivated
    d. **Active Gear Position:** Identify the gear that is currently engaged during the vehicle's operation
    e. **Transmission Operating Mode:** Ascertain the current mode of the vehicle's transmission system, such as automatic, manual, or semi-automatic
    f. **Proximity to Next Car:** Calculate and display the real-time distance, in meters, between the player's vehicle and the nearest following car. This measurement should be limited to a range of 20 meters and only be activated when the other vehicle comes within the player's field of view
5. **Global Accessibility:** Design the system such that the extracted vehicle parameters are universally accessible throughout the codebase, allowing for real-time monitoring and data usage across various game components

6. **On-Screen HUD:** Implement a real-time Heads-Up Display (HUD) to display these metrics while the game is in progress

Evaluation Criteria

We will evaluate your submission based on the following criteria:

1. **Code Structure:** Adherence to Rider-style code styling with well-commented and organized code
2. **Functionality:** Successful extraction and accessibility of all required parameters
3. **Implementation:** Effective use of Unity-specific optimizations
4. **Version Control:** Clean commit history with meaningful messages, branching (if needed), and a comprehensive README
5. **HUD Display:** Usability and presentation of the real-time HUD

Assets

1. Roads and Environment - Unity Asset Store
2. Vehicles - Unity Asset Store
3. Vehicle Physics Pro - Unity Asset Store

Afterword

Upon successful submission and review of your assignment, we will reach out to discuss the results and potential future collaborations. This test serves as an initial assessment of your capabilities, and exemplary performance may pave the way for involvement in more advanced and challenging projects. Should you have any questions or require clarification before commencing the test task, feel free to reach out at your earliest convenience.

Good luck.