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Project Pre-Proposal

Summary

My objective is to create an animation using vPython of a racecar moving around a track. This project will contain two views, enabling the user to toggle between an overhead view and an in-car view. Since I am inexperienced with vPython programming, I will rely on thorough analysis of other vPython projects in order to learn the things necessary to achieve my project goals. I may also require the assistance of the professor and mentors to assist me with coding errors that I am unable to understand. I hope that my enrollment in CS 101, a course which teaches the fundamentals of Python, will give me a basis for working with vPython.

Project Description

As stated above, my objective is for the user to be able to select from two perspectives from which to view the car. The first perspective will be an overhead view, which will depict the car as it progresses around a fixed course. This will be accomplished by first establishing a course and then constructing a point which moves along the closed path. Then, I will find or create an image of a car to be attached to the point, giving the impression that it is moving along the track. The car will have to rotate as it enters corners to simulate the turning motion of a vehicle as it moves along a curved path. Similar projects from which I can gain an understanding of a particle's motion include the orbiting planets example in /Resource/vPyExamplesAnnot/.

The other perspective will be from an in-car point of view, in which the user will be simulated as the driver. This view will depict a still image of the dashboard of a vehicle with a moving image inside a windshield. The dashboard will contain elements such as a steering wheel, a speedometer, and a gear shift. I am interested in the potential for the user to be able to interact with certain elements of the vehicle's interior, such as moving the gear shift or turning the steering wheel. An example of user interaction that exhibits an effect on the program is hanoi.py, which enables the user to move colored rings from one peg to another. I am considering making it so that the user can adjust the position of the gear shifter to various locations in the gear box.

The windshield of the racecar will project the view out of the front of the racecar. The landscape shown to the user will adjust based on the racecar's position along the track. I aim to have trees and/or other objects in the foreground which move based on the car's relative position to them. For example, when rounding a left turn, the user will see the trees pass from the left to the right side of the screen, simulating a turning motion from inside the car. I have not yet found an example project that accomplishes a task similar to this one, nor do I know if animation of this complexity is possible using vPython.