Lab02——Running kart

Alexandre，Please notice that：

Purpose：

- Proficiency and comprehensive use of OpenGL programming technology to develop simple 3D interactive games

Basic requirements：

1. Write an OpenGL program that implements the following features:

   Design and draw a car model (the model can be an imported OBJ model) and a simple straight runway; the default view is to observe the car and runway from a fixed point of view outside;

   In the default view, draw the shadow of the car on the runway (customize an imaginary point source);

   Use the mouse and keyboard to control the car's forward, backward, cornering, acceleration and deceleration;

   Define a callback function that corresponds to the ReShape event so that when the user changes the size of the window, the displayed car will not be distorted.

2. Additional questions (can choose to do 0, 1 or more, the upper limit is full marks)

   use a curved closed runway;

   Make a pop-up menu, the menu items above use to customize some parts of the car such as the wheel, body color, etc. and exit the program;

   Set some road signs on the roadside, texture mapping on the ground, runway and/or sky to enhance fidelity.

   In addition to the default view, the second view is supported: a view sitting in the car looking forward from the driver's seat. Use the "t" key to switch between the two views.

   Alexandre should submit a ".zip" or ".rar" compressed file package named as "Lab02_Alexandre.zip" or "Lab02_Alexandre.rar" containing:

   1. A lab report (Lab02_Alexandre.pdf) that describes how you designed the program, what features your program implements, and gives screenshots.
   2. The complete project file.

Please submit it to cg2019fall@163.com before 10:00 on November 10, 2019.

实验2——跑跑卡丁车

实验目的：

- 熟练掌握和综合运用OpenGL编程技术来开发简单的三维交互式游戏

实验内容：

1. 编写一个OpenGL程序，实现以下功能：
- 设计并绘制一辆汽车模型（该模型可以是导入的OBJ模型）以及一个简单的直线跑道；缺省视图是从外面一个固定的视点观察汽车和跑道；
- 在缺省视图下，绘制汽车在跑道上的阴影（自定义一个假想的点光源）；
- 利用鼠标和键盘控制汽车前进、后退、转弯、加速和减速；
- 定义对应于ReShape事件的回调函数，使得当用户改变窗口的大小时，显示的汽车不会变形。

2. 加分题（可选择做其中的0个、1个或多个，上限为满分）
- 采用弯曲的封闭的跑道。
- 制作一个弹出菜单，上面的菜单项用来自定义小车的部分部件如车轮、车体颜色等以及退出程序；
- 在路边设置一些路标，对于地面、跑道和/或天空进行纹理映射等以增强逼真度。
- 除了缺省视图之外，支持第二种视图：坐在车内从驾驶座位向前看的视图。两种视图之间用"t"键进行切换。

3. 完成一份实验报告,描述你如何设计本程序,你的程序实现了哪些功能,并且给出屏幕截图。
4. 打包（Lab02_Name.zip）提交实验报告(Lab02_Name.pdf)和完整的工程文件
5. 请于2019年11月10日早10点前提交至cg2019fall@163.com，邮件主题与文件名相同。