

Mini project Report

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Project name: Crazy Helicopter

Part one: How to make the helicopter fly?

Control method:

Press s: To start the motion of the helicopter.

Press e: To end the motion of the helicopter.

Initially, the helicopter will move at a uniform speed.

To control the speed of the helicopter:

Press a: The helicopter will move at a higher speed.

Press d: The helicopter will move at a lower speed.

You can click the keyboard to rack the focus:

Press Z: The camera will zoom in on the plane.

Press z: The camera will zoom out.

You can click the keyboard to turn off / turn on the lights:

Press F1: Control the status of the sunlight.

Press F2: Control the status of the blue circle light.

You can click the keyboard to control the slope of the plane(recommended):

UP: Uptilt the plane.

DOWN: Tilt down the plane.

LEFT: Rotate the ground and the helicopter CCW.

RIGHT: Rotate the ground and the helicopter CW.

Press r: Reset the settings:

By the way, you can also use mouse to change the position of the whole scene:(cannot resetting, not recommended). //mouse move

Press q: To exit.

Part two: Functions made to be more realistic.

Basic functions to realize the basic part of the project:

When you press the key of a or d, the speed of the helicopter will change accordingly. Also, the propeller will also change the rotation speed accordingly.

The camera is not fixed, but to move with the plane.

Using techniques learned from the class to realize the function of hierarchical object building, lighting, shadow, and animation.

Adding some new functions to refine the scene:

glScissor — define the scissor box

While scissor test is enabled, only pixels that lie within the scissor box can be modified by drawing commands. Window coordinates have integer values at the shared corners of frame buffer pixels. When the scissor test is disabled, it is as though the scissor box includes the entire window.

8-shape like path equation

I find the parameter equation of the 8-shape like path and attach the equation to the path object and helicopter to make sure that the path is 8 shape like, and the helicopter can automatically move along the 8-shape path. The camera moving is also connected with this equation.

Difficulty encountered:

The coordinates of different objects are difficult to make them match each other.

The texture is always disappearing after running the program several seconds.

Cannot match the camera and the helicopter very well.

Methods to solve the problems:

Build the helicopter first in unit size, and then match it with the ground using glScalef function.

Using small size bmp texture to fix the bug.

Add a new parameter to control the increment value.

"I declare that every line of code is written by myself and I have not committed any plagiarism. Signed

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