CS 550 | Fall 2023

**Project 2**

## “ Using Transformations to Animate a Carousel Horse! "

By

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* **Link to video** 🡪 https://media.oregonstate.edu/media/t/1\_7os1cyd4

**Description 🡪**

The provided code seems to be a component of a computer graphics application that uses OpenGL to show a 3D scene. It creates display lists, defines a number of functions, and generates an orbit for the horse to move in. The question requests a description of the modifications made to the horse in order to produce a specific display. Let's examine the changes and how they affected the horse's performance:

* Down and Up Translation:

The code does not explicitly show this transformation. It may, however, be a component of the model's or object's initial setup of position. The initial glTranslatef calls would need to be changed in order to translate the horse up or down. However, the code given does not contain any support for these translations.

* Turn Around in a Circle:

Both the glTranslatef and glRotatef functions would be used to rotate the horse in a circle. The provided snippet does not, however, contain any direct code for this transformation. To accomplish this, you would typically update the glPushMatrix block's glTranslatef and glRotatef parameters. To make the horse follow the arc, you should update the translation and rotation. The snippet is missing the precise code needed to perform this transformation.

* Translation of the Origin to the Circumference:

This translation is implicit in the code, much like the circular motion. You would need to change the translation values contained within the glPushMatrix block in order to move the horse from the origin to the circumf

* Back and forth rocking

Through repeated transformations within the display list, the rocking back and forth motion is made possible. To produce the rocking motion, the horse is translated along the y-axis. Although not apparent in the provided snippet, this motion would be produced by including glTranslatef calls to produce a rocking effect.

In conclusion, the provided code snippet does not explicitly show the transformations needed to achieve the desired display. To control the circular motion, translate from the origin, and produce the rocking back and forth effect, you would need to change the translation and rotation parameters within the glPushMatrix block. The horse's fundamental structure, rendering, and circular orbit are defined by the provided code.

**Screenshots 🡪**

A screen shot of a computer

Description automatically generated

A screenshot of a computer program

Description automatically generated

A screenshot of a computer program

Description automatically generated

A yellow circle with a figure and x

Description automatically generated with medium confidence