Report

In Assignment -2 I created 2 3D models (Saturn and Cup) and rendered them on screen. I used the equations given in the Question PDF to animate an object movement. I used key bindings to rotate and scale the object. I can select an axis and rotate the coordinate system about it. I can select an object using mouse click.

Key Bindings:

1. a -> render the axes
2. b -> render the models at origin
3. d -> render the models at the corner of axes
4. q, w, e -> rotate the selected object at x y z axes respectively
5. t -> toggle between top view and 3D view.
6. m -> go to animate mode
7. + -> scale up the object
8. - -> scale down the object

Question-1:

I was able to use most of the code used in Assignment-1 for rotation, Translation and scaling of the object. The shader and renderer files remain the same. Transform file changes only for rotation function other than that it remains the same. I had to add additional functionality of rotating the camera, and animating the object in index.js file

Question-2:

The primary changes are: The model view matrix goes from 3 *3 to a 4 x 4 matrix to accommodate for the additional dimension. The z axis is no longer 0 but is given a value. Each vertex has 3 coordinates in place of 2 coordinates. There are different point of view from which we can see the object. So the camera is also added into the functionality.

Question-3:

First the object is translated using translation matrix then the object is rotated using rotation matrix and then scaling is done using scaling matrix. Yes, if I remove a condition called stationary_mode which tells if the model is stationary or not then we can rotate and scale object during animation.

Question-4:

Value of t1 is chosen randomly for 3 points in this case. For n > 3 I can use Bezier curve to get a smooth curve through n points