COMPUTER GRAPHICS

Project Report: 3D objects and implementation

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Introduction:

This project aims to implement the 3D objects with the transformations and the projections. In this project I would initially implement the 2D transformations of the objects with top, front and side views. Later I would apply the transformations like Translating, Rotating, Shearing, and Scaling. This would basically give me the idea of 2D and later apply this knowledge to the creation of the 3D objects. For 3D objects additional features like generating the projections, editing and changing the projections, creating the textures or mappings of the objects will be developed further in the assignments. This week I added css 3D animation and bouncing cube on plane.

Implementation:

I worked mostly on the svg and web toolkit in the initial weeks. In the later weeks I worked with 3js JavaScript API. It is very interesting to work on the Camera and rendering of the objects. In final Submission week I added the functionality of the CSS 3D animation of different views like sphere, Grid, Helix and bouncing cube on the plane.

CSS3d_CG.html:- This file contains 3d animation of the Cube bouncing on the plane. This is developed using three.js JavaScript API. We can view different ASCII characters changing on the cube when the cube is rotating and bouncing. Click on this html page from the link and then the animation can be viewed. Drag on the screen with mouse to change the view of the cube.

Canvas_ascii_effect.html: This file contains the code to execute the bouncing cube on the plane with different ASCII characters. You can drag the mouse to change the views of the bouncing cube on the plane. The ASCII characters adjustment can be made in the AsciiEffect.js script file.

In week 1 : I implemented the front, top and side views of the house.
In week 2 : I implemented the rotating Scaling, shearing, translating for all the house views.
In week 3 : I implemented the 3D House viewing and the parallel and perspective projections of the cube.
In week 4 : I implemented the 3D cube, cone, cylinder and they rotate with certain speed as per the settings in the code and remaining Cube Projections.
In week 5 : I implemented the Camera and shadowing of the Cylinders and sphere textures.

References:

1. https://www.w3schools.com/graphics/
2. https://stackoverflow.com/
3. https://threejs.org/