EUROPEAN UNIVERSITY OF LEFKE
Faculty of Engineering
Department of Software Engineering

COMP - 465

COMPUTER GRAPHICS

Interactive 3D Modeling Tool

(Term Project)

Prepared by Ali Hikmet Keklik (180151)

Submitted to Asst.Prof.Dr. Cem Kalyoncu

Interactive 3D Modelling Tool

Aim:

The aim of this program is to create a simple 3D modelling tool that allows the user to create and color 3D quads (four-sided polygons) in a 3D space. The program also includes a cube, in which the user can move a cube around the 3D space.

Explanation of How the Project was Created:

The project was created using the OpenGl (Glut) library in C++. The program includes functions to initialize the OpenGL window and set up the 3D projection, as well as functions to handle user input and draw the 3D model.

The program begins by defining a structure called "Quads" to represent each quad in the model. The structure includes variables to store the coordinates of the quad's four vertices, as well as variables for the quad's color and state. The state variable is used to track the progress of adding a new quad, and the total variable is used to keep track of the total number of quads in the model.

The program also includes a function called "addQuad" that is called whenever the user presses the space key. This function increments the state variable for the current quad and updates the coordinates of the quad's vertices. When the state variable reaches 4, a new quad is added to the model and the state variable is reset to 1.

After creating the quad pressing "y, r, b, c, g" keys will give it color or leave it default as black.

The program also includes functions to draw the quads and the grid, as well as a function to draw the cube. The user can move the cube by pressing the arrow keys (w,a,s,d,q,z).

The program enables us to view the quads from different angles by using mouse movements.

Limitations:

- The program can only handle up to 100 quads.
- The user can only add quads one at a time, and must manually enter the coordinates of each vertex.
- The program does not include any features for deleting or modifying existing quads.
- The program does not include any features for saving or loading the 3D model.

Conclusion:

Overall, this program provides a simple and intuitive interface for creating 3D models using quads and a cube. While it has some limitations, it could be a useful tool for quickly prototyping 3D models or for learning about 3D graphics programming.

Output Examples: