City River Scenario

Computer Graphics

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**DECLARATION**

We, hereby, declare that the work presented in this Project is the outcome of the investigation performed by us under the supervision of Md. Hasibur Rahman, Lecturer, Department of Computer Science and Engineering, BUBT, Dhaka, Bangladesh.

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# **Introduction**

OpenGL provide various viewing function that helps us to develop various views of single object, and the way in which it appears on screen. Orthographic projection is the default view. OpenGL also provide various transformation functions with the help of these functions’ user can render its object at the desired location on the screen.

OpenGL provides a set of commands to render a three-dimensional scene. OpenGL is a hardware and system-independent interface. An OpenGL-application will work on every platform as long as there is an install GLUT library.

# **Objectives**

The main objectives of this project are:

1. To become familiar with how computer graphics works.
2. To implement the features of graphics.
3. To interface the applications of graphics to the real world.
4. To implement drawing algorithms in coding.

**Procedure of Drawing**

First of all we need to implement the libraries for using GLUT. Then I create some Global variables to move the objects using functions. Then I create a void function **drawScene** with this function we have created the objects like car’s wheel, cloud, sun, trees etc.

We use glPushMatrix function In GL\_MODELVIEW mode, the stack depth is at least 32. In the other two modes, GL\_PROJECTION and GL\_TEXTURE, the depth is at least 2. The current matrix in any mode is the matrix on the top of the stack for that mode. The **glPushMatrix function** pushes the current matrix stack down by one, duplicating the current matrix.

**Sky**: sky color is set to be sky blue with **glColor3f()** function. And with **glBegin(GL\_POLYGON)** function and setting the vertices with **glVertex3f()** function a shape for sky is drawn.

**Cloud**: We draw the cloud with the shape of many circles. We create a some loops to give those circles a form of clouds.

**Plane**: with the help of glBegin(GL\_POLYGON) function we create a shape of a plane and color it white with the glColor3f function.

**Road**: we draw road with the help of glBegin(GL\_POLYGON) function. And then give 2 borders on both sides so that It look likes a road and give some lines in the middle of the road.

**Buildings**: To draw the buildings we first give it a shape of some squres using glBegin(GL\_POLYGON) and then give it some windows so that it looks like a house. And give various of colors so it look nice.

**Trees**: we create 4 trees front and 1 tree back with the help of glBegin(GL\_POLYGON). Give it a shape of trees and give it green color so look like a tree.

**River:** we give a square shape using glBegin(GL\_POLYGON) and then color it blue so it’s looks like a river and give it a border.

**Boat**: with the same function we give a shape of a boat.

**void update:** we use this function to update the values of move so that we can move the things according to our need.

And finally, we call the **drawScene** function in the function so that it run properly and Also give a windows size of 1200,1200 using help of **glutInitWindowSize.**

**Conclusion**

The project is well suited for designing 2D and 3D objects, as well as for carrying out basic graphics functionalities like drawing a simple line, a cube , a circle , a square or filling them however you want.

This project enabled to work with mid-level OpenGL complexity and the project demonstrate the scope of OpenGL platform as a primary game development kit. OpenGL has a very good recommendation for simple level game development.

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