Lab Report – 01

Course Code : CSE 412

Course Title : Computer Graphics Lab

Experiment No : 01

Experiment Name : Implementation of Basic Shapes with some basic built in functions

Submitted To :

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Submission Date : 15-01-2026

Lab Report: 01

Implementation of Basic Shapes with some basic built in functions

1. Title: Drawing a Point Using OpenGL

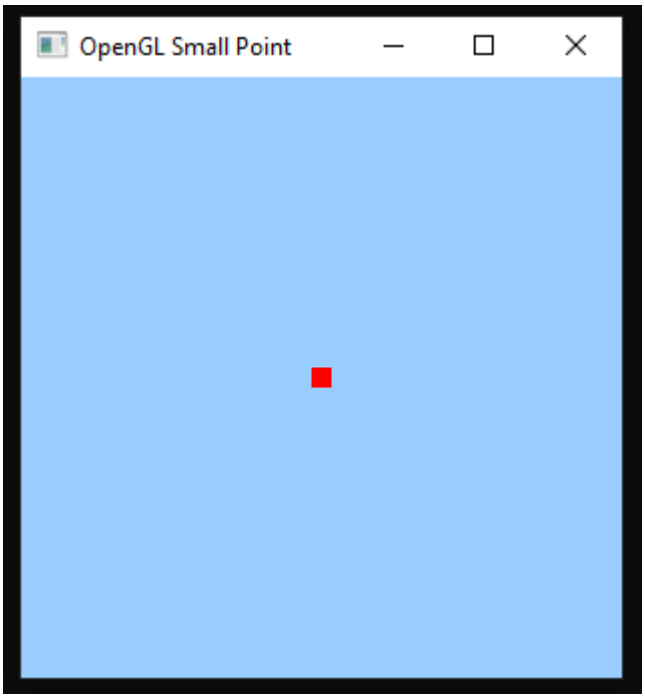
Introduction:

In this project, I have created a simple OpenGL program to draw a single point on the screen. The program uses basic OpenGL functions to set the background color, point color, and point size. The point is drawn at the center of the window using a 2D coordinate system.

Contents:

- **Function Used:** `glBegin(GL_POINTS), glVertex2f(), glColor3f(), glPointSize()`
- **Shape Used:** Point

Graph:



Draw X and Y axis and place one point at the center (0,0).

Code (Drawing Portion Only):

```
glColor3f(1.0,0.0,0.0);
glPointSize(10);
glBegin(GL_POINTS);
glVertex2f(0.0, 0.0);
glEnd();
```

Discussion:

The task was to draw a point. I used OpenGL point function to draw it at the center.

2. Title: Drawing a Line Using OpenGL

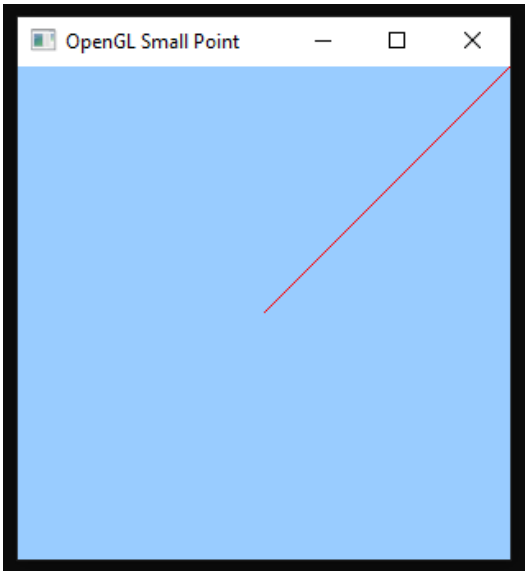
Introduction:

In this project, a simple line is drawn using OpenGL. The line is created by connecting two points.

Contents:

- **Functions Used:** glBegin(), glVertex2f(), glColor3f(), glPointSize()
- **Shape Used:** Line (using two points)

Graph:



Draw X and Y axis. Mark two points and join them with a straight line.

Code (Drawing Portion Only):

```
glColor3f(1.0,0.0,0.0);
glPointSize(10);
glBegin(GL_LINES);
glVertex2f(0.0, 0.0);
glVertex2f(4.0, 4.0);
glEnd();
```

Discussion:

The task was to draw a line. I solved it by using two points and connecting them with the GL_LINES function.

3. Title: Drawing a Triangle Using OpenGL

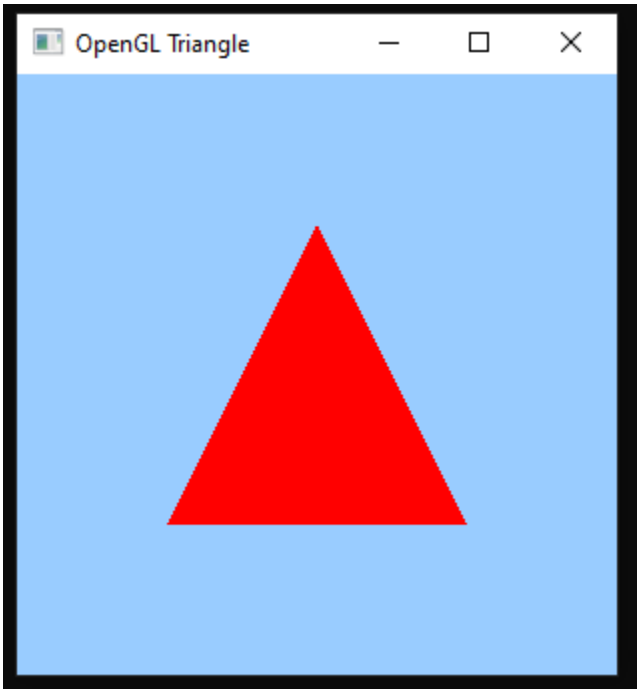
Introduction:

In this project, a simple triangle is drawn using OpenGL. The triangle is displayed at the center of the window.

Contents:

- **Functions Used:** glBegin(), glVertex2f(), glColor3f(), glEnd()
- **Shape Used:** Triangle

Graph:



Draw X and Y axis and sketch a triangle using three points.

Code (Drawing Portion Only):

```
glColor3f(1.0, 0.0, 0.0);
glBegin(GL_TRIANGLES);
```

```
glVertex2f(-0.5, -0.5);
glVertex2f( 0.5, -0.5);
glVertex2f( 0.0,  0.5);
glEnd();
```

Discussion:

The task was to draw a triangle. I used three vertices with the GL_TRIANGLES function to complete the shape.

4. **Title:** **Drawing a Rectangle Using OpenGL**

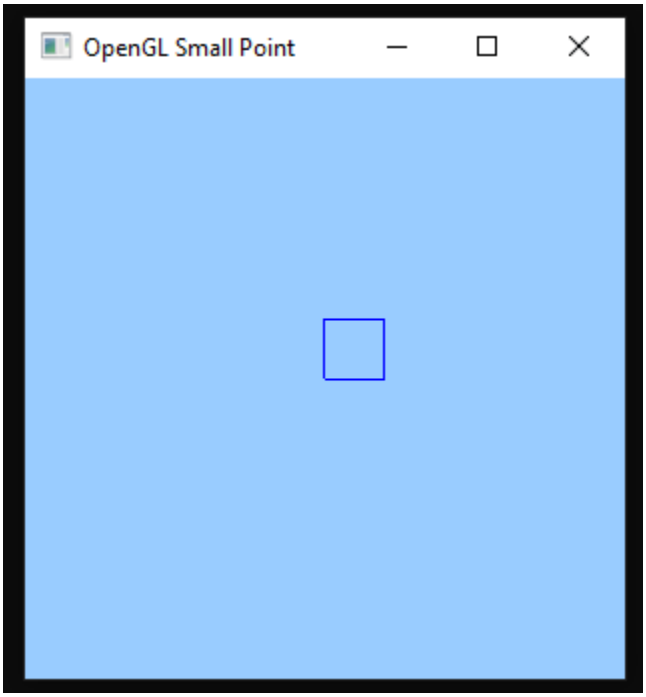
Introduction:

In this project, a rectangle is drawn using OpenGL. The rectangle is created by connecting four straight lines.

Contents:

- **Functions Used:** `glBegin(), glVertex2f(), glColor3f(), glEnd()`
- **Shape Used:** Rectangle

Graph:



Draw X and Y axis and sketch a rectangle using four lines.

Code (Drawing Portion Only)

```
glColor3f(0.0,0.0,1.0);
glBegin(GL_LINES);
glVertex2f(0.0,0.0);
glVertex2f(0.0,2.0);
glEnd();

glBegin(GL_LINES);
glVertex2f(0.0,2.0);
glVertex2f(2.0,2.0);
glEnd();
```

```
glBegin(GL_LINES);
glVertex2f(2.0,2.0);
glVertex2f(2.0,0.0);
glEnd();

glBegin(GL_LINES);
glVertex2f(2.0,0.0);
glVertex2f(0.0,0.0);
glEnd();
```

Discussion

The task was to draw a rectangle. I used four lines to connect four points and form the rectangle.

5. Title: Drawing a House Shape Using OpenGL

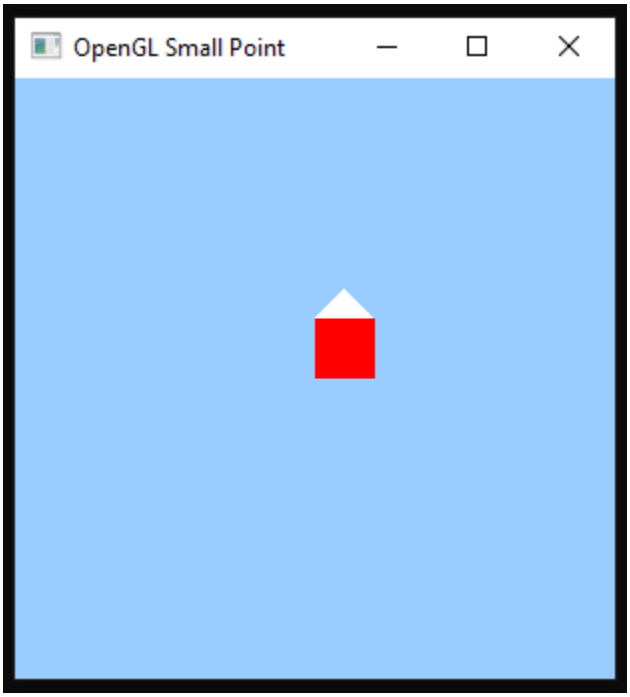
Introduction

In this project, a simple house shape is drawn using OpenGL. The house is made using a rectangle and a triangle.

Contents

- **Functions Used:** `glBegin()`, `glVertex2f()`, `glColor3f()`, `glEnd()`
- **Shapes Used:** Rectangle (body), Triangle (roof)

Graph



Draw X and Y axis and sketch a house with a rectangle and a triangle on top.

Code (Drawing Portion Only)

```
// House body
glColor3f(1.0,0.0,0.0);
glBegin(GL_QUADS);
glVertex2f(0.0,0.0);
glVertex2f(0.0,2.0);
glVertex2f(2.0,2.0);
glVertex2f(2.0,0.0);
glEnd();

// Roof
glColor3f(1.0,1.0,1.0);
glBegin(GL_TRIANGLES);
glVertex2f(0.0,2.0);
```

```
glVertex2f(1.0,3.0);
glVertex2f(2.0,2.0);
glEnd();
```

Discussion:

The task was to draw a house. I used a rectangle for the house body and a triangle for the roof.