**Lab Taks-4**

Submission Guidelines-

* Rename the file to your id only. If your id is 18-XXXXX-1, then the file name must be 18-XXXXX-1.docx.
* Must submit within time that will be discussed in class VUES to the section named Lab Tak-4
* Must include resources for all the section in the table

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| --- |
| **Question- 1**  Draw the scenario of a traffic signal |
| **Graph Plot (Picture)-**  **(Not Needed)** |
| **Code-**  **#include <windows.h> // for MS Windows**  **#include <GL/glut.h> // GLUT, include glu.h and gl.h**  **#include <math.h>**  **/\* Handler for window-repaint event. Call back when the window first appears and**  **whenever the window needs to be re-painted. \*/**  **void background()**  **{**  **//third layer**  **glColor3ub(135,235,250);**  **glBegin(GL\_QUADS);**  **glVertex2f(0.0f,140.0f);**  **glVertex2f(120.0f,140.0f);**  **glVertex2f(120.0f,175.0f);**  **glVertex2f(0.0f,175.0f);**  **glEnd();**  **//second layer**  **glColor3ub(0,191,255);**  **glBegin(GL\_QUADS);**  **glVertex2f(0.0f,175.0f);**  **glVertex2f(120.0f,175.0f);**  **glVertex2f(120.0f,200.0f);**  **glVertex2f(0.0f,200.0f);**  **glEnd();**  **//first layer**  **glColor3ub(30,144,255);**  **glBegin(GL\_QUADS);**  **glVertex2f(0.0f,200.0f);**  **glVertex2f(120.0f,200.0f);**  **glVertex2f(120.0f,220.0f);**  **glVertex2f(0.0f,220.0f);**  **glEnd();**  **}**  **void bottom\_grass()**  **{**  **glColor3ub(50,205,50); // Clear the color buffer (background)**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **glVertex2f(0.0f,-10.0f);**  **glVertex2f(120.0f,-10.0f);**  **glVertex2f(120.0f,40.0f);**  **glVertex2f(0.0f,40.0f);**  **glEnd();**  **}**  **void road()**  **{**  **glColor3ub(128,128,128); // Clear the color buffer (background)**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **glVertex2f(0.0f,40.0f);**  **glVertex2f(120.0f,40.0f);**  **glVertex2f(120.0f,100.0f);**  **glVertex2f(0.0f,100.0f);**  **glEnd();**  **}**  **//Road Side line**  **void road\_line()**  **{**  **glLineWidth(7.0f);**  **glColor3ub(255,255,255); // Clear the color buffer (background)**  **glBegin(GL\_LINES);// Draw a Red 1x1 Square centered at origin**  **glVertex2f(0.0f,45.0f);**  **glVertex2f(120.0f,45.0f);**  **glVertex2f(120.0f,95.0f);**  **glVertex2f(0.0f,95.0f);**  **glEnd();**  **}**  **//Road Middle line**  **void road\_middle\_line()**  **{**  **glLineWidth(12.0f);**  **glColor3ub(255,255,255); // Clear the color buffer (background)**  **glBegin(GL\_LINES);// Draw a Red 1x1 Square centered at origin**  **glVertex2f(5.0f,70.0f);**  **glVertex2f(10.0f,70.0f);**  **glVertex2f(15.0f,70.0f);**  **glVertex2f(20.0f,70.0f);**  **glVertex2f(25.0f,70.0f);**  **glVertex2f(30.0f,70.0f);**  **glVertex2f(35.0f,70.0f);**  **glVertex2f(40.0f,70.0f);**  **glVertex2f(45.0f,70.0f);**  **glVertex2f(50.0f,70.0f);**  **glVertex2f(55.0f,70.0f);**  **glVertex2f(60.0f,70.0f);**  **glEnd();**  **//Zebra Crossing**  **glLineWidth(10.0f);**  **glColor3f(1.0f,1.0f,0.0f); // Clear the color buffer (background)**  **glBegin(GL\_LINES);// Draw a Red 1x1 Square centered at origin**  **glVertex2f(65.0f,50.0f);**  **glVertex2f(70.0f,50.0f);**  **glVertex2f(65.0f,55.0f);**  **glVertex2f(70.0f,55.0f);**  **glVertex2f(65.0f,60.0f);**  **glVertex2f(70.0f,60.0f);**  **glVertex2f(65.0f,65.0f);**  **glVertex2f(70.0f,65.0f);**  **glVertex2f(65.0f,70.0f);**  **glVertex2f(70.0f,70.0f);**  **glVertex2f(65.0f,75.0f);**  **glVertex2f(70.0f,75.0f);**  **glVertex2f(65.0f,80.0f);**  **glVertex2f(70.0f,80.0f);**  **glVertex2f(65.0f,85.0f);**  **glVertex2f(70.0f,85.0f);**  **glVertex2f(65.0f,90.0f);**  **glVertex2f(70.0f,90.0f);**  **glEnd();**  **glLineWidth(12.0f);**  **glColor3ub(255,255,255); // Clear the color buffer (background)**  **glBegin(GL\_LINES);// Draw a Red 1x1 Square centered at origin**  **glVertex2f(75.0f,70.0f);**  **glVertex2f(80.0f,70.0f);**  **glVertex2f(85.0f,70.0f);**  **glVertex2f(90.0f,70.0f);**  **glVertex2f(95.0f,70.0f);**  **glVertex2f(100.0f,70.0f);**  **glVertex2f(105.0f,70.0f);**  **glVertex2f(110.0f,70.0f);**  **glVertex2f(115.0f,70.0f);**  **glVertex2f(120.f,70.0f);**  **glEnd();**  **}**  **void top\_grass()**  **{**  **glColor3ub(50,205,50); // Clear the color buffer (background)**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **glVertex2f(0.0f,100.0f);**  **glVertex2f(120.0f,100.0f);**  **glVertex2f(120.0f,140.0f);**  **glVertex2f(0.0f,140.0f);**  **glEnd();**  **}**  **void traffic\_light()**  **{**  **//traffic light pillar**  **glLineWidth(15.0f);**  **glColor3ub(0,0,0);**  **glBegin(GL\_LINES);**  **glVertex2f(75.0f,100.0f);**  **glVertex2f(75.0f,135.0f);**  **glEnd();**  **//light holder**  **glColor3ub(0,0,0);**  **glBegin(GL\_POLYGON);**  **glVertex2f(72.5f,135.0f);**  **glVertex2f(77.5f,135.0f);**  **glVertex2f(77.5f,165.0f);**  **glVertex2f(72.5f,165.0f);**  **glEnd();**  **//red light**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(255,0,0);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=1.8f;**  **float x = r \* cos(A);**  **float y = r \* sin(A);**  **glVertex2f(x+75,y+140 );**  **}**  **glEnd();**  **//yellow light**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(255,255,0);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=1.8f;**  **float x = r \* cos(A);**  **float y = r \* sin(A);**  **glVertex2f(x+75,y+150 );**  **}**  **glEnd();**  **//green light**  **glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin**  **for(int i=0;i<200;i++)**  **{**  **glColor3ub(0,255,0);**  **float pi=3.1416;**  **float A=(i\*2\*pi)/200;**  **float r=1.8f;**  **float x = r \* cos(A);**  **float y = r \* sin(A);**  **glVertex2f(x+75,y+160 );**  **}**  **glEnd();**  **}**  **void display() {**  **glClearColor(0.0f, 0.0f, 0.0f, 1.0f); // Set background color to black and opaque**  **glClear(GL\_COLOR\_BUFFER\_BIT);**  **//function calling**  **background();**  **bottom\_grass();**  **road();**  **road\_line();**  **road\_middle\_line();**  **top\_grass();**  **traffic\_light();**  **glFlush(); // Render now**  **}**  **int main(int argc, char\*\* argv) {**  **glutInit(&argc, argv); // Initialize GLUT**  **glutCreateWindow("Scenario of a traffic signal ");**  **glutInitWindowSize(320, 320);// Set the window's initial width & height**  **gluOrtho2D(0.0,120.0,-10.0,220.0); //resize the axis size**  **glutDisplayFunc(display);// Register display callback handler for window re-paint**  **glutMainLoop(); // Enter the event-processing loop**  **return 0;**  **}** |
| **Output Screenshot (Full Screen)-** |