**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 using function to represent each object |
| **Graph Plot (Picture)-**  **A screenshot of a computer  Description automatically generated** |
| Code-  #include <windows.h>  #include <GL/glut.h>  #include <math.h>  void Road(){  glBegin(GL\_QUADS);  glColor3f(0.0, 0.0f, 0.0f);  glVertex2f(-1.0f, -0.2f);  glVertex2f(-1.0f, -.6f);  glVertex2f(1.0f, -.6f);  glVertex2f(1.0f, -0.2f);  glEnd();  glBegin(GL\_QUADS);  glColor3f(0.0, 0.0f, 0.0f);  glVertex2f(0.2f, -0.2f);  glVertex2f(0.6f, -0.2f);  glVertex2f(-0.1f, 1.0f);  glVertex2f(-0.2f, 1.0f);  glEnd();  glLineWidth(3);  glBegin(GL\_LINES);  glColor3ub(173, 255, 47);  glVertex2f(-1.0f, -0.4f);  glVertex2f(1.0f, -0.4f);  glEnd();  }  void Building(){  glBegin(GL\_QUADS);  glColor3f(0.4f, 0.2f, 0.1f);  // draw the building  glVertex2f(-0.7f, 0.55f);  glVertex2f(-0.7f, 0.05f);  glVertex2f(-0.3f, 0.05f);  glVertex2f(-0.3f, 0.55f);  glEnd();  // Lines  glBegin(GL\_LINES);  glColor3f(0.2f, 0.2f, 0.2f);  glVertex2f(-0.7f, 0.4f);  glVertex2f(-0.3f, 0.4f);  glEnd();  glBegin(GL\_LINES);  glColor3f(0.2f, 0.2f, 0.2f);  glVertex2f(-0.7f, 0.4f);  glVertex2f(-0.3f, 0.4f);  glEnd();  glBegin(GL\_LINES);  glColor3f(0.2f, 0.2f, 0.2f);  glVertex2f(-0.7f, 0.25f);  glVertex2f(-0.3f, 0.25f);  glEnd();  // Windows  glColor3f(0.8f, 0.8f, 0.8f);  glBegin(GL\_QUADS);  glVertex2f(-0.65f, 0.5f);  glVertex2f(-0.65f, 0.45f);  glVertex2f(-0.6f, 0.45f);  glVertex2f(-0.6f, 0.5f);  glEnd();  glBegin(GL\_QUADS);  glVertex2f(-0.4f, 0.5f);  glVertex2f(-0.4f, 0.45f);  glVertex2f(-0.35f, 0.45f);  glVertex2f(-0.35f, 0.5f);  glEnd();  glBegin(GL\_QUADS);  glVertex2f(-0.65f, 0.35f);  glVertex2f(-0.65f, 0.3f);  glVertex2f(-0.6f, 0.3f);  glVertex2f(-0.6f, 0.35f);  glEnd();  glBegin(GL\_QUADS);  glBegin(GL\_QUADS);  glVertex2f(-0.65f, 0.2f);  glVertex2f(-0.65f, 0.15f);  glVertex2f(-0.6f, 0.15f);  glVertex2f(-0.6f, 0.2f);  glEnd();  glBegin(GL\_QUADS);  glVertex2f(-0.4f, 0.35f);  glVertex2f(-0.4f, 0.3f);  glVertex2f(-0.35f, 0.3f);  glVertex2f(-0.35f, 0.35f);  glEnd();  glBegin(GL\_QUADS);  glVertex2f(-0.4f, 0.2f);  glVertex2f(-0.4f, 0.15f);  glVertex2f(-0.35f, 0.15f);  glVertex2f(-0.35f, 0.2f);  glEnd();  // Door  glColor3f(0.2f, 0.1f, 0.0f);  glBegin(GL\_QUADS);  glVertex2f(-0.53f, 0.12f);  glVertex2f(-0.53f, 0.05f);  glVertex2f(-0.47f, 0.05f);  glVertex2f(-0.47f, 0.12f);  glEnd();  }  void Tree(){  glBegin(GL\_QUADS);  glColor3ub(98.0, 83.0f, 83.0f);  glVertex2f(0.6f, 0.1f);  glVertex2f(0.6f, -0.04f);  glVertex2f(0.62f, -0.04f);  glVertex2f(0.62f, 0.1f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3f(00.0f, 01.0f, 0.0f);  glVertex2f(0.61f, 0.14f);  glVertex2f(0.54f, 0.04f);  glVertex2f(0.68f, 0.04f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3f(00.0f, 01.0f, 0.0f);  glVertex2f(0.61f, 0.17f);  glVertex2f(0.54f, 0.07f);  glVertex2f(0.68f, 0.07f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3f(00.0f, 01.0f, 0.0f);  glVertex2f(0.61f, 0.2f);  glVertex2f(0.54f, 0.1f);  glVertex2f(0.68f, 0.1f);  glEnd();  }  void TraficLight(){  glBegin(GL\_QUADS);  glColor3ub(0, 0, 139);  glVertex2f(0.15f, -0.03f);  glVertex2f(0.15f, -0.2f);  glVertex2f(0.18f, -0.2f);  glVertex2f(0.18f, -0.03f);  glEnd();  glBegin(GL\_QUADS);  glColor3ub(0, 0, 139);  glVertex2f(0.18f, -0.03f);  glVertex2f(0.18f, -0.06f);  glVertex2f(0.25f, -0.06f);  glVertex2f(0.25f, -0.03f);  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<500;i++)  {  glColor3ub(255,0,0);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.0099;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x+0.24,y-0.045);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a green 1x1 Square centered at origin  for(int i=0;i<500;i++)  {  glColor3ub(19, 141, 117);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.0099;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x+0.190,y-0.045);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<500;i++)  {  glColor3ub(183, 149, 11);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.0099;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x+0.215,y-0.045);  }  glEnd();  }  void Car(float a)  {  glBegin(GL\_POLYGON);  glColor3ub(230, 0, 0);  glVertex2f(-0.17f+a, -0.23f);  glVertex2f(-0.19f+a, -0.25f);  glVertex2f(-0.23f+a, -0.26f);  glVertex2f(-0.23f+a, -0.31f);  glVertex2f(0.14f+a, -0.3f);  glVertex2f(0.14f+a, -0.26f);  glVertex2f(0.07f+a, -0.25f);  glVertex2f(0.02f+a, -0.22f);  glEnd();  glLineWidth(5);  glBegin(GL\_LINES);  glColor3ub(230, 0, 0);  glVertex2f(-0.168f+a, -0.228f);  glVertex2f(0.018f+a, -0.218f);  glEnd();  //Tyre  glBegin(GL\_POLYGON);// Draw a green 1x1 Square centered at origin  for(int i=0;i<500;i++)  {  glColor3ub(133, 146, 158);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.0196;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.19+a,y-0.30);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<500;i++)  {  glColor3ub(133, 146, 158);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.0196;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x+0.019+a,y-0.30);  }  glEnd();  //window  glBegin(GL\_QUADS);  glColor3f(0.8f, 0.8f, 0.8f);  glVertex2f(-0.154f+a, -0.23f);  glVertex2f(-0.157f+a, -0.25f);  glVertex2f(-0.085f+a, -0.25f);  glVertex2f(-0.082f+a, -0.23f);  glEnd();  glBegin(GL\_QUADS);  glColor3f(0.8f, 0.8f, 0.8f);  glVertex2f(-0.062f+a, -0.23f);  glVertex2f(-0.065f+a, -0.25f);  glVertex2f(0.003f+a, -0.25f);  glVertex2f(0.005f+a, -0.23f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3f(0.8f, 0.8f, 0.8f);  glVertex2f(-0.17f+a, -0.22f);  glVertex2f(-0.189f+a, -0.25f);  glVertex2f(-0.175f+a, -0.25f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3f(0.8f, 0.8f, 0.8f);  glVertex2f(0.02f+a, -0.22f);  glVertex2f(0.0176f+a, -0.25f);  glVertex2f(0.07f+a, -0.25f);  glEnd();  }  void display() {  glClearColor(0.60f, 0.60f, 0.60f, 1.0f);  glClear(GL\_COLOR\_BUFFER\_BIT);  Road();  Building();  Tree();  TraficLight();  Car(0);  Car(-0.5);  glFlush();  }  int main(int argc, char\*\* argv) {  glutInit(&argc, argv);  glutCreateWindow("Traic");  glutInitWindowSize(320, 320);  glutDisplayFunc(display);  glutMainLoop();  return 0;  } |
| **Output Screenshot (Full Screen)-**  **A screenshot of a video game  Description automatically generated** |

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| **Question- 2**  Draw two village scenarios for day and night using function to represent each object |
| **Graph Plot (Picture)-**  **A screenshot of a computer  Description automatically generated** |
| **Code-**  **//DAY SCENE**  #include <windows.h>  #include <GL/glut.h>  #include <math.h>  void River(){  glBegin(GL\_POLYGON);  glColor3ub(52, 152, 219 );  glVertex2f(-0.9f, -0.2f);  glVertex2f(-0.9f, -0.6f);  glVertex2f(0.9f, -0.6f);  glVertex2f(0.9f, -0.2f);  glEnd();  }  void Boat(float x)  {  glBegin(GL\_POLYGON);  glColor3ub(231, 76, 60);  glVertex2f(-0.4f+x, -0.3f);  glVertex2f(-0.35f+x, -0.35f);  glVertex2f(-0.2f+x, -0.35f);  glVertex2f(-0.15f+x, -0.3f);  glVertex2f(-0.24f+x, -0.32f);  glVertex2f(-0.3f+x, -0.32f);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(100, 30, 22);  glVertex2f(-0.15f+x, -0.3f);  glVertex2f(-0.24f+x, -0.32f);  glVertex2f(-0.3f+x, -0.32f);  glVertex2f(-0.4f+x, -0.3f);  glVertex2f(-0.3f+x, -0.3f);  glVertex2f(-0.24f+x, -0.3f);  glEnd();  glLineWidth(8);  glBegin(GL\_LINES);  glColor3f(0.0f,0.0f,0.0f);  glVertex2f(-0.3f+x, -0.3f);  glVertex2f(-0.3f+x, -0.32f);  glEnd();  glLineWidth(8);  glBegin(GL\_LINES);  glColor3f(0.0f,0.0f,0.0f);  glVertex2f(-0.24f+x, -0.3f);  glVertex2f(-0.24f+x, -0.32f);  glEnd();  }  void Road()  {  glBegin(GL\_POLYGON);  glColor3ub(220, 118, 51);  glVertex2f(-0.9f, 0.15f);  glVertex2f(-0.9f, 0.0f);  glVertex2f(0.9f, 0.0f);  glVertex2f(0.9f, 0.15f);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(220, 118, 51);  glVertex2f(-0.02f, 0.5f);  glVertex2f(-0.15f, 0.15f);  glVertex2f(0.15f, 0.15f);  glVertex2f(0.02f, 0.5f);  glEnd();  }  void Tree( float a, float b)  {  glBegin(GL\_POLYGON);  glColor3ub(175, 96, 26 );  glVertex2f(-0.88f+a, 0.38f+b);  glVertex2f(-0.88f+a, 0.18f+b);  glVertex2f(-0.84f+a, 0.18f+b);  glVertex2f(-0.84f+a, 0.38f+b);  glVertex2f(-0.86f+a, 0.36f+b);  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(30, 132, 73);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.97+a,y+0.48+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(30, 132, 73);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.88+a,y+0.55+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(30, 132, 73);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.84+a,y+0.54+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(30, 132, 73);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.73+a,y+0.47+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(30, 132, 73);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.80+a,y+0.46+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(30, 132, 73);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.84+a,y+0.43+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(30, 132, 73);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.9+a,y+0.44+b);  }  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(30, 132, 73);  glVertex2f(-0.3f, 0.54f);  glVertex2f(-0.3f, 0.5f);  glVertex2f(0.9f, 0.5f);  glVertex2f(0.9f, 0.54f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(-0.66f, 0.55f);  glVertex2f(-0.72f, 0.5f);  glVertex2f(-0.60f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(-0.56f, 0.55f);  glVertex2f(-0.62f, 0.5f);  glVertex2f(-0.50f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(-0.46f, 0.55f);  glVertex2f(-0.52f, 0.5f);  glVertex2f(-0.40f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(-0.36f, 0.55f);  glVertex2f(-0.30f, 0.5f);  glVertex2f(-0.42f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(-0.26f, 0.60f);  glVertex2f(-0.20f, 0.5f);  glVertex2f(-0.32f, 0.5f);  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(-0.16f, 0.60f);  glVertex2f(-0.10f, 0.5f);  glVertex2f(-0.22f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(0.66f, 0.60f);  glVertex2f(0.72f, 0.5f);  glVertex2f(0.60f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(0.56f, 0.60f);  glVertex2f(0.62f, 0.5f);  glVertex2f(0.50f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(30, 132, 73);  glVertex2f(0.46f, 0.56f);  glVertex2f(0.52f, 0.5f);  glVertex2f(0.40f, 0.5f);  glEnd();  }  void sky()  {  glBegin(GL\_POLYGON);  glColor3ub(133, 193, 233 );  glVertex2f(-0.9f, 0.9f);  glVertex2f(-0.9f, 0.50f);  glVertex2f(0.9f, 0.50f);  glVertex2f(0.9f, 0.9f);  glEnd();  // ----sun----  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(247, 220, 111);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x+0.54,y+0.80);  }  glEnd();  }  //-----Cloud------  void cloud(float a){  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(240, 243, 244);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.44+a,y+0.77);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(240, 243, 244);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-39+a,y+0.80);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(240, 243, 244);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.34+a,y+0.76);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(240, 243, 244);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.39+a,y+0.72);  }  glEnd();  }  void house(float x, float y)  {  glBegin(GL\_POLYGON);  glColor3ub(121, 125, 127 );  glVertex2f(-0.7f+x,0.4f+y);  glVertex2f(-0.8f+x, 0.3f+y);  glVertex2f(-0.6f+x, 0.3f+y);  glVertex2f(-0.5f+x, 0.4f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(156, 100, 12 );  glVertex2f(-0.78f+x, 0.3f+y);  glVertex2f(-0.78f+x, 0.2f+y);  glVertex2f(-0.58f+x, 0.2f+y);  glVertex2f(-0.58f+x, 0.3f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(93, 109, 126 );  glVertex2f(-0.78f+x, 0.2f+y);  glVertex2f(-0.8f+x, 0.18f+y);  glVertex2f(-0.6f+x, 0.18f+y);  glVertex2f(-0.58f+x, 0.2f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(93, 109, 126 );  glVertex2f(-0.58f+x, 0.2f+y);  glVertex2f(-0.6f+x, 0.18f+y);  glVertex2f(-0.4f+x, 0.18f+y);  glVertex2f(-0.42f+x, 0.2f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(156, 100, 12 );  glVertex2f(-0.58f+x, 0.3f+y);  glVertex2f(-0.58f+x, 0.2f+y);  glVertex2f(-0.42f+x, 0.2f+y);  glVertex2f(-0.42f+x, 0.3f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(95, 106, 106 );  glVertex2f(-0.5f+x, 0.4f+y);  glVertex2f(-0.52f+x, 0.39f+y);  glVertex2f(-0.42f+x, 0.3f+y);  glVertex2f(-0.4f+x, 0.3f+y);  glEnd();  //----Window  glBegin(GL\_POLYGON);  glColor3ub(135, 54, 0 );  glVertex2f(-0.52f+x, 0.28f+y);  glVertex2f(-0.52f+x, 0.24f+y);  glVertex2f(-0.48f+x, 0.24f+y);  glVertex2f(-0.48f+x, 0.28f+y);  glEnd();  //----door  glBegin(GL\_POLYGON);  glColor3ub(135, 54, 0 );  glVertex2f(-0.7f+x, 0.28f+y);  glVertex2f(-0.7f+x, 0.2f+y);  glVertex2f(-0.64f+x, 0.2f+y);  glVertex2f(-0.64f+x, 0.28f+y);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(66, 73, 73 );  glVertex2f(-0.51f+x, 0.39f+y);  glVertex2f(-0.6f+x, 0.3f+y);  glVertex2f(-0.42f+x, 0.3f+y);  glEnd();  }  void display() {  glClearColor(0.60f, 0.60f, 0.60f, 1.0f);  glClear(GL\_COLOR\_BUFFER\_BIT);  River();  Boat(0);  Boat(0.8);  Boat(0.3);  Road();  sky();  cloud(0);  cloud(0.4);  Tree(0,0);  Tree(1.05,0);  house(0.3,0.09);  house(0,0);  house(1.2,0.1);  house(1.0,0);  glFlush();  }  int main(int argc, char\*\* argv) {  glutInit(&argc, argv);  glutCreateWindow("scenario");  glutInitWindowSize(320, 320);  glutDisplayFunc(display);  glutMainLoop();  return 0;  }  **Code-**  **NIGHT SCENE-**  #include <windows.h>  #include <GL/glut.h>  #include <math.h>  void River(){  glBegin(GL\_POLYGON);  glColor3ub(21, 67, 96 );  glVertex2f(-0.9f, -0.2f);  glVertex2f(-0.9f, -0.6f);  glVertex2f(0.9f, -0.6f);  glVertex2f(0.9f, -0.2f);  glEnd();  }  void Boat(float x)  {  glBegin(GL\_POLYGON);  glColor3ub(100, 30, 22);  glVertex2f(-0.4f+x, -0.3f);  glVertex2f(-0.35f+x, -0.35f);  glVertex2f(-0.2f+x, -0.35f);  glVertex2f(-0.15f+x, -0.3f);  glVertex2f(-0.24f+x, -0.32f);  glVertex2f(-0.3f+x, -0.32f);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(27, 38, 49);  glVertex2f(-0.15f+x, -0.3f);  glVertex2f(-0.24f+x, -0.32f);  glVertex2f(-0.3f+x, -0.32f);  glVertex2f(-0.4f+x, -0.3f);  glVertex2f(-0.3f+x, -0.3f);  glVertex2f(-0.24f+x, -0.3f);  glEnd();  glLineWidth(8);  glBegin(GL\_LINES);  glColor3f(0.0f,0.0f,0.0f);  glVertex2f(-0.3f+x, -0.3f);  glVertex2f(-0.3f+x, -0.32f);  glEnd();  glLineWidth(8);  glBegin(GL\_LINES);  glColor3f(0.0f,0.0f,0.0f);  glVertex2f(-0.24f+x, -0.3f);  glVertex2f(-0.24f+x, -0.32f);  glEnd();  }  void Road()  {  glBegin(GL\_POLYGON);  glColor3ub(40, 55, 71);  glVertex2f(-0.9f, 0.15f);  glVertex2f(-0.9f, 0.0f);  glVertex2f(0.9f, 0.0f);  glVertex2f(0.9f, 0.15f);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(40, 55, 71);  glVertex2f(-0.02f, 0.5f);  glVertex2f(-0.15f, 0.15f);  glVertex2f(0.15f, 0.15f);  glVertex2f(0.02f, 0.5f);  glEnd();  }  void Tree( float a, float b)  {  glBegin(GL\_POLYGON);  glColor3ub(175, 96, 26 );  glVertex2f(-0.88f+a, 0.38f+b);  glVertex2f(-0.88f+a, 0.18f+b);  glVertex2f(-0.84f+a, 0.18f+b);  glVertex2f(-0.84f+a, 0.38f+b);  glVertex2f(-0.86f+a, 0.36f+b);  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(11, 83, 69 );  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.97+a,y+0.48+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(11, 83, 69);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.88+a,y+0.55+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(11, 83, 69);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.84+a,y+0.54+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(11, 83, 69);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.73+a,y+0.47+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(11, 83, 69);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.80+a,y+0.46+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(11, 83, 69);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.84+a,y+0.43+b);  }  glEnd();  glBegin(GL\_POLYGON);  for(int i=0;i<200;i++)  {  glColor3ub(11, 83, 69);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.075;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.9+a,y+0.44+b);  }  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(11, 83, 69);  glVertex2f(-0.3f, 0.54f);  glVertex2f(-0.3f, 0.5f);  glVertex2f(0.9f, 0.5f);  glVertex2f(0.9f, 0.54f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(-0.66f, 0.55f);  glVertex2f(-0.72f, 0.5f);  glVertex2f(-0.60f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(-0.56f, 0.55f);  glVertex2f(-0.62f, 0.5f);  glVertex2f(-0.50f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(-0.46f, 0.55f);  glVertex2f(-0.52f, 0.5f);  glVertex2f(-0.40f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(-0.36f, 0.55f);  glVertex2f(-0.30f, 0.5f);  glVertex2f(-0.42f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(-0.26f, 0.60f);  glVertex2f(-0.20f, 0.5f);  glVertex2f(-0.32f, 0.5f);  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(-0.16f, 0.60f);  glVertex2f(-0.10f, 0.5f);  glVertex2f(-0.22f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(0.66f, 0.60f);  glVertex2f(0.72f, 0.5f);  glVertex2f(0.60f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(0.56f, 0.60f);  glVertex2f(0.62f, 0.5f);  glVertex2f(0.50f, 0.5f);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(11, 83, 69);  glVertex2f(0.46f, 0.56f);  glVertex2f(0.52f, 0.5f);  glVertex2f(0.40f, 0.5f);  glEnd();  }  void sky()  {  glBegin(GL\_POLYGON);  glColor3ub(52, 73, 94 );  glVertex2f(-0.9f, 0.9f);  glVertex2f(-0.9f, 0.50f);  glVertex2f(0.9f, 0.50f);  glVertex2f(0.9f, 0.9f);  glEnd();  // ----sun----  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(208, 211, 212);  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x+0.54,y+0.80);  }  glEnd();  }  //-----Cloud------  void cloud(float a){  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(98, 101, 103 );  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.44+a,y+0.77);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(98, 101, 103 );  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-39+a,y+0.80);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(98, 101, 103 );  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.34+a,y+0.76);  }  glEnd();  glBegin(GL\_POLYGON);// Draw a Red 1x1 Square centered at origin  for(int i=0;i<200;i++)  {  glColor3ub(98, 101, 103 );  float pi=3.1416;  float A=(i\*2\*pi)/200;  float r=0.056;  float x = r \* cos(A);  float y = r \* sin(A);  glVertex2f(x-0.39+a,y+0.72);  }  glEnd();  }  void house(float x, float y)  {  glBegin(GL\_POLYGON);  glColor3ub(121, 125, 127 );  glVertex2f(-0.7f+x,0.4f+y);  glVertex2f(-0.8f+x, 0.3f+y);  glVertex2f(-0.6f+x, 0.3f+y);  glVertex2f(-0.5f+x, 0.4f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(156, 100, 12 );  glVertex2f(-0.78f+x, 0.3f+y);  glVertex2f(-0.78f+x, 0.2f+y);  glVertex2f(-0.58f+x, 0.2f+y);  glVertex2f(-0.58f+x, 0.3f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(93, 109, 126 );  glVertex2f(-0.78f+x, 0.2f+y);  glVertex2f(-0.8f+x, 0.18f+y);  glVertex2f(-0.6f+x, 0.18f+y);  glVertex2f(-0.58f+x, 0.2f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(93, 109, 126 );  glVertex2f(-0.58f+x, 0.2f+y);  glVertex2f(-0.6f+x, 0.18f+y);  glVertex2f(-0.4f+x, 0.18f+y);  glVertex2f(-0.42f+x, 0.2f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(156, 100, 12 );  glVertex2f(-0.58f+x, 0.3f+y);  glVertex2f(-0.58f+x, 0.2f+y);  glVertex2f(-0.42f+x, 0.2f+y);  glVertex2f(-0.42f+x, 0.3f+y);  glEnd();  glBegin(GL\_POLYGON);  glColor3ub(95, 106, 106 );  glVertex2f(-0.5f+x, 0.4f+y);  glVertex2f(-0.52f+x, 0.39f+y);  glVertex2f(-0.42f+x, 0.3f+y);  glVertex2f(-0.4f+x, 0.3f+y);  glEnd();  //----Window  glBegin(GL\_POLYGON);  glColor3ub(247, 220, 111 );  glVertex2f(-0.52f+x, 0.28f+y);  glVertex2f(-0.52f+x, 0.24f+y);  glVertex2f(-0.48f+x, 0.24f+y);  glVertex2f(-0.48f+x, 0.28f+y);  glEnd();  //----door  glBegin(GL\_POLYGON);  glColor3ub(135, 54, 0 );  glVertex2f(-0.7f+x, 0.28f+y);  glVertex2f(-0.7f+x, 0.2f+y);  glVertex2f(-0.64f+x, 0.2f+y);  glVertex2f(-0.64f+x, 0.28f+y);  glEnd();  glBegin(GL\_TRIANGLES);  glColor3ub(66, 73, 73 );  glVertex2f(-0.51f+x, 0.39f+y);  glVertex2f(-0.6f+x, 0.3f+y);  glVertex2f(-0.42f+x, 0.3f+y);  glEnd();  }  void display() {  glClearColor(0.40f, 0.40f, 0.40f, 1.0f);  glClear(GL\_COLOR\_BUFFER\_BIT);  River();  Boat(0);  Boat(0.8);  Boat(0.3);  Road();  sky();  cloud(0);  cloud(0.4);  Tree(0,0);  Tree(1.05,0);  house(0.3,0.09);  house(0,0);  house(1.2,0.1);  house(1.0,0);  glFlush();  }  int main(int argc, char\*\* argv) {  glutInit(&argc, argv);  glutCreateWindow("scenario");  glutInitWindowSize(320, 320);  glutDisplayFunc(display);  glutMainLoop();  return 0;  } |
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| **A screenshot of a video game  Description automatically generated** |