Project Report

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Title: City View(Day/Night view)

Code:

```
#include<windows.h>
#include <GL/glut.h>
#include <cmath>
#define FILL true
#define NOT_FILL false

float xPos = 0.0f;
float yPos = 0.0f;
float angle = 0.0f;
float a=0.301;
float b=0.741;
float c=0.952;
float d=1.0;
float e=1.0;
float f=0.0;
float p=1.0;
float l=1.0;
```

```
float m=1.0;
float o=1.0;
float k=0.0;
float n=1.0;

//cicle formula & condition
void makeCircle(float r, double x_center, double y_center,bool isFill)
{
   float deg = 0;
   double theta, x, y;

   glPointSize(3);
   if(isFill)
   {
      glBegin(GL_TRIANGLE_FAN);
   }
   else
   {
      glBegin(GL_POINTS);
   }
   glPointSize(3);

   while(deg < 360)
   {

      theta = (deg*M_PI)/180;
      x = x_center + r*cos(theta);
      y = y_center + r*sin(theta);
```

```
        glVertex2d(x, y);
        deg+=1;
    }
    glEnd();
}

void display()
{
    glClear(GL_COLOR_BUFFER_BIT);

    //glLoadIdentity();
    //glTranslatef(xPos, yPos, 0.0f);

    //Road
    glBegin(GL_QUADS);
    glColor3f(0.196, 0.192, 0.211);
    glVertex3f(0.0f, 0.0f, 0.0f);
    glVertex3f(1.0f, 0.0f, 0.0f);
    glVertex3f(1.0f, 0.10f, 0.0f);
    glVertex3f(0.0f, 0.10f, 0.0f);
    glEnd();
    //Field
    glBegin(GL_QUADS);
    glColor3f(0.0, 0.427, 0.0);
    glVertex3f(1.0f, 0.10f, 0.0f);
    glVertex3f(0.0f, 0.10f, 0.0f);
```

```
glVertex3f(0.0f, 0.4f, 0.0f);
glVertex3f(1.0f, 0.4f, 0.0f);
glEnd();
//River
glBegin(GL_QUADS);
glColor3f(0.4, 0.7, 1.0);
glVertex3f(0.0f, 0.4f, 0.0f);
glVertex3f(1.0f, 0.4f, 0.0f);
glVertex3f(1.0f, 0.6f, 0.0f);
glVertex3f(0.0f, 0.6f, 0.0f);
glEnd();
//SKY
glBegin(GL_QUADS);
glColor3f(a, b, c);
glVertex3f(1.0f, 0.6f, 0.0f);
glVertex3f(0.0f, 0.6f, 0.0f);
glVertex3f(0.0f, 1.0f, 0.0f);
glVertex3f(1.0f, 1.0f, 0.0f);
glEnd();

//RiverLine
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.0f,0.60f,0.0f);
glVertex3f(1.0f,0.60f,0.0f);
glEnd();

//Sun
```

```
glColor3f(d, e, f);
makeCircle(0.05,0.80,0.75,FILL);

//cloud circle-1
glColor3f(p, l, m);
makeCircle(0.04,0.40,0.90,FILL);

//cloud circle-2
glColor3f(p, l, m);
makeCircle(0.04,0.44,0.90,FILL);

//cloud circle-3
glColor3f(p, l, m);
makeCircle(0.04,0.48,0.90,FILL);

//cloud circle-4
glColor3f(p, l, m);
makeCircle(0.04,0.70,0.84,FILL);

//cloud circle-5
glColor3f(p, l, m);
makeCircle(0.04,0.74,0.84,FILL);

//Ghuri
glBegin(GL_QUADS);
glColor3f(o, k, n);
glVertex3f(0.40f, 0.80f, 0.0f);
glVertex3f(0.36f,0.76f, 0.0f);
```

```
glVertex3f(0.40f, 0.72f,0.0f);
glVertex3f(0.44f, 0.76f, 0.0f);
glEnd();

//Ghuri Horizontal Line
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.36f,0.76f, 0.0f);
glVertex3f(0.44f, 0.76f, 0.0f);
glEnd();

//Ghuri Vertical Line
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.40f, 0.80f, 0.0f);
glVertex3f(0.40f, 0.72f,0.0f);
glEnd();


//Mountains LEFT TO RIGHT
glBegin(GL_TRIANGLES);
glColor3f(0.403, 0.219, 0.0);
glVertex3f(0.20f, 0.60f, 0.0f);
glVertex3f(0.30f, 0.68f, 0.0f);
glVertex3f(0.38f, 0.60f, 0.0f);
glEnd();

glBegin(GL_TRIANGLES);
```

```
glColor3f(0.403, 0.219, 0.0);
glVertex3f(0.37f, 0.60f, 0.0f);
glVertex3f(0.5f, 0.72f, 0.0f);
glVertex3f(0.58f, 0.60f, 0.0f);
glEnd();

glBegin(GL_TRIANGLES);
glColor3f(0.403, 0.219, 0.0);
glVertex3f(0.5f, 0.6f, 0.0f);
glVertex3f(0.6f, 0.7f, 0.0f);
glVertex3f(0.7f, 0.60f, 0.0f);
glEnd();

glBegin(GL_TRIANGLES);
glColor3f(0.403, 0.219, 0.0);
glVertex3f(0.6f, 0.6f, 0.0f);
glVertex3f(0.7f, 0.72f, 0.0f);
glVertex3f(0.8f, 0.60f, 0.0f);
glEnd();

glBegin(GL_TRIANGLES);
glColor3f(0.403, 0.219, 0.0);
glVertex3f(0.8f, 0.6f, 0.0f);
glVertex3f(0.88f, 0.68f, 0.0f);
glVertex3f(0.96f, 0.6f, 0.0f);
glEnd();

//building-1
```

```
glBegin(GL_QUADS);
glColor3f(1.0, 0.0, 1.0);
glVertex3f(0.02f, 0.60f, 0.0f);
glVertex3f(0.08f,0.60f, 0.0f);
glVertex3f(0.08f, 0.70f,0.0f);
glVertex3f(0.02f, 0.70f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 1.0, 0.4);
glVertex3f(0.08f, 0.70f, 0.0f);
glVertex3f(0.08f,0.60f, 0.0f);
glVertex3f(0.10f, 0.60f,0.0f);
glVertex3f(0.10f, 0.72f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 1.0, 0.4);
glVertex3f(0.02f, 0.70f, 0.0f);
glVertex3f(0.08f,0.70f, 0.0f);
glVertex3f(0.10f, 0.72f,0.0f);
glVertex3f(0.04f, 0.72f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 1.0, 0.4);
glVertex3f(0.04f, 0.68f, 0.0f);
glVertex3f(0.04f,0.66f, 0.0f);
```

```
glVertex3f(0.06f, 0.66f,0.0f);
glVertex3f(0.06f, 0.68f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 1.0, 0.4);
glVertex3f(0.04f, 0.64f, 0.0f);
glVertex3f(0.04f,0.62f, 0.0f);
glVertex3f(0.06f, 0.62f,0.0f);
glVertex3f(0.06f, 0.64f, 0.0f);
glEnd();

//building-2
glBegin(GL_QUADS);
glColor3f(1.0, 0.2, 0.2);
glVertex3f(0.12f, 0.74f, 0.0f);
glVertex3f(0.12f,0.60f, 0.0f);
glVertex3f(0.18f, 0.60f,0.0f);
glVertex3f(0.18f, 0.74f, 0.0f);
glEnd();
glBegin(GL_QUADS);
glColor3f(1.0, 0.6, 0.2);
glVertex3f(0.18f, 0.74f, 0.0f);
glVertex3f(0.18f,0.60f, 0.0f);
glVertex3f(0.20f, 0.60f,0.0f);
glVertex3f(0.20f, 0.76f, 0.0f);
glEnd();
```

```
glBegin(GL_QUADS);
glColor3f(1.0, 0.6, 0.2);
glVertex3f(0.12f, 0.74f, 0.0f);
glVertex3f(0.18f,0.74f, 0.0f);
glVertex3f(0.20f, 0.76f,0.0f);
glVertex3f(0.14f, 0.76f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 1.0, 0.4);
glVertex3f(0.14f, 0.72f, 0.0f);
glVertex3f(0.14f,0.70f, 0.0f);
glVertex3f(0.16f, 0.70f,0.0f);
glVertex3f(0.16f, 0.72f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 1.0, 0.4);
glVertex3f(0.14f, 0.64f, 0.0f);
glVertex3f(0.14f,0.62f, 0.0f);
glVertex3f(0.16f, 0.62f,0.0f);
glVertex3f(0.16f, 0.64f, 0.0f);
glEnd();

//House-tree
glBegin(GL_QUADS);
glColor3f(0.6, 0.3, 0.0);
glVertex3f(0.04f, 0.22f, 0.0f);
```

```
glVertex3f(0.04,0.30, 0.0f);
glVertex3f(0.06f, 0.30f,0.0f);
glVertex3f(0.06f, 0.22f, 0.0f);
glEnd();

//house tree Triangle-01
glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.8, 0.0);
glVertex3f(0.0f, 0.30f, 0.0f);
glVertex3f(0.10f, 0.30f, 0.0f);
glVertex3f(0.055f, 0.34f, 0.0f);
glEnd();

//house tree Triangle-02
glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.8, 0.0);
glVertex3f(0.0f, 0.32f, 0.0f);
glVertex3f(0.10f, 0.32f, 0.0f);
glVertex3f(0.055f, 0.36f, 0.0f);
glEnd();

//house tree Triangle-03
glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.8, 0.0);
glVertex3f(0.0f, 0.34f, 0.0f);
glVertex3f(0.10f, 0.34f, 0.0f);
glVertex3f(0.055f, 0.38f, 0.0f);
glEnd();
```

```
//tree-2
glBegin(GL_QUADS);
glColor3f(0.6, 0.3, 0.0);
glVertex3f(0.12f, 0.42f, 0.0f);
glVertex3f(0.12f,0.36f, 0.0f);
glVertex3f(0.14f, 0.36f,0.0f);
glVertex3f(0.14f, 0.42f, 0.0f);
glEnd();
//tree Triangle-01
glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.8, 0.0);
glVertex3f(0.10f, 0.42f, 0.0f);
glVertex3f(0.16f, 0.42f, 0.0f);
glVertex3f(0.13f, 0.46f, 0.0f);
glEnd();

//tree Triangle-01
glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.8, 0.0);
glVertex3f(0.10f, 0.44f, 0.0f);
glVertex3f(0.16f, 0.44f, 0.0f);
glVertex3f(0.13f, 0.48f, 0.0f);
glEnd();

//house-body
glBegin(GL_QUADS);
glColor3f(0.752, 0.498, 0.0);
```

```
glVertex3f(0.12f, 0.22f, 0.0f);
glVertex3f(0.40,0.22, 0.0f);
glVertex3f(0.40f, 0.30f,0.0f);
glVertex3f(0.12f, 0.30f, 0.0f);
glEnd();

//house-bodyLine
glBegin(GL_LINES);
glColor3f(0.0f,0.0f,0.0f);
glVertex2f(0.20f, 0.22f);
glVertex2f(0.20f,0.30f);
glEnd();

//House Shade
glBegin(GL_QUADS);
glColor3f(0.403, 0.219, 0.0);
glVertex3f(0.40f, 0.30f, 0.0f);
glVertex3f(0.36f,0.36f, 0.0f);
glVertex3f(0.16f, 0.36f,0.0f);
glVertex3f(0.20f, 0.30f, 0.0f);
glEnd();

//House Shade -02
glBegin(GL_TRIANGLES);
glColor3f(0.721, 0.384, 0.105);
glVertex3f(0.12f, 0.30f, 0.0f);
glVertex3f(0.20f, 0.30f, 0.0f);
glVertex3f(0.16f, 0.36f, 0.0f);
```

```
glEnd();

//House Door
glBegin(GL_QUADS);
glColor3f(0.298, 0.239, 0.239);
glVertex3f(0.32f, 0.22f, 0.0f);
glVertex3f(0.32,0.26, 0.0f);
glVertex3f(0.26f, 0.26f,0.0f);
glVertex3f(0.26f, 0.22f, 0.0f);
glEnd();

//House Window
glBegin(GL_QUADS);
glColor3f(0.298, 0.239, 0.239);
glVertex3f(0.18f, 0.24f, 0.0f);
glVertex3f(0.18,0.28, 0.0f);
glVertex3f(0.14f, 0.28f,0.0f);
glVertex3f(0.14f, 0.24f, 0.0f);
glEnd();

//plane
glPushMatrix();
glTranslatef(xPos, 0.0f, 0.0f);

glBegin(GL_QUADS);
glColor3f(1.0, 0.0, 1.0);
glVertex3f(0.10f, 0.86f, 0.0f);
glVertex3f(0.22f,0.86f, 0.0f);
```

```
glVertex3f(0.22f, 0.90f,0.0f);
glVertex3f(0.10f, 0.90f, 0.0f);
glEnd();

glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.0, 0.8);
glVertex3f(0.22f, 0.86f, 0.0f);
glVertex3f(0.28f, 0.86f, 0.0f);
glVertex3f(0.22f, 0.90f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 0.0, 0.0);
glVertex3f(0.02f, 0.90f, 0.0f);
glVertex3f(0.10f,0.86f, 0.0f);
glVertex3f(0.10f, 0.90f,0.0f);
glVertex3f(0.04f, 0.93f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(1.0, 0.6, 0.6);
glVertex3f(0.10f, 0.82f, 0.0f);
glVertex3f(0.14f,0.82f, 0.0f);
glVertex3f(0.18f, 0.86f,0.0f);
glVertex3f(0.14f, 0.86f, 0.0f);
glEnd();

glBegin(GL_QUADS);
```

```
glColor3f(1.0, 0.6, 0.6);
glVertex3f(0.14f, 0.90f, 0.0f);
glVertex3f(0.18f,0.90f, 0.0f);
glVertex3f(0.14f, 0.94f,0.0f);
glVertex3f(0.10f, 0.94f, 0.0f);
glEnd();

glPopMatrix();

//triangleshape-house
//house-shade
glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.0, 0.8);
glVertex3f(0.94f, 0.46f, 0.0f);
glVertex3f(0.90f, 0.42f, 0.0f);
glVertex3f(0.98f, 0.42f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(0.1, 0.40, 0.92);
glVertex3f(0.90f, 0.42f, 0.0f);
glVertex3f(0.90f,0.38f, 0.0f);
glVertex3f(0.98f, 0.38f,0.0f);
glVertex3f(0.98f, 0.42f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(0.0, 0.0, 0.0);
```

```
glVertex3f(0.93f, 0.42f, 0.0f);
glVertex3f(0.93f,0.38f, 0.0f);
glVertex3f(0.96f, 0.38f,0.0f);
glVertex3f(0.96f, 0.42f, 0.0f);
glEnd();

//hill-tree-1
glBegin(GL_QUADS);
glColor3f(0.6, 0.3, 0.0);
glVertex3f(0.96f, 0.60f, 0.0f);
glVertex3f(0.98f,0.60f, 0.0f);
glVertex3f(0.98f, 0.66f,0.0f);
glVertex3f(0.96f, 0.66f, 0.0f);
glEnd();

//tree Triangle-01
glBegin(GL_TRIANGLES);
glColor3f(0.0, 0.4, 0.0);
glVertex3f(0.94f, 0.66f, 0.0f);
glVertex3f(1.0f, 0.66f, 0.0f);
glVertex3f(0.97f, 0.72f, 0.0f);
glEnd();

//tree Triangle-02
glBegin(GL_TRIANGLES);
glColor3f(0.0, 0.4, 0.0);
glVertex3f(0.94f, 0.69f, 0.0f);
glVertex3f(1.0f, 0.69f, 0.0f);
```

```
glVertex3f(0.97f, 0.76f, 0.0f);
glEnd();

//stand-tree-2
glBegin(GL_QUADS);
glColor3f(0.6, 0.3, 0.0);
glVertex3f(0.74f, 0.44f, 0.0f);
glVertex3f(0.74f,0.38f, 0.0f);
glVertex3f(0.76f, 0.38f,0.0f);
glVertex3f(0.76f, 0.44f, 0.0f);
glEnd();

//tree Triangle-01
glBegin(GL_TRIANGLES);
glColor3f(0.0, 0.4, 0.0);
glVertex3f(0.70f, 0.44f, 0.0f);
glVertex3f(0.80f, 0.44f, 0.0f);
glVertex3f(0.75f, 0.50f, 0.0f);
glEnd();

//Moving BOAT

glPushMatrix();
glTranslatef(xPos, 0.0f, 0.0f);

glBegin(GL_POLYGON);
glColor3f(0.286, 0.219, 0.09);
glVertex3f(0.06f, 0.52f, 0.0f);
```

```
glVertex3f(0.1f, 0.48f, 0.0f);
glVertex3f(0.22f, 0.48f, 0.0f);
glVertex3f(0.26f, 0.52f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(0.831, 0.713, 0.454);
glVertex3f(0.12f, 0.52f, 0.0f);
glVertex3f(0.12f, 0.54f, 0.0f);
glVertex3f(0.2f, 0.54f, 0.0f);
glVertex3f(0.2f, 0.52f, 0.0f);
glEnd();

glBegin(GL_TRIANGLES);
glColor3f(0.866, 0.486, 0.168);
glVertex3f(0.24f, 0.52f, 0.0f);
glVertex3f(0.22f, 0.58f, 0.0f);
glVertex3f(0.28f, 0.56f, 0.0f);
glEnd();

glBegin(GL_LINES);
glColor3f(1.0, 1.0, 1.0);
glVertex3f(0.24f, 0.52f, 0.0f);
glVertex3f(0.25f, 0.566f, 0.0f);
glEnd();

glPopMatrix();
```

```
//BOAT
glBegin(GL_POLYGON);
glColor3f(0.286, 0.219, 0.09);
glVertex3f(0.48f, 0.44f, 0.0f);
glVertex3f(0.64f, 0.44f, 0.0f);
glVertex3f(0.6f, 0.4f, 0.0f);
glVertex3f(0.52f, 0.4f, 0.0f);
glEnd();

glBegin(GL_QUADS);
glColor3f(0.831, 0.713, 0.454);
glVertex3f(0.52f, 0.44f, 0.0f);
glVertex3f(0.52f, 0.46f, 0.0f);
glVertex3f(0.6f, 0.46f, 0.0f);
glVertex3f(0.6f, 0.44f, 0.0f);
glEnd();

glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.46f, 0.50f, 0.0f);
glVertex3f(0.46f, 0.38f, 0.0f);
glEnd();

glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.48f, 0.44f, 0.0f);
glVertex3f(0.46f, 0.44f, 0.0f);
glEnd();
```

```
//Road line 1
glBegin(GL_LINES);
glColor3f(1.0f,1.0f,1.0f);
glVertex3f(0.0f,0.06f,0.0f);
glVertex3f(0.10f,0.06f,0.0f);
glEnd();

//Road line 2
glBegin(GL_LINES);
glColor3f(1.0f,1.0f,1.0f);
glVertex3f(0.20f,0.06f,0.0f);
glVertex3f(0.30f,0.06f,0.0f);
glEnd();

//Road line 3
glBegin(GL_LINES);
glColor3f(1.0f,1.0f,1.0f);
glVertex3f(0.40f,0.06f,0.0f);
glVertex3f(0.50f,0.06f,0.0f);
glEnd();

//Road line 4
glBegin(GL_LINES);
glColor3f(1.0f,1.0f,1.0f);
glVertex3f(0.60f,0.06f,0.0f);
glVertex3f(0.700f,0.06f,0.0f);
glEnd();
```

```
//Road line 5
glBegin(GL_LINES);
glColor3f(1.0f,1.0f,1.0f);
glVertex3f(0.80f,0.06f,0.0f);
glVertex3f(0.900f,0.06f,0.0f);
glEnd();

//bus Body

glPushMatrix();
glTranslatef(xPos, 0.0f, 0.0f);

glBegin(GL_QUADS);
glColor3f(0.831, 0.713, 0.454);
glVertex3f(0.06f, 0.14f, 0.0f);
glVertex3f(0.06f, 0.06f, 0.0f);
glVertex3f(0.34f, 0.06f, 0.0f);
glVertex3f(0.30f, 0.14f, 0.0f);
glEnd();

//bus wheel-1
glColor3f(0.0, 0.0, 0.0);
makeCircle(0.02,0.10,0.06,FILL);

//bus wheel-1 Center
glColor3f(1.0, 1.0, 1.0);
makeCircle(0.01,0.10,0.06,FILL);
```

```
//bus wheel-2
glColor3f(0.0, 0.0, 0.0);
makeCircle(0.02,0.15,0.06,FILL);

//bus wheel-2 Center
glColor3f(1.0, 1.0, 1.0);
makeCircle(0.01,0.15,0.06,FILL);

//bus wheel-3
glColor3f(0.0, 0.0, 0.0);
makeCircle(0.02,0.28,0.06,FILL);

//bus wheel-3 Center
glColor3f(1.0, 1.0, 1.0);
makeCircle(0.01,0.28,0.06,FILL);

//bus Body - windows
glBegin(GL_QUADS);
glColor3f(0.2, 0.3, 0.1);
glVertex3f(0.06f, 0.14f, 0.0f);
glVertex3f(0.10f, 0.14f, 0.0f);
glVertex3f(0.10f, 0.10f, 0.0f);
glVertex3f(0.06f, 0.10f, 0.0f);
glEnd();

//bus Body - windows
glBegin(GL_QUADS);
```

```
glColor3f(0.2, 0.3, 0.1);
glVertex3f(0.10f, 0.14f, 0.0f);
glVertex3f(0.14f, 0.14f, 0.0f);
glVertex3f(0.14f, 0.10f, 0.0f);
glVertex3f(0.10f, 0.10f, 0.0f);
glEnd();

//bus Body - windows
glBegin(GL_QUADS);
glColor3f(0.2, 0.3, 0.1);
glVertex3f(0.14f, 0.14f, 0.0f);
glVertex3f(0.18f, 0.14f, 0.0f);
glVertex3f(0.18f, 0.10f, 0.0f);
glVertex3f(0.14f, 0.10f, 0.0f);
glEnd();

//bus Body - windows Driver
glBegin(GL_QUADS);
glColor3f(0.2, 0.3, 0.1);
glVertex3f(0.26f, 0.14f, 0.0f);
glVertex3f(0.30f, 0.14f, 0.0f);
glVertex3f(0.30f, 0.10f, 0.0f);
glVertex3f(0.26f, 0.10f, 0.0f);
glEnd();

//Bus Body - Front Glass
glBegin(GL_TRIANGLES);
glColor3f(0.4, 0.7, 1.0);
```

```
glVertex3f(0.3f, 0.14f, 0.0f);
glVertex3f(0.30f, 0.10f, 0.0f);
glVertex3f(0.32f, 0.10f, 0.0f);
glEnd();

//Line 1
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.1f,0.14f,0.0f);
glVertex3f(0.1f,0.1f,0.0f);
glEnd();

//Line 2
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.14f,0.14f,0.0f);
glVertex3f(0.14f,0.1f,0.0f);
glEnd();

glPopMatrix();

//House 2 body
glBegin(GL_QUADS);
glColor3f(0.7, 0.4, 1.0);
glVertex3f(0.50f, 0.22f, 0.0f);
glVertex3f(0.50f, 0.30f, 0.0f);
glVertex3f(0.70f, 0.30f, 0.0f);
glVertex3f(0.70f, 0.22f, 0.0f);
```

```
glEnd();

//House 2 Shade
glBegin(GL_QUADS);
glColor3f(0.2, 0.0, 0.1);
glVertex3f(0.50f, 0.30f, 0.0f);
glVertex3f(0.70f, 0.30f, 0.0f);
glVertex3f(0.70f, 0.36f, 0.0f);
glVertex3f(0.50f, 0.36f, 0.0f);
glEnd();

//House 2 upper shade
glBegin(GL_QUADS);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.66f, 0.36f, 0.0f);
glVertex3f(0.70f, 0.36f, 0.0f);
glVertex3f(0.70f, 0.38f, 0.0f);
glVertex3f(0.66f, 0.38f, 0.0f);
glEnd();

//house 2 door
glBegin(GL_QUADS);
glColor3f(0.2, 0.3, 0.4);
glVertex3f(0.58f, 0.22f, 0.0f);
glVertex3f(0.58f, 0.28f, 0.0f);
glVertex3f(0.62f, 0.28f, 0.0f);
glVertex3f(0.62f, 0.22f, 0.0f);
glEnd();
```

```
//cicle tree
glBegin(GL_QUADS);
glColor3f(0.6, 0.3, 0.0);
glVertex3f(0.80f, 0.20f, 0.0f);
glVertex3f(0.82f, 0.20f, 0.0f);
glVertex3f(0.83f, 0.30f, 0.0f);
glVertex3f(0.79f, 0.30f, 0.0f);
glEnd();

//tree circle-1
glColor3f(0.0, 0.2, 0.0);
makeCircle(0.04,0.79,0.30,FILL);

//tree circle-2
glColor3f(0.0, 0.2, 0.0);
makeCircle(0.04,0.82,0.30,FILL);

//tree circle-3
glColor3f(0.0, 0.2, 0.0);
makeCircle(0.04,0.81,0.32,FILL);

//fench line-1
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.42f,0.32f,0.0f);
glVertex3f(0.42f,0.24f,0.0f);
glEnd();
```

```
//fench line-2
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.43f,0.32f,0.0f);
glVertex3f(0.43f,0.24f,0.0f);
glEnd();

//fench line-3
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.44f,0.32f,0.0f);
glVertex3f(0.44f,0.24f,0.0f);
glEnd();

//fench line-4
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.45f,0.32f,0.0f);
glVertex3f(0.45f,0.24f,0.0f);
glEnd();

//fench line-5
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.46f,0.32f,0.0f);
glVertex3f(0.46f,0.24f,0.0f);
glEnd();
```

```
//fench line-6
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.47f,0.32f,0.0f);
glVertex3f(0.47f,0.24f,0.0f);
glEnd();

//fench line-7
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.48f,0.32f,0.0f);
glVertex3f(0.48f,0.24f,0.0f);
glEnd();

//fench line-8
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.40f,0.30f,0.0f);
glVertex3f(0.50f,0.30f,0.0f);
glEnd();

//fench line-9
glBegin(GL_LINES);
glColor3f(0.0, 0.0, 0.0);
glVertex3f(0.40f,0.28f,0.0f);
glVertex3f(0.50f,0.28f,0.0f);
glEnd();
```

```
    //fench line-10
    glBegin(GL_LINES);
    glColor3f(0.0, 0.0, 0.0);
    glVertex3f(0.40f,0.26f,0.0f);
    glVertex3f(0.50f,0.26f,0.0f);
    glEnd();


    glutSwapBuffers();
}

void keyboard(unsigned char key, int x, int y)
{
    switch (key)
    {
    case 'w':
        yPos += 0.01f;
        break;
    case 's':
        yPos -= 0.01f;
        break;
    case 'a':
        xPos -= 0.01f;
        break;
    case 'd':
        xPos += 0.01f;
        break;
```

```
case 'b':
    a=0.0;
    b=0.0;
    c=0.0;
    d=1.0;
    e=1.0;
    f=1.0;
    p=0.0;
    l=0.0;
    m=0.0;
    o=0.0;
    k=0.0;
    n=0.0;
    break;
case 'c':
    a=0.301;
    b=0.741;
    c=0.952;
    d=1.0;
    e=1.0;
    f=0.0;
    p=1.0;
    l=1.0;
    m=1.0;
    o=1.0;
    k=0.0;
    n=1.0;
    break;
```

```
    default:
        break;
    }
    glutPostRedisplay();
}
void handleSpecialKeypress(int key, int x, int y)
{
    switch(key)
    {
    case GLUT_KEY_LEFT:
        xPos -= 0.01f;
        break;
    case GLUT_KEY_RIGHT:
        xPos += 0.01f;
        break;
    case GLUT_KEY_UP:
        yPos += 0.01f;
        break;
    case GLUT_KEY_DOWN:
        yPos -= 0.01f;
        break;
    }
    glutPostRedisplay();
}
```

```
void update(int value)
{
   xPos += 0.01f;


   if (xPos>1)
   {
      xPos = 0-xPos;
   }
   glutPostRedisplay();
   glutTimerFunc(100, update, 0);
}
int main(int argc, char **argv)
{
   glutInit(&argc, argv);
   glutInitDisplayMode(GLUT_DOUBLE | GLUT_RGB);
   glutInitWindowSize(600, 600);
   glutCreateWindow("Moving Square");
   glClearColor(1.0f, 1.0f, 1.0f, 1.0f);  // White background
   glMatrixMode(GL_PROJECTION);
   glLoadIdentity();
   gluOrtho2D(0.0f, 1.0f, 0.0f, 1.0f);
   glMatrixMode(GL_MODELVIEW);
   glutDisplayFunc(display);
   glutTimerFunc(100, update, 0);
   glutKeyboardFunc(keyboard);
   glutSpecialFunc(handleSpecialKeypress);
```

```
    glutMainLoop();
    return 0;
}
```

Output: