5. Write a program to create a house like figure and rotate it about a given fixed point using OpenGL/CUDA transformation functions.

```
#define BLACK 0
#include <stdio.h>
#include <math.h>
#include <GL/glut.h>
GLfloat house[3][9]={{100.0,100.0,175.0,250.0,250.0,150.0,150.0,200.0,200.0},
{100.0,300.0,400.0,300.0,100.0,100.0,150.0,150.0,100.0},
{1.0,1.0,1.0,1.0,1.0,1.0,1.0,1.0,1.0}
};
GLfloat arbitrary_x=100.0;
GLfloat arbitrary_y=100.0;
GLfloat rotation_angle;
void drawhouse()
{
glColor3f(0.0, 0.0, 1.0);
glBegin(GL_LINE_LOOP);
 glVertex2f(house[0][0],house[1][0]);
 glVertex2f(house[0][1],house[1][1]);
 glVertex2f(house[0][3],house[1][3]);
 glVertex2f(house[0][4],house[1][4]);
 glEnd();
glColor3f(1.0,0.0,0.0);
 glBegin(GL_LINE_LOOP);
 glVertex2f(house[0][5],house[1][5]);
 glVertex2f(house[0][6],house[1][6]);
 glVertex2f(house[0][7],house[1][7]);
 glVertex2f(house[0][8],house[1][8]);
 glEnd();
glColor3f(0.0, 0.0, 1.0);
```

```
 glBegin(GL_LINE_LOOP);
 glVertex2f(house[0][1],house[1][1]);
 glVertex2f(house[0][2],house[1][2]);
 glVertex2f(house[0][3],house[1][3]);
 glEnd();
}
void display()
{
glClear(GL_COLOR_BUFFER_BIT);
glMatrixMode(GL_MODELVIEW);
glLoadIdentity();
drawhouse();
glTranslatef(arbitrary_x,arbitrary_y,0.0);
glRotatef(rotation_angle,0.0,0.0,1.0);
glTranslatef(-(arbitrary_x),-(arbitrary_y),0.0); drawhouse();
glFlush();
}
void myinit()
{
glClearColor(1.0,1.0,1.0,1.0);
glColor3f(1.0,0.0,0.0);
glPointSize(1.0);
glMatrixMode(GL_PROJECTION);
glLoadIdentity();
gluOrtho2D(0.0,499.0,0.0,499.0);
}
void main(int argc, char** argv)
{
printf("Enter the rotation angle\n");
scanf("%f", &rotation_angle);
glutInit(&argc,argv);
```

```
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB); glutInitWindowSize(500,500);
glutInitWindowPosition(0,0);
glutCreateWindow("house rotation");
glutDisplayFunc(display);
myinit();
glutMainLoop();
}
```