

PROGRAM -4

4. Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing

```
#include<GL/glut.h>
#include<stdio.h>
#include<stdlib.h>
float v[8][3]={ {0,0,0},{1,0,0},{1,1,0},{0,1,0},{0,0,1},{1,0,1},{1,1,1},{0,1,1}};
float v1[3]={0,0,5};
void polygon(int a, int b, int c, int d);
void polygon1();

void display()
{
glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);
glClearColor(1,1,1,1);
glLoadIdentity();
gluLookAt(v1[0],v1[1],v1[2],0,0,0,0,1,0);
polygon1();
glFlush();
}

void polygon1()
{
polygon(0,1,2,3);
polygon(4,5,6,7);
polygon(5,1,2,6);
polygon(4,0,3,7);
polygon(4,5,1,0);
polygon(7,6,2,3);
}

void polygon(int a, int b, int c, int d)
{
glBegin(GL_POLYGON);
glColor3fv(v[a]);
glVertex3fv(v[a]);
glColor3fv(v[b]);
glVertex3fv(v[b]);
glColor3fv(v[c]);
```

```
glVertex3fv(v[c]);
glColor3fv(v[d]);
glVertex3fv(v[d]);
glEnd();
}
```

```
void key(unsigned char f, int mouseX, int mouseY)
{
    if(f=='x')
        v1[0]-=0.1;
    if(f=='X')
        v1[0]+=0.1;
    if(f=='y')
        v1[1]-=0.1;
    if(f=='Y')
        v1[1]+=0.1;
    if(f=='z')
        v1[2]-=0.1;
    if(f=='Z')
        v1[2]+=0.1;
    display();
}
```

```
void reshape(int w, int h)
{
    glViewport(0,0,w,h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
    if(w<=h)
        glFrustum(-2.0,2.0,-2.0*h/w,2.0*h/w,2.0,20);
    else
        glFrustum(-2.0*w/h,2.0*w/h,-2.0,2.0,2.0,20);
    glMatrixMode(GL_MODELVIEW);
}
```

```
int main(int argc, char **argv)
{
    glutInit(&argc, argv);
    glutInitDisplayMode(GLUT_SINGLE|GLUT_DEPTH);
    glutInitWindowSize(1500,1500);
```

```
glutInitWindowPosition(10,10);  
glutCreateWindow("cube presp");  
glutDisplayFunc(display);  
glutKeyboardFunc(key);  
glEnable(GL_DEPTH_TEST);  
glutReshapeFunc(reshape);  
glutMainLoop();  
}
```

Output command

To create file - gedit filename.c

To compile file - gcc filename.c -lGL -lGLU -lglut

To execute - ./a.out

