COMPUTER_GRAPHICS_CODE_FOR_HELICOPTER_GAME:

```
#include<stdlib.h>
#include<GL/glut.h>
#include<time.h>
//#include<dos.h>
#include<stdio.h>
//#include<conio.h>
//#include<windows.h>

float bspd=0.02; // block dx value

char name[25];

float b1x=50.0,b1y=0;//block 1 init position

float hm=0.0;//copter moving dy value

int i=0,sci=1;float scf=1; // for increment score score_int score_flag

char scs[20],slevel[20];
//to store score_string using itoa() and level as well

int level=1,lflag=1,wflag=1; //level_flag & welcome_flag init w/ 1 void init(void)
```

```
{
srand(time(0)); b1y=(rand()%45)+10;//b/w
10 to 44

glClearColor (0.0, 0.0, 0.0, 0.0);
glShadeModel (GL_SMOOTH);
glLoadIdentity (); glOrtho(0.0, 100.0,
0.0, 100.0, -1.0 , .0);
}

void drawcopter()
{
glColor3f(0.7,1.0,1.0);
glRectf(10,49.8,19.8,44.8);//body
glRectf(2,46,10,48);//tail glRectf(2,46,4,51);//tail
up glRectf(14,49.8,15.8,52.2);//propeller stand
glRectf(7,53.6,22.8,52.2);//propeller*/
}

void renderBitmapString(float x,float y,float z,void *font,char*string)
{

char *c;
glRasterPos3f(x, y,z);

for(c=string; *c != '\0'; c++)
```

```
{
glutBitmapCharacter(font, *c);
}
}

void display(void)
{
glClear(GL_COLOR_BUFFER_BIT);
//GameOver Checking
 if(
(i==730||i==-700)
//top and bottom checking

||
( ((int)b1x==10||(int)b1x==7||(int)b1x==4||(int)b1x==1)
&&(int)b1y<53+(int)hm&&(int)b1y+35>53+(int)hm)
        // propeller front checking

||
( ((int)b1x==9||(int)b1x==3||(int)b1x==6) &&(int)b1y<45+(int)hm&&(int)b1y+35>45+(int)hm)
//lower body checking

||
( ((int)b1x==0) && (int)b1y<46+(int)hm&&(int)b1y+35>46+(int)hm))
// lower tail checking
```

```
{


glColor3f(0.0,0.0,1.0); glRectf(0.0,0.0,100.0,100.0); glColor3f(1.0,0.0,0.0);
renderBitmapString(40,70,0,GLUT_BITMAP_HELVETICA_18,"GAME OVER!!!");
glColor3f(1.0,1.0,1.0);
renderBitmapString(25,58,0,GLUT_BITMAP_TIMES_ROMAN_24,"You");
renderBitmapString(45,58,0,GLUT_BITMAP_TIMES_ROMAN_24,"scored:");
renderBitmapString(70,58,0,GLUT_BITMAP_TIMES_ROMAN_24,scs);
glutSwapBuffers(); glFlush(); printf("\nGAME OVER\n\n"); printf("%s\You
scored  %s" ,name,scs); printf("\n\nClose the console window to
exit...\n");
//getch(); exit(0);
}


else if(wflag==1)//Welcome Screen
{


wflag=0;


glColor3f(0.0,0.5,0.7); glRectf(0.0,0.0,100.0,10.0);//ceil
glRectf(0.0,100.0,100.0,90.0);//floor


glColor3f(1.0,1.0,1.0); renderBitmapString(35,85,0,GLUT_BITMAP_HELVETICA_18,"CITY
ENGINEERING COLLEGE");


renderBitmapString(41,80,0,GLUT_BITMAP_HELVETICA_12,"Bangalore, Karnataka-560 062");
```

```
glColor3f(1.0,1.0,0.0);
renderBitmapString(20,65,0,GLUT_BITMAP_8_BY_13,"a mini project for Computer Graphics &
Visualization Laboratery");
renderBitmapString(45.5,70,0,GLUT_BITMAP_TIMES_ROMAN_24,"Helicopter");

glColor3f(1.0,0.0,0.0);
renderBitmapString(40,45,0,GLUT_BITMAP_TIMES_ROMAN_24,"Welcome");
renderBitmapString(53,45,0,GLUT_BITMAP_TIMES_ROMAN_24,name);
renderBitmapString(43,30,0,GLUT_BITMAP_TIMES_ROMAN_24,"Click To Start");
renderBitmapString(17,24,0,GLUT_BITMAP_9_BY_15,"CLICK AND HOLD LEFT MOUSE BUTTON TO GO UP
RELEASE TO GO DOWN");

glColor3f(0.0,0.0,0.0);
drawcopter();

glutSwapBuffers(); glFlush();

}

else
{

//on every increase by 50 in score in each level if(sci%50==0&&lflag==1)
{
```

```
lflag=0; //make level_flag=0 level++;//increase

level by 1 bspd+=0.01;//increase

block_dx_speed by 0.01

}


//within every level make level_flag=1 else

if(sci%50!=0&&lflag!=1)

{

lflag=1;

}


glPushMatrix();

glColor3f(0.0,0.5,0.7);

glRectf(0.0,0.0,100.0,10.0);          //ceil

glRectf(0.0,100.0,100.0,90.0);    //floor


glColor3f(0.0,0.0,0.0);   //score

renderBitmapString(1,3,0,GLUT_BITMAP_TIMES_ROMAN_24,"Distance:");

//glColor3f(0.7,0.7,0.7);


sprintf(slevel,"%d",level);   //level

renderBitmapString(80,3,0,GLUT_BITMAP_TIMES_ROMAN_24,"Level:");

renderBitmapString(93,3,0,GLUT_BITMAP_TIMES_ROMAN_24,slevel);


scf+=0.025;            //so less as program run very fast

sci=(int)scf; sprintf(scs,"%d",sci);
```

```
//from int to char convertion to display score

renderBitmapString(20,3,0,GLUT_BITMAP_TIMES_ROMAN_24,scs);

glTranslatef(0.0,hm,0.0);
// hm(=dy) changes occur by mouse func

drawcopter();
//code for helicopter
//if wall move towards left & get out of projection volume if(b1x<-10)
{

b1x=50;          //total width is 50
b1y=(rand()%25)+20;
//10 for selling+10 for giving enough space
// block bottom limit 0+20 & top limit 24+20=44

}

else b1x-=bspd;
//within the projection volume dec its x value by block_speed

glTranslatef(b1x,-hm,0.0);

glColor3f(1.0,0.0,0.0); glRectf(b1x,b1y,b1x+5,b1y+35);//block
1
```

```
glPopMatrix();


glutSwapBuffers(); glFlush();

}


}


void moveHeliU(void)

{


hm+=0.05;

i++; glutPostRedisplay();


}


void moveHeliD()

{


hm-=0.05;

i--;

glutPostRedisplay();


}
```

```
void mouse(int button, int state, int x, int y) {

switch (button)
{

case GLUT_LEFT_BUTTON:

if (state == GLUT_DOWN) glutIdleFunc(moveHeliU);

else if (state == GLUT_UP)
glutIdleFunc(moveHeliD); break;

default: break;

}

}

void keys(unsigned char key,int x,int y)
{

if(key=='w') glutIdleFunc(moveHeliU); if(key=='m') glutIdleFunc(moveHeliD);

}
```

```
int main(int argc, char** argv)
{

printf("enter your name to play: ");
scanf("%s",name); glutInit(&argc, argv);
glutInitDisplayMode (GLUT_DOUBLE | GLUT_RGB);
glutInitWindowSize (800, 600);
glutInitWindowPosition (200,200);
glutCreateWindow ("2D Copter Game");
init();
glutDisplayFunc(display);
        glutMouseFunc(mouse);
glutKeyboardFunc(keys);
glutMainLoop();         return
0;

        }
```