// p1.cpp : Defines the entry point for the console application.

//

#include<stdio.h>

#include<stdlib.h>

#include<GL/glut.h>

#include <string.h>

#include <time.h>

#include<math.h>

GLfloat a=0,b=0,c=0,d=0,e=0,f=320,g=0,h=340,i=230,j=0,k=320,l=500,m=300,n=0,o=340,op=0,clr=1,r1=0,g1=0,b1=1;

int fa,fb,fc,fd,fe,ff,fi,fj,fk,fl,fm,fn,fo,fp,fq,fr,fs,fz,flag=0;

char s1[]="GSSS INSTITUTE OF ENGINEERING & TECHNLOGY FOR WOMEN ";

char s2[]="DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING";

char s3[]="COMPUTER GRAPHICS MINI PROJECT";

char s4[]=" 'AIR ATTACK SIMULATION' ";

char s5[]="BY: PRAKRUTHI S(4GW16CS415)";

char s13[]=" R AMRUTHAVARSHINI(4GW16CS416)";

char s15[]="UNDER THE GUIDANCE OF : ";

char s16[]=" VISHWESH J ";

char s18[]=" PRESS 'ENTER' TO START . . . ";

char s20[]=" I A F ";

//objects

void fighter\_jet();

void enemy\_jet();

void tank();

void missile();

//buildings

void building();

void build\_outline();

void windows();

void house1();

void house\_outline1();

void house2();

void house\_outline2();

void house\_windows();

void skyscraper();

void tower\_outline();

//blast polygon

void blast\_building();

void blast\_tank();

//roads

void road();

void runway();

void whitestrips();

void pavement();

//display frames

void display1();

void display2();

void display3();

void display\_landing();

void display\_buildings();

void display\_building\_a();

void display\_building\_m();

void display\_tank\_m();

void display\_plane();

void display\_main();

void display\_main1();

//others

void stars();

void myinit();

void myinit1();

void circle\_draw(GLint h,GLint k,GLint r);

void update(int value)

{

if(flag==1)

{

a+=0.9; //Plane position takeoff on x axis

b-=2.2; //Road Strip backward movement

c+=0.8; //take off at certain angle on y axis

if(b<=-78.0)// moving of run way

b=0.0;

glutPostRedisplay();

}

glutTimerFunc(3,update,0);//delay

}

void frontscreen()

{

glBegin(GL\_POLYGON);

glColor3f(0,0,0);

glVertex2f(0,0);

glVertex2f(1400,0);

glVertex2f(1400,1000);

glVertex2f(0,1000);

glEnd();

glColor3f(1,0,0);

glRasterPos3f(160,475,1.0);

for(fi=0;fi<strlen(s1);fi++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s1[fi]);

glColor3f(1,0,0);

glRasterPos3f(120,425,1.0);

for(fj=0;fj<strlen(s2);fj++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s2[fj]);

glColor3f(1,1,1);

glRasterPos3f(160,375,1.0);

for(fk=0;fk<strlen(s3);fk++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s3[fk]);

glColor3f(1,1,1);

glRasterPos3f(170,325,1.0);

for(fl=0;fl<strlen(s4);fl++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s4[fl]);

glColor3f(0,1,0);

glRasterPos3f(120,275,1.0);

for(fm=0;fm<strlen(s5);fm++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s5[fm]);

glColor3f(0,1,0);

glRasterPos3f(120,225,1.0);

for(fa=0;fa<strlen(s13);fa++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s13[fa]);

glColor3f(0,1,0);

glRasterPos3f(300,275,1.0);

for(fc=0;fc<strlen(s15);fc++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s15[fc]);

glColor3f(0,1,0);

glRasterPos3f(300,225,1.0);

for(fd=0;fd<strlen(s16);fd++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s16[fd]);

glColor3f(1,1,1);

glRasterPos3f(160,150,1.0);

for(ff=0;ff<strlen(s18);ff++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s18[ff]);

}

void fighter\_jet()

{ if(clr==1)

glColor3f(0.5,0.5,0.55);

else if(clr==2)

glColor3f(0.0,0.2,0.4);

else if(clr==3)

glColor3f(0.2,0.2,0.4);

glBegin(GL\_POLYGON);

glVertex2f(0.0,28.0);

glVertex2f(0.0,41.0);

glVertex2f(44.0,50.0);

glVertex2f(64.0,55.0);

glVertex2f(80.0,60.0);

glVertex2f(92.0,65.0);

glVertex2f(96.0,70.0);

glVertex2f(100.0,71.0);

glVertex2f(102.0,71.5);

glVertex2f(103.0,72.0);

glVertex2f(104.0,72.5);

glVertex2f(106.0,72.0);

glVertex2f(108.0,72.0);

glVertex2f(112.0,70.0);

glVertex2f(116.0,68.0);

glVertex2f(120.0,66.0);

glVertex2f(132.0,56.0);

glVertex2f(144.0,54.0);

glVertex2f(152.0,52.0);

glVertex2f(156.0,50.0);

glVertex2f(160.0,49.0);

glVertex2f(152.0,47.0);

glVertex2f(144.0,45.0);

glVertex2f(136.0,45.0);

glVertex2f(104.0,45.0);

glVertex2f(86.0,40.0);

glVertex2f(78.0,25.0);

glVertex2f(30.0,25.0);

glVertex2f(16.0,25.0);

glEnd();

glColor3f(1.0,1.0,1.0);//cockpit,colour white

glBegin(GL\_POLYGON);

glVertex2f(104.0,72.5);

glVertex2f(106.0,71.5);

glVertex2f(108.0,71.0);

glVertex2f(112.0,70.0);

glVertex2f(116.0,68.0);

glVertex2f(120.0,64.0);

glVertex2f(132.0,56.0);

glVertex2f(104.0,60.0);

glEnd();

//if(clr==1)

glColor3f(0.35,0.35,0.39);

//else if(clr==2)

//glColor3f(0.2,0.2,0.4);

glBegin(GL\_POLYGON);

glVertex2f(10.0,43.0);

glVertex2f(6.0,70.0);

glVertex2f(15.0,80.0);

glVertex2f(34.0,48.0);

glEnd();

glBegin(GL\_POLYGON);//left side wing

glVertex2f(52.0,52.0);

glVertex2f(64.0,55.0);

glVertex2f(73.0,60.0);

glVertex2f(55.0,73.0);

glVertex2f(45.0,68.1);

glEnd();

glBegin(GL\_POLYGON);//rightside wing

glVertex2f(50.0,40.0);

glVertex2f(86.0,40.0);

glVertex2f(53.0,15.0);

glVertex2f(40.0,15.0);

glEnd();

glBegin(GL\_POLYGON);//front cone

glVertex2f(136.0,55.0);

glVertex2f(144.0,54.0);

glVertex2f(152.0,52.0);

glVertex2f(156.0,50.0);

glVertex2f(160.0,49.0);

glVertex2f(152.0,47.0);

glVertex2f(144.0,45.0);

glVertex2f(136.0,45.0);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(0.0,28.0);

glVertex2f(0.0,41.0);

glVertex2f(8.0,43.0);

glVertex2f(8.0,26.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);//cockpit partition

glVertex2f(116.0,68.0);

glVertex2f(116.0,58.0);

glEnd();

glColor3f(0.0,0.4,0.0);//rear wing flag

glBegin(GL\_POLYGON);

glVertex2f(10.0,60.0);

glVertex2f(10.0,62.0);

glVertex2f(16.0,62.0);

glVertex2f(16.0,60.0);

glEnd();

glColor3f(1.0,1.0,1.0);//rear wing flag

glBegin(GL\_POLYGON);

glVertex2f(10.0,62.0);

glVertex2f(10.0,64.0);

glVertex2f(16.0,64.0);

glVertex2f(16.0,62.0);

glEnd();

glColor3f(1.0,0.2,0.0);//rear wing flag

glBegin(GL\_POLYGON);

glVertex2f(10.0,64.0);

glVertex2f(10.0,66.0);

glVertex2f(16.0,66.0);

glVertex2f(16.0,64.0);

glEnd();

glColor3f(0,0,0);

glRasterPos3f(75,45,0.0);

for(fz=0;fz<strlen(s20);fz++)

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24, s20[fz]);

}

void enemy\_jet()

{

glColor3f(0.5,0.5,0.55);

glBegin(GL\_POLYGON);

glVertex2f(0.0,28.0);

glVertex2f(0.0,41.0);

glVertex2f(-44.0,50.0);

glVertex2f(-64.0,55.0);

glVertex2f(-80.0,60.0);

glVertex2f(-92.0,65.0);

glVertex2f(-96.0,70.0);

glVertex2f(-100.0,71.0);

glVertex2f(-102.0,71.5);

glVertex2f(-103.0,72.0);

glVertex2f(-104.0,72.5);

glVertex2f(-106.0,72.0);

glVertex2f(-108.0,72.0);

glVertex2f(-112.0,70.0);

glVertex2f(-116.0,68.0);

glVertex2f(-120.0,66.0);

glVertex2f(-132.0,56.0);

glVertex2f(-144.0,54.0);

glVertex2f(-152.0,52.0);

glVertex2f(-156.0,50.0);

glVertex2f(-160.0,49.0);

glVertex2f(-152.0,47.0);

glVertex2f(-144.0,45.0);

glVertex2f(-136.0,45.0);

glVertex2f(-104.0,45.0);

glVertex2f(-86.0,40.0);

glVertex2f(-78.0,25.0);

glVertex2f(-30.0,25.0);

glVertex2f(-16.0,25.0);

glEnd();

glColor3f(0.35,0.35,0.35);//rear wing

glBegin(GL\_POLYGON);

glVertex2f(-10.0,43.0);

glVertex2f(-6.0,70.0);

glVertex2f(-15.0,80.0);

glVertex2f(-34.0,48.0);

glEnd();

glColor3f(1.0,1.0,1.0);//cockpit,colour white

glBegin(GL\_POLYGON);

glVertex2f(-104.0,72.5);

glVertex2f(-106.0,71.5);

glVertex2f(-108.0,71.0);

glVertex2f(-112.0,70.0);

glVertex2f(-116.0,68.0);

glVertex2f(-120.0,64.0);

glVertex2f(-132.0,56.0);

glVertex2f(-104.0,60.0);

glEnd();

glColor3f(0.35,0.35,0.39);

glBegin(GL\_POLYGON);//left side wing

glVertex2f(-52.0,52.0);

glVertex2f(-64.0,55.0);

glVertex2f(-73.0,60.0);

glVertex2f(-55.0,73.0);

glVertex2f(-45.0,68.1);

glEnd();

glColor3f(0.35,0.35,0.39);

glBegin(GL\_POLYGON);//rightside wing

glVertex2f(-50.0,40.0);

glVertex2f(-86.0,40.0);

glVertex2f(-53.0,15.0);

glVertex2f(-40.0,15.0);

glEnd();

glColor3f(0.35,0.35,0.39);

glBegin(GL\_POLYGON);//front cone

glVertex2f(-136.0,55.0);

glVertex2f(-144.0,54.0);

glVertex2f(-152.0,52.0);

glVertex2f(-156.0,50.0);

glVertex2f(-160.0,49.0);

glVertex2f(-152.0,47.0);

glVertex2f(-144.0,45.0);

glVertex2f(-136.0,45.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);//cockpit partition

glVertex2f(-116.0,68.0);

glVertex2f(-116.0,58.0);

glEnd();

glColor3f(0.35,0.35,0.39);

glBegin(GL\_POLYGON);

glVertex2f(-0.0,28.0);

glVertex2f(-0.0,41.0);

glVertex2f(-8.0,43.0);

glVertex2f(-8.0,26.0);

glEnd();

}

void tank()

{

glColor3f(0.8,0.6,0.1);

glBegin(GL\_POLYGON);//tank

glVertex2f(315.0,75);

glVertex2f(257.0,67.0);

glVertex2f(256.0,60.0);

glVertex2f(258.0,55.0);

glVertex2f(260.0,45.0);

glVertex2f(420.0,45.0);

glVertex2f(423.0,50.0);

glVertex2f(424.0,55.0);

glVertex2f(430.0,57.0);

glVertex2f(430.0,72.0);

glVertex2f(427.0,75.0);

glVertex2f(385.0,85.0);

glVertex2f(370.0,35.0);

glVertex2f(355.0,75.0);

glEnd();

glColor3f(0.8,0.6,0.0);

glBegin(GL\_POLYGON);//rotor shaft

glVertex2f(385.0,85.0);

glVertex2f(377.0,100.0);

glVertex2f(323.0,100.0);

glVertex2f(315.0,75);

glVertex2f(380.0,80.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINE\_LOOP);//rotor shaft

glVertex2f(385.0,85.0);

glVertex2f(377.0,100.0);

glVertex2f(323.0,100.0);

glVertex2f(315.0,75);

glVertex2f(380.0,80.0);

glEnd();

glColor3f(0.8,0.6,0.1);

glBegin(GL\_POLYGON);//barrel

glVertex2f(322.0,95.0);

glVertex2f(250.0,120.0);

glVertex2f(247.0,113.0);

glVertex2f(323.0,83.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINE\_LOOP);//barrel

glVertex2f(322.0,95.0);

glVertex2f(250.0,120.0);

glVertex2f(247.0,113.0);

glVertex2f(323.0,83.0);

glEnd();

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);//chain

glVertex2f(260.0,45.0);

glVertex2f(305.0,15.0);

glVertex2f(402.0,15.0);

glVertex2f(420.0,45.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINE\_LOOP);//chain

glVertex2f(260.0,45.0);

glVertex2f(305.0,15.0);

glVertex2f(402.0,15.0);

glVertex2f(420.0,45.0);

glEnd();

glColor3f(0,0,0);//wheels

circle\_draw(310,30,15);

circle\_draw(338,30,15);

circle\_draw(366,30,15);

circle\_draw(394,30,15);

circle\_draw(275,40,5);

circle\_draw(412,40,5);

circle\_draw(310,30,2);

circle\_draw(338,30,2);

circle\_draw(366,30,2);

circle\_draw(394,30,2);

circle\_draw(310,30,13);

circle\_draw(338,30,13);

circle\_draw(366,30,13);

circle\_draw(394,30,13);

circle\_draw(275,40,4);

circle\_draw(412,40,4);

circle\_draw(275,40,1);

circle\_draw(412,40,1);

}

void missile()

{

glColor3f(0.75,0.75,0.75);

glBegin(GL\_POLYGON);

glVertex2f(0.0,30.0);

glVertex2f(0.0,40.0);

glVertex2f(50.0,40.0);

glVertex2f(70.0,35.0);

glVertex2f(50.0,30.0);

glEnd();

}

void building()

{

glColor3f(0.60,0.40,0.70);

glBegin(GL\_POLYGON);

glVertex2f(350.0,80.0);

glVertex2f(350.0,380.0);

glVertex2f(400.0,300.0);

glVertex2f(400.0,0.0);

glEnd();

glColor3f(0.80,0.50,0.80);//side portion

glBegin(GL\_POLYGON);

glVertex2f(400.0,0.0);

glVertex2f(400.0,300.0);

glVertex2f(450.0,310.0);

glVertex2f(450.0,10.0);

glEnd();

glColor3f(0.90,0.60,0.80);//side portion upper triangle

glBegin(GL\_POLYGON);

glVertex2f(400.0,300.0);

glVertex2f(350.0,380.0);

glVertex2f(390.0,420.0);

glVertex2f(450.0,310.0);

glEnd();

glColor3f(0.80,0.40,0.80);

glBegin(GL\_POLYGON);//front portion upper triangle of building

glVertex2f(400.0,300.0);

glVertex2f(350.0,380.0);

glVertex2f(390.0,420.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);//seperation line of floors

glVertex2f(350.0,180);

glVertex2f(400.0,100);

glEnd();

glColor3f(0.0,0.0,0.0);//1st floor

glBegin(GL\_LINES);

glVertex2f(350.0,280);

glVertex2f(400.0,200);

glEnd();

glColor3f(0.0,0.0,0.0);//2nd floor

glBegin(GL\_LINES);

glVertex2f(350.0,380);

glVertex2f(400.0,300);

glEnd();

glColor3f(0.0,0.0,0.0);//1st floor side

glBegin(GL\_LINES);

glVertex2f(450.0,110);

glVertex2f(400.0,100);

glEnd();

glColor3f(0.0,0.0,0.0);//2nd floor side

glBegin(GL\_LINES);

glVertex2f(450.0,210);

glVertex2f(400.0,200);

glEnd();

glColor3f(0.0,0.0,0.0);//3rd floor side

glBegin(GL\_LINES);

glVertex2f(450.0,310);

glVertex2f(400.0,300);

glEnd();

glColor3f(0.0,0.0,0.0);//side triangle outline

glBegin(GL\_LINES);

glVertex2f(450.0,310);

glVertex2f(390.0,420);

glEnd();

glColor3f(0.0,0.0,0.0);//side triange outline

glBegin(GL\_LINES);

glVertex2f(390.0,420);

glVertex2f(400.0,300);

glEnd();

glColor3f(0.0,0.0,0.0);//front triangle outline

glBegin(GL\_LINES);

glVertex2f(390.0,420);

glVertex2f(350.0,380);

glEnd();

glColor3f(0.0,0.0,0.0);//front building partition

glBegin(GL\_LINES);

glVertex2f(375.0,40.0);

glVertex2f(375.0,340.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);//tower

glVertex2f(390,420);

glVertex2f(390,450);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(350.0,180);

glEnd();

build\_outline();

windows();

glPushMatrix();//draw windows

glTranslated(0.0,-100.0,0.0);

windows();

glPopMatrix();

glPushMatrix();

glTranslated(0.0,-200.0,0.0);

windows();

glPopMatrix();

glPushMatrix();

glTranslated(0.0,-300.0,0.0);

windows();

glPopMatrix();

glPushMatrix();

glTranslated(-22.0,-65.0,0.0);

windows();

glPopMatrix();

glPushMatrix();

glTranslated(-22.0,-165.0,0.0);

windows();

glPopMatrix();

glPushMatrix();

glTranslated(-22.0,35.0,0.0);

windows();

glPopMatrix();

glFlush();

}

void windows()

{

glColor3f(1.70,0.60,0.90);

glBegin(GL\_POLYGON);

glVertex2f(380.0,270.0);

glVertex2f(380.0,300.0);

glVertex2f(390.0,280.0);

glVertex2f(390.0,250.0);

glEnd();

}

void build\_outline()//building out lines

{

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINE\_LOOP);

glVertex2f(350.0,80.0);

glVertex2f(350.0,380.0);

glVertex2f(400.0,300.0);

glVertex2f(400.0,0.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINE\_LOOP);

glVertex2f(400.0,0.0);

glVertex2f(400.0,300.0);

glVertex2f(450.0,310.0);

glVertex2f(450.0,10.0);

glEnd();

}

void house1()

{

glColor3f(0.6,0.0,0.0);

glBegin(GL\_POLYGON);

glVertex2f(300.0,80.0);

glVertex2f(300.0,200.0);

glVertex2f(430.0,200.0);

glVertex2f(430.0,80.0);

glEnd();

glColor3f(0.6,0.0,0.0);//2nd floor

glBegin(GL\_POLYGON);

glVertex2f(300.0,200.0);

glVertex2f(300.0,280.0);

glVertex2f(400.0,280.0);

glVertex2f(400.0,200.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);//seperation line of floors

glVertex2f(300.0,200);

glVertex2f(430.0,200);

glEnd();

glColor3f(0.8,0.2,0.2);//roof

glBegin(GL\_POLYGON);

glVertex2f(280.0,180);

glVertex2f(300.0,200);

glVertex2f(430.0,200);

glVertex2f(450.0,180);

glEnd();

glColor3f(0.8,0.2,0.2);//roof

glBegin(GL\_POLYGON);

glVertex2f(290.0,280);

glVertex2f(300.0,300);

glVertex2f(400.0,300);

glVertex2f(410.0,280);

glEnd();

glColor3f(0.0,0.0,0.0);//door

glBegin(GL\_POLYGON);

glVertex2f(355.0,80.0);

glVertex2f(355.0,120.0);

glVertex2f(375.0,120.0);

glVertex2f(375.0,80.0);

glEnd();

house\_outline1();

house\_windows();

glPushMatrix();//draw windows

glTranslated(0.0,100.0,0.0);

house\_windows();

glPopMatrix();

glPushMatrix();

glTranslated(57.0,100.0,0.0);

house\_windows();

glPopMatrix();

glPushMatrix();

glTranslated(87.0,0.0,0.0);

house\_windows();

glPopMatrix();

glFlush();

}

void house\_outline1()

{

glColor3f(0.0,0.0,0.0);//front portion

glBegin(GL\_LINE\_LOOP);

glVertex2f(300.0,80.0);

glVertex2f(300.0,200.0);

glVertex2f(430.0,200.0);

glVertex2f(430.0,80.0);

glEnd();

glColor3f(0.0,0.0,0.0);//side portion

glBegin(GL\_LINE\_LOOP);

glVertex2f(300.0,200.0);

glVertex2f(300.0,280.0);

glVertex2f(400.0,280.0);

glVertex2f(400.0,200.0);

glEnd();

}

void house2()

{

glColor3f(0.8,0.4,0.0);

glBegin(GL\_POLYGON);

glVertex2f(300.0,80.0);

glVertex2f(300.0,300.0);

glVertex2f(400.0,300.0);

glVertex2f(400.0,80.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);//seperation line of floors

glVertex2f(300.0,180);

glVertex2f(400.0,180);

glEnd();

glColor3f(0.35,0.1,0.0);//roof

glBegin(GL\_POLYGON);

glVertex2f(290.0,280);

glVertex2f(300.0,300);

glVertex2f(400.0,300);

glVertex2f(410.0,280);

glEnd();

glColor3f(0.35,0.1,0.0);//door

glBegin(GL\_POLYGON);

glVertex2f(340.0,80.0);

glVertex2f(340.0,120.0);

glVertex2f(360.0,120.0);

glVertex2f(360.0,80.0);

glEnd();

house\_outline2();

house\_windows();

glPushMatrix();//draw windows

glTranslated(0.0,100.0,0.0);

house\_windows();

glPopMatrix();

glPushMatrix();

glTranslated(57.0,100.0,0.0);

house\_windows();

glPopMatrix();

glPushMatrix();

glTranslated(57.0,0.0,0.0);

house\_windows();

glPopMatrix();

glFlush();

}

void house\_outline2()//building out lines

{

glColor3f(0.0,0.0,0.0);//

glBegin(GL\_LINE\_LOOP);

glVertex2f(300.0,80.0);

glVertex2f(300.0,280.0);

glVertex2f(400.0,280.0);

glVertex2f(400.0,80.0);

glEnd();

}

void house\_windows()

{

glColor3f(1.70,0.60,0.90);

glBegin(GL\_POLYGON);

glVertex2f(310.0,140.0);

glVertex2f(310.0,160.0);

glVertex2f(330.0,160.0);

glVertex2f(330.0,140.0);

glEnd();

}

void skyscraper()

{

glColor3f(0.2,0.4,0.4);

glBegin(GL\_POLYGON);//1st floor

glVertex2f(300.0,80.0);

glVertex2f(298.0,200.0);

glVertex2f(382.0,200.0);

glVertex2f(380.0,80.0);

glEnd();

glColor3f(0.2,0.4,0.6);//2nd floor

glBegin(GL\_POLYGON);

glVertex2f(305.0,200.0);

glVertex2f(305.0,260.0);

glVertex2f(375.0,260.0);

glVertex2f(375.0,200.0);

glEnd();

glColor3f(0.2,0.4,0.8);//3rd floor

glBegin(GL\_POLYGON);

glVertex2f(310.0,260);

glVertex2f(310.0,290);

glVertex2f(370.0,290);

glVertex2f(370.0,260);

glEnd();

glColor3f(0.2,0.4,1.0);//4th floor

glBegin(GL\_POLYGON);

glVertex2f(315.0,290);

glVertex2f(315.0,320);

glVertex2f(365.0,320);

glVertex2f(365.0,290);

glEnd();

glColor3f(0.2,0.5,1.0);//5th floor

glBegin(GL\_POLYGON);

glVertex2f(325.0,320.0);

glVertex2f(325.0,350.0);

glVertex2f(355.0,350.0);

glVertex2f(355.0,320.0);

glEnd();

glColor3f(0.5,0.5,0.55);//lightening rod

glBegin(GL\_POLYGON);

glVertex2f(338.0,350.0);

glVertex2f(338.0,380.0);

glVertex2f(342.0,380.0);

glVertex2f(342.0,350.0);

glEnd();

tower\_outline();

glFlush();

}

void tower\_outline()//building out lines

{

glColor3f(0.0,0.0,0.0);//1st floor

glBegin(GL\_LINE\_LOOP);

glVertex2f(300.0,80.0);

glVertex2f(298.0,200.0);

glVertex2f(382.0,200.0);

glVertex2f(380.0,80.0);

glEnd();

glColor3f(0.0,0.0,0.0);//2nd floor

glBegin(GL\_LINE\_LOOP);

glVertex2f(305.0,200.0);

glVertex2f(305.0,260.0);

glVertex2f(375.0,260.0);

glVertex2f(375.0,200.0);

glEnd();

glColor3f(0.0,0.0,0.0);//3dr floor

glBegin(GL\_LINE\_LOOP);

glVertex2f(310.0,260);

glVertex2f(310.0,290);

glVertex2f(370.0,290);

glVertex2f(370.0,260);

glEnd();

glColor3f(0.0,0.0,0.0);//4th floor

glBegin(GL\_LINE\_LOOP);

glVertex2f(315.0,290);

glVertex2f(315.0,320);

glVertex2f(365.0,320);

glVertex2f(365.0,290);

glEnd();

glColor3f(0.0,0.0,0.0);//5th floor

glBegin(GL\_LINE\_LOOP);

glVertex2f(325.0,320.0);

glVertex2f(325.0,350.0);

glVertex2f(355.0,350.0);

glVertex2f(355.0,320.0);

glEnd();

glColor3f(0.0,0.0,0.0);//lightening rod

glBegin(GL\_LINE\_LOOP);

glVertex2f(338.0,350.0);

glVertex2f(338.0,380.0);

glVertex2f(342.0,380.0);

glVertex2f(342.0,350.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(340.0,80.0);

glVertex2f(340.0,380.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(332.0,80.0);

glVertex2f(332.0,350.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(348.0,80.0);

glVertex2f(348.0,350.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(324.0,80.0);

glVertex2f(324.0,320.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(356.0,80.0);

glVertex2f(356.0,320.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(316.0,80.0);

glVertex2f(316.0,290.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINES);

glVertex2f(364.0,80.0);

glVertex2f(364.0,290.0);

glEnd();

}

void blast\_tank(void)//blast polygon construction

{

glPushMatrix();

glTranslated(-10.0,-60.0,0.0);

glColor3f(1.0,0.0,0.0);

glBegin(GL\_POLYGON);

glVertex2f(344.4,100.0);

glVertex2f(324.0,65.0);

glVertex2f(308.0,124.5);

glVertex2f(284.0,135.0);

glVertex2f(287.2,194.5);

glVertex2f(272.8,222.5);

glVertex2f(287.2,257.5);

glVertex2f(292.0,310.0);

glVertex2f(319.2,299.5);

glVertex2f(336.8,345.0);

glVertex2f(356.0,310.0);

glVertex2f(380.0,327.5);

glVertex2f(392.8,292.5);

glVertex2f(412.0,292.5);

glVertex2f(415.2,250.5);

glVertex2f(428.0,222.5);

glVertex2f(428.0,184.0);

glVertex2f(410.0,152.5);

glVertex2f(415.2,117.5);

glVertex2f(404.0,86.0);

glVertex2f(384.8,100.0);

glVertex2f(365.6,65.0);

glVertex2f(344.8,100.0);

glEnd();

glPopMatrix();

}

void blast\_building(void)//blast polygon construction

{

glTranslated(-10.0,-60.0,0.0);

glColor3f(1.0,0.0,0.0);

glBegin(GL\_POLYGON);

glVertex2f(404.4,320.0);

glVertex2f(384.0,285.0);

glVertex2f(368.0,344.5);

glVertex2f(344.0,355.0);

glVertex2f(347.2,414.5);

glVertex2f(332.8,442.5);

glVertex2f(347.2,477.5);

glVertex2f(352.0,530.0);

glVertex2f(379.2,519.5);

glVertex2f(396.8,565.0);

glVertex2f(416.0,530.0);

glVertex2f(440.0,547.5);

glVertex2f(452.8,512.5);

glVertex2f(472.0,512.5);

glVertex2f(475.2,470.5);

glVertex2f(488.0,442.5);

glVertex2f(488.0,404.0);

glVertex2f(470.0,372.5);

glVertex2f(475.2,337.5);

glVertex2f(464.0,306.0);

glVertex2f(444.8,320.0);

glVertex2f(425.6,285.0);

glVertex2f(404.8,320.0);

glEnd();

}

void runway()

{

glColor3f(0.10,0.10,0.10);

glBegin(GL\_POLYGON);//black road

glVertex2f(0.0,0.0);

glVertex2f(0.0,100.0);

glVertex2f(1500.0,100.0);

glVertex2f(1500.0,0.0);

glEnd();

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);//white strips on road

glVertex2f(0.0,40.0);

glVertex2f(8.0,60.0);

glVertex2f(58.0,60.0);

glVertex2f(50.0,40.0);

glEnd();

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(100.0,40.0);

glVertex2f(108.0,60.0);

glVertex2f(158.0,60.0);

glVertex2f(150.0,40.0);

glEnd();

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(200.0,40.0);

glVertex2f(208.0,60.0);

glVertex2f(258.0,60.0);

glVertex2f(250.0,40.0);

glEnd();

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(300.0,40.0);

glVertex2f(308.0,60.0);

glVertex2f(358.0,60.0);

glVertex2f(350.0,40.0);

glEnd();

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(400.0,40.0);

glVertex2f(408.0,60.0);

glVertex2f(458.0,60.0);

glVertex2f(450.0,40.0);

glEnd();

}

void road()

{

glColor3f(0.10,0.10,0.10);

glBegin(GL\_POLYGON);//black road

glVertex2f(0.0,0.0);

glVertex2f(0.0,80.0);

glVertex2f(400.0,80.0);

glVertex2f(405.0,0.0);

glEnd();

glPushMatrix();

whitestrips();

glPopMatrix();

glPushMatrix();

glTranslated(70,0.0,0.0);

whitestrips();

glPopMatrix();

glPushMatrix();

glTranslated(140,0.0,0.0);

whitestrips();

glPopMatrix();

glPushMatrix();

glTranslated(210,0.0,0.0);

whitestrips();

glPopMatrix();

glPushMatrix();

glTranslated(280,0.0,0.0);

whitestrips();

glPopMatrix();

}

void whitestrips()

{

glPushMatrix();

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);//white strips on road

glVertex2f(8.0,35.0);

glVertex2f(0.0,45.0);

glVertex2f(50.0,45.0);

glVertex2f(58.0,35.0);

glEnd();

glPopMatrix();

}

void pavement()

{

glColor3f(0.6,0.6,0.66);

glBegin(GL\_POLYGON);

glVertex2f(0.0,75.0);

glVertex2f(0.0,85.0);

glVertex2f(400.0,85.0);

glVertex2f(400.0,75.0);

glEnd();

glColor3f(0.0,0.0,0.0);

glBegin(GL\_LINE\_LOOP);

glVertex2f(0.0,75.0);

glVertex2f(0.0,85.0);

glVertex2f(400.0,85.0);

glVertex2f(400.0,75.0);

glEnd();

glColor3f(0.6,0.6,0.66);

glBegin(GL\_POLYGON);

glVertex2f(0.0,85.0);

glVertex2f(0.0,105.0);

glVertex2f(400.0,105.0);

glVertex2f(400.0,85.0);

glEnd();

}

void stars()

{

glColor3f(r1,g1,b1);

glPointSize(3.0);

glBegin(GL\_POINTS);

glVertex2f(200,430);

glVertex2f(300,550);

glVertex2f(350,450);

glVertex2f(406,420);

glVertex2f(300,-200);

glVertex2f(310,-200);

glVertex2f(900,500);

glVertex2f(850,700);

glVertex2f(800,650);

glVertex2f(750,800);

glVertex2f(150,800);

glVertex2f(350,600);

glVertex2f(100,300);

glVertex2f(250,250);

glEnd();

}

void display1()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

stars();

glPushMatrix();

glTranslatef(b,0.0,0.0);

runway();

glPopMatrix();

glPushMatrix();

glTranslated(a,c,0.0);

fighter\_jet();

glPopMatrix();

}

void display2()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

stars();

glColor3f(1.0,0.8,0.4);

glBegin(GL\_POLYGON);

glVertex2f(0.0,0.0);

glVertex2f(0.0,150.0);

glVertex2f(500.0,150.0);

glVertex2f(500.0,0.0);

glEnd();

glPushMatrix();

glTranslatef(-150.0,30.0,0.0);

glScalef(0.7,0.7,0.0);

house2();

glPopMatrix();

glPushMatrix();

glTranslatef(50.0,50.0,0.0);

glScalef(0.5,0.5,0.0);

house2();

glPopMatrix();

glPushMatrix();

glTranslated(d,320.0,0.0);

fighter\_jet();

glPopMatrix();

}

void display3()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

stars();

if(op==0)

display\_building\_a();

else if(op==1)

display\_building\_m();

else if(op==2)

display\_tank\_m();

else if(op==3)

display\_plane();

}

void display4()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

stars();

glPushMatrix();

glTranslatef(b,0.0,0.0);

runway();

glPopMatrix();

glPushMatrix();

glTranslatef(j,k,0.0);

fighter\_jet();

glPopMatrix();

if(k<20)

k=20;

if(j>310)

{

j=310;

b=0.0;

}

}

void display\_buildings()

{

glPushMatrix();

pavement();

glPopMatrix();

glPushMatrix();

glScalef(1.0,0.95,0.0);

road();

glPopMatrix();

glPushMatrix();

glScalef(0.5,0.9,0.0);

glTranslatef(-280,37.0,0.0);

skyscraper();

glPopMatrix();

glPushMatrix();

glScalef(0.9,0.9,0.0);

glTranslatef(-200,37.0,0.0);

house1();

glPopMatrix();

glPushMatrix();

glScalef(0.9,0.8,0);

glTranslatef(-40,51.0,0.0);

house2();

glPopMatrix();

glPushMatrix();

glScalef(1.0,0.93,0.0);

building();

glPopMatrix();

}

void display\_building\_a()

{

display\_buildings();

glPushMatrix();

glTranslatef(e,360.0,0.0);

fighter\_jet();

glPopMatrix();

/\*glPushMatrix();

if(e>240)//timer to call blast function

{

blast\_building();

e=320;

}

glPopMatrix();\*/

}

void display\_building\_m()

{

display\_buildings();

glPushMatrix();

glTranslatef(e,o,0.0);

missile();

glPopMatrix();

glPushMatrix();

glTranslatef(g,h,0.0);

fighter\_jet();

glPopMatrix();

if(e>340)//timer to call blast function

{

glPushMatrix();

glTranslatef(-40.0,-80.0,0.0);

glScalef(1.1,1.1,0.0);

blast\_building();

glPopMatrix();

e=360;

o=200;

}

}

void display\_tank\_m()

{

glColor3f(0.35,0.1,0.0);

glBegin(GL\_POLYGON);

glVertex2f(0.0,0.0);

glVertex2f(0.0,40.0);

glVertex2f(500.0,40.0);

glVertex2f(500.0,0.0);

glEnd();

glPushMatrix();

glTranslatef(i,20,0.0);

tank();

glPopMatrix();

glPushMatrix();

glTranslatef(e,f,0.0);

missile();

glPopMatrix();

glPushMatrix();

glTranslatef(g,320,0.0);

fighter\_jet();

glPopMatrix();

if(e>320||f<65)//timer to call blast function

{

blast\_tank();

e=330;

f=55;

i=330;

}

}

void display\_plane()

{

glPushMatrix();

glTranslatef(g,320.0,0.0);

fighter\_jet();

glPopMatrix();

glPushMatrix();

glTranslatef(n,320.0,0.0);

missile();

glPopMatrix();

glPushMatrix();

glTranslatef(l,m,0.0);

enemy\_jet();

glPopMatrix();

if(m<40)

{

m=40;

l=400;

glPushMatrix();

glScalef(1.5,1,0);

glTranslatef(-130,20,0.0);

blast\_tank();

glPopMatrix();

}

}

void draw\_pixels(GLint m,GLint n)

{

glPointSize(1.5);

glBegin(GL\_POINTS);

glVertex2i(m,n);

}

void plot\_pixels(GLint h,GLint k,GLint x,GLint y)

{

draw\_pixels(x+h,y+k);

draw\_pixels(-x+h,y+k);

draw\_pixels(x+h,-y+k);

draw\_pixels(-x+h,-y+k);

draw\_pixels(y+h,x+k);

draw\_pixels(-y+h,x+k);

draw\_pixels(y+h,-x+k);

draw\_pixels(-y+h,-x+k);

}

void circle\_draw(GLint h,GLint k,GLint r)//draw wheels for tank

{

GLint d=1-r,x=0,y=r;

GLint i;

plot\_pixels(h,k,x,y);

while(y>x)

{

if(d<0)

{

d+=2\*x+3;

}

else

{

d+=2\*(x-y)+5;

--y;

}

++x;

plot\_pixels(h,k,x,y);

}

glEnd();

}

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

{

switch(key)

{

case 27:

exit(1);

case 'x':

case 'X':

display\_main1();

break;

case 'f':

case 'F':

glutFullScreen();

break;

case 'r':

case 'R':

a=0,d=0,e=0,c=0,f=300,g=0,h=310,i=230,j=0,k=310,l=500,m=300,n=0,o=320,op=0;

glutPostRedisplay();

case 13:if(flag==0)

flag=1;

break;

}

}

void target(int id)

{

switch(id)

{

case 1:op=1;

break;

case 2:op=2;

break;

case 3:op=3;

break;

}

}

void color(int cl)

{

switch(cl)

{

case 1:clr=1;

break;

case 2:clr=2;

break;

case 3:clr=3;

break;

}

}

void rightmenu(int op)

{

switch(op)

{

case 3:myinit();

break;

case 4:myinit1();

break;

case 5:break;

}

}

void leftmenu(int opr)

{

switch(opr)

{

case 1:break;

case 2:break;

case 3:break;

case 4:break;

}

}

void myinit()

{

glClearColor(0.0f,1.0f,1.0f,1.0f);//set day

glColor3f(0.0,0.1,1.0);

glPointSize(1.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(0.0,499.0,0.0,499.0);

r1=0.0;g1=1.1;b1=1.0;

}

void myinit1()

{

glClearColor(0.0,0.0,0.0,0.0);//set night

glColor3f(1.0,0.0,0.0);

glPointSize(1.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(0.0,499.0,0.0,499.0);

r1=1.0;g1=1.0;b1=1.0;

}

void reshape(int w, int h)

{

glViewport (0,0, (GLsizei) w, (GLsizei) h);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(0.0,499.0,0.0,499.0);

glMatrixMode(GL\_MODELVIEW);

glLoadIdentity();

}

void display\_main()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

if(flag==0)

frontscreen();

else if(flag==1)

{

display1();

if(c>360) //timer to jump to next display

{

display2();

d+=0.9;//plane takeoff on x in 2nd display(plane speed)

}

if(d>450)//timer to jump to 3rd display

{

e+=0.9;//plane takeoff on x in 3rd display

f-=0.8;

g+=0.9;

h+=0.35;

i-=0.7;

l-=0.7;

n+=3.0;

o-=0.35;

display3();

if(l<430)

{

m-=4;

n=-100.0;

}

}

if(g>400)

{

j+=0.48;

k-=0.64;

display4();

}

}

glutSwapBuffers();

glFlush();

}

void display\_main1()//to increase the speed

{

glClear(GL\_COLOR\_BUFFER\_BIT);

if(flag==0)

frontscreen();

else if(flag==1)

{

display1();

a+=2.4;

b-=2.4;

c+=2.3;

if(c>360) //timer to jump to next display

{

display2();

d+=5.0;//plane takeoff on x in 2nd display(plane speed)

}

if(d>450)//timer to jump to 3rd display

{

e+=4.7;//plane takeoff on x in 3rd display

f-=4.6;

g+=4.7;

h+=2.29;

i-=3.4;

l-=2.7;

n+=9.0;

o-=1.0;

display3();

if(l<430)

{

m-=6;

n=-100.0;

}

}

if(g>400)

{

j+=1.28;

k-=1.9;

b-=2.4;

display4();

}

}

glutSwapBuffers();

glFlush();

}

int main(int argc, char\* argv[])

{

int submenu1,submenu2;

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_SINGLE | GLUT\_DOUBLE | GLUT\_RGB);

glutInitWindowSize(1400,800);

//glutInitWindowPosition(0,0);

glutCreateWindow("AIR ATTACK SIMULATION");

glutDisplayFunc(display\_main);

myinit();

glutKeyboardFunc(keys);

glutReshapeFunc(reshape);

submenu1=glutCreateMenu(target);

glutAddMenuEntry("Building",1);

glutAddMenuEntry("Tank",2);

glutAddMenuEntry("Enemy jet",3);

submenu2=glutCreateMenu(color);

glutAddMenuEntry("Grey",1);

glutAddMenuEntry("Blue",2);

glutAddMenuEntry("Purple",3);

glutCreateMenu(rightmenu);

glutAddSubMenu("Target",submenu1);

glutAddSubMenu("Plane Color",submenu2);

glutAddMenuEntry("Day",3);

glutAddMenuEntry("Night",4);

glutAddMenuEntry("PRESS left button to see MORE OPTIONS",5);

glutAttachMenu(GLUT\_RIGHT\_BUTTON);

glutCreateMenu(leftmenu);

glutAddMenuEntry("Press and hold X to increase speed of the jet/missile/tank",1);

glutAddMenuEntry("Press the F button for FULL SCREEN DISPLAY",2);

glutAddMenuEntry("Press the R button for REDISPLAY",3);

glutAddMenuEntry("PRESS right button to see MORE OPTIONS",4);

glutAddMenuEntry("Press the Esc button to EXIT From the Program",5);

glutAttachMenu(GLUT\_LEFT\_BUTTON);

glutTimerFunc(100,update,0);

glutMainLoop();

return 0;

}