Mini Project

Team Members:

Mihir Joshi -30
Pritesh Gandhi -19
Ronak Jain -28
Batch 1

Code:

```
#include<GL/glut.h>
#include<stdlib.h>
#include<stdio.h>
#include<math.h>
#include<string.h>
const float DEG2RAD = 3.14159/180;
void display1();
void stars();
int p;
void stars1();
void static_rocket();
void rocket_to_cam_pos();
void rocket_in_motion();
void mars(float radius);

float i,j,count=0,count1=0,count3=0,flag=0,flag1=0,t=0,f=0,flag3=0;
void semicircle(float radius,float u,float v)
{

        glColor3f(1.0 ,1.0 ,1.0);
  glBegin(GL_POLYGON);

  for (int i=135; i<=315; i++)
  {
     float degInRad = i*DEG2RAD;
     glVertex2f(u+cos(degInRad)*radius,v+(sin(degInRad))*radius);//100,100
specifies centre of the circle
  }

  glEnd();
}
```

```
void display1()
{

count1++;
 if(count1==250)
      flag=1;
   if(flag==0)
       static_rocket();
 else if((count1==151)| (count1==152))
       rocket_to_cam_pos();
  else
      rocket_in_motion();
}

void stars()
{

          glColor3f(1.0,1.0,1.0);
          glPointSize(0.37);
          glBegin(GL_POINTS);
          glVertex2i(10,20);
          glVertex2i(20,100);
          glVertex2i(30,10);
          glVertex2i(15,150);
          glVertex2i(17,80);
          glVertex2i(200,200);
          glVertex2i(55,33);
          glVertex2i(400,300);
          glVertex2i(330,110);
          glVertex2i(125,63);
          glVertex2i(63,125);
          glVertex2i(20,10);
          glVertex2i(110,330);
          glVertex2i(440,430);
          glVertex2i(32,65);
          glVertex2i(110,440);
          glVertex2i(210,230);
          glVertex2i(390,490);
          glVertex2i(12,90);
          glVertex2i(400,322);
          glVertex2i(420,366);
          glVertex2i(455,400);
          glVertex2i(20,20);
          glVertex2i(111,120);
          glVertex2i(401,200);
          glVertex2i(230,30);
          glVertex2i(220,20);
          glVertex2i(122,378);
          glVertex2i(133,340);
```

```
        glVertex2i(345,420);
        glVertex2i(130,360);
        glVertex2i(333,120);
        glVertex2i(250,22);
        glVertex2i(242,11);
        glVertex2i(280,332);
        glVertex2i(233,40);
        glVertex2i(210,418);
        glVertex2i(256,12);
        glVertex2i(288,232);
        glVertex2i(247,36);
        glVertex2i(229,342);
        glVertex2i(257,47);
        glVertex2i(290,63);
        glVertex2i(232,72);
        glVertex2i(243,143);
        glVertex2i(100,200);
        glVertex2i(90,250);
        glVertex2i(80,225);
        glVertex2i(50,333);
        glVertex2i(60,350);
        glVertex2i(243,143);
        glVertex2i(243,143);
        glEnd();
}

void stars1()
{
        int l;
        glColor3f(1.0,1.0,1.0);
        glPointSize(0.3);
        glBegin(GL_POINTS);
        glVertex2i(50,20);
        glVertex2i(70,100);
        glVertex2i(80,10);
        glVertex2i(65,150);
        glVertex2i(67,80);
        glVertex2i(105,33);
        glVertex2i(450,300);
        glVertex2i(380,110);
        glVertex2i(175,63);
        glVertex2i(113,125);
        glVertex2i(70,10);
        glVertex2i(160,330);
        glVertex2i(490,430);
        glVertex2i(82,65);
        glVertex2i(160,440);
        glVertex2i(440,490);
        glVertex2i(62,90);
```

```
          glVertex2i(450,322);
          glVertex2i(420,366);
          glVertex2i(455,400);
          glVertex2i(60,20);
          glVertex2i(111,120);
          glVertex2i(451,200);
          glVertex2i(280,30);
          glVertex2i(220,20);
          glVertex2i(132,378);
          glVertex2i(173,340);
          glVertex2i(325,420);
          glVertex2i(180,360);
          glVertex2i(383,120);
          glVertex2i(200,22);
          glVertex2i(342,11);
          glVertex2i(330,332);
          glVertex2i(283,40);
          glVertex2i(210,418);
          glVertex2i(256,12);
          glVertex2i(288,232);
          glVertex2i(247,36);
          glVertex2i(229,342);
          glVertex2i(257,47);
          glVertex2i(290,63);
          glVertex2i(232,72);
          glVertex2i(243,143);
          glVertex2i(100,200);
          glVertex2i(90,250);
          glVertex2i(80,225);
          glVertex2i(50,333);
          glVertex2i(60,350);
          glVertex2i(243,143);
          glVertex2i(243,143);
          glEnd();
          for(l=0;l<=10000;l++)
                    ;
}
void static_rocket()
{

count1++;
if(count1==150)
flag=1;
  if(flag==0)
  {
          glClearColor(0.196078  ,0.6 ,0.8,1.0);
          glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);

          glColor3f(0.4,0.25,0.1);
```

```
        glBegin(GL_POLYGON);//green ground
        glVertex2f(0.0,0.0);
        glVertex2f(0.0,250.0);
        glVertex2f(280.0,250.0);
        glVertex2f(500.0,50.0);
        glVertex2f(500.0,0.0);
        glEnd();
        glBegin(GL_POLYGON);//green ground
        glVertex2f(280.0,250.0);
        glVertex2f(500.0,250.0);
        glVertex2f(500.0,50.0);
        glEnd();
        glColor3f(0.0,0.0,0.0);

                glColor3f(0.647059 ,0.164706  ,0.164706);
                glBegin(GL_POLYGON);//solid cone
                glVertex2f(26,250);
                glVertex2f(52,250);
                glVertex2f(39,290);
                glEnd();
                semicircle(20.0,50,300);

glColor3f(0.0,0.0 ,0.0);
                glBegin(GL_LINES);//wires
                glVertex2f(37,313);
                glVertex2f(62,310);
                glVertex2f(63,287);
                glVertex2f(62,310);
                glEnd();
        glColor3f(1.0,1.0,1.0);

        glEnd();
        glPointSize(2.0);

glColor3f(1.0,1.0 ,1.0);
glBegin(GL_POLYGON);//core
        glVertex2f(237.5,20.0);
        glVertex2f(262.5,20.0);
        glVertex2f(262.5,120.0);
        glVertex2f(237.5,120.0);


glEnd();

glColor3f(1.0,1.0,1.0);//bonnet
glBegin(GL_POLYGON);//front
glVertex2f(237.5,120.0);
glVertex2f(262.5,120.0);
glVertex2f(250,170.0);
```

```
glEnd();
glColor3f(1.0,0.0,0.0);
glBegin(GL_POLYGON);//left_side_top
glVertex2f(237.5,120.0);
glVertex2f(217.5,95.0);
glVertex2f(237.5,95.0);
glEnd();
        glBegin(GL_POLYGON);//left_side_bottom
glVertex2f(237.5,20.0);
glVertex2f(217.5,20.0);
glVertex2f(237.5,70.0);
glEnd();
        glBegin(GL_POLYGON);//right_side_bottom
glVertex2f(262.5,20.0);
glVertex2f(282.5,20.0);
glVertex2f(262.5,70.0);
glEnd();
        glBegin(GL_POLYGON);//right_side_top
glVertex2f(262.5,120.0);
glVertex2f(262.5,95.0);
glVertex2f(282.5,95.0);
glEnd();
glColor3f(0.556863 ,0.137255  ,0.419608);
        glBegin(GL_POLYGON);//bottom_1_exhaust
glVertex2f(237.5,20.0);
glVertex2f(244.5,20.0);
glVertex2f(241,0.0);
glEnd();
        glBegin(GL_POLYGON);//bottom_2_exhaust
glVertex2f(246.5,20.0);
glVertex2f(253.5,20.0);
glVertex2f(249.5,0.0);
glEnd();
        glBegin(GL_POLYGON);//bottom_3_exhaust
glVertex2f(262.5,20.0);
glVertex2f(255.5,20.0);
glVertex2f(258.5,0.0);
glEnd();

glBegin(GL_POLYGON);//left_stand_holder
glVertex2f(182.5,85.0);
glVertex2f(182.5,0.0);
glVertex2f(187.5,0.0);
glVertex2f(187.5,80.0);
glVertex2f(237.5,80.0);
glVertex2f(237.5,85.0);
glVertex2f(182.5,85.0);
glEnd();
glBegin(GL_POLYGON);
```

```
glVertex2f(312.5,85.0);//right_stand_holder
        glVertex2f(312.5,0.0);
        glVertex2f(307.5,0.0);
        glVertex2f(307.5,80.0);
        glVertex2f(262.5,80.0);
        glVertex2f(262.5,85.0);
        glVertex2f(312.5,85.0);
        glEnd();

        for(j=0;j<=1000000;j++)
                ;
        glutSwapBuffers();
        glutPostRedisplay();
        glFlush();
}

}
void rocket_to_cam_pos()
{
        count++;
count3++;

for(i=0;i<=200;i++)
{

        glClearColor(0.196078  ,0.6 ,0.8,1.0);
        glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);

        glColor3f(0.8,0.498039 ,0.196078);
        glBegin(GL_POLYGON);//core
                glVertex2f(237.5,20.0+i);
                glVertex2f(262.5,20.0+i);
                glVertex2f(262.5,120.0+i);
                glVertex2f(237.5,120.0+i);


        glEnd();

        glColor3f(1.0,1.0,1.0);//bonnet
        glBegin(GL_POLYGON);//front
        glVertex2f(237.5,120.0+i);
        glVertex2f(262.5,120.0+i);
        glVertex2f(250,170.0+i);
        glEnd();
        glColor3f(1.0,0.0,0.0);
        glBegin(GL_POLYGON);//left_side_top
        glVertex2f(237.5,120.0+i);
        glVertex2f(217.5,95.0+i);
        glVertex2f(237.5,95.0+i);
```

```
glEnd();
    glBegin(GL_POLYGON);//left_side_bottom
glVertex2f(237.5,20.0+i);
glVertex2f(217.5,20.0+i);
glVertex2f(237.5,70.0+i);
glEnd();
    glBegin(GL_POLYGON);//right_side_bottom
glVertex2f(262.5,20.0+i);
glVertex2f(282.5,20.0+i);
glVertex2f(262.5,70.0+i);
glEnd();
    glBegin(GL_POLYGON);//right_side_top
glVertex2f(262.5,120.0+i);
glVertex2f(262.5,95.0+i);
glVertex2f(282.5,95.0+i);
glEnd();
glColor3f(0.556863 ,0.137255  ,0.419608);
    glBegin(GL_POLYGON);//bottom_1_exhaust
glVertex2f(237.5,20.0+i);
glVertex2f(244.5,20.0+i);
glVertex2f(241,0.0+i);
glEnd();
    glBegin(GL_POLYGON);//bottom_2_exhaust
glVertex2f(246.5,20.0+i);
glVertex2f(253.5,20.0+i);
glVertex2f(249.5,0.0+i);
glEnd();
    glBegin(GL_POLYGON);//bottom_3_exhaust
glVertex2f(262.5,20.0+i);
glVertex2f(255.5,20.0+i);
glVertex2f(258.5,0.0+i);
glEnd();

if((p%2)==0)
            glColor3f(1.0,0.25,0.0);
            else
                glColor3f(1.0,0.816,0.0);

            glBegin(GL_POLYGON);//outer fume
    glVertex2f(237.5,20+i);
    glVertex2f(234.16,16.66+i);
    glVertex2f(230.82,13.32+i);
    glVertex2f(227.48,9.98+i);
    glVertex2f(224.14,6.64+i);
    glVertex2f(220.8,3.3+i);
    glVertex2f(217.5,0+i);
    glVertex2f(221.56,-5+i);
    glVertex2f(225.62,-10+i);
    glVertex2f(229.68,-15+i);
```

```
glVertex2f(233.74,-20+i);
glVertex2f(237.8,-25+i);
glVertex2f(241.86,-30+i);
glVertex2f(245.92,-35+i);
glVertex2f(250,-40+i);
glVertex2f(254.06,-35+i);
glVertex2f(258.12,-30+i);
glVertex2f(262.18,-25+i);
glVertex2f(266.24,-20+i);
glVertex2f(270.3,-15+i);
glVertex2f(274.36,-10+i);
glVertex2f(278.42,-5+i);
glVertex2f(282.5,0+i);
glVertex2f(278.5,4+i);
glVertex2f(274.5,8+i);
glVertex2f(270.5,12+i);
glVertex2f(266.5,16+i);
glVertex2f(262.5,20+i);//28 points
glEnd();

                    if((p%2)==0)
              glColor3f(1.0,0.816,0.0);
              else
                     glColor3f(1.0,0.25,0.0);

glBegin(GL_POLYGON);//inner fume
glVertex2f(237.5,20+i);
glVertex2f(236.5,17.5+i);
glVertex2f(235.5,15+i);
glVertex2f(234.5,12.5+i);
glVertex2f(233.5,10+i);
glVertex2f(232.5,7.5+i);
glVertex2f(236,5+i);
glVertex2f(239.5,2.5+i);
glVertex2f(243,0+i);
glVertex2f(246.5,-2.5+i);
glVertex2f(250,-5+i);
glVertex2f(253.5,-2.5+i);
glVertex2f(257,0+i);
glVertex2f(260.5,2.5+i);
glVertex2f(264,5+i);
glVertex2f(267.5,7.5+i);
glVertex2f(266.5,10+i);
glVertex2f(265.5,12.5+i);
glVertex2f(264.5,15+i);
glVertex2f(263.5,17.5+i);
glVertex2f(262.5,20+i);//21 points

glEnd();
```

```
        p=p+1;
    for(j=0;j<=1000000;j++)
        ;
    glutSwapBuffers();
    glutPostRedisplay();
    glFlush();
}
}
void rocket_in_motion()
{
    count++;


for(i=195;i<=200;i++)
{
  if(count>=5)
     {
            glClearColor(0.0 ,0.0 ,0.0,1.0);
    glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);
    if(flag1==0)
    {
    stars();
    flag1=1;
    }
    else
    {
        stars1();

        flag1=0;
    }

     }
     else
     {
    glClearColor(0.196078  ,0.6 ,0.8,1.0);
    glClear(GL_COLOR_BUFFER_BIT|GL_DEPTH_BUFFER_BIT);
     }

    glColor3f(0.8,0.498039 ,0.196078);
    glBegin(GL_POLYGON);//core
        glVertex2f(237.5,20.0+i);
        glVertex2f(262.5,20.0+i);
        glVertex2f(262.5,120.0+i);
        glVertex2f(237.5,120.0+i);


    glEnd();

    glColor3f(1.0,1.0,1.0);//bonnet
```

```
glBegin(GL_POLYGON);//front
glVertex2f(237.5,120.0+i);
glVertex2f(262.5,120.0+i);
glVertex2f(250,170.0+i);
glEnd();
glColor3f(1.0,0.0,0.0);
glBegin(GL_POLYGON);//left_side_top
glVertex2f(237.5,120.0+i);
glVertex2f(217.5,95.0+i);
glVertex2f(237.5,95.0+i);
glEnd();
        glBegin(GL_POLYGON);//left_side_bottom
glVertex2f(237.5,20.0+i);
glVertex2f(217.5,20.0+i);
glVertex2f(237.5,70.0+i);
glEnd();
        glBegin(GL_POLYGON);//right_side_bottom
glVertex2f(262.5,20.0+i);
glVertex2f(282.5,20.0+i);
glVertex2f(262.5,70.0+i);
glEnd();
        glBegin(GL_POLYGON);//right_side_top
glVertex2f(262.5,120.0+i);
glVertex2f(262.5,95.0+i);
glVertex2f(282.5,95.0+i);
glEnd();
glColor3f(0.556863 ,0.137255  ,0.419608);
        glBegin(GL_POLYGON);//bottom_1_exhaust
glVertex2f(237.5,20.0+i);
glVertex2f(244.5,20.0+i);
glVertex2f(241,0.0+i);
glEnd();
        glBegin(GL_POLYGON);//bottom_2_exhaust
glVertex2f(246.5,20.0+i);
glVertex2f(253.5,20.0+i);
glVertex2f(249.5,0.0+i);
glEnd();
        glBegin(GL_POLYGON);//bottom_3_exhaust
glVertex2f(262.5,20.0+i);
glVertex2f(255.5,20.0+i);
glVertex2f(258.5,0.0+i);
glEnd();
if((p%2)==0)
                        glColor3f(1.0,0.25,0.0);
                        else
                                glColor3f(1.0,0.816,0.0);

                        glBegin(GL_POLYGON);//outer fume
        glVertex2f(237.5,20+i);
```

```
glVertex2f(234.16,16.66+i);
glVertex2f(230.82,13.32+i);
glVertex2f(227.48,9.98+i);
glVertex2f(224.14,6.64+i);
glVertex2f(220.8,3.3+i);
glVertex2f(217.5,0+i);
glVertex2f(221.56,-5+i);
glVertex2f(225.62,-10+i);
glVertex2f(229.68,-15+i);
glVertex2f(233.74,-20+i);
glVertex2f(237.8,-25+i);
glVertex2f(241.86,-30+i);
glVertex2f(245.92,-35+i);
glVertex2f(250,-40+i);
glVertex2f(254.06,-35+i);
glVertex2f(258.12,-30+i);
glVertex2f(262.18,-25+i);
glVertex2f(266.24,-20+i);
glVertex2f(270.3,-15+i);
glVertex2f(274.36,-10+i);
glVertex2f(278.42,-5+i);
glVertex2f(282.5,0+i);
glVertex2f(278.5,4+i);
glVertex2f(274.5,8+i);
glVertex2f(270.5,12+i);
glVertex2f(266.5,16+i);
glVertex2f(262.5,20+i);//28 points
glEnd();

                    if((p%2)==0)
              glColor3f(1.0,0.816,0.0);
              else
                     glColor3f(1.0,0.25,0.0);

glBegin(GL_POLYGON);//inner fume
glVertex2f(237.5,20+i);
glVertex2f(236.5,17.5+i);
glVertex2f(235.5,15+i);
glVertex2f(234.5,12.5+i);
glVertex2f(233.5,10+i);
glVertex2f(232.5,7.5+i);
glVertex2f(236,5+i);
glVertex2f(239.5,2.5+i);
glVertex2f(243,0+i);
glVertex2f(246.5,-2.5+i);
glVertex2f(250,-5+i);
glVertex2f(253.5,-2.5+i);
glVertex2f(257,0+i);
glVertex2f(260.5,2.5+i);
```

```
				glVertex2f(264,5+i);
				glVertex2f(267.5,7.5+i);
				glVertex2f(266.5,10+i);
				glVertex2f(265.5,12.5+i);
				glVertex2f(264.5,15+i);
				glVertex2f(263.5,17.5+i);
				glVertex2f(262.5,20+i);//21 points

				glEnd();
				p=p+1;


		for(j=0;j<=1000000;j++)
				;
		glutSwapBuffers();
		glutPostRedisplay();
		glFlush();
}
}



void myinit()
{
		//int i;
		glClearColor(0.196078  ,0.6 ,0.8,1.0);


		glPointSize(1.0);
		gluOrtho2D(0.0,499.0,0.0,499.0);
}






int main(int argc,char*argv[])
{
		printf("Project By Mihir Joshi\tPritesh Gandhi\tRonak Jain ");
		glutInit(&argc,argv);
		glutInitDisplayMode(GLUT_DOUBLE|GLUT_RGB);
		glutInitWindowSize(500,500);
		glutCreateWindow("rocket");


		glutIdleFunc(display1);
		glutDisplayFunc(display1);
		myinit();
```

```
   glutMainLoop();
   return 0;
}

// -lGL -lglut -lGLU -lm
```

Output: