#include"iostream"

using namespace std;

#include<graphics.h>

#include<math.h>

#include<conio.h>

void Area();

void Volume();

void triangle();

void square();

void rectangle();

void circle();

void parallelogram();

void ellipse();

void cube();

void cylinder();

void prism();

void sphere();

void tetrahedron();

void rectangular\_cuboid();

float area;

float volume;

int main()

{

int ch;

while(1)

{

cout<<"1.Area\t 2.Volume\t3.Exit\n";

cout<<"Enter your choice\n";

cin>>ch;

switch(ch)

{

case 1:Area();

break;

case 2:Volume();

break;

case 3:exit(0);

break;

default:cout<<"Enter correct choice\n";

}

}

}

void Area()

{

int ch;

cout<<"1.triangle\t 2.square\t 3.rectangle\t 4.circle\t 5.parallelogram\t 6.ellipse\t 7.exit\n";

cout<<"Enter your choice\n";

cin>>ch;

switch(ch)

{

case 1:triangle();

break;

case 2:square();

break;

case 3:rectangle();

break;

case 4:circle();

break;

case 5:parallelogram();

break;

case 6:ellipse();

break;

case 7:exit(0);

break;

default:cout<<"Enter correct choice\n";

}

}

void Volume()

{

int ch;

cout<<"1.cube\t 2.cylinder\t 3.prism\t 4.sphere\t 5.tetrahedron\t 6.rectangular\_cuboid\t 7.exit\n";

cout<<"Enter your choice\n";

cin>>ch;

switch(ch)

{

case 1:cube();

break;

case 2:cylinder();

break;

case 3:prism();

break;

case 4:sphere();

break;

case 5:tetrahedron();

break;

case 6:rectangular\_cuboid();

break;

case 7:exit(0);

break;

default:cout<<"Enter correct choice\n";

}

}

void triangle()

{

int gd = DETECT, gm;

initgraph(&gd, &gm, (char\*)"");

setcolor(GREEN);

setfillstyle(SOLID\_FILL,GREEN);

line(300,100,200,200);

line(300,100,400,200);

line(200,200,400,200);

floodfill(301,110,GREEN);

getch();

closegraph();

float base,height;

cout<<"Enter the base of triangle\n";

while(!(cin>>base))

{

cout<<"ERROR enter the correct base\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the height of triangle\n";

while(!(cin>>height))

{

cout<<"ERROR enter the correct height\n";

cin.clear();

cin.ignore(123,'\n');

}

area=(0.5\*base\*height);

cout<<"The area of triangle is :\n"<<area<<" square units\n\n";

}

void square()

{

int gd, gm, s;

gd=DETECT;

initgraph(&gd, &gm,(char\*)"");

cout<<"Enter the value of side of square:\n";

cin>>s;

setcolor(CYAN);

setfillstyle(SOLID\_FILL,CYAN);

moveto(50,50);

lineto(50+s,50);

lineto(50+s,50+s);

lineto(50,50+s);

lineto(50,50);

//outtextxy(20, 450,"Press any key to continue...");

floodfill(51,60,CYAN);

getch();

closegraph();

float length;

cout<<"Enter the length of square\n";

while(!(cin>>length))

{

cout<<"ERROR enter the correct length\n";

cin.clear();

cin.ignore(123,'\n');

}

area=length\*length;

cout<<"The area of square is :\n"<<area<<" square units\n\n";

}

void rectangle()

{

int gd = DETECT, gm;

int left = 150, top = 200;

int right = 400, bottom = 350;

initgraph(&gd, &gm,(char\*) "");

setcolor(YELLOW);

rectangle(left, top, right, bottom);

setfillstyle(SOLID\_FILL,YELLOW);

floodfill(390,300,YELLOW);

getch();

closegraph();

float length=0,breadth=0;

cout<<"Enter the length of the rectangle\n";

while(!(cin>>length))

{

cout<<"ERROR enter the correct length\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the breadth of the rectangle\n";

while(!(cin>>breadth))

{

cout<<"ERROR enter the correct breadth\n";

cin.clear();

cin.ignore(123,'\n');

}

area=length\*breadth;

cout<<"The area of rectangle is :\n"<<area<<" square units\n\n";

}

void circle()

{

//for graphics

int gd=DETECT,gm;

int r;

initgraph(&gd, &gm, (char\*)"");

cout<<"Enter the radius of circle to draw the circle\n";

cin>>r;

circle(250,240,r);

setfillstyle(SOLID\_FILL,RED);

floodfill(250,240,WHITE);

getch();

closegraph();

float radius;

cout<<"Enter the radius of circle\n";

while(!(cin>>radius))

{

cout<<"ERROR enter the correct radius\n";

cin.clear();

cin.ignore(123,'\n');

}

area=3.14\*radius\*radius;

cout<<"The area of circle is :\n"<<area<<" square units\n\n";

}

void parallelogram()

{

int gd=DETECT,gm;

initgraph(&gd, &gm,(char\*)"");

setcolor(WHITE);

setfillstyle(LTBKSLASH\_FILL,WHITE);

line(150,100,450,100);

line(50,300,150,100);

line(50,300,350,300);

line(350,300,450,100);

floodfill(151,110,WHITE);

getch();

closegraph();

float base,height;

cout<<"Enter the base of parallelogram\n";

while(!(cin>>base))

{

cout<<"ERROR enter the correct base\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the height of parallelogram\n";

while(!(cin>>height))

{

cout<<"ERROR enter the correct height\n";

cin.clear();

cin.ignore(123,'\n');

}

area=base\*height;

cout<<"The area of parallelogram is :\n"<<area<<" square units\n\n";

}

void ellipse()

{

int gd = DETECT,gm;

int x ,y,maj,min;

initgraph(&gd, &gm,(char\*)"");

x = getmaxx()/2;

y = getmaxy()/2;

cout<<"Enter the radius of semi major axis to draw an ellipse\n";

cin>>maj;

cout<<"Enter the radius of semi minor axis to draw an ellipse\n";

cin>>min;

outtextxy(x-100, 50, "ELLIPSE Using Graphics in C");

setfillstyle(HATCH\_FILL,MAGENTA);

ellipse(x, y, 0, 360, maj, min);

floodfill(maj,min,WHITE);

getch();

float major,minor;

cout<<"Enter the radius of semi major axis of an ellipse\n";

while(!(cin>>major))

{

cout<<"ERROR enter the correct radius of semi major axis of an ellipse\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the radius of semi minor axis of an ellipse\n";

while(!(cin>>minor))

{

cout<<"ERROR enter the correct radius semi minor axis of an ellipse\n";

cin.clear();

cin.ignore(123,'\n');

}

area=3.14\*major\*minor;

cout<<"The area of ellipse is :\n"<<area<<" square units\n\n";

closegraph();

}

void cube()

{

int gd=DETECT,gm;

initgraph(&gd,&gm,(char\*)"");

setcolor(BLUE);

//1st rectangle

rectangle(100,200,200,300);

//2nd rectangle

rectangle(150,250,250,350);

setcolor(RED);

// 1st line

line(100,200,150,250);

// 2nd line

line(200,300,250,350);

// 3rd line

line(100,300,150,350);

// 4th line

line(200,200,250,250);

getch();

closegraph();

float a;

cout<<"Enter the edge length of cube\n";

while(!(cin>>a))

{

cout<<"ERROR enter the correct edge length of cube\n";

cin.clear();

cin.ignore(123,'\n');

}

volume= a\*a\*a;

cout<<"The volume of cube is :\n"<<volume<<" cubic units\n\n";

}

void cylinder()

{

int gd=DETECT,gm;

int x ,y;

initgraph(&gd, &gm,(char\*)"");

setcolor(YELLOW);

setfillstyle(HATCH\_FILL,YELLOW);

ellipse(300,60, 0, 360, 100, 50);

ellipse(300,300, 0, 360, 100, 50);

floodfill(301,70,YELLOW);

floodfill(301,310,YELLOW);

setcolor(CYAN);

line(200,50,200,300);

line(400,50,400,300);

getch();

closegraph();

float r,h;

cout<<"Enter the radius of cylinder\n";

while(!(cin>>r))

{

cout<<"ERROR enter the correct radius of cylinder\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the height of cylinder\n";

while(!(cin>>h))

{

cout<<"ERROR enter the correct height of cylinder\n";

cin.clear();

cin.ignore(123,'\n');

}

volume = (3.14\*r\*r\*h);

cout<<"The volume of cylinder is :\n"<<volume<<" cubic units\n\n";

}

void prism()

{

int gd = DETECT, gm;

initgraph(&gd, &gm, (char\*)"");

setcolor(RED);

line(200,300,100,400);

line(300,400,100,400);

line(200,300,300,400);

setcolor(RED);

line(325,350,525,350);

line(325,350,425,250);

line(425,250,525,350);

setcolor(BLUE);

line(425,250,200,300);

line(300,400,525,350);

line(100,400,325,350);

getch();

closegraph();

float height,lheight,base;

cout<<"Enter the base of triangular prism\n";

while(!(cin>>base))

{

cout<<"ERROR enter the correct base\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the height of triangle in prism\n";

while(!(cin>>height))

{

cout<<"ERROR enter the correct height\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the height of the triangular prism\n";

while(!(cin>>lheight))

{

cout<<"ERROR enter the correct height\n";

cin.clear();

cin.ignore(123,'\n');

}

volume=base\*height\*lheight;

cout<<"The volume of triangular prism is :\n"<<volume<<" cubic units\n\n";

}

void sphere()

{

int gd=DETECT,gm;

initgraph(&gd, &gm, (char\*)"");

setcolor(MAGENTA);

circle(320,240,120);

setcolor(MAGENTA);

int x ,y;

x = getmaxx()/2;

y = getmaxy()/2;

setfillstyle(HATCH\_FILL,MAGENTA);

ellipse(x, y, 0, 360, 120, 60);

floodfill(x,y,MAGENTA);

getch();

closegraph();

float r;

cout<<"Enter the radius of a sphere\n";

while(!(cin>>r))

{

cout<<"ERROR enter the correct radius\n";

cin.clear();

cin.ignore(123,'\n');

}

volume =1.333\*3.14\*r\*r\*r;

cout<<"The volume of the sphere is :\n"<<volume<<" cubic units\n\n";

}

void tetrahedron()

{

int gd = DETECT, gm;

initgraph(&gd, &gm, (char\*)"");

setcolor(BROWN);

line(300,100,100,300);

line(300,100,500,300);

line(100,300,500,300);

setcolor(CYAN);

line(100,300,300,200);

line(500,300,300,200);

line(300,100,300,200);

getch();

closegraph();

float a;

cout<<"Enter the base length of tetrahedron\n";

while(!(cin>>a))

{

cout<<"ERROR enter the correct base length of tetrahedron\n";

cin.clear();

cin.ignore(123,'\n');

}

volume=(a\*a\*a)/(6\*1.4142);

cout<<"The volume of tetrahedron is :\n"<<volume<<" cubic units\n\n";

}

void rectangular\_cuboid()

{

int gd=DETECT,gm;

initgraph(&gd,&gm,(char\*)"");

setcolor(RED);

rectangle(150,200,400,350);

rectangle(200,150,450,300);

setcolor(BLUE);

line(150,350,200,300);

line(400,350,450,300);

line(150,200,200,150);

line(400,200,450,150);

getch();

closegraph();

float l,w,h;

cout<<"Enter the length of rectangular\_cuboid\n";

while(!(cin>>l))

{

cout<<"ERROR enter the correct length\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the width of an rectangular\_cuboid\n";

while(!(cin>>w))

{

cout<<"ERROR enter the correct width\n";

cin.clear();

cin.ignore(123,'\n');

}

cout<<"Enter the height of rectangular\_cuboid\n";

while(!(cin>>h))

{

cout<<"ERROR enter the correct height\n";

cin.clear();

cin.ignore(123,'\n');

}

volume=l\*w\*h;

cout<<"The volume rectangular\_cuboid is :\n"<<volume<<" cubic units\n\n";

}