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/*//Ozan Gazi Onder. CSC30 homework 6: (2)
/ The program reads the input from the file
/and calculates perimeter and area.//////*/

#include<iostream>
#include<iomanip>
#include<fstream>
#include<cstring>
#include<math.h>//for math calculations
#define W setw
using namespace std;

//class triangle.reads input and calculates perimeter and area
class triangle
{
   private:
     int a,b,c, perimeter;//sides of triangle and perimeter
     double area, s;

   public:
     triangle();//constructor
     int readFile(ifstream &);//reads the data from the file
     void show();//displays the sides, perimeter and area of triangle
     bool isequilateral();//returns true if all sides are equal
};

triangle::triangle(){}

int triangle::readFile(ifstream &IS)
{
    IS>>a>>b>>c;//reads the input from file
    return !IS.eof();
}

void triangle::show()
{
    perimeter = a + b + c;
    s = perimeter/2.;//semiperimeter
   double value1=s-a, value2=s-b, value3=s-c;
   //calculates the area
   area=sqrt(s*value1);

   //displays the results
   cout<<"\nsides of triangle: "<<a<<" "<<b<<" "<<c<<endl;
   cout<<"Perimeter: "<<perimeter<<endl;
   cout<<"Area: "<<area<<endl;
}

bool triangle::isequilateral()
{
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     bool result = false;
     if((a==b)&&(b==c))//checks if the sides are equal
         result= true;
     return result;//returns true or false
}

int main()
{
    triangle t[10];
    ofstream OS("triangle.dat", ios::out);//creates the file with
given data
    OS<<10<<W(5)<<17<<W(5)<<8<<2<<W(5)<<13<<W(5)<<13<<W(5)<<13<<endl;
    OS.close();

    ifstream IS("triangle.dat", ios::in);
    int n = 0;
    while(t[n].readFile(IS)) n++;//reads data
    t[0].show();
    t[1].show();
    if(t[1].isequilateral())//checks if all the sides are equal
       cout<<"trinagle is equilateral"<<endl;
    system("pause");
    return 0;
}
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sides of triangle: 10 17 82
Perimeter: 109
Area: 49.2468

sides of triangle: 13 13 13
Perimeter: 39
Area: 11.2583
trinagle is equilateral
Press any key to continue . . .
```