ES 112.02/04 Homework #4
Fall 2003-2004

Calculating Areas of a Circle or a Triangle

Your task is to write a C program that will ask the user whether he wants to calculate the area of a triangle or a circle first. Depending on the response, the computer should ask for either the radius of a circle, or the three sides of a triangle. Then, the area for the proper shape should be calculated, and printed on the screen. Your code should include the following parts:

a. A function that takes the radius of a circle as a `double`, and calculates and returns its area also as a `double`. In other words, the prototype of the function should be:

```
double circleArea(double radius);
```

Hopefully you do know that the area of a circle is given by $A = \pi r^2$.

b. A function that takes the three sides of a triangle as `doubles`, and returns the area of the triangle as a `double`. The prototype of the function should be:

```
double triangleArea(double side1, double side2, double side3);
```

The area of a triangle, given the three sides a, b, and c is:

$$\begin{aligned} A &= \sqrt{u(u-a)(u-b)(u-c)} \\ u &= \frac{a+b+c}{2} \end{aligned}$$

c. A `main()` that asks the user for a choice, asks the required parameters, and uses the above functions to calculate and print the area. Two typical runs should look as follows:

```
Area Calculation Program
1. Calculate the area of a circle
2. Calculate the area of a triangle

Enter your choice: 1
Enter the radius of the circle: 1.0
The area of the circle is: 3.1415
```

```
Area Calculation Program
1. Calculate the area of a circle
2. Calculate the area of a triangle

Enter your choice: 2
Enter the first side of the triangle: 3.0
Enter the second side of the triangle: 4.0
Enter the third side of the triangle: 5.0
The area of the circle is: 6.0
```