Lab 6 – Introduction to Functions

Complete the following program. Make sure you use constants as needed and comment your program, especially all of the functions.

Areas of Geometric Shapes

For this assignment, you are to compute the areas of four different geometric shapes: circle, square, rectangle, and triangle.

You will need to set up a way for the user to choose which shape's area to calculate: you can either use integers (1 for circle, 2 for square, 3 for rectangle, or 4 for triangle) or characters ('c', 's', 'r', or 't'). In either case, you should define constants in your program.

The logic of the program will be:

1) Ask the user what shape
2) based on the shape ask for the necessary information
    a) For a circle, get the radius (area = radius * radius* PI)
    b) For a square, get the length of a side (area = side * side)
    c) For a rectangle, get the height and width (area = height * width)
    d) For a triangle, get the height and width (area = height * width * 0.5)

You should use floating point numbers for area, radius, side, length, and width. For PI use 3.1416, rather than bothering with a more precise value. Note that PI should also be a constant.

In selecting the shape, you can either use a series of if statements or a single switch statement. In either case, you should detect if the user enters an invalid code

You should use a function for each of the calculations. That is, you will have four functions: circleArea, squareArea, rectangleArea, and triangleArea. You can use these names or other names of your own choosing. Make sure that your function names match the function's use. You should have a comment for each function explaining what it does.

Each function will accept as parameters the necessary values (radius, length of a side, or width and height) and return the result of the calculation.

Your main program will get all input and display all output. Make sure that your parameters and return values are all the correct types.