Lab 5 Pre-Lab

The following exercises must be completed before you come to lab. Your instructor will check your pre-lab exercises at the beginning of the lab period. Completion of the pre-lab is worth 10 points of the total 50 points for the lab.

Part 1
Create the UML class diagram for the Circle class as described below:

- radius: a double
- PI: a final double initialized with the value 3.14159

The class should have the following methods:

- calculateArea - Returns the area of the circle, which is calculated as:
  - area = PI * radius * radius
- calculateDiameter - Returns the diameter of the circle, which is calculated as:
  - diameter = radius * 2
- calculateCircumference - Returns the circumference of the circle, which is calculated as:
  - circumference = 2 * PI * radius
- setRadius - A mutator (setter) method for the radius field
- getRadius - An accessor (getter) method for the radius field

Part 2
Create the UML class diagram for the Book class as described below:

The Book class has three instance variables:

- The sales tax as a constant
- The title of the book
- The price of the book

The class has the following methods:

- Accessor methods (getters) for all instance variables
- Mutator methods (setters) for the title and price
- An increasePrice method that accepts one parameter representing the percentage of the increase in price. Note that a 5% increase should be passed in as 0.05. The increasePrice method should adjust the price of the book by the specified percentage. For example, if I have a Book book1 currently priced at $12 and I call the increasePrice method with 5%:
  - book1.increasePrice(0.05);
  - book1 should now be priced at $12.60
- A calculateSales method that accepts one parameter representing the number of books sold and computes (Note: sales tax should be computed and added too) and returns the total sales.