C++ programming II
Lab 16

Define a pure abstract base class called BasicShape. The BasicShape class should have the following members:

- Private Member Variable:
  - area, a double used to hold the shape's area.
- Public Member Functions:
  - getArea. This function should return the value in the member variable area.
  - calcArea. This function should be a pure virtual function.

Next, define a class named Circle . It should be derived from the BasicShape class. It should have the following members:

- Private Member Variables:
  - centerX, a long integer used to hold the x coordinate of the circle's center.
  - centerY, a long integer used to hold the y coordinate of the circle's center.
  - radius, a double used to hold the circle's radius.
- Public Member Functions:
  - constructor—accepts values for centerX, centerY, and radius. Should call the overridden calcArea function described below.
  - getCenterX—returns the value in centerX.
  - getCenterY—returns the value in centerY.
  - calcArea—calculates the area of the circle (area = 3.14159 * radius * radius) and stores the result in the inherited member area.

Next, define a class named Rectangle . It should be derived from the BasicShape class. It should have the following members:

- Private Member Variables:
  - width, a long integer used to hold the width of the rectangle.
  - length, a long integer used to hold the length of the rectangle.
- Public Member Functions:
  - constructor—accepts values for width and length. Should call the overridden calcArea function described below.
  - getWidth—returns the value in width.
  - getLength—returns the value in length.
  - calcArea—calculates the area of the rectangle (area = length * width) and stores the result in the inherited member area.

After you have created these classes, create a driver program that defines a Circle object and a Rectangle object. Demonstrate that each object properly calculates and reports its area.