Assignment 1

Date Class	30 pts.
Point Class	30 pts.
Circle Class	40 pts.
TOTAL	**100 pts.**

Part 1

Date Class

Design a class called `Date`. The class should store a date in three integers: `month`, `day`, and `year`. There should be member functions to print the date in the following forms:

12/25/06
December 25, 2006
25 December 2006

Demonstrate the class by writing a complete program implementing it.
Input validation: Do not accept values for the day greater than 31 or less than 1. Do not accept values for the month greater than 12 or less than 1.

Point Class

Write a definition of a class named `Point` that might be used to store and manipulate the location of a point on the plane. You will need to declare and implement the following member functions:

1. The member function `set` that sets the private data after an object of this class is created.
2. The member function to move the point by an amount along the vertical and horizontal directions specified by the first and second arguments.
3. The member function to rotate the point by 90 degrees clockwise around the origin.
   Hint: when point is getting rotated 90 clockwise around the origin the following changes happen to its coordinates:
   $x_{rotated} = y$;
   $y_{rotated} = -x$.
4. two accessor functions to retrieve the coordinates of the point

Document these functions with appropriate comments. Embed your class in a test program that requests the data for several points from the user, creates a point, then calls the member functions.

Part 2

Circle Class

Write a `Circle` class that has the following member variables:

- `radius`: a `double`
- `pi`: a `double` initialized with the value 3.14159

The class should have the following member functions:

- **Default constructor**. A default constructor that sets radius to 0.0
- **Constructor**. Accepts the radius of the circle as an argument.
- **`setRadius`**. A mutator function for the radius variable.
- **`getRadius.`** An accessor function for the radius variable.
- **`GetArea`**. Returns the area of the circle, which is calculated as
  `area = pi * radius * radius`
- **`getDiameter`**. Returns the diameter of the circle, which is calculated as
  `diameter = radius * 2`
- **`getCircumference`**. Returns the circumference of the circle, which is calculated as
  `circumference = 2* pi * radius`

Write a program that demonstrates the `Circle` class by asking the user of the circle's radius, creating a `Circle` object, and then reporting the circle's area, diameter, and circumference.