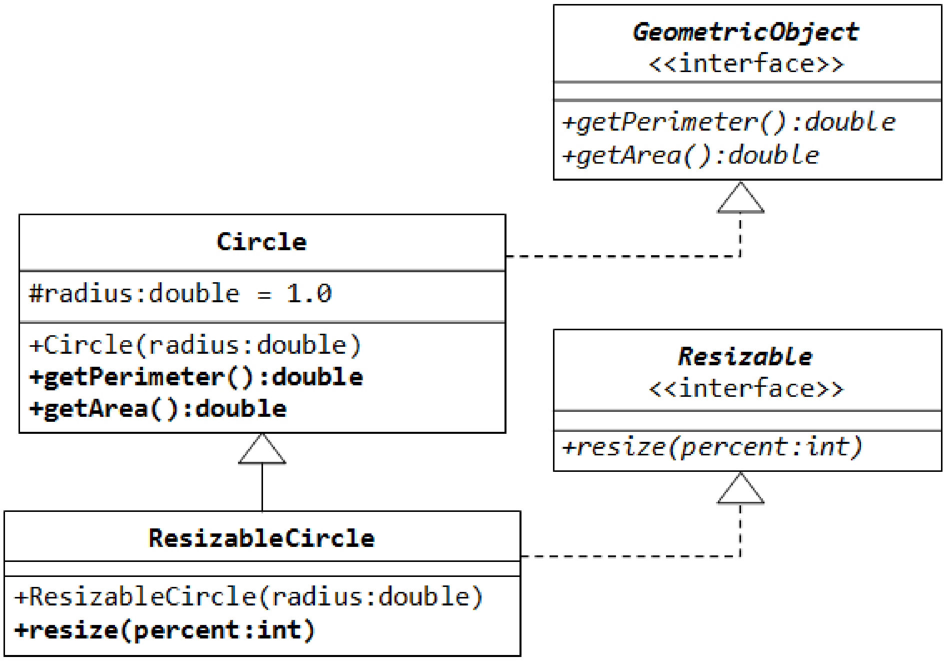
Question 1

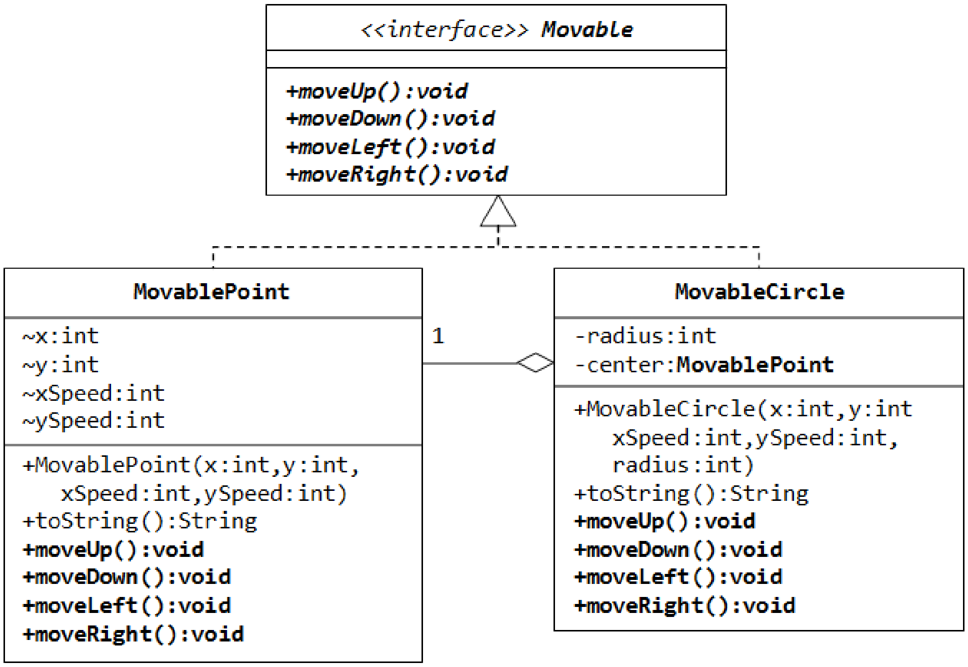
1. Write the interface called GeometricObject, which declares two abstract methods: getParameter() and getArea().
2. Write the implementation class Circle, with a protected variable radius, which implements the interface GeometricObject.
3. Write a test program called TestCircle to test the methods defined in Circle.
4. The class ResizableCircle is defined as a subclass of the class Circle, which also implements an interface called Resizable, as shown in diagram. The interface Resizable declares an abstract method resize(), which modifies the dimension (such as radius) by the given percentage. Write the interface Resizable and the class ResizableCircle.
5. Write a test program called TestResizableCircle to test the methods defined in ResizableCircle.



Question-2

Suppose that we have a set of objects with some common behaviors: they could move up, down, left or right. The exact behaviors (such as how to move and how far to move) depend on the objects themselves. One common way to model these common behaviors is to define an *interface* called Movable, with abstract methods moveUp(), moveDown(), moveLeft() and moveRight(). The classes that implement the Movable interface will provide actual implementation to these abstract methods.

For the MovablePoint class, declare the instance variable x, y, xSpeed and ySpeed. For the MovableCircle class, use a MovablePoint to represent its center (which contains four variable x, y, xSpeed and ySpeed). In other words, the MovableCircle composes a MovablePoint, and its radius.


<<interface>> Movable
+moveUp():void
+moveDown():void
+moveLeft():void
+moveRight():void
MovablePoint
~x:int
~y:int
~xSpeed:int
~ySpeed:int
+MovablePoint(x:int,y:int,
xSpeed:int,ySpeed:int)
+toString():String
+moveUp():void
+moveDown():void
+moveLeft():void
+moveRight():void
1
MovableCircle
-radius:int
-center:MovablePoint
+MovableCircle(x:int,y:int
xSpeed:int,ySpeed:int,
radius:int)
+toString():String
+moveUp():void
+moveDown():void
+moveLeft():void
+moveRight():void