Northern University of Business and Technology Khulna Department of Computer Science and Engineering

Assignment 1_Polymorphism is Fun

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Polymorphism is Fun

Assume that the following classes have been defined:

```
public class Quadrilateral
{
   public String name = "Quadrilateral";

   public void method1()
   {
      System.out.println("Quadrilateral 1");
   }
   public void method2()
   {
      System.out.println("Quadrilateral 2");
   }
   public void method3()
   {
      System.out.println("Quadrilateral 3");
   }
   public void method4()
   {
      System.out.println("Quadrilateral 4");
   }
   public String toString() {
      this.method4();
      return "This is Quadrilateral Class";
   }
}
```

```
public class Trapezium extends Quadrilateral
{
   public String name = "Trapezium";

   public void method1() {
       System.out.println("Trapezium 1");
   }

   public String toString() {
       return "This is a "+ name;
   }
}
```

```
public class Kite extends Quadrilateral
{
   public String name = "Kite";

   public void method1()
   {
      System.out.println("Kite 1");
   }
   public void method3()
   {
      System.out.println("Kite 3");
   }
   public void method4()
   {
      System.out.println("Kite 4");
   }
}
```

```
public class Parallelogram extends Quadrilateral
{
   public String name = "Parallelogram";

   public void method3()
   {
      System.out.println("Parallelogram 3");
      super.method2();
      method4();
   }
}
```

```
public class Rhombus extends Parallelogram
{
   public String name = "Rhombus";

   public void method1() {
       System.out.println(this);
       System.out.println("Rhombus 1");
   }

   public void method3() {
       super.method2();
       System.out.println("Rhombus 3");
   }
}
```

```
public class Rectangle extends Parallelogram
{
   public String name = "Rectangle";

   public void method2() {
      method4();
      System.out.println("Rectangle 2");
      System.out.println(this);
   }

   public int compareTo(Rectangle a) {
      if(a instanceof Rectangle) {
        return 1;
      }else {
        return 0;
      }
   }
}
```

```
public class Square extends Rectangle
{
   public String name = "Square";

   public void method1() {
       method3();
       System.out.println("Square 1");
   }

   public void method2() {
       super.method2();
       System.out.println("Square 2");
       method3();
   }
}
```

And assume that the following variables have been defined:

```
Quadrilateral shape1 = new Quadrilateral();
Object shape2 = new Kite();
Quadrilateral shape3 = new Trapezium();
Object shape4 = new Parallelogram();
Parallelogram shape5 = new Rhombus();
Quadrilateral shape6 = new Rectangle();
Parallelogram shape7 = new Square();
Rectangle shape8 = new Square();
```

In the table below, indicate in the right-hand column the output produced by the statement in the left-hand column. If the statement produces more than one line of output, indicate the line breaks with slashes as in "a/b/c" which indicates three lines of output with "a" followed by "b" followed by "c". If the statement causes an error, fill in the right-hand column with either "CT" for "compile time error" or RE for "runtime error" to indicate when the error would be detected.

Statement	Output
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<pre>System.out.println(shape3.name);</pre>	Quadrilateral
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System.out.println(shape4.name);	CT
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System.out.println(shape5.name);	Parallelogram
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System.out.println(shape6.name);	Quadrilateral
System.out.println(shape7.name);	Parallelogram
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shape1.method2();	Quadrilateral 2
shape1.method3();	Quadrilateral 3
shape1.method4();	Quadrilateral 4
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	Quadrilateral 4/Rectangle
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	Parallelogram 3/Quadrilateral
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	Parallelogram 3/Quadrilateral
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	Quadrilateral 4/Rectangle
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	2/Parallelogram
	3/Quadrilateral 2/
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