Interface Examples

```
J Drawable.java

    Shape.java 
    □ Rectangle.java

                                                      Circle.java
   package drawableshape;
   public abstract class Shape {
        private double x, y;
 6
        public Shape(double x, double y) {
 7⊝
 8
            this.x = x;
            this.y = y;
10
        }
11
        double getX() {
12⊖
13
             return x;
        }
14
15
        double getY() {
169
17
             return y;
        }
18
19
        public abstract double calculateArea();
20
21
22 }
```

```
■ DrawableShapeApp.java
                 🚺 Drawable.java 💢
                             package drawableshape;
   public interface Drawable {
        static final int RED = 1;
        int GREEN = 2;
       int BLUE = 3;
       int BLACK = 4;
       int WHITE = 5;
      void draw(int color);
10 }
```

```
DrawableShapeApp.java
                 J Drawable.java
                                                    Shape.java
  1 package drawableshape;
    public class Rectangle extends Shape implements Drawable {
        private double width, height;
  6
  7⊝
        Rectangle(double x, double y, double width, double height) {
            super(x, y);
  8
            this.width = width;
 10
            this.height = height;
 11
 12⊖
        @Override
<del>-</del>13
        public void draw(int color) {
 141516
            System.out.println("Rectangle drawn with upper-left corner at ("
                     + getX() + ", " + getY() + "), with width " + width +
                     ", with height " + height + ", and color " + color);
 17
        }
 18
△19⊝
        public double calculateArea() {
 20
             return width * height;
        }
 21
 22
 23⊖
        public double getWidth() {
 24
             return width;
 25
        }
 26
 27⊝
        public double getHeight() {
 28
             return height;
 29
30
```

```
    □ DrawableShapeApp.java

                   Drawable.java
                                Rectangle.java

    Circle.java 
    □ Shape.java

  1 package drawableshape;
                                                 interfaces/src/drawableshape/Circle.java
    public class Circle extends Shape implements Drawable {
         private double radius;
  6
  7⊝
         Circle(double x, double y, double radius) {
  8
              super(x, y);
             this.radius = radius;
 10
 11⊖
         @Override
         public void draw(int color) {
△12
 13
              System.out.println("Circle drawn at (" + getX() + ", " + getY() +
                       "), with radius " + radius + ", and color " + color);
 14
 15
 16
         public double calculateArea() {
△17⊝
 18
              return radius*radius*3.14;
 19
 20
         double getRadius() {
 21⊖
 22
              return radius;
 23
 24
 25 }
```

```
☑ DrawableShapeApp.java 
☐ Drawable.java
                               Rectangle.java
                                            Circle.java
                                                       J Shape.java
 1 package drawableshape;
   public class DrawableShapeApp {
 4
        public static void main(String[] args) {
 5<sup>©</sup>
 6
             Drawable[] drawables = new Drawable[] {
 8
                      new Circle(10, 20, 15),
 9
                      new Circle(30, 20, 10),
                      new Rectangle(5, 8, 8, 9) };
10
11
12
             for (int i = 0; i < drawables.length; i++) {</pre>
13
                 drawables[i].draw(Drawable.RED);
14
                 drawables[i].draw(Drawable.GREEN);
15
16
17
18
             for (int i = 0; i < drawables.length; i++) {</pre>
                 Shape shape = (Shape)drawables[i];
19
                 System.out.println("Area of " +
20
                          shape.getClass() + " = " + shape.calculateArea());
21
22
23
24
25 }
```

```
    Animal.java 
    □ IFlyable.java

                        IMovable.java
                                     J IRunnable.java
                                                   J ISwimmable.java
   package movinganimals;
    public abstract class Animal implements IMovable {
        private String color;
         public Animal(String color) {
 70
             this.color = color;
10
119
        public String getColor() {
             return color;
12
13
14
15 }
```

```
Animal.java

    IMovable.java 
    □ IFlyable.java

                                       J IRunnable.java
                                                     J ISwimmable.java
    package movinganimals;
    public interface IMovable {
         public void move(String location);
  6
 7 }
J IMovable.java

    □ IRunnable.java 
    □ ISwimmable.java

                                                        J IFlyable.java
    package movinganimals;
    public interface IRunnable extends IMovable {
         public void run(int speed);
  6
            J IMovable.java
                          J IRunnable.java
                                        J IFlyable.java
J Animal.java
    package movinganimals;
    public interface ISwimmable extends IMovable {
         public void swim(int speed);
  6
```

```
J IRunnable.java
                                     J ISwimmable.java
                                                   Animal.java
           J IMovable.java
    package movinganimals;
   public interface IFlyable extends IMovable {
        public void fly(int speed);

    MovingAnimalsApp.java 
    □ Bird.java

                                         J Fish.java
 J Animal.java
     package movinganimals;
     public class MovingAnimalsApp {
          public static void main(String[] args) {
   5⊝
   6
               Animal gull = new Bird("Gull", "White");
               gull.move("Egean See");
               Bird gull2 = (Bird)gull;
               gull2.fly(20);
  10
  11
  12
               Fish shark = new Fish("Shark", "Gray");
  13
               shark.move("Atlantic Ocean");
               shark.swim(40);
  14
          }
  15
  16 }
```

```
    *Bird.java 
    □ Fish.java

Animal.java
           MovingAnimalsApp.java
    package movinganimals;
    public class Bird extends Animal implements IFlyable {
         private String name;
  6
  7⊝
         public Bird(String name, String color) {
  8
             super(color);
             this.name = name;
 10
 11
△12⊖
         public void move(String location) {
             System.out.println(name + " moving to " + location);
 13
         }
 14
 15
         public void fly(int speed) {
△16⊖
             System.out.println(name + " flying at " + speed + " km/h");
 17
         }
 18
 19
         public String getName() {
 20⊝
 21
             return name;
 22
23 }
```

```
MovingAnimalsApp.java
                            J Bird.java
                                     J Animal.java
    package movinganimals;
    public class Fish extends Animal implements ISwimmable {
  4
  5
        private String name;
  6
  7⊝
        public Fish(String name, String color) {
            super(color);
  8
            this.name = name;
 10
 11
        public void move(String location) {
△12⊖
 13
            System.out.println(name + " moving to " + location);
 14
 15
        public void swim(int speed) {
△16⊖
            System.out.println(name + " swimming at " + speed + " km/h");
 17
 18
 19
        public String getName() {
 20⊝
 21
             return name;
 22
 23 }
```