Software Design & Analysis

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Façade Design Pattern

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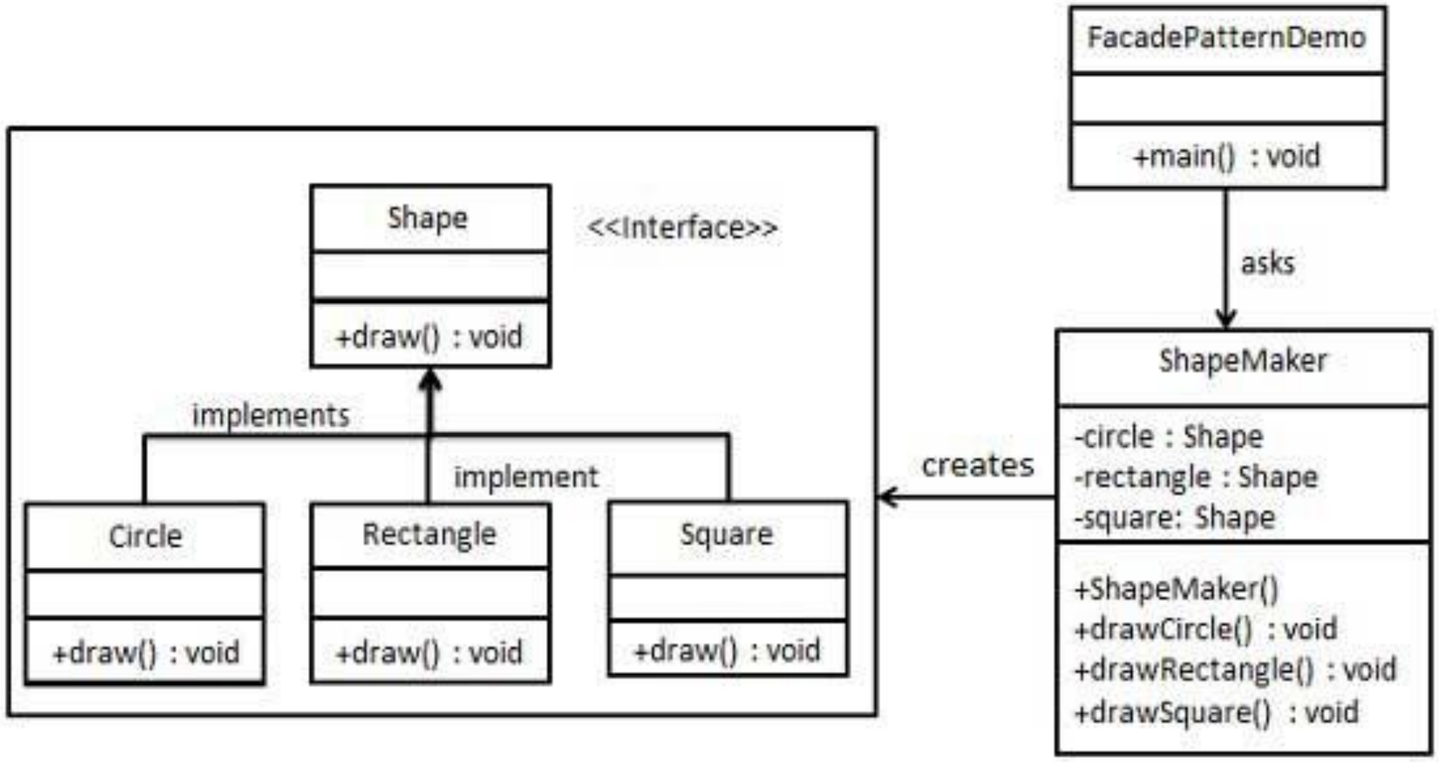
- Facade pattern hides the complexities of the system and provides an interface to the client using which the client can access the system.
- This type of design pattern comes under structural pattern as this pattern adds an interface to existing system to hide its complexities.
- This pattern involves a single class which provides simplified methods required by client and delegates calls to methods of existing system classes.

Implementation

- We are going to create a *Shape* interface and concrete classes implementing the *Shape* interface. A facade class *ShapeMaker* is defined as a next step.
- *ShapeMaker* class uses the concrete classes to delegate user calls to these classes. *FacadePatternDemo*, our demo class, will use *ShapeMaker* class to show the results.



Step 1

- Create an interface.
- *Shape.java*

```
public interface Shape {
   void draw();
}
```

Step 2

- Create concrete classes implementing same interface.

Rectangle.java

```
public class Rectangle implements Shape {
   @Override
   public void draw() {
      System.out.println("Rectangle::draw()"); }
}
```

Square.java

```
public class Square implements Shape {
   @Override
   public void draw() {
      System.out.println(“Square ::draw()"); }
}
```

Circle.java

```
public class Circle implements Shape {
   @Override
   public void draw() {
      System.out.println(“Circle::draw()"); }
}
```

Step 3

- Create a facade class.
- *ShapeMaker.java*

```
public class ShapeMaker {
   private Shape circle;
   private Shape rectangle;
   private Shape square;

   public ShapeMaker() {
      circle = new Circle();
      rectangle = new Rectangle();
      square = new Square();
   }

   public void drawCircle(){
      circle.draw();
   }
   public void drawRectangle(){
      rectangle.draw();
   }
   public void drawSquare(){
      square.draw();
   }
}
```

Step 4

- Use the facade to draw various types of shapes.
- *FacadePatternDemo.java*

```
public class FacadePatternDemo {
   public static void main(String[] args) {
      ShapeMaker shapeMaker = new ShapeMaker();

      shapeMaker.drawCircle();
      shapeMaker.drawRectangle();
      shapeMaker.drawSquare();
   }
}
```

Step 5

- Verify the output.

```
Circle::draw()
Rectangle::draw()
Square::draw()
```