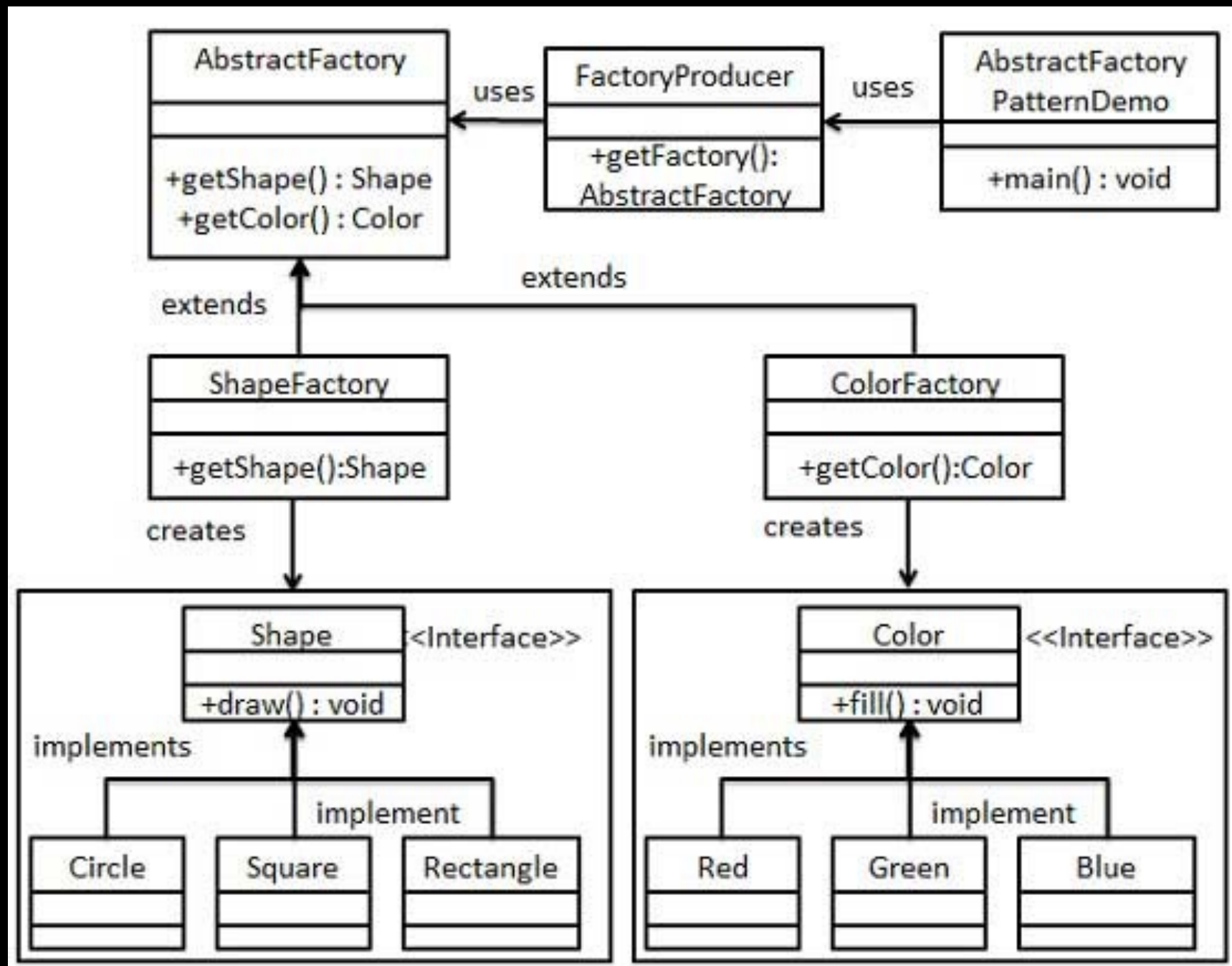# Abstract Factory Pattern

Abstract Factory Pattern

Shape (interface)

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

Rectangle

```java
public class Rectangle implements Shape {

    @Override
    public void draw() {
        System.out.println("Inside Rectangle::draw() method.");
    }
}
```

Abstract Factory

```java
public abstract class AbstractFactory {
    abstract Color getColor(String color);
    abstract Shape getShape(String shape) ;
}
```

Shape Factory

```java
public class ShapeFactory extends AbstractFactory {

    @Override
    public Shape getShape(String shapeType){

        if(shapeType == null){
            return null;
        }

        if(shapeType.equalsIgnoreCase("CIRCLE")){
            return new Circle();

        }else if(shapeType.equalsIgnoreCase("RECTANGLE")){
            return new Rectangle();

        }else if(shapeType.equalsIgnoreCase("SQUARE")){
            return new Square();
        }

        return null;
    }

    @Override
    Color getColor(String color) {
        return null;
    }
}
```

Factory Producer

```java
public class FactoryProducer {
    public static AbstractFactory getFactory(String choice){

        if(choice.equalsIgnoreCase("SHAPE")){
            return new ShapeFactory();

        }else if(choice.equalsIgnoreCase("COLOR")){
            return new ColorFactory();
        }

        return null;
    }
}
```

Main

```java
public class AbstractFactoryPatternDemo {
   public static void main(String[] args) {

      //get shape factory
      AbstractFactory shapeFactory = FactoryProducer.getFactory("SHAPE");

      //get an object of Shape Circle
      Shape shape1 = shapeFactory.getShape("CIRCLE");

      //call draw method of Shape Circle
      shape1.draw();

      //get an object of Shape Rectangle
      Shape shape2 = shapeFactory.getShape("RECTANGLE");

      //call draw method of Shape Rectangle
      shape2.draw();

      //get an object of Shape Square
      Shape shape3 = shapeFactory.getShape("SQUARE");

      //call draw method of Shape Square
      shape3.draw();

      //get color factory
      AbstractFactory colorFactory = FactoryProducer.getFactory("COLOR");

      //get an object of Color Red
      Color color1 = colorFactory.getColor("RED");

      //call fill method of Red
      color1.fill();

      //get an object of Color Green
      Color color2 = colorFactory.getColor("Green");

      //call fill method of Green
      color2.fill();

      //get an object of Color Blue
      Color color3 = colorFactory.getColor("BLUE");

      //call fill method of Color Blue
      color3.fill();
   }
}
```

Bank Example