In proxy pattern, a class represents functionality of another class. This type of design pattern comes under structural pattern.

In proxy pattern, we create object having original object to interface its functionality to outer world.

**Implementation**

We are going to create an *Image* interface and concrete classes implementing the *Image* interface. *ProxyImage* is a proxy class to reduce memory footprint of *RealImage* object loading.

*ProxyPatternDemo*, our demo class, will use *ProxyImage* to get an *Image* object to load and display as it needs.

**Step 1**

Create an interface.

*Image.java*

```java
public interface Image {
    void display();
}
```

**Step 2**

Create concrete classes implementing the same interface.

*RealImage.java*

```java
public class RealImage implements Image {
    private String fileName;

    public RealImage(String fileName){
        this.fileName = fileName;
        loadFromDisk(fileName);
    }

    @Override
    public void display() {
        System.out.println("Displaying " + fileName);
    }
}
```
private void loadFromDisk(String fileName){
    System.out.println("Loading " + fileName);
}

ProxyImage.java

public class ProxyImage implements Image{
    private RealImage realImage;
    private String fileName;
    public ProxyImage(String fileName){
        this.fileName = fileName;
    }
    @Override
    public void display() {
        if(realImage == null){
            realImage = new RealImage(fileName);
        }
        realImage.display();
    }
}

Step 3
Use the ProxyImage to get object of RealImage class when required.

ProxyPatternDemo.java

public class ProxyPatternDemo {
    public static void main(String[] args) {
        Image image = new ProxyImage("test_10mb.jpg");
        //image will be loaded from disk
        image.display();
        System.out.println("\n");
        //image will not be loaded from disk
        image.display();
    }
}

Step 4
Verify the output.

Loading test_10mb.jpg
Displaying test_10mb.jpg
Displaying test_10mb.jpg