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**TASK 6 : Implementing the Proxy Pattern**

**Scenario:**

You are developing an image viewer application that loads images from a remote server. Use the Proxy Pattern to add lazy initialization and caching.

**Steps:**

1. **Create a New Java Project:**
   * Create a new Java project named **ProxyPatternExample**.
2. **Define Subject Interface:**
   * Create an interface Image with a method **display()**.
3. **Implement Real Subject Class:**
   * Create a class **RealImage** that implements Image and loads an image from a remote server.
4. **Implement Proxy Class:**
   * Create a class **ProxyImage** that implements Image and holds a reference to RealImage.
   * Implement lazy initialization and caching in **ProxyImage**.
5. **Test the Proxy Implementation:**
   * Create a test class to demonstrate the use of **ProxyImage** to load and display images.

**CODE :**

public class TestProxy {

    public static void main(String[] args) {

        Image image = new ProxyImage("car.jpg");

        image.display();

        image.display();

    }

}

interface Image {

    void display();

}

class RealImage implements Image {

    private String fileName;

    public RealImage(String fileName) {

        this.fileName = fileName;

        loadFromDisk();

    }

    private void loadFromDisk() {

        System.out.println("Loading image: " + fileName);

    }

    public void display() {

        System.out.println("Displaying image: " + fileName);

    }

}

class ProxyImage implements Image {

    private RealImage realImage;

    private String fileName;

    public ProxyImage(String fileName) {

        this.fileName = fileName;

    }

    public void display() {

        if (realImage == null) {

            realImage = new RealImage(fileName);

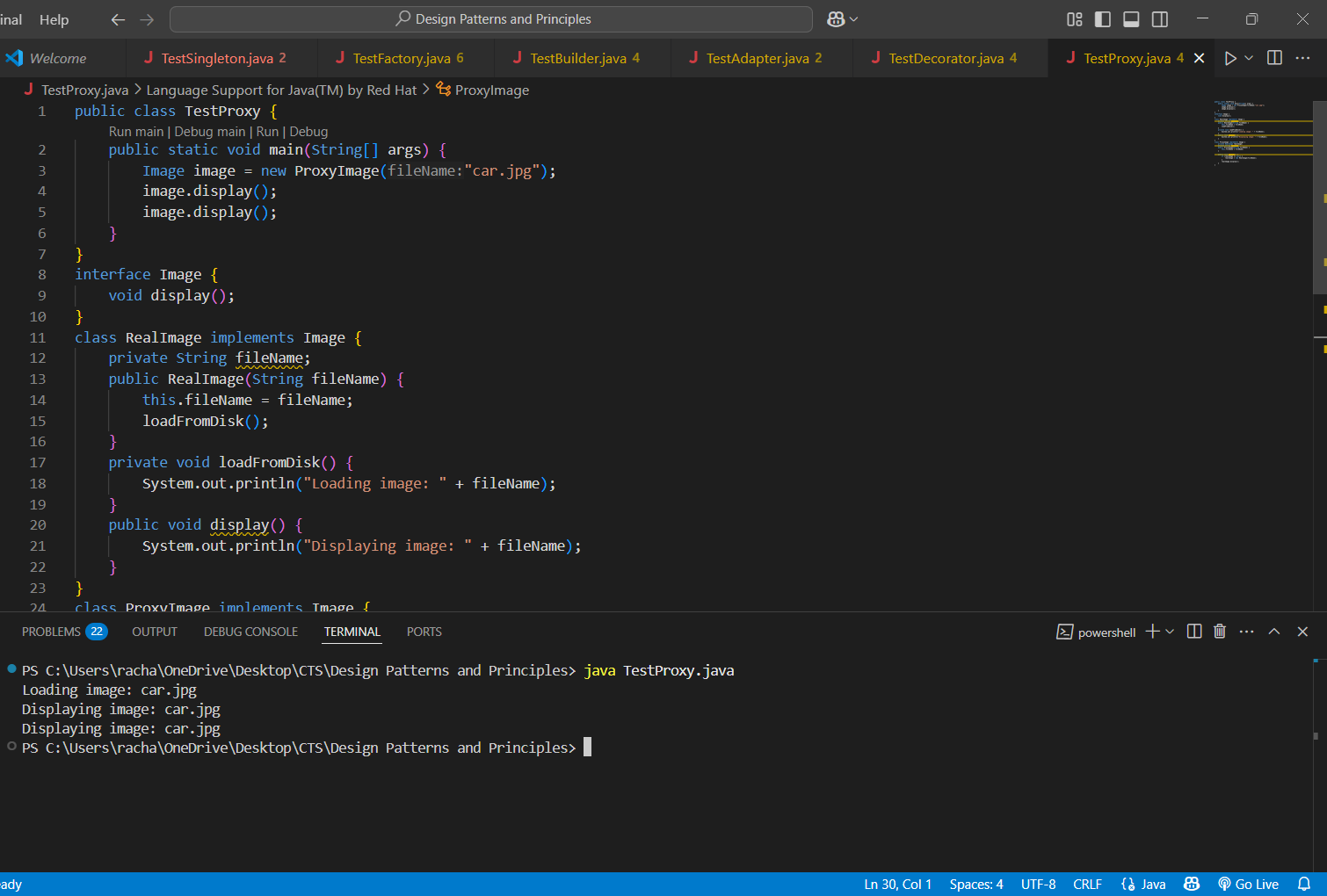
        }

        realImage.display();

    }

}

**OUTPUT :**

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