**Exercise 6: Implementing the Proxy Pattern**

interface Image {

void display();

}

class RealImage implements Image {

private String filename;

public RealImage(String filename) {

this.filename = filename;

loadFromRemoteServer();

}

private void loadFromRemoteServer() {

System.out.println("Loading image from remote server: " + filename);

}

@Override

public void display() {

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

}

}

class ProxyImage implements Image {

private String filename;

private RealImage realImage;

public ProxyImage(String filename) {

this.filename = filename;

}

@Override

public void display() {

if (realImage == null) {

realImage = new RealImage(filename);

} else {

System.out.println("Using cached image: " + filename);

}

realImage.display();

}

}

public class Main {

public static void main(String[] args) {

Image image1 = new ProxyImage("photo1.jpg");

Image image2 = new ProxyImage("photo2.jpg");

image1.display();

System.out.println();

image2.display();

System.out.println();

image1.display();

}

}