package week2;

import java.util.HashMap;

import java.util.Map;

import java.util.Random;

public class URLShortener {

private Map<String, String> shortToLongMap;

private Map<String, String> longToShortMap;

private static final int SHORT\_URL\_LENGTH = 6;

public URLShortener() {

this.shortToLongMap = new HashMap<>();

this.longToShortMap = new HashMap<>();

}

public String shortenURL(String longURL) {

if (longToShortMap.containsKey(longURL)) {

return longToShortMap.get(longURL);

}

String shortURL = generateShortURL();

shortToLongMap.put(shortURL, longURL);

longToShortMap.put(longURL, shortURL);

return shortURL;

}

public String expandURL(String shortURL) {

if (shortToLongMap.containsKey(shortURL)) {

return shortToLongMap.get(shortURL);

} else {

return "Invalid short URL!";

}

}

private String generateShortURL() {

String characters = "ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789";

StringBuilder shortURL = new StringBuilder();

Random random = new Random();

for (int i = 0; i < SHORT\_URL\_LENGTH; i++) {

shortURL.append(characters.charAt(random.nextInt(characters.length())));

}

return shortURL.toString();

}

public static void main(String[] args) {

URLShortener urlShortener = new URLShortener();

// Sample usage

String longURL = "https://www.google.com";

String shortURL = urlShortener.shortenURL(longURL);

System.out.println("Shortened URL: " + shortURL);

String expandedURL = urlShortener.expandURL(shortURL);

System.out.println("Expanded URL: " + expandedURL);

}

}