**P2.java**

java

Copy code

package project;

import java.util.HashMap;

import java.util.Base64;

public class P2 {

private HashMap<String, String> urlMap = new HashMap<>();

private String baseUrl = "http://short.ly/";

public String shortenURL(String longURL) {

if (urlMap.containsValue(longURL)) {

return getKey(longURL);

}

String shortURL = baseUrl + encode(longURL);

urlMap.put(shortURL, longURL);

return shortURL;

}

public String expandURL(String shortURL) {

return urlMap.getOrDefault(shortURL, "Invalid short URL");

}

private String encode(String longURL) {

return Base64.getUrlEncoder().encodeToString(longURL.getBytes()).substring(0, 6);

}

private String getKey(String longURL) {

for (String key : urlMap.keySet()) {

if (urlMap.get(key).equals(longURL)) {

return key;

}

}

return null;

}

}

**ErrorHandling.java** (if you choose to implement error handling)

java

Copy code

package project;

public class ErrorHandling {

public static void handleError(String message) {

System.err.println("Error: " + message);

}

}

**Main.java**

java

Copy code

package project;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

P2 urlShortener = new P2(); // Correct class name

while (true) {

System.out.println("Enter 1 to shorten a URL, 2 to expand a URL, or 0 to exit:");

int choice = scanner.nextInt();

scanner.nextLine(); // consume the newline

if (choice == 1) {

System.out.print("Enter the long URL: ");

String longURL = scanner.nextLine();

String shortURL = urlShortener.shortenURL(longURL);

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

} else if (choice == 2) {

System.out.print("Enter the short URL: ");

String shortURL = scanner.nextLine();

String originalURL = urlShortener.expandURL(shortURL);

System.out.println("Original URL: " + originalURL);

} else if (choice == 0) {

break;

} else {

System.out.println("Invalid option. Please try again.");

}

}

scanner.close();

}

}