MyHashMap Lab
(Travel Catalog)
Advanced Computer Science

Topics: Objects, Classes, Java Components, HashTable, HashMap, Linked List

Program Description
You will create a travel catalog where images of the countries the user visited can be stored.

Features

- **You cannot import any data structure.**
- The data structure used to store the information given will be of a modified version of a hashmap. The key will contain the country name and abbreviation, and the hashcode is generated based upon the country abbreviation. The image information will be the value. (Hint: You can have a DLList or a HashTable of Keys to store all the keys.)
- You will create a MyHashMap given the following data Link. You will create key objects of the **Country class** using that data and insert it into your hashmap. (Here's an example to read data from a file. Link)
- The value of each key will be the **MyImage Class** that contains the image information. They are the landmark name and the URL of the image online.
- There will be a list with a scroll bar to view the country **code abbreviation**, corresponding **country name,** and **the number of images contained** in there.
  For example: "ar - Argentina - 3"
  (Display only the countries that have images.)
- There will be a section where the user enters in the desired country abbreviation that is 2 letters **all lowercase**. Or you can have the user select a country from a list selector.
  Once a country abbreviation is entered or a country is selected, it will display the following...
  - Display the country name and abbreviation that was selected.
  - Images are displayed via a url. (Here's an example. Link).
  - Images are viewed **one at a time** with arrows to navigate forwards and backward.
  - There will be a button to delete the current image displayed.
  - A back button is also displayed so the user can go back to the main view tab to enter another country. Or, you can have everything on the same page.
- **Adding an image.** There will be text fields to add an image. To add an image, the user will enter in url for an image, country abbreviation, and landmark name.
- Your program will start off with 3 countries having 3 images each. (This means 9 images total for 3 different countries).
- Your travel catalog will automatically save to file when there is a change. When you run the program again, it will have all the latest information. How you save to file is up to you. You can save the object to file in which you will need to implement serializable, or you can write the data to a text file. (Hint: Look at the resource page for examples of saving to file. (link))

Country Class

- It will contain information about the country's abbreviation and country name.
- A hashcode is generated from the country's abbreviation.

MyImage Class

- It contains the image url and landmark name.
- This class does not contain any hashcode information.

MyHashMap<K,V> Class

This is where you will manage the countries (key) and their corresponding images (value) from each country.

DLList<V> Class

This will be used in your MyHashMap<E> class.

Node<V> class

This will be used in your DLList<E> class.

Screen Class

This is where the Grid will be drawn.

Notes:

- Think about performance when writing this. You may want to use another HashTable or MyHashMap to store all the countries and their corresponding abbreviation. When you need to get a country name's given the initial, it will take only O(1) to do so. For example, when entering a country's initial, your program can create a country object with the performance of O(1).
- You cannot import any other data structures (e.g. ArrayList, LinkedList, etc…).
- Add more classes as needed.
- Add more methods and instance variables as needed for each class.

Grading Rubric:

Your lab will be graded using the following criteria.

Completion of Lab as Described	90
Milestone 1 - **Due Friday.** You can enter an abbreviation of a country and it will display the corresponding country name and abbreviation. Hint 1: You can create another HashTable or MyHashMap of all the abbreviations and corresponding country names. When	10

the user enter in a country abbreviation, it grabs it from that, and displays it. (Though not needed for the milestone) Hint 2: Once you have a country abbreviation, you can create a key from that, and get your DLList of Images from your MyHashMap to be displayed.	

You will have class time to work on this lab. Any late submission or revision will be given a maximum score of 90.

Due Date and Submission: See Google Classroom. Link

- To convert each char to a number, you can cast it.

```
char myChar = 'a';
int value = (int) myChar; //'a' returns 97, for 'a' to be 1, subtract 96.
```

```
Think of the following
a = 1          aa = 27       ba = 53
b = 2          ab = 28       bb = 54
c = 3          ac = 29       ...
...            ...
z = 26         az = 52
a = a(26^0) = 1(1) = 1
z = z(26^0) = 26(1) = 26
aa = a(26^1) + a(26^0) = 1(26) + 1(1) = 27
ab = a(26^1) + b(26^0) = 1(26) + 2(1) = 28
ba = b(26^1) + a(26^0) = 2(26) + 1(1) = 53
ba = b(26^1) + b(26^0) = 2(26) + 2(1) = 54
```