

CSCI 3901 Lab 1: Basic Problem Solving

My team members

1. Yogish Honnadevipura Gopalakrishna
2. Abdul Baseer Khan

The list of items from the description that needed clarification

- Can we use other data structures(Excluding maps) to build the put and get method?
- Any particular features that are required as output for the given methods?
- Should the program take user inputs for the key and value pair?

Your decisions on the items that need clarification

- We used LinkedList as it is dynamic and can store more elements.
- We needed clarification on using strings for both key and value pairs.

How you showed that your work (so far) is working

Basic Functionality of the program

We have used a linked list for storing both key and value pairs. The index of the key is same as its corresponding value for eg. In `object.put("Key1","Value1")`, if "Key1" is stored in the 0th index of the linked list containing keys, its value "Value1" is stored in the 0th index of the linked list containing values. We have implemented two methods namely "put" and "get".

Put method

This method will first verify if the key passed as the parameter is already present in the map. If present, it will update its associated value.

This will also act as an update feature in this method. Otherwise, if the key passed is unique, then an additional (key,value) pair element will be added to the Map.

Get method

This method will take the key as the argument, output its respective value as the output. If the key is absent, then "Key not present in the map" message is displayed.

INPUT

```
public static void main(String[] args) {  
    Map m = new Map();  
    m.put("K1", "V1");  
    m.put("K2", "V2");  
    m.put("K3", "V3");  
    m.put("K2", "V4");  
    m.get("K2");  
    m.get("k");  
    m.get("K3");  
}
```

OUTPUT

```
"C:\Program Files\Java\jdk-17.0.5\bin\ja  
V4  
Key named "k" not present in the map  
V3  
  
Process finished with exit code 0
```

Error Handling

We have used a try and catch in both get and put methods to handle any Exception which may occur.

How you would approach this problem differently if you had to start new

If we start new, we will use arraylist or explore more complex abstract data structures such as trees, heaps etc. to store the key and value elements for building map structure. One extra feature we would try to implement is the remove method where we can delete a key and its corresponding value in the map. Then after coding, retest the code to find possible errors or bugs to resolve.