Jesus Valencia-Ramirez (ik4877)

Anthony Do (cc4582)

Katrina Webb (gb1736)

Prof. Fay Zhong

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Design Plan

Expectations:

* To create a LIFO Data Structure that will serve as a bucket problem example that will use a vector for the bucket, it will remove the very first value from the bucket and add a new one in its place.

Let’s break down the problem:

* LIFO Data Structure within class
  + LIFO (Last In First Out), bucket problem as an example
* We want the following:
  + “Bucket” - Will use a vector for this, which contains a preset amount of values but it can also be altered
  + A method that checks whether the “bucket” is empty
  + Method that’ll add one to the “bucket”
  + Method that’ll remove one from the “bucket”
    - **It should remove the last value that went into the “Bucket”**

Class with Member Functions and Methods

* Class - Number\_Bucket
  + Setters/Getters methods:
    - isEmpty() - Checks whether the “bucket” is empty
    - push(int n) - Adds new value into the “bucket”
    - pop() - Pushes the last value out of the “bucket”
    - get\_size() - Prints the current size of the Bucket
  + Member Functions
    - print() - prints current items inside of “bucket” (vector)

Test Plan

* Test if the push(int n) function will add in new values. It will be tested twice.
* Test if the pop() function will remove the last value added in
* Test get\_size() to show minimum value in bucket and any other value higher than the minimum value
* Test isEmpty() and show whether if the bucket is empty or not and show if the bucket is filled
* Test if print() shows current values inside of the “bucket”

Test Cases for each (We need to test out 10 different test cases for each one):

| Method that's being tested | Reason for Test Case | Input Value | Expected Output Value |
| --- | --- | --- | --- |
| isEmpty() | Test if is Empty can detect an empty bucket | N/A | The Bucket is Empty |
| isEmpty() | Test if the bucket can detect a bucket that is not empty | N/A | The Bucket is not Empty |
| print() | To show the current values on the condition the bucket is empty | N/A | The Bucket is Empty |
| print() | To show the current values inside of the bucket | N/A | Current values of bucket |
| get\_size()  (with zero values) | To show the number of values in the vector if there are 0 values | N/A | 0 |
| get\_size() | To show the number of values in the vector if there are values in the vector | N/A | 1 or more (Shows us there’s something in there) |
| push(int n) | To see if value gets added to the front of the list | 30 | 30 |
| push(int n) | To see if value gets added to the front of the list | 60 | 30, 60 |
| pop() | To see if first value of the list will be removed (there’s two values) | N/A | Nothing, if vector is printed then 60 |
| pop() | To see if first value will be removed (There’s only one value) | N/A | Nothing, if vector is printed then Empty Bucket |