CS562 w16
Qi Wang
932-439-151
Email: wangq5@oregonstate.edu

Proposal of Testing Project

For this testing project, I will use the Template Scripting Testing Language (TSTL) to test two Python programs: double linked list and a stack data structure. These two programs come from the same repository. Here are the links for these two programs:
https://github.com/mirob2005/Python_Data_Structures/blob/master/LinkedLists/LinkedList_Double.py
https://github.com/mirob2005/Python_Data_Structures/blob/master/ADTs/Stack.py .

The first program implements a double linked list, which is a linked data structure that consists a set of sequentially linked records call nodes. Each node contains two fields, called links, which are references to the previous and to the next node in the sequence of nodes. This programs has two classes, which are DoulyNode and DoublyLInkedLIst.

This program has a lot of main functions: insert(self, data), append(self, data), insertBeforeIndex(self, index, data), insertAfterIndex(self, index,data),deleteIndex(self,index), deleteData(self, data), deletePtr(self, ptr), deleteAllData(self,data), deleteList(self), copyList(self), insertAfterEveryData(self,data,dataToInsert), insertBeforeEveryData(self,data,dataToInsert).

For the insert(self, data) function, it is used to insert data to the double linked list. The other insert functions are similar to the insert(self, data) function, including insertAfterIndex and insertBoforeIndex. These two functions can insert a data into the double linked list, which can insert the specific location of the list. So I will firstly test the functions and ensure it work correctly. Then I will test when I insert a data to a specific location,

if it was inserted to the right place.

For the deleteIndex(self,index), deleteData(self, data), deletePtr(self, ptr), deleteAllData(self,data), deleteList(self) functions, these are mainly used to delete data from the linked list. The deleteIndex can delete the specific index's data and the deleteData can remove the data from the linked list. I will test these functions by removing a data from an empty linked list, then test if it can delete the data. Then I will test when I remove an item that does not exist in the linked list, if it can actually remove it.

The copyList(self) function can duplicate the list. So I will test if the copy result is correct. Then I may test when I copy this doubly linked list to another data structure, if it can work.

For the second program, it implements a useful data structure, which is stack. It is very basic and useful data structure. When implementing a graph, usually use the stack to implement it. So I will also write a tstl file for the stack data structure. Stack is a data structure that all operations should be done at the top of the stack. This stack program has two main classes: Element and Stack class. It has many main functions, such push(self, element), pop(self).

For the push(self, element) function, it used to add a new element to the stack. I will test when I push many elements to the stack, if it can work right. I will also test if the new element is added to the head of the stack.

For the pop(self) function, it used to take out the first element of the stack. I will test when the stack is empty, if the pop function can work. Then I will test if the pop actually takes out the first element of the stack. These programs are I want to test for now. If there are other programs I want to test, I will add some programs later.