Proposal For Testing Project

In the testing project, I'm going to use TSTL to test a python program called Linklist.py, which created by my friend. It's not a standard library Linklist. All the function in this file is defined and implemented by him. Also, it is only the Linklist data structure file; it also can provide merge sort two integer-lists function. It contains 12 functions I can test: create_by_head, create_by_tail, clear, is_empty, getData_by_index, getData_by_value, insertData, deleteData_by_index, deleteData_by_value, delete_repeat, delete_one, merge_linklist. This could be found in the https://github.com/zhufree/datastructure/blob/master/List.

In create_by_head function, a LinkList created by using data in an array (or a list), every data will be added at the head of the list. In this function, I will use TSTL to try different types of array to test it first. Then, I will try large number of data to test. Last, I will try to check whether every data is added at the head. Last but not least, I will test when there is same value data need to be added, if it would be correct.

For create_by_tail, I will use the same method as create_by_head.

Clear function is used to clear the list, I will try to check the head of the linelist is node[0] or not. Also, I will try different types of data.

For is_empty function, I just need to test if it returns true when the list is empty, and else returns false.

getData_by_index will return the data on the index of False if not exist. In getData_by_index, deleteData_by_index, I will try some special situation. When index is 0, and the value of index larger than the number of data in the list. I'm going to see what happens in this two special situations. Also, I will test what returns if index is not a integer. In delete function, I need to test, what will return if the data in the index is not existed.

getData_by_value will return the position of the first data that fit the value or False if not exist. In getData_by_value, deleteData_by_value, I will test what if the value is not existed. Then, I will check the correctness of these two function in the large data situation.

insertData function will insert data in the assigned index. If it successes, it will return true, otherwise, false. I need to check when it returns true, whether the data is inserted correctly. Also, if I insert a integer to a char list, what will happen? Etc.

delete_repeat will delete the repeat node in the list. For the correctness, I only need to check whether the results have the same data after calling this function. In this function, I will test when the list contains only one value, like 1->1->1->1…

delete_one will delete all the nodes in the list. First, I will check its correctness in all situations. Then, I need to try it in the null list.

In the merge_linklist function, the most important thing I need to check is its correctness. And if I let it merge sorts two different type lists. Also, I need to check if it really uses merge algorithm, rather than using babul sorts or others (But I have no ideas about how to test it now, and I will work for it next).

That's what I plan to use TSTL to test and the general way I plan to use to test.