**CS311 Yoshii HW3 Part 2 - Inherited Linked List (based on Notes-6B)**

**DUE: Week 8 Sat**

**TOTAL: 20 points Your score is:**

**Email me the required correction to get HW6 graded:**

**Your NAME:Salma Rashed**

**Date Turned in:3/19/2022**

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**Purpose: To be able to extend the linked list class to allow additional functionality through inheritance. If you did not get llist/slist to work perfectly, you must come and see me to fix them or you will be asked to drop the class.**

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**PROGRAM: LinkedList class through Inheritance [4+16=20pts] Your score:**

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**Header:**

**Implementation:**

**Client:**

**Test results (required):**

**Total 16 points:**

**Q’s 4 points:**

**Q1) We did not create the slist constructor/destructor. Did the llist ones get called? [1pts]**

**<yes>**

**Q2) State of the Program[3pts]**

· **Did you fix HW3P1 errors as advised?yes**

* **Does your program compile without errors? Yes without error**
* **List any bugs you are aware of, or state “No bugs”:no bugs**

**We will use the Linked List from HW3P1 to expand it into a Searchable List class by adding more functions.**

n **HW3P2 will create slist.h and slist.cpp.**

n **Must use HW3P2client.cpp**

**Updating the Header Files (llist.h and slist.h)**

**Inherit** all member functions from the Linked List class.

Note that the client of Searchable List will need to be able to call these functions. **Pick the access type accordingly.**

Searchable List class must have access to the data members of the base class.

But the clients should not access these data members.

**Thus, data members should be in which part of the Linked List header? Think.**

**Now, put only these 4 functions in slist.h and slist.cpp:**

**slist(); // constructor which does nothing (note: we are not creating a destructor)**

**int search(el\_t Key)**

search through the list to see if any node contains Key.

If so, return its position (>=1). Otherwise, return 0.

**void replace(el\_t Elem, int I)**

go to the Ith node (I is between 1 and Count) and replace the element there with Elem.

If I was an illegal value, throw an exception (OutOfRange). MUST USE MOVETO

**bool operator==(cost slist&)**

compare two slist object to see if they look the same.

· If this->Count and OtherOne.Count are not the same, false.

· Else go through the lists Count times comparing ->Elem’s, and as soon as they are different, return false.

· If the loop completes, return true.

**The client program (HW3P2client.cpp) should test the following: è Test.txt**

**Case 1: Search and Replace**

1. add to front once (element 4)

2. add to rear 3 times (elements 6,7,8)

3. displayAll - [4 6 7 8]

4. search for 6, report the result - found in pos 2

5. replace the 6 with 0 using the search result

6. displayAll - [4 0 7 8]

7. search for 8 and report the result – found in pos 4

8. replace the 8 with 2 using the search result

9. displayAll - [4 0 7 2]

10. search for 5 and report the result - not found

11. replace position 7 with 10 - error

**Case 2: Comparison**

1. L1 is empty and L2 is empty - true

2. L1 is empty and L2 has 4, 5 - false

3. L1 has 4, 5 and L2 is empty - false

4. L1 has 1,2,3 and L2 has 1,2,3 - true

5. L1 has 1,2,3 and L2 has 1,2 - false

6. L1 has 1,2,3 and L2 has 1,2,3,4 - false

7. L1 has 1,2,3 and L2 has 1,2,4 - false

**===================================================================**

**SUBMIT THESE 6 (or 7) FILES:**

**If you were told to fix and resubmit HW3P1, please submit TestP1.txt output file as well to prove that it works perfectly now. Otherwise, I will not grade P2 files.**

**1)** **this assignment sheet with your answers.**

**2)** **llist.h updated**

**3)** **slist.h commented well**

**4)** **slist.cpp commented well**

**5)** **HW3P2client.cpp commented well**

**6)** **Test.txt (Script of compilation and test result)**

* **Whether working or not, test result must include the lines for compiling your files or we will not grade your program i.e. 0 points for the program**
* **Did you check your comments and style against CS311 How To Comment.doc??yes**
* **Did you answer all the questions?yes**

**Always make sure you submitted all the files. You may not submit them after I start grading them!!!!**