Name: Huayue Hua

USC ID: 9817961224

Email: [huayuehu@usc.edu](mailto:huayuehu@usc.edu)

Lab4

1. To run Mandatory part for file “Lab3\_p1\_9817961224”, the following command should be entered:

g++ -o lab3 Lab3\_p1\_9817961224.cpp

./lab3 input.txt

1. To run extra credit TDD Member update part, the following should be entered:

g++ -o member main.cpp MemberTester.cpp Member.cpp MemberList.cpp MemberListTester.cpp

./member

Result:

A screenshot of a cell phone

Description automatically generated

1. To run extra credit TDD Book part, the following should be entered:

g++ -o main mainBook.cpp BookTester.cpp Book.cpp BookList.cpp BookListTester.cpp

./main

Result:

A screenshot of a cell phone

Description automatically generated

1. To run extra credit Q2 and Q3 for file “Lab3\_p2\_9817961224”, the following command should be entered:

g++ -o ec Lab3\_p2\_9817961224.cpp

./ec input.txt

1. Time complexity for extra credit Q2:

To check independece of current and given NumberSet, it will create a Hash table filling with current NumberSet elements firstly, then search every element from given NumberSet in this Hash table. If one of the elements has appeared in hash table, return false; otherwise, return true after completing all elements search. The time complexity for creating a hash table is O(n), searching an element is O(1). Therefore, the total time complexity is O(n) + n\*O(1) = O(n) + O(n) = O(n).