**Herman Mann**

**CMSC 204**

**Assignment 3**

**Doubly Linked Lists Implementation**

**GUI SCREENSHOTS OF ASSIGNMENT 3 Execution (Double Linked Lists)**

Graphical user interface, application

Description automatically generated**Graphical user interface, application

Description automatically generated** Adding to a Basic List Adding to a Sorted List

Graphical user interface, application

Description automatically generatedRemoving LEXUS from basic Removing Steph Curry from sorted

Graphical user interface, application

Description automatically generated

Example of selecting “Next” for Basic and then for Sorted list. Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generatedExample of “Next” for basic and “Previous” for Sorted.

A screenshot of a computer

Description automatically generated with medium confidence**Github Screenshot of Assignment 3 (Doubly Linked Lists in directory)**

Table

Description automatically generated

Reflection Paragraphs

Throughout the completion of the Assignment 3 which was on Doubly Linked Lists, I got to learn and experience a lot of different object-oriented programming skills such as exceptions, and generic classes, Double Linked List, Ordered Double Linked List, Iterators and Comparators and how to utilize them in different methods of the assignment’s implementation. Using the Iterators and Comparators for going through a double linked list of throwing and catching the NoSuchElementException and the UnsupportedOperation Exceptions were very useful in the assignment to catch the exceptions after I tried to check if the addToFront and addToEnd methods throwed the appropriate exception as needed (ex: UnsupportedOperationException, etc.). I really enjoyed how the assignment is getting me introduced to the new and unique data structures of object-oriented programming, and I am interested to look at these different data structure algorithms as the class keeps goes on. Also, I got to experience more in-depth knowledge and reasoning in Exception handling, using the static keyword, and using the concept of testing and planning using Junit tests and using Javadoc to make the appropriate commenting on each of the assignment’s implementation methods. The learning of Exceptions, exception handling, double linked lists, the ordered double linked lists, the iterators, and comparators served as a great learning experience for this assignment and for future assignments throughout the class.

In the completion of this assignment, I struggled with a couple of things towards the end of things. First, I struggled with addToCar method which it was supposed to get the getLast() method and the retrieveLastElement() notation representation of a number in the linked list and return the adding of the specific data to the car of the sorted list class which extended BasicDoubleLinkedList but that did not meet a single expression’s requirements. My program came to an error towards the center of the Junit test due to me not throwing the UnsupportedOperationException in my earlier methods which was the addToEnd. I solved the issue by using the java iterators and comparators concept of symbolizing the direct solution to my issue(s) Another problem I struggled with were creating the student Junit tests, some methods towards the end of this assignment’s student tests had me thinking about how to approach it. So, my solution to the problem was looking at the other methods of the student test that I had done previously and from there I solved the issue successfully by changing things here and there to make the test work according to the certain test I was doing at the time by following the way the other tests were made and solved to be working successfully after the student test ran through.

When I had completed the entirety of this project, I found out a lot of things to be useful for me and would help me out for the completing of future assignments/projects. I learned and experienced that the use of exceptions and linked lists in general and also the iterators and comparators will serve me a big deal and help to know for the future and will be a great thing to be well-experienced in the concept of using try/catch for exception handling and the proper and correct use of generic classes and things of this sort. Also, Javadoc will help me in the future not just for the upcoming assignments but also in my career of Computer Science, for accurate and important commenting of various programs that I will be coding for bigger and widespread company projects. Also, critical analysis especially learned from the completion of this project implementation will be so useful and demanding in the field for advancement to write larger scope programs with various object-oriented programming techniques. Also, the importance of iterators, comparators, and the different doubly linked list requirements served such an important purpose of furthering my knowledge on Java and its object-oriented principles/techniques. This assignment implementation of Doubly linked lists helped me in so many great ways its satisfying to know I chose a great career path majoring in Computer Science.