**COMP 313/413 Project 2 Report Template**

**TestList.java and TestIterator.java**

TODO also try with a LinkedList - does it make any difference?

The only difference I was able to spot was with performance. I have listed below the execution timings of both the lists. Linked lists take longer time to execute.

ArrayList:

BUILD SUCCESSFUL in 459ms

2 actionable tasks: 2 executed

5:22:58 PM: Execution finished ':test'.

LinkedList:

BUILD SUCCESSFUL in 871ms

2 actionable tasks: 2 executed

5:22:09 PM: Execution finished ':test'.

**TestList.java**

testRemoveObject()

list.remove(5); // what does this method do?

It removes the value that is at index 5

list.remove(Integer.valueOf(5)); // what does this one do?

It removes the integer 5 in the list regardless of the index

**TestIterator.java**

testRemove()

i.remove(); // what happens if you use list.remove(77)?

It removes the index where 77 is added for the first time

**TestPerformance.java**

State how many times the tests were executed for each SIZE (10, 100, 1000 and 10000)to get the running time in milliseconds and how the test running times were recorded.

These are examples of SIZEs you might choose, you can choose others if you wish.

SIZE 10

#4

ArrayList Access Time: 6 ms 8 ms 9 ms 10 ms

LinkedList Add/Remove Time: 19 ms 15 ms 17 ms 17 ms

LinkedList Access Time: 9 ms 7 ms 11 ms 6 ms

ArrayList Add/Remove Time: 20 ms 20 ms 21 ms 20 ms

SIZE 100

#4

ArrayList Access Time: 10 ms 11 ms 10 ms 7 ms

LinkedList Add/Remove Time: 15 ms 15 ms 15 ms 17 ms

LinkedList Access Time: 18 ms 19 ms 18 ms 18 ms

ArrayList Add/Remove Time: 28 ms 31 ms 29 ms 29 ms

SIZE 1000

#4

ArrayList Access Time: 9 ms 8 ms 8 ms 9 ms 7 ms

LinkedList Add/Remove Time: 16 ms 17 ms 15 ms 16 ms 17 ms

LinkedList Access Time: 341 ms 346 ms 343 ms 340 ms 341 ms

ArrayList Add/Remove Time: 158 ms 156 ms 180 ms 180 ms 158 ms

SIZE 10000

#4

ArrayList Access Time: 8 ms 7 ms 5 ms 6 ms

LinkedList Add/Remove Time: 17 ms 10 ms 20 ms 19 ms

LinkedList Access Time: 4908 ms 4741 ms 4706 ms 4697 ms

ArrayList Add/Remove Time: 1604 ms 1614 ms 1586 ms 1598 ms

listAccess - which type of List is better to use, and why?

Answer: Array List is better here. It shows consistent and faster access times than LinkedLists across all sizes. This is because they are backed by array, allowing direct access to elements using an index in constant time.

listAddRemove - which type of List is better to use, and why?

Answer: Linked List is the better choice for Add Remove. The test results show that add/remove times for linked lists is generally lower and more consistent.