Analysis Document on Assignment05

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1. **What is your programming partner's name and which of you submitted the program files to Gradescope?**

Partner Name: YuYao TU

We both submitted the files to Gradescope.

2. **How well did you apply the techniques of pair programming (as explained on this page) to this assignment?**

We were getting better as we code. Although it wasn't smooth in the beginning for we met problems such as the driver couldn't understand the navigator or the navigator couldn't express himself clearly.

3. **What percentage of the program code did you write using these techniques?**

We write the entire code except for the testing part.

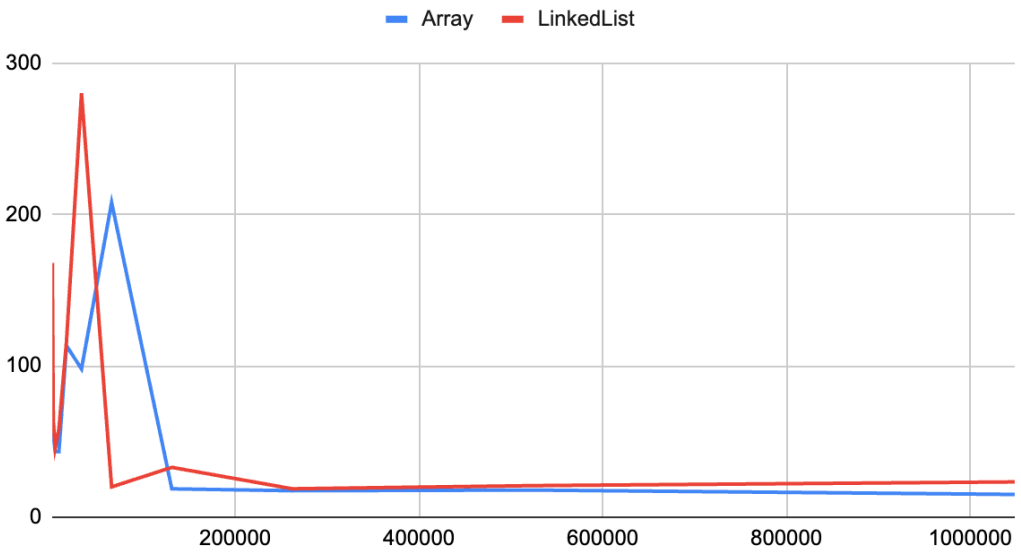
4. **About how many hours did you spend completing the programming and testing portion of this assignment? Evaluate your programming partner.**

We spent two days after class and for an estimated of roughly 10 hours on the project. My partner was being really patient and helpful.

5. **Do you plan to work with this person again?**

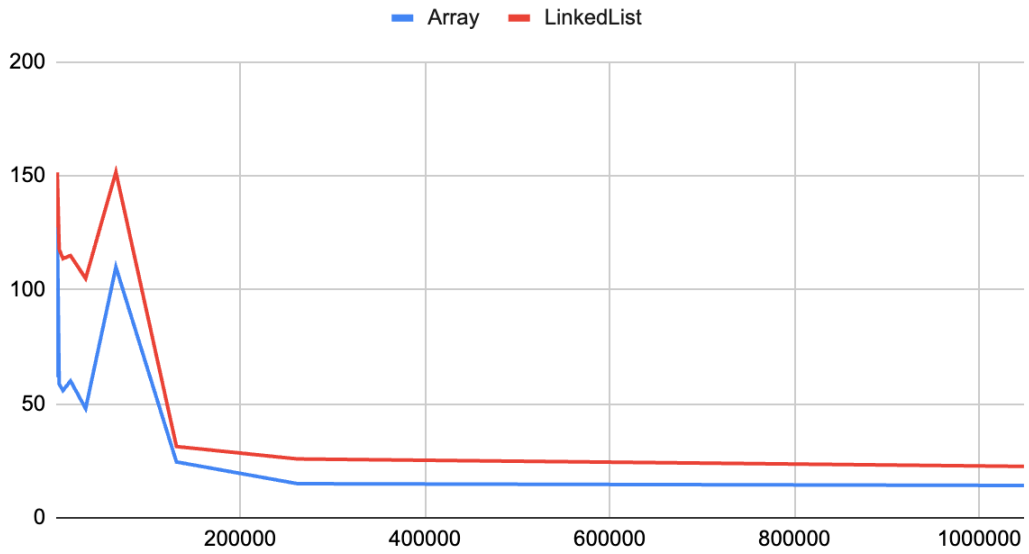
Yes.

6. **Compare the running time of the push method. What is the growth rate of the method's running time for each stack class, and why?**



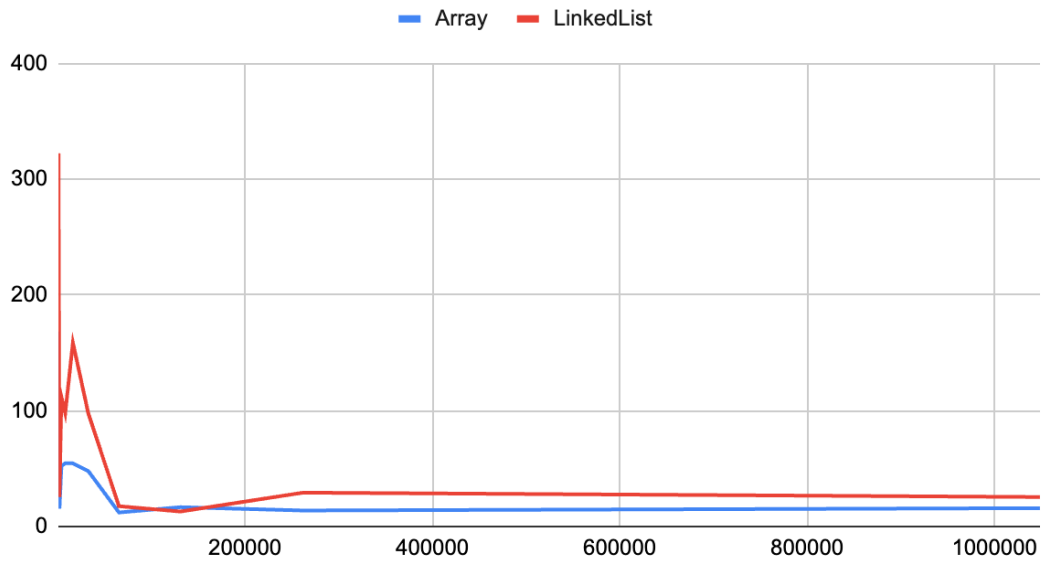
The add method has a time complexity of O(1) for both Array and LinkedList. For LinkedList, the push method uses the insetFirst method in SinglyLinkedList class, which is of time complexity of O(1).

7. **Compare the running time of the pop method. What is the growth rate of the method's running time for each stack class, and why**



The pop method has a time complexity of O(1) for both Array and LinkedList. It always delete the first element in the linkedlist, so there is no iteration process, which leads to the time complexity of O(1).

8. **Compare the running time of the peek method. What is the growth rate of the method's running time for each stack class, and why?**



The peek method has a time complexity of O(1) for both Array and LinkedList. It always return the first element in the linkedlist, so there is no iteration process, which leads to the time complexity of O(1).

9. **Based on your timing experiments, which stack class do you think is more efficient for using in your WebBrowser application? Why?**

In all three scenarios, the array stack has a better performance comparing with the LinkedListStack. This is because the address of elements in an array is continuous, while the address of elements in linked lists are not. Finding elements in array is therefore faster than LinkedList which find the next element by looking along the pointer of the former element.