
Laboratory 4 : Cover Sheet

Name _____ Date _____

Section _____

Place a check mark in the *Assigned* column next to the exercises your instructor has assigned to you. Attach this cover sheet to the front of the packet of materials you submit following the laboratory.

Activities	Assigned: Check or list exercise numbers	Completed
Implementation Testing	✓	
Programming Exercise 1		
Programming Exercise 2		
Programming Exercise 3		
Analysis Exercise 1		
Analysis Exercise 2		
	Total	

Laboratory 4: Implementation Testing

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Check with your instructor whether you are to complete this exercise prior to your lab period or during lab.

Test Plan 4-1 (operations in the Ordered List ADT)			
Test case	Commands	Expected result	Checked

Laboratory 4: Programming Exercise 1

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Test Plan 4-2 (message processing program)	
Test case	Checked
The input is in the file <i>message.dat</i> . First look at <i>message.dat</i> and determine what the correct output should be. The correct output is unmistakable.	

Test Plan 4-3 (merge operation)			
Test case	Lists	Expected result	Checked

Laboratory 4: Programming Exercise 3

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Test Plan 4-4 (subset operation)			
Test case	Lists	Expected result	Checked

Laboratory 4: Analysis Exercise 1

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Part A

Given an ordered list containing N data items, develop worst-case, order-of-magnitude estimates of the execution time of the steps in the insert operation, assuming this operation is implemented using an array in conjunction with a binary search. Briefly explain your reasoning behind each estimate.

Array Implementation of the Insert Operation

Find the insertion point $O(\quad)$

Insert the data item $O(\quad)$

Entire operation $O(\quad)$

Explanation:

Part B

Suppose you had implemented the Ordered List ADT using a linear search, rather than a binary search. Given an ordered list containing N data items, develop worst-case, order-of-magnitude estimates of the execution time of the steps in the insert operation. Briefly explain your reasoning behind each estimate.

Linked List Implementation of the Insert Operation

Find the insertion point $O(\quad)$

Insert the data item $O(\quad)$

Entire operation $O(\quad)$

Explanation:

Laboratory 4: Analysis Exercise 2

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In specifying the Ordered List ADT, we assumed that no two data items in an ordered list have the same key. What changes would you have to make to your implementation of the Ordered List ADT in order to support ordered lists in which multiple data items have the same key?