

2. Write an algorithm to determine the average of a linked list of real numbers with first node pointed to by **first**.

- Page 1 of 7

9. The *shuffle-merge* of two lists x_1, x_2, \dots, x_n and y_1, y_2, \dots, y_m is the list

$$z = \begin{cases} x_1, y_1, x_2, y_2, \dots, x_n, y_n, y_{n+1}, y_{n+2}, \dots, y_m & n < m \\ x_1, y_1, x_2, y_2, \dots, x_m, y_m, x_{m+1}, x_{m+2}, \dots, x_n & n > m \\ x_1, y_1, x_2, y_2, \dots, x_n, y_n & n = m \end{cases}$$

Write an algorithm to shuffle-merge two linked lists with first nodes pointed to by **first1** and **first2**, respectively. The items in these two lists should be copied to produce the new list; the original lists should not be destroyed.

10. Proceed as in Exercise 9, but do not copy the items. Just change links in the two lists (thus destroying the original lists) to produce the merged list.

Exercises 6.6

1. An ordered linked list of characters has been constructed using the array-based implementation described in this section. The following diagram shows the current contents of the array that stores the elements of the linked list and storage pool:

Node	Data	Next
[0]	J	3
[1]	Z	6
[2]	C	0
[3]	P	-1
[4]	B	2
[5]	M	1
[6]	K	7
[7]	Q	8
[8]	?	9
[9]	?	-1

first = 4 **free** = 5

- (a) List the elements of this list.
 - (b) List the nodes in the storage pool in the order in which they are linked together.
2. Assuming the contents of the array node pictured in Exercise 1, show the contents of node and the values of **first** and **free** after the letter F is inserted into the list so that the resulting list is in alphabetical order.

- Page 4 of 7

- Page 5 of 7

- Page 6 of 7

Worksheet Questions

1. Give asymptotic bounds on the worst-case time complexity of your algorithms for Exercises 6.4 questions 2., 4., 9. and 10 and for Exercises 6.6 questions 7., 8., and 9. *Justify your answer.*