

Practice Problems: page 105

In the data cleanup problem, suppose the original data are

2	0	4	1
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1. Write the data list after completion of algorithm 1, the shuffle-left algorithm.

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2. Write the two data lists after completion of algorithm 2, the copy-over algorithm.

3. Write the data list after completion of algorithm 3, the converging-pointers algorithm.

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4. Make up a data list such that step 11 of the converging-pointers algorithm (Figure 3.3) is needed.

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1. Using the information in Figure 3.2, fill in the following table for the number of comparisons required in the sequential search algorithm.

<i>N</i>	Best Case	Worst Case	Average Case
10			
50			
100			
1,000			
10,000			
100,000			

******EXTRA PROBLEM NOT IN THE BOOK******

Using the information in Figure 3.20, fill in the following table for the number of comparisons required in the *Binary Search Algorithm*.

<i>N</i>	Best Case	Worst Case	Average Case
10			
50			
100			
1,000			
10,000			
100,000			

2. An algorithm does $14n^2 + 5n - 1$ units of work on input of size n . Explain why this is considered an $\Theta(n^2)$ algorithm even though there is a term that involves just n .

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1. For each of the following lists, perform a selection sort, and show the list after each exchange that has a visible effect.

a. 4, 8, 2, 6

b. 12, 3, 6, 8, 2, 5, 7

c. D, B, G, E, A, C, E

2. Suppose that, using the list of seven names from this section, we try binary search to decide whether Grant is in the list. What names would be compared to Grant?

3. Use the first example pattern and text given in Section 3.6^{4.3} for the worst case of the pattern-matching algorithm. What is m ? What is n ? What is $m * n$? This algorithm is $\Theta(m * n)$ in the worst case, but what is the exact number of comparisons done?

$m =$ _____ $n =$ _____ $m * n =$ _____

exact # of copies = _____ formula for exact no. of copies = _____

Complete the problem from Ch. 3

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