3.1 Algorithms - Worksheet

1. Devise an algorithm that finds the sum of all the integers in a list.

2. Describe an algorithm that takes as input a list of n integers and finds the location of the last even integer in the list or returns 0 if there are no even integers in the list.

3. List all the steps used to search for 9 in the sequence 1, 3, 4, 5, 6, 8, 9, 11 using

   a. a linear search
   b. a binary search

4. Use the bubble sort to sort 6, 2, 3, 1, 5, 4, showing the lists obtained at each step.

5. Use the insertion sort to sort 6, 2, 3, 1, 5, 4, showing the lists obtained at each step.

6. The selection sort begins by finding the least element in the list. This element is moved to the front. Then the least element among the remaining elements is found and put into the sec- ond position. This procedure is repeated until the entire list has been sorted.

   (a) Sort this list using the selection sort: 3,5,4,1,2
   (b) Write the selection sort algorithm in pseudocode.