**Time Complexity and Memory Efficiency – 11 points;
Suggested work & submission time less than 10min**

Answer the following 11 questions. Each correct answer brings 1 point, and incorrect answer will be penalized by -0.5 point to discourage random guessing. The minimum possible score is 0.

What is time complexity of the following operations for data structures with n elements:

1) AVL Sort algorithm of Bag implemented as a dynamic array?

   Solution:

2) Add operation of Hash Table with linked lists, when the table size is m?

   Solution:

3) Add operation of Sorted Bag implemented as a dynamic array?

   Solution:

4) Remove operation of Heap implemented as a dynamic array?

   Solution:

5) Dijkstra's algorithm for a graph with m edges?

   Solution:

6) Remove operation of AVL tree?

   Solution:

7) Pop operation of Stack implemented as a static array?

   Solution:

Compare memory efficiency between the following pairs of data structures with the same number n of data elements. For example, comment: Is memory usage the same, or does one data structure take more memory than the other?

8) Deque implemented as a linked list; or
   Stack implemented as a linked list?

   Solution:

9) Hash Table with linked lists and the load factor greater than 1; or
   Hash Table with linked lists and the load factor less than 1?

   Solution:

10) BST; or AVL tree?

    Solution:

11) Deque implemented as a dynamic array; or Heap implemented as a dynamic array?

    Solution: