Homework - 4

1. (20 points) Find the k-th smallest element in the following list using Quick-Select:

   17, 19, 11, -31, 51, 42, -4

2. (30 points) Insert the following nodes 53, 39, 25, 78, 55, 63 and construct an AVL tree.

   - Indicate the node and type of rotation used, whenever necessary. Show all intermediate steps.
   - List the pre-order, in-order and post-order traversals of the nodes of the AVL tree after completing all insertions/rotations.

3. (20 points) Insert the following key values: A, L, G, O, R, I, T, H, M and construct a 2-3 tree. Show all intermediate steps.

4. (30 points) Apply the Heapsort algorithm on the following array values:

   54, 21, 1, -2, 31, 71, 23, 10 Show your work. Give a list of the updated array values at the end of each max-delete operation.

Reading Assignment:

- Chapter– 4 (4.5), 6 (6.1 – 6.4)

Submission:

- Submit a single PDF file on BB.