COMP 8851
Instructor: Borna Noureddin
Assignment #2

All work should be done individually.

Total marks: 125

1. [25 marks]   Complete exercise 4.16 in the textbook. The class is provided as an attachment. All of the routines will have to be modified. You will have to:
    a. add a flag in each node to indicate if it has been deleted
    b. change the traversal code to bypass any node that has been deleted
    c. insert must be modified to skip any deleted nodes and allow reinsertion by just flipping the deleted flag
    d. delete must be modified to set the deleted flag
    e. change the findMin and findMax routines to work recursively

2. [10 marks]   Complete exercise 4.44 in the textbook. Use the following definition of a node:
    ```cpp
    template<typename Comparable>
    struct ChildSibNode
    {
    Comparable element;
    ChildSibNode<Comparable> * child;
    ChildSibNode<Comparable> * sib;
    };
    ```

3. [10 marks]   Complete exercise 4.48 in the textbook.

4. [6 marks]   Complete exercise 7.17 in the textbook.

5. [6 marks]   Complete exercise 7.20 in the textbook.

6. [5 marks]   Complete exercise 7.31 in the textbook.

7. [8 marks]   Complete exercise 7.42 in the textbook. *Hint: use radix sort.*

8. [20 marks]   Complete exercise 7.53 in the textbook.

9. [15 marks]   Complete exercise 9.3 in the textbook.

10. [20 marks]   Complete exercise 9.51 in the textbook. You do not need to write the program, just explain how it can be solved using a shortest-path algorithm. Describe the vertices and edges of the graph, as well as any associated cost or weight.