Lab Exercise-2

Lab exercise (C/C++):

1. Implement a singly linked list with the following operations

    1.1. Insert at HEAD, TAIL, k_{th} position.
    1.2. Delete at HEAD, TAIL, k_{th} position.
    1.3. Print all the elements from head to tail.

2. Implement a doubly linked list with the following operations

    2.1. Insert at HEAD, TAIL, k_{th} position.
    2.2. Delete at HEAD, TAIL, k_{th} position.
    2.3. Print all the elements from head to tail.

3. Implement a circular linked list with the following operations

    3.1. Insert at HEAD, TAIL, k_{th} position.
    3.2. Delete at HEAD, TAIL, k_{th} position.
    3.3. Print all the elements from head to k_{th} position.
    3.4. Print all the elements from k_{th} till $(k-1)_{th}$ in a circular manner.

4. Implement the insertion sort algorithm and print the sorted order (increasing) along with the number of comparisons and swaps.

5. Implement the insertion sort algorithm using a doubly linked list.

Note: Optionally students can practice using large files of inputs having thousands to millions of numbers and compare the time taken by the two algorithms (Q4, Q5).