Assignment On Linked List

1. Write a program to create a single linked list and perform inset at first, insert at last, insert any position, delete first, delete last delete from any position and display operation on it.

2. Write a program that takes two lists, assumed to be sorted, and returns their merge. The only field your program can change in a node is its next field.

3. Write a program which takes a singly linked list L and two integers s and f as arguments, and reverses the order of the nodes from the sth node to f^{th} node, inclusive. The numbering begins at 1, i.e., the head node is the first node. Do not allocate additional nodes.

4. Write a program that takes the head of a singly linked list and returns null if there does not exist a cycle, and the node at the start of the cycle, if a cycle is present. (You do not know the length of the list in advance.)

5. Given a singly linked list and an integer k, write a program to remove the kth last element from the list. Your algorithm cannot use more than a few words of storage, regardless of the length of the list. In particular, you cannot assume that it is possible to record the length of the list.

6. Write a program that takes as input a singly linked list of integers in sorted order, and removes duplicates from it. The list should be sorted.

7. Write a program that tests whether a singly linked list is palindromic.

8. Implement a function which takes as input a singly linked list and an integer k and performs a pivot of the list with respect to k. The relative ordering of nodes that appear before k, and after k, must remain unchanged; the same must hold for nodes holding keys equal to k.