Faculty of Computer Science, IBA

Linked List

Objective

The objective of this lab is to understand the linked list implementation.

Task

1. Create a singly linked list and implement its basic methods.

   Procedure

   The implementation of Linked List uses a pair of classes. One class specification describes the node object and second maintain a collection of nodes as a list structure. Consider the following template for linked list implementation. Once you successfully implemented then convert it to generic implementation.

   ```
   class Node {
           int data;
           Node next;

       Node(int d){
         Data=d;
       }
   }

   class Linkedlist {
           Node head;
   ```

   public void insertInOrder(int d){   // code insert data in ascending order   }

   public Boolean find(int d){   // find the node with value d   }

   public void clear(){   // remove the whole linked list   }

   public boolean isEmpty(){ //return true if linked list is empty   }

   public int length(){ // return the number of nodes in the list length is zero for the empty list }

   public void remove(int d){   // find the node with value d and remove that node }

   public void addAll(List l) { //appends the list l to the end of the current list, if the current list is nonempty, or lets the head of the current list point to the first element of l if the current list is empty.

   public void reverse() { // reverses the linked list by updating the references or rearrange the nodes to reverse the list;

   public String toString(){ // print the list as comma separated values }

   ```
   }
   ```

2. Determine the Big-Oh of each method you have implemented in both above questions and write as comment within code before the start of each method.   For example, // O(n).