Data Structure Lab (15CSE 281)

Lab Sheet V Singly Linked List (10/08/16)

I. Write driver program to perform the following tasks in Linklist:

a. Using the definition of node given in the skeleton , create a node for the LinkedList.
b. Write methods insertAtEnd(), insrtAtBeg(), insertAtPosition(), delete() and display()
c. Write function isEmpty() and check if the list is empty or not.

```
import java.util.Scanner;
/*  Class Node  */
class Node
{
    public int data;
    public Node next;
    /*  Constructor  */
    public Node()
    {
        next = null;
        data = 0;
    }
    /*  Constructor  */
    public Node(int d,Node n)
    {
        data = d;
        next = n;
    }

}
/* Class linkedList */
class linkedList
{
    public Node head;
    public int size ;
    /*  Constructor  */
    public linkedList()
    {
        head = null;

    }

    public void insertAtEnd(int val)
    {
        Node n = new Node(val, null);
       .....
    }
    /*  Function to insert an element at end  */


    /*  Function to insert an element at position  */
    public void insertAtPos(int val , int pos)
    {

    }
    /*  Function to delete an element at position  */
    public void deleteAtPos(int pos)
    {

    }
```

```
    /*  Function to display elements  */
    public void display()
    {
        System.out.print("Singly Linked List = ");
        //check empty condition and display a proper message

}
/*  Class SinglyLinkedList  */
public class SinglyLinkedList
{
    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        /* Creating object of class linkedList */
        linkedList list = new linkedList();
        System.out.println("Singly Linked List Test");
        char ch;

        do
        {
            System.out.println("\nSingly Linked List Operations");
            System.out.println("1. insert at beginning");
            System.out.println("2. insert at end");
            System.out.println("3. insert at position");
            System.out.println("4. delete at position");
            System.out.println("5. check empty");
            System.out.println("6. get size");
            int choice = scan.nextInt();
            switch (choice)
            {
            case 1 :

            case 2 :

            case 3 :

            case 4 :

            case 5 :

            case 6 :

             default :

            }
            /*  Display List  */
            list.display();
            System.out.println("\nDo you want to continue (Type y or n) ");
            ch = scan.next().charAt(0);
        } while (ch == 'Y'|| ch == 'y');
    }
}
```

II. Add a method Countnode() to return the count of nodes in the List that you have created.

BONUS QUESTION

Write a driver program that performs insertion of elements into the list in the sorted order.