

**CSE 2001 - Data Structures and Algorithms**

**LAB SHEET2**

**/\*Single linked list\*/**

**import** java.util.Scanner;

**public** **class** SinglyLinkedList

{ //defining a node in singly linked list

**class** Node

{

**int** data;

Node next;

**public** Node(**int** data)

{

**this**.data = data;

**this**.next = **null**;

}

}

//defining the head and tail of a singly linked list

**public** Node head = **null**;

**public** Node tail = **null**;

//defining insert() function to add a node to the list

**public** **void** insert\_begin(**int** data)

{

//Creating a new node

Node newNode = **new** Node(data);

//checking of the list is empty

**if**(head == **null**)

{

//if the given list is empty, making the two nodes head and tail to point to the newly created node newNode

head = newNode;

tail=newNode;

tail.next=**null**;

}

**else**

{

//otherwise the newNode will be added after tail so that the next pointer of tail points to the newNode

newNode.next=head;

head=newNode;

}

}

**public** **void** insert\_end(**int** data)

{

Node newNode = **new** Node(data);

**if**(head == **null**)

{

head = newNode;

tail=newNode;

tail.next=**null**;

}

**else**

{

Node temp=head;

**while**(temp.next!=**null**) {

temp=temp.next;

}

temp.next=newNode;

tail=newNode;

tail.next=**null**;

}

}

//defining displaylist() function to display the data in the list

**public** **void** display()

{

//Pointing the head to the node called current

Node temp = head;

**if**(head == **null**)

{

System.***out***.println("The given list is empty");

**return**;

}

System.***out***.println("The data in the given list are: ");

**while**(temp != **null**)

{

//printing each data in the list and next pointer pointing to the next node

System.***out***.print(temp.data + "----> ");

temp = temp.next;

}

System.***out***.println("NULL");

}

**public** **static** **void** main(String[] args) {

SinglyLinkedList LL= **new** SinglyLinkedList();

//Scanner sc= new Scanner(System.in);

**for**(;;)

{

System.***out***.println("Enter 1: insert\_begin 2: insert\_end 3: display 4: exit");

Scanner sc= **new** Scanner(System.***in***);

System.***out***.print("Enter the choice");

**int** ch= sc.nextInt();

**switch**(ch)

{

**case** 1: System.***out***.println("Enter the value to add in the data ");

Scanner sc1= **new** Scanner(System.***in***);

System.***out***.print("Enter the number- ");

**int** val= sc1.nextInt();

LL.insert\_begin(val);

**break**;

**case** 2: System.***out***.println("Enter the value to add in the data ");

Scanner sc2= **new** Scanner(System.***in***);

System.***out***.print("Enter the number- ");

**int** val1= sc2.nextInt();

LL.insert\_end(val1);

**break**;

**case** 3: LL.display();

**break**;

**case** 4: System.***out***.println("Invalid choice ");

**return**;

}

}

}

}