**ii) implementation of ListADT using Linkedlist**

**ListADT.java**

**public** **interface** ListADT {

**void** create();

**void** insert();

**void** delete();

**void** display();

**int** length();

**void** update();

**void** search();

}

**LList.java**

**import** java.util.\*;

**class** Node{

**int** data;

Node link;

Node(**int** d)

{

data=d;

link=**null**;

}

}

**public** **class** LList **implements** ListADT{

**int** item;

Node first,last;

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

LList()

{

first=last=**null**;

}

**public** **void** create()

{

System.***out***.print("Enter a value");

item=sc.nextInt();

Node temp=**new** Node(item);

**if**(first==**null**)

first=last=temp;

**else**

{

last.link=temp;

last=temp;

}

}

**public** **int** length()

{

**int** l;

Node temp=first;

**for**(l=1;temp!=**null**;l++,temp=temp.link);

**return** l;

}

**public** **void** insert()

{

System.***out***.print("Enter a position");

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

Node temp=**new** Node(item);

**if**(pos>0 && pos<=length())

{

System.***out***.print("Enter a value");

item=sc.nextInt();

**if**(pos==1)

{

temp.link=first;

first=temp;

}

**else**

{

Node prev,curr;

prev=curr=first;

**int** i=1;

**while**(i<pos)

{

prev=curr;

curr=curr.link;

i++;

}

prev.link=temp;

temp.link=curr;

}

}

System.***out***.println("No Such Place");

}

**public** **void** delete()

{

**if**(first==**null**)

{

System.***out***.print("List is Empty");

}

**else**

{

System.***out***.print("Enter a postion:");

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

**if**(pos<=length())

{

**if**(pos==1)

{

System.***out***.println(first.data + "is deleted");

first=first.link;

}

**else**

{

Node prev,curr;

prev=curr=first;

**int** i=1;

**while**(i<pos)

{

prev=curr;

curr=curr.link;

i++;

}

System.***out***.println(curr.data + " is deleted");

prev.link=curr.link;

}

}

System.***out***.println("No such place");

}

}

**public** **void** search()

{

Node temp;

**int** flag=0;

temp=first;

System.***out***.print("Enter a key element");

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

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

{

**if**(temp.data==key)

{

flag=1;

**break**;

}

temp=temp.link;

}

**if**(flag==1)

{

System.***out***.println("Element Found");

}

**else**

{

System.***out***.println("NOT FOUND");

}

}

**public** **void** update()

{

Node temp;

temp=first;

System.***out***.print("Enter a key element");

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

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

{

**if**(temp.data==key)

{

System.***out***.print("Enter a data");

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

temp.data=data;

**break**;

}

temp=temp.link;

}

}

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

{

**if**(first==**null**)

{

System.***out***.println("List is empty");

**return**;

}

**else**

{

Node temp;

temp=first;

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

{

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

temp=temp.link;

}

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

}

}

}

**LinkedList.java**

**import** java.util.Scanner;

**public** **class** LinkedList {

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

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

LList ll=**new** LList();

**int** ch;

**do**

{

System.***out***.println(" "+"LIST OPERATIONS");

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

System.***out***.println(" "+"1.Create");

System.***out***.println(" "+"2.Insert");

System.***out***.println(" "+"3.Delete");

System.***out***.println(" "+"4.Update");

System.***out***.println(" "+"5.Search");

System.***out***.println(" "+"6.Display");

System.***out***.println(" "+"7.Exit");

System.***out***.print("Enter your choice: ");

ch=sc.nextInt();

**switch**(ch)

{

**case** 1: ll.create();**break**;

**case** 2: ll.insert();**break**;

**case** 3: ll.delete();**break**;

**case** 4: ll.update();**break**;

**case** 5: ll.search();**break**;

**case** 6: ll.display();**break**;

**case** 7: System.*exit*(0);

**default**: System.***out***.println("Enter correct choice :");

}

}**while**(ch!=7);

}

}