Assignment 2

1.Singly linked list

```
package Assignment2;
import java.util.*;
public class SinglyLinkedList {
    static Node head=null;
     public static void main(String[] args) {
          System.out.println("1.Insert at begining 2.Insert
at middle 3.Insert at end"
                    + "4.delete at begining 5.delete at end
6.delete at middle 7.display 8.exit");
          boolean flag=true;
          while(flag) {
               System.out.println("Enter choice");
               Scanner scan=new Scanner(System.in);
               int n=scan.nextInt();
          switch(n) {
          case 1:insertAtBeg();
                 break;
          case 2:insertAtMiddle();
                 break;
          case 3:insertAtEnd();
            break;
          case 4:deleteAtBeg();
            break;
          case 5:deleteAtEnd();
            break;
          case 6:deleteAtMid();
            break;
          case 7:display();
                 break;
          case 8:flag=false;
            break;
          }
          }

     }
```

```
public static void insertAtBeg() {
     System.out.println("Enter an element");
     Scanner scan=new Scanner(System.in);
     int ele=scan.nextInt();
     Node node=new Node(ele,null);
     if(head==null) {
          head=node;
     }else {
          node.next=head;
          head=node;
     }

}
public static void insertAtMiddle() {
     System.out.println("Enter an element");
     Scanner scan=new Scanner(System.in);
     int ele=scan.nextInt();
     Node node=new Node(ele,null);
     System.out.println("Enter index");
     int index=scan.nextInt();
     if(head==null) {
          head=node;
     }
     else {
          Node temp=head;
          for(int i=0;i<index-1;i++) {
               temp=temp.next;
          }
          node.next=temp.next;
          temp.next=node;
     }

}
public static void insertAtEnd() {
     System.out.println("Enter an element");
     Scanner scan=new Scanner(System.in);
     int ele=scan.nextInt();
     Node node=new Node(ele,null);
```

```
            if(head==null) {
                head=node;
            }
            else {
                Node temp=head;
                while(temp.next!=null) {
                    temp=temp.next;
                }
                temp.next=node;
            }
        }
       public static void deleteAtBeg() {
         head=head.next;
        }
        public static void deleteAtEnd() {
            Node temp=head;
            while(temp.next.next!=null)
                temp=temp.next;
            temp.next=null;
        }
        public static void deleteAtMid() {
            Scanner scan=new Scanner(System.in);
            System.out.println("Enter index");
            int index=scan.nextInt();
            Node temp=head;
            for(int i=0;i<index-1;i++) {
                temp=temp.next;
            }
            temp.next=temp.next.next;
        }
        public static void display() {
            Node temp=head;
            while(temp!=null) {
                System.out.println(temp.data);
                temp=temp.next;
            }
        }

}
```

```java
package Assignment2;

public class Node {
	Node next;
	int data;
	public Node(int data,Node next) {
	 this.data=data;
	 this.next=next;
	}
}
```

Output

```
1.Insert at begining 2.Insert at middle 3.Insert at
end4.delete at begining 5.delete at end 6.delete at middle
7.display 8.exit
Enter choice
3
Enter an element
1
Enter choice
3
Enter an element
2
Enter choice
1
Enter an element
3
Enter choice
2
Enter an element
6
Enter index
1
Enter choice
7
3
6
```

```
1
2
Enter choice
4
Enter choice
7
6
1
2
Enter choice
6
Enter index
1
Enter choice
7
6
2
Enter choice
5
Enter choice
7
6
Enter choice
8
```