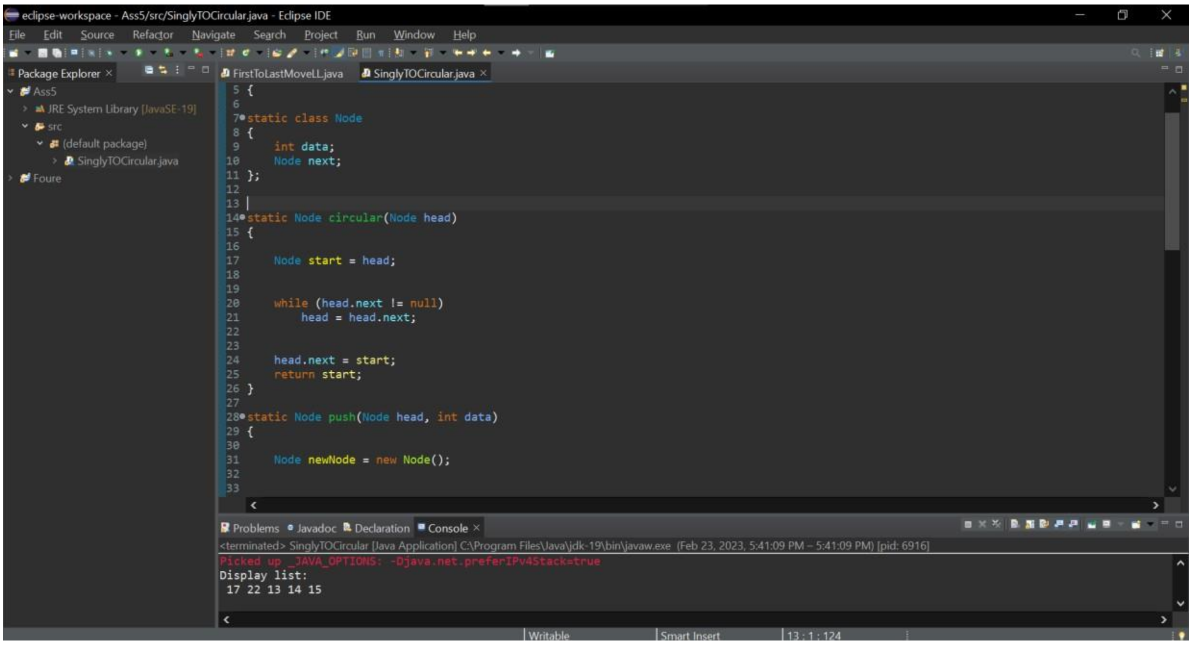
LAB SHEET -5

AIM 1: Understanding the concepts Doubly and Circular Linked List (10points)

1. Implement a program to convert singly linked list into circular linked list.



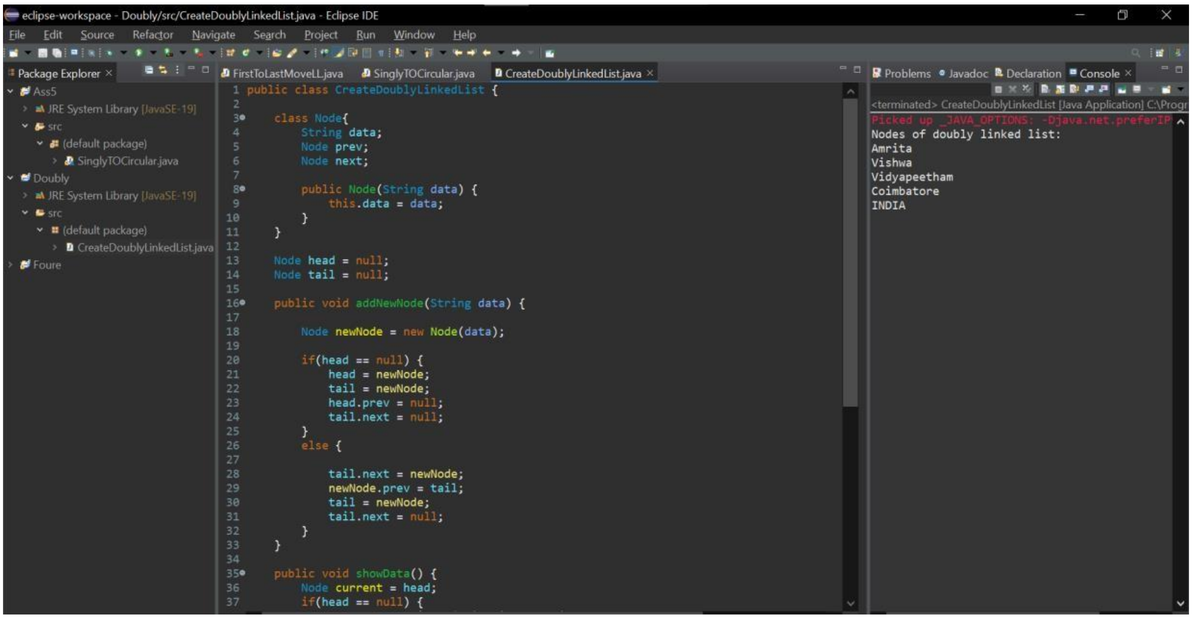
```
{

static class Node
{
    int data;
    Node next;
};


static Node circular(Node head)
{

    Node start = head;


    while (head.next != null)
        head = head.next;


    head.next = start;
    return start;
}

static Node push(Node head, int data)
{

    Node newNode = new Node();


```

```
<terminated> SinglyTOCircular [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Feb 23, 2023, 5:41:09 PM – 5:41:09 PM) [pid: 6916]
Picked up _JAVA_OPTIONS: -Djava.net.preferIPv4Stack=true
Display list:
 17 22 13 14 15
```

Code:
```
import java.util.*;

import java.io.*;

class SinglyTOCircular

{

static class Node

{

int data;

Node next;

};

static Node circular(Node head)

{

Node start = head;
```

```
while (head.next != null)
head = head.next;
head.next = start;
return start;
}
static Node push(Node head, int data)
{
Node newNode = new Node();
newNode.data = data;
newNode.next = (head);
(head) = newNode;
return head;
}
static void displayList( Node node)
{
Node start = node;
while (node.next != start)
{
System.out.print(" "+ node.data);
node = node.next;
}
System.out.print(" " + node.data);
}
public static void main(String args[])
{
Node head = null;
head = push(head, 15);
head = push(head, 14);
head = push(head, 13);

head = push(head, 22);

head = push(head, 17);

circular(head);

System.out.print("Display list: \n");

displayList(head);

}

}
```

2. Implement doubly linked list


eclipse-workspace - Doubly/src/CreateDoublyLinkedList.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer
Ass5
JRE System Library [JavaSE-19]
src
(default package)
SinglyTOCircular.java
Doubly
JRE System Library [JavaSE-19]
src
(default package)
CreateDoublyLinkedList.java
Foure
FirstToLastMoveLL.java
SinglyTOCircular.java
CreateDoublyLinkedList.java
Problems
Javadoc
Declaration
Console

```
public class CreateDoublyLinkedList {

    class Node{
        String data;
        Node prev;
        Node next;

        public Node(String data) {
            this.data = data;
        }
    }

    Node head = null;
    Node tail = null;

    public void addNewNode(String data) {

        Node newNode = new Node(data);

        if(head == null) {
            head = newNode;
            tail = newNode;
            head.prev = null;
            tail.next = null;
        }
        else {

            tail.next = newNode;
            newNode.prev = tail;
            tail = newNode;
            tail.next = null;
        }
    }

    public void showData() {
        Node current = head;
        if(head == null) {
```

```
<terminated> CreateDoublyLinkedList [Java Application] C:\Progr
Picked up _JAVA_OPTIONS: -Djava.net.preferIP
Nodes of doubly linked list:
Amrita
Vishwa
Vidyapeetham
Coimbatore
INDIA
```

Code:

```
public class CreateDoublyLinkedList {

class Node{

String data;

Node prev;

Node next;

public Node(String data) {

this.data = data;

}
```

```java
}
Node head = null;
Node tail = null;
public void addNewNode(String data) {
Node newNode = new Node(data);
if(head == null) {
head = newNode;
tail = newNode;
head.prev = null;
tail.next = null;
}
else {
tail.next = newNode;
newNode.prev = tail;
tail = newNode;
tail.next = null;
}
}
public void showData() {
Node current = head;
if(head == null) {
System.out.println("List is empty");
return;
}
System.out.println("Nodes of doubly linked list: ");
while(current != null) {
System.out.print(current.data + "\n");
current = current.next;
}

}

public static void main(String[] args) {

CreateDoublyLinkedList obj = new CreateDoublyLinkedList();

obj.addNewNode("Amrita");

obj.addNewNode("Vishwa ");

obj.addNewNode("Vidyapeetham");

obj.addNewNode("Coimbatore");

obj.addNewNode("INDIA");

obj.showData();

}

}
```