Addition of polynomials using single linked lists

```java
import java.util.*;
class polyaddition{
    node head;
    static class node{
        int coefficient;
        int power;
        node next;

        public node(int coefficient, int power) {
            this.coefficient = coefficient;
            this.power = power;
        }
    }
    void display(){
        node temp = head;
        while (temp!=null){
            System.out.print(temp.coefficient+" x^ "+temp.power+" ");
            if (temp.next != null)
                System.out.print(" + ");
            temp = temp.next;
        }
        System.out.println();
    }
    polyaddition addition(polyaddition list1,polyaddition list2){
        polyaddition result = new polyaddition();
        node temp1 = list1.head;
        node temp2 = list2.head;
        while (temp1!=null && temp2!=null){
            if(temp1.power> temp2.power){
                result.endinsert(temp1.coefficient, temp1.power);
                temp1 = temp1.next;
            }
            else if(temp1.power< temp2.power){
                result.endinsert(temp2.coefficient, temp2.power);
                temp2 = temp2.next;
            }
            else{
                int resco = temp1.coefficient+ temp2.coefficient;
                result.endinsert(resco, temp2.power);
                temp1 = temp1.next;
                temp2 = temp2.next;
            }
        }
        while (temp1!=null){
            result.endinsert(temp1.coefficient, temp1.power);
            temp1 = temp1.next;
        }
        while (temp2!=null){
            result.endinsert(temp2.coefficient, temp2.power);
            temp2 = temp2.next;
        }
        return result;
    }
    void endinsert(int coefficient,int power){
        node inserted = new node(coefficient,power);
        node temp = head;
        if (head==null){
            head=inserted;
        }
        else {
            while (temp.next != null) {
                temp = temp.next;
            }
            temp.next = inserted;
            inserted.next = null;
        }
    }
}
public class question8 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number of terms in 1st polynomial : "
);
        int size1 = sc.nextInt();
        System.out.print("Enter the number of terms in 2nd polynomial : "
);
        int size2 = sc.nextInt();
        polyaddition list1 = new polyaddition();
        polyaddition list2 = new polyaddition();
        System.out.println("Enter the terms of 1st polynomial ");
        for(int i=0;i<size1;i++){
            System.out.print("Enter coefficient and power : ");
            int coef =sc.nextInt();
            int power = sc.nextInt();
            list1.endinsert(coef,power);
        }
        System.out.println("Enter the terms of 2nd polynomial ");
        for(int i=0;i<size2;i++){
            System.out.print("Enter coefficient and power : ");
            int coef =sc.nextInt();
            int power = sc.nextInt();
            list2.endinsert(coef,power);
        }
        System.out.print("1st polynomial :  ");
        list1.display();
        System.out.print("2nd polynomial :  ");
        list2.display();
        polyaddition result = list1.addition(list1,list2);
        System.out.println("Answer is ");
        result.display();




    }
}
```

Doubly Linked List all functions

```c
#include<stdio.h>
#include<stdlib.h>

struct node{
    struct node*prev;
    int data;
    struct node*next;
};
```

```c
struct node*DeleteAtEnd(struct node*head){
    struct node*p=head;

    if(head==NULL){
        printf("Can't delete because list is empty\n");
        return NULL;
    }

    else if(head->next==NULL){
        free(head);
        printf("Deleted only item in list the list is empty now\n");
        return NULL;
    }

    else{
        while(p->next!=NULL){
            p=p->next;
        }
    struct node*q=p;
    p=p->prev;
    if(p!=NULL)
        p->next=NULL;
    free(q);
    return head;
    }
}

struct node*DeleteAtFront(struct node*head){
    if(head==NULL){
        printf("Can't delete because the list is empty\n");
        return NULL;
    }
    else if(head->next==NULL && head->prev==NULL){
        free(head);
        printf("List is empty now\n");
        return NULL;
    }
    else{
    struct node*p=head;
    head=head->next;
    head->prev=NULL;
    free(p);
    return head;
    }
}

struct node*InsertAtEnd(struct node*head,int data){
    struct node*ptr=(struct node*)malloc(sizeof(struct node));
    ptr->data=data;

    if(head==NULL){
        ptr->prev=NULL;
        ptr->next=NULL;
        head=ptr;
        return head;
    }
    else{
        struct node*p=head;

        while(p->next!=NULL){
        p=p->next;
        }

    ptr->prev=p;
    p->next=ptr;
    ptr->next=NULL;
    return head;
    }

}

struct node*InsertAtFront(struct node*head,int data){
    struct node*ptr=(struct node*)malloc(sizeof(struct node));
    ptr->data=data;
    if(head==NULL){

        ptr->prev=NULL;
        ptr->next=NULL;
        head=ptr;
        return head;
    }
    else{

    ptr->next=head;
    head->prev=ptr;
    head=ptr;
    return head;
    }
}

struct node*InsertBeforePosition(struct node*head,int checkData,int insData){
    struct node*ptr=(struct node*)malloc(sizeof(struct node));
    struct node*p=head;

    ptr->data=insData;
```

```c
    if(head==NULL){
        printf("List is empty,So can't insert anything\n");
        return NULL;
    }
    while(p->data!=checkData && p->next!=NULL){
        p=p->next;
    }

    struct node*q=p->prev;
    if(p->next==NULL && p->data!=checkData){
        printf("No such element exists!\n");
        return head;
    }
    else if(p->prev==NULL){
        ptr->prev=NULL;
        ptr->next=head;
        head->prev=ptr;
        head=ptr;
        return head;
    }
    else{
        ptr->prev=p->prev;
        q->next=ptr;
        ptr->next=p;
        p->prev=ptr;
        return head;
    }

}

void Display(struct node*head){
    struct node*temp=head;
    if(head==NULL)
        printf("List is empty!\n");

    else{
    printf("Traversal of entire Linked List\n");
    while(temp!=NULL){
        printf("%d ",temp->data);
        temp=temp->next;
        }
    }
}

struct node*DeleteAtPosition(struct node*head,int checkData){
    struct node*p=head;
    if(head==NULL){
        printf("No such element exists!\n");
        return NULL;
    }
    while(p->data!=checkData && p->next!=NULL){
        p=p->next;
    }
    if((p->next==NULL && p->data!=checkData)){
        printf("No such element exists!\n");
        return head;
    }
    else if(p->next==NULL && p->prev==NULL){
        free(p);
        printf("List is empty now\n");
        return NULL;
    }
    else if(p->next==NULL){
        head=DeleteAtEnd(head);
        return head;
    }
    else if(p->prev==NULL){
        head=DeleteAtFront(head);
        return head;
    }
    else if(p!=NULL){
        struct node*r=p->prev;
        r->next=p->next;
        p->next->prev=p->prev;
        free(p);
        return head;
    }

}




int main(){
    struct node*head=NULL;
    int flag=0;
    do {
    int ch;

    printf("\nEnter your choice:\n");
    printf("1)Insert At Front\n2)Insert At End\n3)Insert with a given 
value\n");
    printf("4)Delete At Front\n5)Delete At End\n6)Delete with a given 
element\n7)Exit\n");
    scanf("%d",&ch);
    switch(ch){
        case 1:
```

```c
        {
            int ele;
            printf("Enter the element you want to insert:\n");
            scanf("%d",&ele);
            head=InsertAtFront(head,ele);
            printf("Current Status:\n");
            Display(head);
            break;
        }
        case 2:
        {
            int ele;
            printf("Enter the element you want to insert:\n");
            scanf("%d",&ele);
            head=InsertAtEnd(head,ele);
            printf("Current Status:\n");
            Display(head);
            break;
        }
        case 3:
        {
            int ele,check;
            printf("Enter the element you want to insert:\n");
            scanf("%d",&ele);
            printf("Enter the element before which you want to insert:\n");
            scanf("%d",&check);
            head=InsertBeforePosition(head,check,ele);
            printf("Current Status:\n");
            Display(head);
            break;
        }
        case 4:
        {
            head=DeleteAtFront(head);
            printf("Current Status:\n");
            Display(head);
            break;
        }
        case 5:
        {
            head=DeleteAtEnd(head);
            printf("Current Status:\n");
            Display(head);
            break;
        }
        case 6:
        {
            int check;
            printf("Enter the element which you want to delete:\n");
            scanf("%d",&check);
            head=DeleteAtPosition(head,check);
            printf("Current Status:\n");
            Display(head);
            break;
        }
        case 7:
        {
            flag=1;
            printf("Program finished\n");
            break;
        }
        default:
        {
            printf("Invalid choice!\n");
            break;
        }
    }
    }while(flag!=1);

    return 0;
}
```

Circular single linked list

```
struct node {
    int info;
    struct node* next;
};

// Pointer to last node in the list
struct node* last = NULL;

// Function to insert a node in the
// starting of the list
void insertAtFront(int data)
{
    // Initialize a new node
    struct node* temp;
    temp = (struct node*)malloc(sizeof(struct node));

    // If the new node is the only
    // node in the list
    if (last == NULL) {
        temp->info = data;
        temp->next = temp;
        last = temp;
```

```c
    }

    // Else last node contains the
    // reference of the new node and
    // new node contains the reference
    // of the previous first node
    else {
        temp->info = data;
        temp->next = last->next;

        // last node now has reference
        // of the new node temp
        last->next = temp;
    }
}
```

```c
void addatlast(int data)
{
    // Initialize a new node
    struct node* temp;
    temp = (struct node*)malloc(sizeof(struct node));

    // If the new node is the
    // only node in the list
    if (last == NULL) {
        temp->info = data;
        temp->next = temp;
        last = temp;
    }

    // Else the new node will be the
    // last node and will contain
    // the reference of head node
    else {
        temp->info = data;
        temp->next = last->next;
        last->next = temp;
        last = temp;
    }
}
```

```c
void addatlast()
{
    // Stores number to be inserted
    int data;

    // Initialize a new node
    struct node* temp;
    temp = (struct node*)malloc(sizeof(struct node));

    // Input data
    printf("\nEnter data to be inserted : \n");
    scanf("%d", &data);

    // If the new node is the
    // only node in the list
    if (last == NULL) {
        temp->info = data;
        temp->next = temp;
        last = temp;
    }

    // Else the new node will be the
    // last node and will contain
    // the reference of head node
    else {
        temp->info = data;
        temp->next = last->next;
        last->next = temp;
        last = temp;
    }
}

// Function to insert after any
// specified element
void insertafter()
{
    // Stores data and element after
    // which new node is to be inserted
    int data, value;

    // Initialize a new node
    struct node *temp, *n;

    // Input data
    printf("\nEnter number after which"
           " you want to enter number: \n");
    scanf("%d", &value);
    temp = last->next;

    do {

        // Element after which node is
        // to be inserted is found
        if (temp->info == value) {
            n = (struct node*)malloc(sizeof(struct node));

            // Input Data
            printf("\nEnter data to be"
                   " inserted : \n");
            scanf("%d", &data);
            n->info = data;
            n->next = temp->next;
            temp->next = n;

            // If temp is the last node
            // so now n will become the
            // last node
            if (temp == last)
                last = n;
            break;
        }
        else
            temp = temp->next;
    } while (temp != last->next);
}
```

```
void addatlast(int data)
{
    // Initialize a new node
    struct node* temp;
    temp = (struct node*)malloc(sizeof(struct node));

    // If the new node is the only
    // node in the list
    if (last == NULL) {
        temp->info = data;
        temp->next = temp;
        last = temp;
    }

    // Else the new node will be the
    // last node and will contain
    // the reference of head node
    else {
        temp->info = data;
        temp->next = last->next;
        last->next = temp;
        last = temp;
    }
}

// Function to delete the first
```

```c
// element of the list
void deletefirst()
{
    struct node* temp;

    // If list is empty
    if (last == NULL)
        printf("\nList is empty.\n");

    // Else last node now contains
    // reference of the second node
    // in the list because the
    // list is circular
    else {
        temp = last->next;
        last->next = temp->next;
        free(temp);
    }
}
```

```c
void addatlast(int data)
{
    // Initialize a new node
    struct node* temp;
    temp = (struct node*)malloc(sizeof(struct node));

    // If the new node is the only
    // node in the list
    if (last == NULL) {
        temp->info = data;
        temp->next = temp;
        last = temp;
    }

    // Else the new node will be
    // last node and will contain
    // the reference of head node
    else {
        temp->info = data;
        temp->next = last->next;
        last->next = temp;
        last = temp;
    }
}

// Function to delete the last node
// in the list
void deletelast()
```

```c
{
    struct node* temp;

    // If list is empty
    if (last == NULL)
        printf("\nList is empty.\n");

    temp = last->next;

    // Traverse the list till
    // the second last node
    while (temp->next != last)
        temp = temp->next;

    // Second last node now contains
    // the reference of the first
    // node in the list
    temp->next = last->next;
    last = temp;
}
```

```c
void deleteAtIndex()
{
    // Stores the index at which
    // the element is to be deleted
    int pos, i = 1;
    struct node *temp, *position;
    temp = last->next;

    // If list is empty
    if (last == NULL)
        printf("\nList is empty.\n");

    // Else
    else {

        // Input Data
        printf("\nEnter index : ");
        scanf("%d", &pos);

        // Traverse till the node to
        // be deleted is reached
        while (i <= pos - 1) {
            temp = temp->next;
            i++;
        }

        // After the loop ends, temp
        // points at a node just before
        // the node to be deleted

        // Reassigning links
        position = temp->next;
        temp->next = position->next;

        free(position);
    }
}
```

Alternating split of two linked lists

```
/*Program to alternatively split a linked list into two halves */
#include<stdio.h>
#include<stdlib.h>
#include<assert.h>

/* Link list node */
struct Node
{
    int data;
    struct Node* next;
};

/* pull off the front node of the source and put it in dest */
void MoveNode(struct Node** destRef, struct Node** sourceRef) ;

/* Given the source list, split its nodes into two shorter lists.
If we number the elements 0, 1, 2, ... then all the even elements
should go in the first list, and all the odd elements in the second.
The elements in the new lists may be in any order. */
void AlternatingSplit(struct Node* source, struct Node** aRef,
                            struct Node** bRef)
{
/* split the nodes of source to these 'a' and 'b' lists */
struct Node* a = NULL;
struct Node* b = NULL;

struct Node* current = source;
while (current != NULL)
{
    MoveNode(&a, ¤t); /* Move a node to list 'a' */
    if (current != NULL)
    {
    MoveNode(&b, ¤t); /* Move a node to list 'b' */
    }
}
```

```
*aRef = a;
*bRef = b;
}

/* Take the node from the front of the source, and move it to the front of the
dest.
It is an error to call this with the source list empty.

Before calling MoveNode():
source == {1, 2, 3}
dest == {1, 2, 3}

After calling MoveNode():
source == {2, 3}
dest == {1, 1, 2, 3}
*/
void MoveNode(struct Node** destRef, struct Node** sourceRef)
{
/* the front source node */
struct Node* newNode = *sourceRef;
assert(newNode != NULL);

/* Advance the source pointer */
*sourceRef = newNode->next;

/* Link the old dest off the new node */
newNode->next = *destRef;

/* Move dest to point to the new node */
*destRef = newNode;
}

/* UTILITY FUNCTIONS */
/* Function to insert a node at the beginning of the linked list */
void push(struct node** head_ref, int new_data)
{
/* allocate node */
struct Node* new_node =
            (struct Node*) malloc(sizeof(struct Node));

/* put in the data */
new_node->data = new_data;

/* link the old list off the new node */
new_node->next = (*head_ref);

/* move the head to point to the new node */
(*head_ref) = new_node;
```

```
}

/* Function to print nodes in a given linked list */
void printList(struct Node *node)
{
while(node!=NULL)
{
printf("%d ", node->data);
node = node->next;
}
}

/* Driver program to test above functions*/
int main()
{
/* Start with the empty list */
struct Node* head = NULL;
struct Node* a = NULL;
struct Node* b = NULL;

/* Let us create a sorted linked list to test the functions
Created linked list will be 0->1->2->3->4->5 */
push(&head, 5);
push(&head, 4);
push(&head, 3);
push(&head, 2);
push(&head, 1);
push(&head, 0);

printf("\n Original linked List: ");
printList(head);

/* Remove duplicates from linked list */
AlternatingSplit(head, &a, &b);

printf("\n Resultant Linked List 'a' ");
printList(a);

printf("\n Resultant Linked List 'b' ");
printList(b);

getchar();
return 0;
}
```

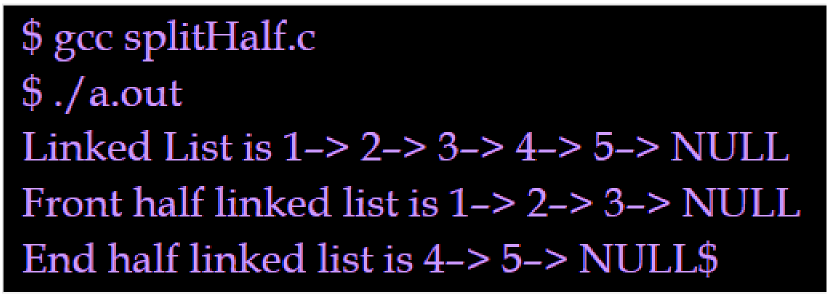
Method-2

```
void AlternatingSplit(struct Node* source, struct Node** aRef,
                            struct Node** bRef)
{
  struct Node aDummy;
  struct Node* aTail = &aDummy; /* points to the last node in 'a' */
  struct Node bDummy;
  struct Node* bTail = &bDummy; /* points to the last node in 'b' */
  struct Node* current = source;
  aDummy.next = NULL;
  bDummy.next = NULL;
  while (current != NULL)
  {
    MoveNode(&(aTail->next), ¤t); /* add at 'a' tail */
    aTail = aTail->next; /* advance the 'a' tail */
    if (current != NULL)
    {
      MoveNode(&(bTail->next), ¤t);
      bTail = bTail->next;
    }
  }
  *aRef = aDummy.next;
  *bRef = bDummy.next;
}
```

**Problem statement:** Given a linked list split it into two halves, front and back. If the linked list has even number of elements then resultant linked lists will be equal. If the input linked list has odd number of elements then front linked list will has one element more than back linked list.

```
/*C code to Split nodes of a linked list into the
front and back halves*/
#include <stdio.h>
#include <stdlib.h>

typedef struct node
{
    int data;
    struct node *next;
} NODE;

NODE *newNode(int key)
{
    NODE *temp = (NODE *)malloc(sizeof(NODE));
    temp->data = key;
    temp->next = NULL;
    return temp;
```

```
}

void splitInHalf(NODE *head, NODE **front, NODE **end)
{
    if (head == NULL)
    {
        *front = head;
        *end = NULL;
        return;
    }
    NODE *slow = head, *fast = head;

    if (head != NULL)
    {
        while (fast && fast->next)
        {
            fast = fast->next->next;
            slow = slow->next;
        }
    }

    *front = head;
    *end = slow->next;
    slow->next = NULL;
}

void printList(NODE *temp)
{
    if (temp == NULL)
    {
        printf("List is empty!\n");
        return;
    }

    while (temp != NULL)
    {
        printf("%d--> ", temp->data);
        temp = temp->next;
    }
    printf("NULL\n");
}

int main()
{
    NODE *head = NULL;
    NODE *front = NULL;
    NODE *end = NULL;
    head = newNode(1);
    head->next = newNode(2);
    head->next->next = newNode(3);
    head->next->next->next = newNode(4);
    head->next->next->next->next = newNode(5);
    head->next->next->next->next->next = NULL;

    printf("Linked List is\t");
    printList(head);

    splitInHalf(head, &front, &end);

    printf("\nFront half linked list is\t");
    printList(front);

    printf("\nEnd half linked list is\t\t");
    printList(end);

    return 0;
}
```



```
$ gcc splitHalf.c
$ ./a.out
Linked List is 1-> 2-> 3-> 4-> 5-> NULL
Front half linked list is 1-> 2-> 3-> NULL
End half linked list is 4-> 5-> NULL$
```

Priority queues

```
import java.util.*;

class priorityQueues{
    int arr[];
    int priority[];
    int size;
    int front;
    int rear;

    priorityQueues(int size){
        this.size = size;
        arr = new int[size];
        priority = new int[size];
        front = 0;
        rear = -1;
    }

    boolean isFull(){
        if(rear == size - 1){
            return true;
        }
        return false;
    }

    boolean isEmpty(){
        if(front > rear){
            return true;
        }
        return false;
    }

    void enqueue(int value, int key){
        if(!isFull()){
            rear++;
            arr[rear] = value;
            priority[rear] = key;
            insertionSort();
            System.out.println(value + " has been enqueued.");
        }
        else{
            System.out.println("Queue is Full");
        }
    }

    void dequeue(){
        if(!isEmpty()){
            front++;
            System.out.println("\nFront element has been dequeued.");
        }
        else{
            System.out.println("\nQueue is Empty");
        }
    }

    int queueFront() {
        return (!isEmpty() ? arr[front] : 0);
    }

    int queueRear() {
        return (!isEmpty() ? arr[rear] : -1);
    }

    void display(){
```

```java
        if(!isEmpty()){
            for(int i = front; i <= rear; i++){
                System.out.print(arr[i] + "(" + priority[i] + ")" + " ");
            }
            System.out.println();
        }
        else {
            System.out.println("\nQueue is Empty.");
        }
    }

    void insertionSort(){
        int i = rear;
        int j = i - 1;
        while(i > front && priority[i] > priority[j]){
            int temp = arr[i];
            arr[i] = arr[j];
            arr[j] = temp;
            temp = priority[i];
            priority[i] = priority[j];
            priority[j] = temp;
            i--;
            j--;
        }
    }
}

public class question6 {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the total number of elements: ");
        int n=sc.nextInt();
        priorityQueues priorityQueue = new priorityQueues(n);
        int el, k;
        for(int i=0;i<n;i++){
            System.out.println("\nEnter the element: ");
            el=sc.nextInt();
            System.out.println("Enter its key(priority): ");
            k=sc.nextInt();
            priorityQueue.enqueue(el, k);
            System.out.println("\nQueue so far: ");
            priorityQueue.display();
        }
        while(true){
            System.out.println("\nEnter 0 to dequeue, 1 to exit: ");
            // highest priority item dequeued first
            int ch=sc.nextInt();
            if(ch==0){
                System.out.println();
                priorityQueue.dequeue();
                System.out.println("Updated Queue: ");
                priorityQueue.display();
            }
            else if(ch==1){
                System.out.println("\nProgram Terminated !");
                break;
            }
        }
    }
}
```

DFS AND BFS TRAVERSALS

```
import java.util.*;
class Graph
{
public
    static int time = 1;
    int ver;
    static boolean visitedbfs[];
    static boolean visiteddfs[];
    LinkedList<Integer> adj[];
    Graph(int ver)
    {
        this.ver = ver;
        adj = new LinkedList[ver];
        visitedbfs = new boolean[ver];
        visiteddfs = new boolean[ver];
        for (int i = 0; i < ver; i++)
        {
            adj[i] = new LinkedList<Integer>();
        }
    }
    void Add(int v, int w)
    {
        adj[v].add(w);
        adj[w].add(v);
    }
    void DFS(int ver, int start[], int end[])
    {
        start[ver] = time;
        time++;
        visiteddfs[ver] = true;
        System.out.print(ver + " ");
        Iterator<Integer> it = adj[ver].listIterator();
        while (it.hasNext())
```

```java
        {
            int vis = it.next();
            if (!visiteddfs[vis])
            {
                DFS(vis, start, end);
            }
        }
        end[ver] = time;
        time++;
    }
    void print()
    {
        System.out.println("Adjacency List representation of Graph:");
        for (int i = 1; i < ver; i++)
        {
            System.out.print(i + ":");
            for (int x : adj[i])
            {
                System.out.print(x + " ");
            }
            System.out.println();
        }
    }
    void BFS(int src, int level[])
    {
        LinkedList<Integer> queue = new LinkedList();
        visitedbfs[src] = true;
        level[src] = 0;
        queue.add(src);
        while (queue.size() != 0)
        {
            int new_src = queue.poll();
            System.out.print(new_src + " ");
            Iterator<Integer> It = adj[src].listIterator();
            while (It.hasNext())
            {
                int neigh = It.next();
                if (!visitedbfs[neigh])
                {
                    visitedbfs[neigh] = true;
                    queue.add(neigh);
                    level[neigh] = level[src] + 1;
                }
            }
        }
    }
} public class DSA8
{
```

```
public
    static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of vertices:");
        int ver = sc.nextInt();
        Graph g = new Graph(ver + 1);
        System.out.println("Enter the number of edges:");
        int edge = sc.nextInt();
        int start[] = new int[ver + 1];
        int end[] = new int[ver + 1];
        int level[] = new int[ver];
        for (int i = 0; i < edge; i++)
        {
            System.out.println("Enter the first vertex");
            int src = sc.nextInt();
            System.out.println("Enter the second vertex");
            int des = sc.nextInt();
            g.Add(src, des);
        }
        System.out.println("Representation of graph");
        g.print();
        System.out.println("Enter the vertex from where you want to start
traversal:");
        ;
        int startver = sc.nextInt();
        System.out.println();
        System.out.println("DFS TRAVERSAL");
        g.DFS(startver, start, end);
        System.out.println();
        for (int i = 1; i <= ver; i++)
            System.out.println("Vertex " + i + " START POINT " + start[i] + "
END POINT " + end[i]);
        System.out.println("BFS TRAVERSAL");
        g.BFS(startver, level);
        System.out.println();
        System.out.println("Nodes" + " " + "Level");
        for (int i = 0; i < ver; i++)
            System.out.println(" " + i + " --> " + level[i]);
    }
}
```